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:

Orofino Wastewater Treatment Plant

Public Comment Start Date: March 19, 2021
Public Comment Expiration Date: April 19, 2021

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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

EPA Certification

Since this facility discharges to tribal waters and the Tribe does not have Treatment as a State (TAS), the EPA is the certifying authority for the permit. See Section IX.C. Comments regarding the intent to certify should be directed to the EPA technical contact listed above.

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 Michael Le (le.michael@epa.gov). If you are unable to submit comments via email, please call 206-553-1099.

Persons wishing to comment on, or request a Public Hearing for the draft permit for this facility may do so 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 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 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, 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 permit, fact sheet, and other information can be found by visiting the Region 10 NPDES website at: http://EPA.gov/r10earth/waterpermits.htm and at https://www.epa.gov/npdes-permits/idaho-npdes-permits. Because of the COVID-19 virus and limited building access, we cannot make hard copies available for viewing at our offices.

I. 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
AWL	Average Weekly Limit
BE	Biological Evaluation
BOD_5	Biochemical oxygen demand, five-day
°C	Degrees Celsius
CFR	Code of Federal Regulations
CFS	Cubic Feet per Second
CV	Coefficient of Variation
CWA	Clean Water Act
DMR	Discharge Monitoring Report
DO	Dissolved oxygen
EFH	Essential Fish Habitat
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FR	Federal Register
Gpd	Gallons per day
HUC	Hydrologic Unit Code
ICIS	Integrated Compliance Information System
IDEQ	Idaho Department of Environmental Quality
I/I	Infiltration and Inflow
LA	Load Allocation
lbs/day	Pounds per day
LTA	Long Term Average
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
N	Nitrogen
NEPA	National Environmental Policy Act
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NSPS	New Source Performance Standards
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
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
TRC	Total Residual Chlorine
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
WD	Water Division
WET	Whole Effluent Toxicity
WLA	Wasteload allocation
WQBEL	Water quality-based effluent limit

WQS	Water Quality Standards
WWTP	Wastewater treatment plant

I. Background Information

A. General Information

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

Table 1. General Facility Information

NPDES Permit #:	ID0020150
Applicant:	City of Orofino, Wastewater Treatment Plant
Type of Ownership	Publicly Owned Treatment Works
Physical Address:	10200 Highway 12 Orofino, ID 83544
Mailing Address:	P.O. Box 312 Orofino, ID 83544
Facility Contact:	Michael Martin Water and Wastewater Superintendent orofinowwtp@yahoo.com 208-476-5051
Facility Location:	Latitude 46.487385 Longitude -116.267884
Receiving Water	Clearwater River, Idaho/Nez Perce Reservation
Facility Outfall	Latitude 46.48746 Longitude -116.26497

B. Permit History

The most recent NPDES permit for the City of Orofino was issued on June 21, 2011, became effective on August 1, 2011, and expired on July 31, 2016. An NPDES application for permit issuance was submitted by the permittee on November 16, 2015. The EPA determined that the application was timely and complete. Therefore, pursuant to 40 CFR 122.6, the permit has been administratively continued and remains fully effective and enforceable.

C. Tribal Consultation

EPA consults on a government-to-government basis with federally recognized tribal governments when EPA actions and decisions may affect tribal interests. Meaningful tribal consultation is an integral component of the federal government's general trust relationship with the federally recognized tribes. The federal government recognizes the right of each tribe to self-government, with sovereign powers over their members and their territory. Executive Order 13175 (November 2000) entitled "Consultation and Coordination with Indian Tribal Governments" requires federal agencies to have an accountable process to assure meaningful and timely input by tribal officials in the development of regulatory

policies on matters that have tribal input by tribal officials in the development of regulatory policies on matters that have tribal implications and to strengthen the government-to-government relationship with Indian tribes. In May 2011, EPA issued the "EPA Policy on Consultation and Coordination with Indian Tribes" which established national guidelines and institutional controls for consultation.

The Orofino WWTP is located on the Nez Perce Reservation of the Nez Perce Tribe of Indians (Nez Perce or Tribe). Consistent with the Executive Order and the EPA tribal consultation policies, EPA coordinated with the Nez Perce during the development of the draft permit and is inviting the Tribe to engage in formal tribal consultation.

II. Facility Information

A. Treatment Plant Description

The City of Orofino owns, operates and has maintenance responsibility for a facility that treats domestic sewage and commercial wastewater discharge. The facility receives wastewater primarily from local residents and commercial establishments through a separate sanitary sewer system.

Raw wastewater collected on the east side of the Clearwater River is pumped across the river by the main pump station to the influent structure at the treatment plant. Raw wastewater collected on the west side of the river and return flows from the treatment plant are pumped by the commercial lift station to the influent structure.

The raw wastewater undergoes coarse screening and grit removal to eliminate equipment damaging material. The wastewater then enters the oxidation ditch where a biological system effectively removes organic matter present in the wastewater. Secondary clarification follows. The effluent is then disinfected with chlorine and discharged to the Clearwater River. A map with the location of the facility and a map of the Nez Perce tribes are provided in **Error! Reference source not found.**.

Service Area

The City of Orofino owns and operates the City of Orofino wastewater treatment plant (WWTP) located in Orofino, Idaho. The collection system has no combined sewers. The facility serves a resident population of 3,911. There are no major industries discharging to the facility.

Treatment Process

The design flow of the facility is 0.88 mgd. The reported actual flows from the facility range from 0.2 mgd to 0.5 mgd (average monthly flow). The treatment process consists of activated sludge, and disinfection using chlorine and dechlorination**.** Because the design flow is less than 1 mgd, the facility is considered a minor facility.

Outfall Description

The discharge is continuous through a subsurface open pipe that discharges to the Clearwater River within the Tribal reservation.

Effluent Characterization

To characterize the effluent, EPA evaluated the facility's application form, discharge monitoring report (DMR) data, and additional data provided by the City of Orofino WWTP. The effluent quality is summarized in Table 2. Data are provided in 0.

Table 2 Effluent Characterization

Parameter	Minimum	Maximum	Notes
Biochemical Oxygen Demand (BOD_5)	1.0 mg/L	3.0 mg/L	Monthly Average
BOD_5 Percent Removal	96.7 %	99.8 %	Monthly Average
Solids, Total Suspended (TSS)	1.0 mg/L	26 mg/L	Monthly Average
TSS Percent Removal	85.5 %	99.8 %	Monthly Average
E. coli, MTEC-MF	1.0 #/100mL	136 #/100mL	Instant Maximum
Total Ammonia	0.06 mg/L	7.12 mg/L	Monthly Maximum
pH	6.5	7.9	Standard Unit
Total Residual Chlorine	0.16 mg/L	0.45 mg/L	Monthly Average

Source: City of Orofino (2015-2020)

Compliance History

A summary of effluent violations is provided in Table 3. Overall, the facility has had a good compliance record. Some violations occurred with meeting pH, total residual chlorine, and Total Suspended Solids.

Additional compliance information for this facility, including compliance with other environmental statutes, is available on Enforcement and Compliance History Online (ECHO). The ECHO web address for this facility is: https://echo.epa.gov/trends/loading-tool/reports/effluent-exceedances?permit_id=ID0020150.

Table 3. Summary of Effluent Violations (4/30/2015 to 8/25/2020)

Parameter	Limit	Units	Number of Instances
pH	Daily Maximum	s.u.	1
Chlorine, total residual (TRC)	Monthly Average	mg/L	4
Total Suspended Solids (TSS)	Weekly Average	mg/L	2
Chlorine, total residual (TRC)	Weekly Average	lb/day	2

The IDEQ conducted an inspection of the facility on behalf of EPA in November 15, 2016. The encompassed the wastewater treatment process, records review, operation and maintenance, and the collection system. On April 20, 2017, EPA sent a Notice of Violation (NOV) to the City. The facility was using Method 4500-NH3C instead of Method 350.1 to monitor for total ammonia as required by its NPDES permit. Also, the facility failed to update its Quality Assurance Plan (QAP) since the facility was constructed in 1984.

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 analysis are provided in the Water Quality-Based Effluent Limits section below. This section summarizes characteristics of the receiving water that impact that analysis.

A. Receiving Water

This facility discharges to Clearwater River in the City of Orofino, Idaho. The outfall is located upstream of the North Fork of the Clearwater River.

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. 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 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 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.

The Nez Perce has not applied for the status of Treatment as a State (TAS) from the EPA for purposes of the Clean Water Act. When the Nez Perce is granted TAS, and when it has Water Quality Standards (WQS) approved by EPA, those tribal WQS will be used for determining effluent limitations. Meanwhile, the Idaho WQS were used as reference for setting permit limits, and to protect downstream uses in the State of Idaho 34.5 miles downstream.

Designated Beneficial Uses

This facility discharges to the Clearwater River in the Clearwater River – Lolo Creek to North Fork Clearwater River (HUC17060306), Water Body Unit C-21. At the point of discharge, the Clearwater River is protected for the following designated uses:

- cold water aquatic life
- primary contact recreation
- domestic water supply

- salmonid spawning

The Idaho Water Quality Standards state that all waters of the State of Idaho are protected for industrial and agricultural water supply, wildlife habitats and aesthetics (IDAPA 58.01.02.100.03.b and c, 100.04 and 100.05).

C. Water Quality

The water quality for the receiving water is summarized in Table 4.

Table 4. Receiving Water Quality Data

Parameter	Units	Percentile	Value
Temperature	°C	95th	21.5
pH	Standard units	5th – 95th	7.71-7.89
Ammonia	mg/L	maximum	7.12
Source: Data collected by USGS station 13340000, 1973-2018			

D. Water Quality Limited Waters

The DEQ 2016 Integrated report states that this portion of the Clearwater River is a Categorical 3-waters. This segment of the river has not been assessed by the State or the Nez Perce to determine whether beneficial uses are being attained or impaired.

E. Low Flow Conditions

Critical low flows for the receiving water are summarized in Table 5. Critical Flows in Receiving Water.

Table 5. Critical Flows in Receiving Water

Flows	Annual Flow (cfs)
1Q10	671
7Q10	839
30B3	1147
30Q5	1093
Harmonic Mean	3123
Source: USGS station 13340000 located at Orofino, Idaho in the Clearwater River. (1990-2020)	

Low flows are defined in Appendix D, Part C.

IV. Effluent Limitations and Monitoring

Table 6 below presents the existing effluent limits and monitoring requirements in the NPDES Permit. Table 7, below, presents the proposed effluent limits and monitoring requirements in the draft permit.

Table 6. Existing Permit - Effluent Limits and Monitoring Requirements

Parameter	Effluent Limitations			Monitoring Requirements		
	Average Monthly Limit	**Average Weekly Limit**	**Instantaneous Maximum Limit**	**Sample Location**	**Sample Frequency**	**Sample Type**
Flow mgd	---	---	---	Effluent	continuous	Recording
Biochemical Oxygen Demand (BOD_5)	30 mg/L	45 mg/L	---	Effluent	1/month	8-hour composite
	≥85% removal	---	---	Influent and Effluent	---	Calculation
	220 lbs/day	330 lbs/day	---	Effluent	1/month	Calculation
Total Suspended Solids (TSS)	30 mg/L	45 mg/L	---	Effluent	1/month	8-hour composite
	≥85% removal	---	---	Influent and Effluent	---	Calculation
	220 lbs/day	330 lbs/day	---	Effluent	1/month	Calculation
E. coli Bacteria	126 colonies/ 100 mL	---	406 colonies/ 100 mL	Effluent	5/month	Grab
pH	6.5 – 9.0 s. u.			Effluent	5/week	Grab
Total Residual Chlorine	0.50 mg/L	0.75 mg/L	---	Effluent	5/week	Grab
	3.6 lbs/day	5.5 lbs/day				
Total Ammonia as Nitrogen, mg/L	---	---	---	Effluent	1/month	8-hour composite
NPDES Application Form 2A Effluent Testing Data	---	---	---	Effluent	1 each in 2nd, 3rd & 4th years of the permit	

Table 7. Draft Permit - Effluent Limits and Monitoring Requirements

Parameter	Effluent Limitations			Monitoring Requirements		
	Average Monthly Limit	**Average Weekly Limit**	**Instantaneous Maximum Limit**	**Sample Location**	**Sample Frequency**	**Sample Type**
Flow mgd	---	---	---	Effluent	continuous	Recording
Temperature ^{0}C	---	---	---	Effluent	1/month	Grab
Biochemical Oxygen Demand (BOD_5)	30 mg/L	45 mg/L	---	Influent and Effluent	1/month	8-hour composite
	≥85% removal	---	---	Influent and Effluent	---	Calculation
	220 lbs/day	330 lbs/day	---	Influent and Effluent	1/month	Calculation
Total Suspended Solids (TSS)	30 mg/L	45 mg/L	---	Influent and Effluent	1/month	8-hour composite
	≥85% removal	---	---	Influent and Effluent	---	Calculation
	220 lbs/day	330 lbs/day	---	Influent and Effluent	1/month	Calculation
E. coli Bacteria	126 colonies/ 100 mL	---	406 colonies/ 100 mL	Effluent	5/month	Grab
pH	6.5 – 9.0 s. u.			Effluent	5/week	Grab
Total Residual Chlorine	0.50 mg/L	0.75 mg/L	---	Effluent	5/week	Grab
	3.6 lbs/day	5.5 lbs/day				
Total Ammonia as Nitrogen, mg/L	---	---	---	Effluent	1/month	8-hour composite
NPDES Application Form 2A Effluent Testing Data	---	---	---	Effluent	1/year	

There are no changes in the effluent limitations from the existing permit to the proposed reissued permit.

V. Basis for Effluent Limits

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.

A. Pollutants of Concern

Pollutants of concern are those that either have technology-based 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 wasteload allocation (WLA) from a total maximum daily load (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

The wastewater treatment process for this facility includes both primary and secondary treatment, as well as disinfection with chlorination. Pollutants expected in the discharge from a facility with this type of treatment, include but are not limited to: BOD_5, TSS, E. coli bacteria, total residual chlorine (TRC), pH, ammonia, temperature, phosphorus, and dissolved oxygen (DO).

Based on this analysis, pollutants of concern are as follows:

- BOD_5
- TSS
- *E. coli* bacteria
- TRC
- pH
- Ammonia

B. Technology-Based Effluent Limits

Federal Secondary Treatment Effluent Limits

The CWA requires POTWs to meet performance-based requirements based on available wastewater treatment technology. Section 301 of the CWA established a required performance level, referred to as "secondary treatment," which 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 certain municipal WWTPs 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 8. For additional information and background refer to Part 5.1 *Technology Based Effluent Limits for POTWs* in the Permit Writers Manual.

Table 8. Secondary Treatment Effluent Limits

Parameter	30-day average	7-day average
BOD_5	30 mg/L	45 mg/L
TSS	30 mg/L	45 mg/L
Removal for BOD_5 and TSS (concentration)	85% (minimum)	--
pH	within the limits of 6.0 - 9.0 s.u.	
Source: 40 CFR 133.102		

Equivalent to Secondary Treatment Effluent Limits

EPA has additionally established effluent limitations (40 CFR 133.105) that are considered "equivalent to secondary treatment" which apply to facilities meeting certain conditions established under 40 CFR 133.101(g). The federally promulgated equivalent to secondary treatment effluent limits are listed below in Table 9.

Table 9. Equivalent to Secondary Treatment Effluent Limits

Parameter	30-day average	7-day average
BOD_5	45 mg/L	65 mg/L
TSS	45 mg/L	65 mg/L
Removal for BOD_5 and TSS (concentration)	65% (minimum)	--
Source: 40 CFR 133.105		

Using DMR data from 2015 to 2020, EPA evaluated the facility's eligibility for effluent limits based on equivalent to secondary treatment standards. To be eligible, a POTW must meet all three of the following criteria:

- Criterion #1 – Consistently Exceeds Secondary Treatment Standards: The first criterion that must be satisfied to qualify for the equivalent to secondary standards is demonstrating that the BOD_5 and TSS effluent concentrations consistently achievable through proper operation and maintenance of the treatment works exceed the secondary treatment standards set forth in 40 CFR 133.102(a) and (b). The regulations at 40 CFR 133.101(f) define "effluent concentrations consistently achievable through proper operation and maintenance" as

- (f)(1): For a given pollutant parameter, the 95th percentile value for the 30-day average effluent quality achieved by a treatment works in a period of at least 2 years, excluding values attributable to upsets, bypasses, operational errors, or other unusual conditions, and
- (f)(2): A 7-day average value equal to 1.5 times the value derived under paragraph (f)(1)

- Criterion #2 – Principal Treatment Process: The second criterion that a facility must meet to be eligible for equivalent to secondary standards is that its principal treatment process must be a trickling filter or waste stabilization pond (i.e., the largest percentage of BOD_5 and TSS removal is from a trickling filter or waste stabilization pond system).
- Criterion #3 – Provide Significant Biological Treatment: The third criterion for applying equivalent to secondary standards is that the treatment works provides significant biological treatment of municipal wastewater. 40 CFR 133.101(k) defines significant biological treatment as using an aerobic or anaerobic biological treatment process in a treatment works to consistently achieve a 30-day average of at least 65 percent removal of BOD_5.

See Table 10 for the Treatment Equivalent to Secondary Treatment determinations for BOD_5 and TSS.

Table 10. Treatment Equivalent to Secondary Treatment Determinations for BOD_5 and TSS

Criterion 1: Consistently Exceeds Secondary Treatment Standards

BOD_5	**95th Percentile**	**Secondary Treatment Standard**	**Exceeds Secondary Standard**
Average Monthly	3 mg/L	30 mg/L	No
Weekly Average	5.2 mg/L × 1.5 = 7.8 mg/L	45 mg/L	No
TSS	**95th Percentile**	**Secondary Treatment Standard**	**Exceeds Secondary Standard**
Average Monthly	10.1 mg/L	30 mg/L	No
Weekly Average	20.4 mg/L × 1.5 = 30.6 mg/L	45 mg/L	No

Criterion 2: Principal Treatment Process

Waste stabilization ponds are the primary treatment method; Yes, it meets Criterion 2.

Criterion 3: Provides Significant Biological Treatment

BOD_5 30-day Average Percent Removal	**5th Percentile**	**Secondary Treatment Standard**	**Provides Significant Biological Treatment**
	97.7%	65%	Yes

The POTW does not meet all three criteria for treatment equivalent to secondary treatment for BOD_5, therefore secondary limits for BOD_5 apply.

The POTW does not meet the three criteria for treatment equivalent to secondary for TSS, therefore secondary limits for TSS apply.

Table 11 lists the basis and proposed effluent limits for BOD_5 and TSS.

Table 11. Treatment Equivalent to Secondary Determinations for BOD_5 and TSS

Parameter	**Monthly Average**	**Weekly Average**	**Percent Removal**	**Basis**
BOD_5	30 mg/L	45 mg/L	85%	Technology-based effluent limits for secondary treatment (40 CFR 133.102(a)-(b))
TSS	30 mg/L	45 mg/L	85%	Technology-based effluent limits for secondary treatment (40 CFR 133.102(a)-(b))

Mass-Based Limits

The federal regulation at 40 CFR 122.45(f) requires that effluent limits be expressed in terms of mass, except under certain conditions. 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[1]

Since the design flow for this facility is 0.88 mgd, the technology based mass limits for BOD_5 and TSS are calculated as follows:

Average Monthly Limit = 30 mg/L × 0.88 mgd × 8.34 = 220 lbs/day

[1] 8.34 is a conversion factor with units (lb ×L)/(mg × gallon×10^6)

Average Weekly Limit = 45 mg/L × 0.88 mgd × 8.34 = 330 lbs/day

Chlorine

Chlorine is often used to disinfect municipal wastewater prior to discharge. The WWTP 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 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:

Monthly average Limit= 0.5 mg/L x 0.88 mgd x 8.34 = 3.7 lbs/day

Weekly average Limit = 0.75 mg/L x 0.88 mgd x 8.34 = 5.5 lbs/day

C. Water Quality-Based Effluent Limits

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 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) 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. 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 wasteload allocation for the discharge in an approved TMDL. If there are no approved TMDLs that specify wasteload allocations 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 Idaho Water Quality Standards at IDAPA 58.01.02.060 provides Idaho's mixing zone policy for point source discharges. The proposed mixing zones are summarized in Table 12. EPA also calculated dilution factors for year-round critical low flow conditions. All dilution factors are calculated with the effluent flow rate set equal to the design flow of 0.88 mgd.

Table 12. Mixing zones

Criteria Type	Critical Low Flow (cfs)	Mixing Zone (% of Critical Low Flow)	Dilution Factor
Acute Aquatic Life	670.9	25	124
Chronic Aquatic Life (except ammonia)	839.36	25	155
Chronic Aquatic Life (ammonia)	1146.63	25	212

The reasonable potential analysis and water quality-based effluent limit calculations were based on mixing zones shown in Table 12. If IDEQ revises the allowable mixing zone in its final certification of this permit, reasonable potential analysis and water quality-based effluent limit calculations will be revised accordingly.

The equations used to conduct the reasonable potential analysis and calculate the water quality-based effluent limits are provided in Appendix D.

Reasonable Potential and Water Quality-Based Effluent Limits

The reasonable potential and water quality-based effluent limit for specific parameters are summarized below. The calculations are provided in Appendix D.

Ammonia

Ammonia criteria are based on a formula which relies on the pH and temperature of the receiving water, because the fraction of ammonia present as the toxic, un-ionized form increases with increasing pH and temperature. Therefore, the criteria become more stringent as pH and temperature increase. The table below details the equations used to determine water quality criteria for ammonia.

Table 12 Ammonia Criteria

Total ammonia nitrogen criteria (mg N/L):

Annual Basis

Based on IDAPA 58.01.02

INPUT	
1. Receiving Water Temperature (deg C):	21.5
2. Receiving Water pH:	7.89
3. Is the receiving water a cold water designated use?	Yes
4. Are non-salmonid early life stages present or absent?	Present
OUTPUT	
Total ammonia nitrogen criteria (mg N/L):	
Acute Criterion (CMC)	**6.89**
Chronic Criterion (CCC)	**1.81**

Acute Criteria Equation: Cold Water

$$CMC = \frac{0.275}{1 + 10^{7.204 - pH}} + \frac{39.0}{1 + 10^{pH - 7.204}}$$

Acute Criteria Equation: Warm Water

$$CMC = \frac{0.411}{1 + 10^{7.204 - pH}} + \frac{58.4}{1 + 10^{pH - 7.204}}$$

Chronic Criteria: Cold Water, Early Life Stages Present

$$CCC = \left(\frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}}\right) \bullet MIN(2.85, 1.45 \cdot 10^{0.028(25-T)})$$

Chronic Criteria: Cold Water, Early Life Stages Absent

$$CCC = \left(\frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}}\right) \bullet 1.45 \cdot 10^{0.028(25-T)})$$

A reasonable potential calculation showed that the WWTP discharge would have no reasonable potential to cause or contribute to a violation of the water quality criteria for ammonia. Therefore, the draft permit does not contain water quality-based effluent limits for ammonia. Monitoring is again required for the new permit to insure no increase in discharges from the previous permit. See Appendices D for reasonable potential and effluent limit calculations for ammonia.

pH

The Idaho water quality standards at IDAPA 58.01.02.250.01.a, require pH values of the river to be within the range of 6.5 to 9.0. Mixing zones are generally not granted for pH, therefore the most stringent water quality criterion must be met before the effluent is discharged to the receiving water. Effluent pH data were compared to the water quality criteria**.** The effluent pH values at the WWTP are within the Idaho water quality standards of 6.5 to 9.0.

E. coli

The Idaho water quality standards state that waters of the State of Idaho, that are designated for recreation, are not to contain *E. coli* bacteria in concentrations exceeding 126 organisms per 100 ml based on a minimum of five samples taken every three to seven days over a thirty-day period. A mixing zone is not appropriate for bacteria for waters designated for contact recreation. Therefore, the draft permit contains a monthly geometric mean effluent limit for *E. coli* of 126 organisms per 100 ml (IDAPA 58.01.02.251.01.a.).

The Idaho water quality standards also state that a water sample that exceeds certain “single sample maximum” values indicates a likely exceedance of the geometric mean criterion, although it is not, in and of itself, a violation of water quality standards. For waters

designated for primary contact recreation, the "single sample maximum" value is 406 organisms per 100 ml (IDAPA 58.01.02.251.01.b.ii.).

The goal of a water quality-based effluent limit is to ensure a low probability that water quality standards will be exceeded in the receiving water as a result of a discharge, while considering the variability of the pollutant in the effluent. Because a single sample value exceeding 406 organisms per 100 ml indicates a likely exceedance of the geometric mean criterion, the EPA has imposed an instantaneous (single grab sample) maximum effluent limit for *E. coli* of 406 organisms per 100 ml, in addition to a monthly geometric mean limit of 126 organisms per 100 ml, which directly implements the water quality criterion for *E. coli*. This will ensure that the discharge will have a low probability of exceeding water quality standards for *E. coli*.

Regulations at 40 CFR 122.45(d)(2) require that effluent limitations for continuous discharges from POTWs be expressed as average monthly and average weekly limits, unless impracticable. Additionally, the terms "average monthly limit" and "average weekly limit" are defined in 40 CFR 122.2 as being arithmetic (as opposed to geometric) averages. It is impracticable to properly implement a 30-day geometric mean criterion in a permit using monthly and weekly arithmetic average limits. The geometric mean of a given data set is equal to the arithmetic mean of that data set if and only if all of the values in that data set are equal. Otherwise, the geometric mean is always less than the arithmetic mean. In order to ensure that the effluent limits are "derived from and comply with" the geometric mean water quality criterion, as required by 40 CFR 122.44(d)(1)(vii)(A), it is necessary to express the effluent limits as a monthly geometric mean and an instantaneous maximum limit.

Chlorine

The Idaho state water quality standards at IDAPA 58.01.02.210 establish an acute criterion of 19 µg /L, and a chronic criterion of 11 µg/L for the protection of aquatic life. A reasonable potential calculation showed that the discharge from the facility would have the reasonable potential to cause or contribute to a violation of the water quality criteria for chlorine. Therefore, the draft permit contains a water quality-based effluent limit. See Appendix D for reasonable potential and effluent limit calculations.

Temperature

The Idaho water quality standards at IDAPA 58.01.02.250.02(f) establish criterion for the protection of salmonid spawning. As the facility currently does not collect effluent temperature monitoring data, the reasonable potential analysis for temperature was unable to be calculated. In order to calculate reasonable potential, EPA will require monthly grab effluent temperature monitoring.

Residues

The Idaho water quality standards require that surface waters of the State be free from floating, suspended or submerged matter of any kind in concentrations impairing designated beneficial uses. The draft permit contains a narrative limitation prohibiting the discharge of such materials.

D. Antibacksliding

Section 402(o) of the Clean Water Act and 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. For explanation of the antibacksliding exceptions refer to Chapter 7 of the Permit Writers Manual *Final Effluent Limitations and Anti-backsliding*.

The proposed effluent limits for BOD_5, TSS, pH and TRC are the same as those of the current permit. Thus, there is no backsliding in the permit.

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

Monitoring Changes from the Previous Permit

The segment of the Orofino River at the City of Orofino is listed for salmonid spawning. However, the City of Orofino lacks effluent temperature data to conduct a reasonable analysis for the designated use. Therefore, effluent temperature monitoring is required.

C. Surface Water Monitoring

In general, surface water monitoring may be required for pollutants of concern to assess the assimilative capacity of the receiving water for the pollutant. In addition, surface water monitoring may be required for pollutants for which the water quality criteria are dependent and to collect data for TMDL development if the facility discharges to an impaired water body. The facility does not have reasonable potential to exceed ammonia aquatic life criteria. Therefore, surface water monitoring will not be required for ammonia. As is listed in Table 7, effluent temperature monitoring will be required.

D. Electronic 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.

Part III.B of the Permit requires that the Permittee submit a copy of the DMR to the Nez Perce Tribe. Currently, the permittee may submit a copy to the Nez Perce Tribe by one of three ways: 1. a paper copy may be mailed. 2. The email address for the Nez Perce Tribe may be added to the electronic submittal through NetDMR, or 3. The permittee may provide the Nez Perce Tribe viewing rights through NetDMR.

VII. Sludge (Biosolids) Requirements

EPA Region 10 separates wastewater and sludge permitting. EPA has authority under the CWA to issue separate sludge-only permits for the purposes of regulating biosolids. 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.

VIII. Other Permit Conditions

A. Quality Assurance Plan

The City of Orofino is required to update the Quality Assurance Plan within 180 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 made available to EPA and the Nez Perce upon request.

B. Operation and Maintenance Plan

The permit requires the City of Orofino 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 180 days of the effective date of the final permit. The plan must be retained on site and made available to EPA and the Nez Perce upon request.

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

Sanitary Sewer Overflows (SSOs) are not authorized under this permit. 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 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 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 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 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. Environmental Justice

As part of the permit development process, EPA Region 10 conducted a screening analysis to determine whether this permit action could affect overburdened communities. "Overburdened" communities can include minority, low-income, tribal, and indigenous populations or communities that potentially experience disproportionate environmental harms and risks. EPA used a nationally consistent geospatial tool that contains demographic and environmental data for the United States at the Census block group level. This tool is used to identify permits for which enhanced outreach may be warranted.

The WWTP is not located within or near a Census block group that is potentially overburdened. The draft permit does not include any additional conditions to address environmental justice.

Regardless of whether a WWTP 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/d/2013-10945). 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.

For more information, please visit https://www.epa.gov/environmentaljustice and Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*.

E. 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 flow or loading exceeds 85% of the design criteria values for any two months in a twelve-month period. The permittee has a design flow of 0.88 mgd but often exceeds this design value on a maximum monthly basis, with maximum monthly flows between 2016 and 2020 ranging from 0.246 mgd to 2.489 mgd, indicating a possible problem with inflow and infiltration within the collection system.

F. Pretreatment Requirements

The Nez Perce Tribe does have an approved pretreatment program. Thus, EPA is the Approval Authority for POTWs located on tribal land; and since the City of Orofino does not have an approved pretreatment program per 40 CFR 403.8, EPA is also the Control Authority for industrial users that might introduce pollutants into the City of Orofino wastewater treatment plant.

The Permittee may not authorize discharges which may violate the national specific prohibitions of the General Pretreatment Program under 40 CFR 403.5(b).

Although, not a permit requirement, the Permittee may wish to consider developing the legal authority enforceable in Federal, State or local courts which authorizes or enables the POTW to apply and to enforce the requirement of sections 307 (b) and (c) and 402(b)(8) of the Clean Water Act, as described in 40 CFR 403.8(f)(1). Where the POTW is a municipality, legal authority is typically through a sewer use ordinance, which is usually part of the city or county code. EPA has a Model Pretreatment Ordinance for use by municipalities operating POTWs that are required to develop pretreatment programs to regulate industrial discharges to their systems (EPA, 2007). The model ordinance should also be useful for communities with POTWs that are not required to implement a pretreatment program in drafting local ordinances to control nondomestic dischargers within their jurisdictions.

G. Standard Permit Provisions

Sections III, IV and V of the draft permit contain standard regulatory language that must be included in all NPDES permits. The standard regulatory language covers requirements such as monitoring, recording, and reporting requirements, compliance responsibilities, and other general requirements.

IX. 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. A review of the threatened and endangered species located in Idaho finds that this permit has no effect on endangered or threatened species under the jurisdiction of FWS.

According to the FWS (September 2010) Bull Trout (Salvelinus confluentus) in the mainstem of the Clearwater River is listed as threatened. NOAA lists Fall Chinook Salmon (Oncorhynchus tshawytscha) and Steelhead (Oncorhynchus mykiss) as threatened.

Bull Trout

A biological evaluation (BE) was prepared for the 2003 permit issuance analyzing the effects of the discharge on Bull Trout. The BE concluded that the issuance of the 2003 permit had no effect on Bull Trout. There has not been any changes to the discharge since the 2003 and 2011 permit issuances.

Based on the following considerations, EPA again concludes as it did for the 2003 and 2011 permit issuances that this permit has no effect on endangered or threatened species under the jurisdiction of FWS.

1. The U.S. Fish and Wildlife Service *Recovery Plan for the Coterminous United States Population of Bull Trout* 2015 identified causes of the Bull Trout listing. They are isolation and habitat fragmentation, poaching, non-native species, residential development, mining, transportation networks and agricultural practices. Neither Orofino or any sewage treatment plant is identified as a contributing factor to the decline in Bull Trout.
2. High acute dilution ratio of 124 to 1 and high chronic dilution ratio of 212 to 1.
3. Secondary Treatment.
4. Chronic dissipates very quickly (within minutes) and does not bioaccumulate or cause chronic toxicity problem.
5. Technology based chlorine limits, monitoring and reporting to ensure compliance.
6. Compliance with water quality standards for pH and bacteria at the point of discharge.
7. This permit requires compliance with the State of Idaho Surface Water Quality Standards that protect aquatic organisms including threatened and endangered species.

Fall Chinook Salmon and Steelhead

Based on the same reasons listed for Bull Trout, EPA again concludes as it did for the 2003 and existing permit, that this permit has no effect on Fall Chinook Salmon and Steelhead.

B. 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 the 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.

The area of the discharge is designated proposed critical habitat for Bull Trout. Due to the same reasons listed above under the ESA section, EPA has determined that issuance of this permit will have no effect on EFH in the vicinity of the discharge.

C. State Certification

Section 401 of the Clean Water Act (CWA) requires the State in which the discharge originates to certify that the discharge complies with the appropriate sections of the CWA, as well as any appropriate requirements of State Law. See 33 USC § 1341(d). This includes water quality standards that have been approved for Tribes with TAS. Since this facility discharges to tribal waters and the Nez Perce Tribe has not been approved for TAS from the EPA for purposes of the Clean Water Act, the EPA is the certifying authority. See Appendix F. EPA is taking comment on EPA's intent to certify this permit.

D. Antidegradation

EPA has completed an antidegradation review which is shown in Appendix E.

E. Permit Expiration

The permit will expire five years from the effective date.

X. References

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

https://www3.epa.gov/npdes/pubs/owm0264.pdf

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. September 2010. https://www3.epa.gov/npdes/pubs/pwm_2010.pdf

EPA, 2007. *EPA Model Pretreatment Ordinance*, Office of Wastewater Management/Permits Division, January 2007.

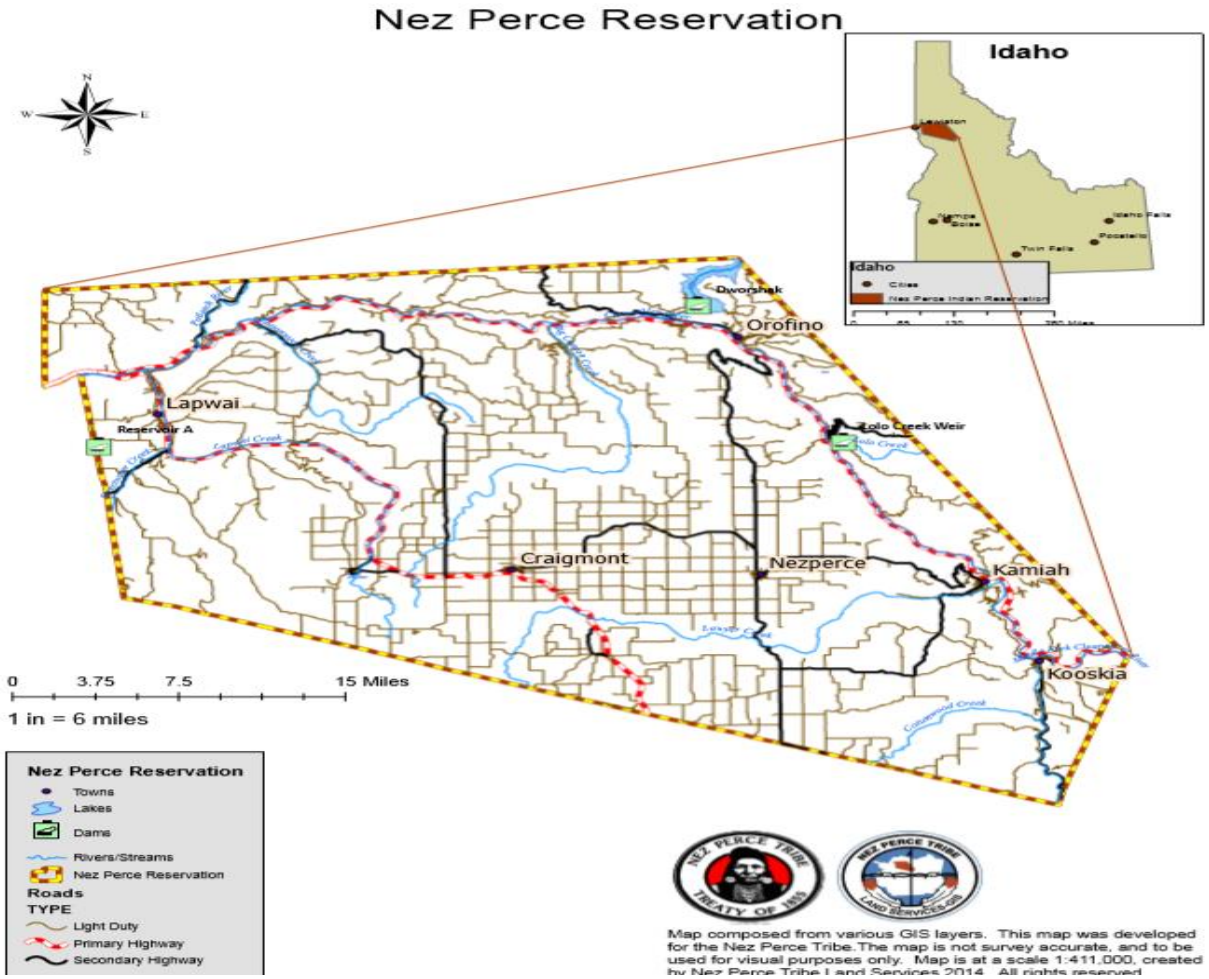
EPA, 2011. *Introduction to the National Pretreatment Program*, Office of Wastewater Management, EPA 833-B-11-011, June 2011.

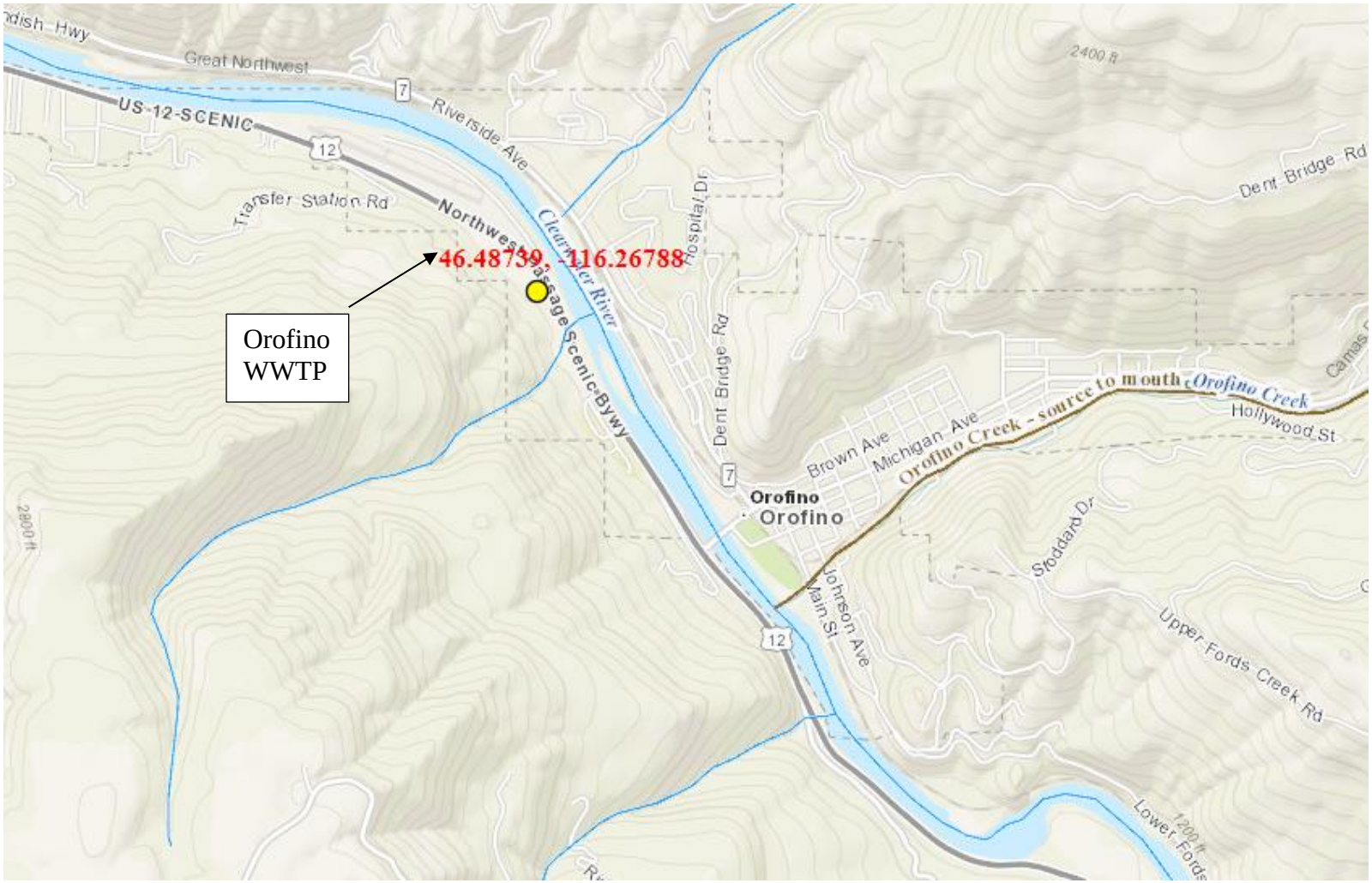
EPA. 2014. Water Quality Standards Handbook Chapter 5: General Policies. Environmental Protection Agency. Office of Water. EPA 820-B-14-004. September 2014. https://www.epa.gov/sites/production/files/2014-09/documents/handbook-chapter5.pdf

U.S. Fish & Wildlife Service. September 2015. Recovery Plan for the Coterminous United States Population of Bull Trout (Salvelinus confluentus). https://www.fws.gov/pacific/bulltrout/pdf/Final_Bull_Trout_Recovery_Plan_092915.pdf

EPA. 2003. Biological Evaluation for Issuance of a NPDES Permit for the Orofino Wastewater Treatment Plant Orofino, Idaho.

Appendix A. Facility Information




Great Northwest
US-12-SCENIC
Riverside Ave
Transfer Station Rd
Northwest Passage Scenic Byway
Clearwater River
Hospital Dr
Dent Bridge Rd
46.48739, -116.26788
Orofino
WWTP
Orofino
Orofino
Brown Ave
Michigan Ave
Orofino Creek - source to mouth
Orofino Creek
Hollywood St
Stoddard Dr
Johnson Ave
Main St
Upper Fords Creek Rd
Lower Fords
2400 ft
2800 ft
1200 ft

Appendix B. Water Quality Data

A. Treatment Plant Effluent Data

Parameter	Flow, in conduit or thru treatment plant	BOD, 5-day, 20 deg. C	BOD, 5-day, 20 deg. C	BOD, 5-day, 20 deg. C	BOD, 5-day, 20 deg. C	BOD, 5-day, 20 deg. C	Solids, total suspended	Solids, total suspended	Solids, total suspended	Solids, total suspended	Solids, total suspended	Nitrogen, ammonia total [as N]	pH	pH	E. coli	E. coli	Chlorine, total residual	Chlorine, total residual	Chlorine, total residual	Chlorine, total residual
Monitoring Location	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross	Percent Removal	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross	Percent Removal	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross
Statistical Base	MO MAX	MO AVG	MO AVG	WKLY AVG	WKLY AVG	MIN % RMV	MO AVG	MO AVG	WKLY AVG	WKLY AVG	MIN % RMV	MO MAX	INST MAX	INST MIN	INST MAX	MO AVG	MO AVG	MO AVG	WKLY AVG	WKLY AVG
Limit Units	MGD	mg/L	lb/d	mg/L	lb/d	%	mg/L	lb/d	mg/L	lb/d	%	mg/L	SU	SU	#/100mL	#/100mL	mg/L	lb/d	mg/L	lb/d
Current Limit	Report	30	220	45	330	85	30	220	45	330	85	Report	9	6.5	406	126	0.5	3.6	0.75	5.5
07/31/2015	0.296	2	4	3	6	99.2	3	6	8	15	99.2	0.23	7.1	6.5	115	3.63	0.23	0.44	0.3	0.55
08/31/2015	0.316	1	2	1	2	99.7	2	4	5	8	99.7	0.2	7.2	6.5	11	1.62	0.16	0.28	0.21	0.39
09/30/2015	0.381	1	2	1	2	99.6	2	4	3	6	99.5	0.1	6.8	6.5	2	1.26	0.31	0.62	0.39	0.74
10/31/2015	0.709	1	2	2	4	99.7	2	4	5	16	99.7	0.5	6.5	6.5	19	3.48	0.27	0.59	0.34	1.07
11/30/2015	0.61	2	6	3	7	99.2	3	9	6	21	99.4	0.14	7	6.5	8	1.74	0.26	0.75	0.4	1.38
12/31/2015	1.089	2	8	2	11	99	4	16	6	27	99	1.69	6.9	6.5	115.3	4.97	0.28	1.15	0.34	1.91
01/31/2016	1.15	3	17	3	25	96.7	4	23	11	59	97.5	0.14	7	6.5	20	4.48	0.3	1.74	0.29	0.87
02/29/2016	1.245	3	21	5	33	97.7	3	21	4	34	98.5	0.15	7.1	6.5	4.1	2.65	0.32	2.2	0.45	3.9
03/31/2016	1.701	2	17	2	17	98.4	2	17	3	37	98.9	0.06	7	6.6	1	1	0.33	2.8	0.43	2.6
04/30/2016	1.011	2	10	3	13	98.6	2	10	2	12	99.2	0.11	7	6.7	5	2.2	0.18	0.92	0.21	1.04
05/31/2016	0.79	2	7	4	11	99	2	7	2	7	99.8	0.32	7.2	6.7	3	1.25	0.25	0.82	0.29	1.21
06/30/2016	0.44	2	5	3	6	99	1	2	1	3	99.7	0.23	6.8	6.5	99	6.56	0.21	0.47	0.31	0.54
07/31/2016	0.42	1	2	2	3	99.5	6	11	20	40	98.4	1.05	6.9	6.5	12	1.64	0.3	0.56	0.36	0.65
08/31/2016	1.41	2	4	5	8	99.2	2	4	4	7	99.2	0.49	7.2	6.5	3	1.25	0.23	0.45	0.27	0.45
09/30/2016	0.318	1	2	1	2	99.7	2	4	3	5	99.6	0.16	6.6	6.5	3	1.55	0.24	0.42	0.28	0.5
10/31/2016	0.51	1	3	2	6	99.4	2	7	2	7	99.4	0.34	6.7	6.5	1	1	0.33	0.91	0.37	1.2
11/30/2016	0.465	2	6	2	7	99.1	4	11	10	30	98.6	0.12	6.8	6.5	5	1.58	0.28	0.78	0.31	0.88
12/31/2016	0.429	2	5	3	7	99.6	2	5	5	11	99.4	0.18	7.3	6.6	4	1.74	0.23	0.52	0.28	0.84
01/31/2017	0.709	3	10	3	16	98.3	2	7	4	10	99	0.17	7.2	6.5	136	4.39	0.34	1.11	0.41	1.77
02/28/2017	1.762	2	19	2	28	97.7	3	29	3	36	97.9	0.31	7.1	6.5	2	1.15	0.43	4	0.65	6.5
03/31/2017	2.39	2	27	3	50	98.5	5	68	13	216	94.7	0.39	7.1	6.5	97	4.4	0.35	4.8	0.39	5.5
04/30/2017	1.235	2	15	2	18	98.9	2	15	6	47	99	0.16	7.1	6.5	2	1.52	0.29	2.19	0.32	3.66
05/31/2017	0.869	1	4	2	10	99.6	4	17	5	26	98.6	0.18	6.7	6.5	22	5.51	0.22	0.96	0.27	1.16
06/30/2017	0.604	2	5	3	9	99.2	4	11	8	23	99	0.27	6.6	6.5	31	6.36	0.18	0.48	0.2	0.64
07/31/2017	0.246	1	2	1	2	99.7	4	7	7	13	98.5	0.19	6.9	6.5	13	2.53	0.21	0.36	0.24	0.42
08/31/2017	0.333	1	2	2	4	99.7	2	4	4	7	99.3	0.19	6.7	6.5	11	1.86	0.21	0.4	0.26	0.49
09/30/2017	0.391	1	1	1	3	99.7	2	4	3	9	99.3	0.08	6.8	6.5	2	1.15	0.32	0.67	0.35	0.65
10/31/2017	0.588	1	3	1	2	99.6	3	8	7	14	98.4	0.14	6.8	6.5	13	7.03	0.3	0.8	0.41	1
11/30/2017	0.928	2	7	4	27	99.4	4	14	8	54	98.9	0.22	6.8	6.5	4	1.32	0.3	1.03	0.35	1.3
12/31/2017	2.276	1	5	2	4	99.6	2	9	6	45	99.3	0.13	7.3	6.5	6	1.64	0.36	1.66	0.45	1.08
01/31/2018	2.489	3	30	5	62	97.6	7	69	9	125	93.9	0.52	6.9	6.6	25	2.63	0.28	2.78	0.36	3.77
02/28/2018	1.904	2	20	2	18	98.5	4	40	7	61	97.6	0.13	7	6.5	1	1	0.39	3.92	0.45	5.5
03/31/2018	1.185	2	15	2	15	99.1	5	37	6	44	96.2	0.15	7.2	6.5	2	1.15	0.31	2.32	0.35	2.74
04/30/2018	2.416	1	9.5	1	13	99.4	8	76	13	174	94.9	0.11	6.7	6.5	3	1.25	0.36	3.4	0.42	5.3
05/31/2018	1.017	1	5	2	13	99.6	1	5	1	7	99.5	0.18	6.9	6.5	5	1.38	0.24	1.26	0.32	1.8
06/30/2018	0.492	1	3	2	8	99.7	3	7	9	21	98.9	0.41	6.6	6.5	2	1.15	0.22	0.54	0.25	0.73
07/31/2018	0.297	1	2	1	2	99.8	4	8	8	12	98.7	0.35	6.7	6.5	4	1.32	0.28	0.53	0.37	0.62
08/31/2018	0.482	2	4	7	22	99.3	3	6	8	25	98.9	0.21	6.6	6.5	1	1	0.37	0.74	0.4	0.71
09/30/2018	0.311	2	4	4	7	99.3	2	4	3	8	99.5	7.12	7.2	6.5	14	1.7	0.27	0.54	0.3	0.81
10/31/2018	0.455	2	5	2	5	99.1	5	12	9	20	98.4	0.9	7.3	6.5	5	1.38	0.29	0.7	0.34	1.51
11/30/2018	0.705	1	4	2	8	99.6	3	10	8	14	98.7	0.26	7.4	6.5	15	1.72	0.34	1.18	0.43	1.5
12/31/2018	0.84	1	4	2	5	99.5	2	7	3	9	99.1	0.19	7.3	6.7	7	2.11	0.39	1.4	0.46	2.24
01/31/2019	0.909	3	11	7	38	98.6	26	99	104	569	85.5	0.26	7.1	7	4	1.74	0.38	1.45	0.45	1.61

Parameter	Flow, in conduit or thru treatment plant	BOD, 5-day, 20 deg. C	BOD, 5-day, 20 deg. C	BOD, 5-day, 20 deg. C	BOD, 5-day, 20 deg. C	BOD, 5-day, 20 deg. C	Solids, total suspended	Solids, total suspended	Solids, total suspended	Solids, total suspended	Solids, total suspended	Nitrogen, ammonia total [as N]	pH	pH	E. coli	E. coli	Chlorine, total residual	Chlorine, total residual	Chlorine, total residual	Chlorine, total residual
Monitoring Location	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross	Percent Removal	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross	Percent Removal	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross
Statistical Base	MO MAX	MO AVG	MO AVG	WKLY AVG	WKLY AVG	MIN % RMV	MO AVG	MO AVG	WKLY AVG	WKLY AVG	MIN % RMV	MO MAX	INST MAX	INST MIN	INST MAX	MO AVG	MO AVG	MO AVG	WKLY AVG	WKLY AVG
Limit Units	MGD	mg/L	lb/d	mg/L	lb/d	%	mg/L	lb/d	mg/L	lb/d	%	mg/L	SU	SU	#/100mL	#/100mL	mg/L	lb/d	mg/L	lb/d
Current Limit	Report	30	220	45	330	85	30	220	45	330	85	Report	9	6.5	406	126	0.5	3.6	0.75	5.5
06/30/2019	0.708	2	6	3	11	99.4	3	9	5	19	98.6	0.47	7.6	6.5	8	2.17	0.16	0.49	0.22	0.68
07/31/2019	0.322	2	4	3	8	99.5	2	4	3	8	99.5	1.08	6.9	6.6	14	3.09	0.27	0.51	0.31	0.6
08/31/2019	0.343	1	2	2	5	99.7	2	4	4	9	99.3	0.31	7.3	6.8	1	1	0.22	0.42	0.27	0.65
09/30/2019	0.439	2	4	2	5	99.5	3	6	4	10	99.5	0.22	6.9	6.6	1	1	0.27	0.57	0.31	0.78
10/31/2019	0.56	2	5	3	7	98.9	2	5	3	9	98.9	0.35	7.3	6.6	17	9.6	0.34	0.9	0.46	1.43
11/30/2019	0.417	1	2	2	4	99.7	4	9	6	15	98.9	0.22	7.2	6.5	9	2.29	0.29	0.67	0.39	1.03
12/31/2019	0.679	1	3	1	3	99.6	2	6	3	9	98.9	0.08	7	6.5	4	1.32	0.41	1.16	0.5	1.54
01/31/2020	1.073	1	5	2	8	99.5	10	51	25	216	95	0.22	6.5	6.5	4	1.52	0.44	2.24	0.58	4.88
02/29/2020	2.13	1	9	2	16	99.5	3	27	3	53	98.2	0.18	6.7	6.5	4	1.52	0.38	3.42	0.58	4.88
03/31/2020	0.721	1	4	2	9	99.4	4	16	12	55	95.9	0.11	7.2	6.5	15	3.06	0.28	1.13	0.36	1.6
04/30/2020	0.687	2	8	3	15	99.2	3	11	9	33	98.7	0.22	6.7	6.5	2	1.15	0.27	1.02	0.32	1.4
05/31/2020	0.701	2	6	3	9	99.3	1	3	1	4	99.6	0.18	6.8	6.5	6	2.49	0.22	0.7	0.29	1.08
Average	0.8709636	2.160714	11.02679	3.303571	17.66071	98.91964	4.0535714	19.803571	8.6607143	48.28571	98.078571	0.419455	7.003571	6.535714	24.07857	4.610714	0.292679	1.294107	0.36375	1.781786
Minimum	0.246	1	1	1	2	85	1	2	1	3	85	0.06	6.5	6.5	1	1	0.16	0.28	0.2	0.39
Maximum	2.489	30	220	45	330	99.8	30	220	104	569	99.8	7.12	9	7	406	126	0.5	4.8	0.75	6.5
Count	55	56	56	56	56	56	56	56	56	56	56	55	56	56	56	56	56	56	56	56
Std Dev	0.6071451	3.841291	29.15451	5.824461	44.0934	1.994029	4.9558767	33.841029	14.631568	93.21017	2.8251284	0.963351	0.370731	0.09031	60.58928	16.61351	0.0723	1.090756	0.107086	1.613382
CV	0.6970959	1.777788	2.643972	1.76308	2.496694	0.020158	1.2225951	1.7088347	1.6894182	1.930388	0.0288047	2.296677	0.052935	0.013818	2.516315	3.603239	0.247028	0.842864	0.294396	0.905486
95th Percentile	2.3102	3	22.5	5.5	41	99.7	8.5	70.75	21.25	216	99.7	1.059	7.325	6.7	115.075	6.6775	0.415	3.68	0.58	5.5
90th Percentile	1.8472	2.5	18	4.5	27.5	99.7	5.5	45.5	12.5	93	99.55	0.512	7.3	6.6	64	5.24	0.385	3.1	0.46	4.88
5th Percentile	0.3068	1	2	1	2	97.675	1.75	4	1.75	5.75	94.5	0.094	6.6	6.5	1	1	0.18	0.415	0.2175	0.48

Appendix C. Reasonable Potential and Water Quality-Based Effluent Limit Formulae

A. Reasonable Potential Analysis

The 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, the 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.

Mass Balance

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

$$C_d Q_d = C_e Q_e + C_u Q_u \qquad \text{Equation 1}$$

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:

$$C_d = \frac{C_e \times Q_e + C_u \times Q_u}{Q_e + Q_u} \qquad \text{Equation 2}$$

The above form of the equation is based on the assumption that the discharge is rapidly and completely mixed with 100% of the receiving stream.

If the mixing zone is based on less than complete mixing with the receiving water, the equation becomes:

$$C_d = \frac{C_e \times Q_e + C_u \times (Q_u \times \%MZ)}{Q_e + (Q_u \times \%MZ)} \qquad \text{Equation 3}$$

Where:

% MZ = the percentage of the receiving water flow available for mixing.

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

$$C_d = C_e \qquad \text{Equation 4}$$

A dilution factor (D) can be introduced to describe the allowable mixing. Where the dilution factor is expressed as:

$$D = \frac{Q_e + Q_u \times \%MZ}{Q_e} \qquad \text{Equation 5}$$

After the dilution factor simplification, the mass balance equation becomes:

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

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 follows:

$$C_d = \frac{CF \times C_e - C_u}{D} + C_u \qquad \text{Equation 7}$$

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.

The above equations for C_d are the forms of the mass balance equation which were used to determine reasonable potential and calculate wasteload allocations.

Maximum Projected Effluent Concentration

When determining the projected receiving water concentration downstream of the effluent discharge, the EPA's Technical Support Document for Water Quality-based Toxics Controls (TSD, 1991) recommends using the maximum projected effluent concentration (Ce) in the mass balance calculation (see equation 3, page C-5). To determine the maximum projected effluent concentration (Ce) the EPA has developed a statistical approach to better characterize the effects of effluent variability. The approach combines knowledge of effluent variability as estimated by a coefficient of variation (CV) with the uncertainty due to a limited number of data to project an estimated maximum concentration for the effluent. Once the CV for each pollutant parameter has been calculated, the reasonable potential multiplier (RPM) used to derive the maximum projected effluent concentration (Ce) can be calculated using the following equations:

First, the percentile represented by the highest reported concentration is calculated.

$$p_n = (1 - \text{confidence level})^{1/n} \qquad \text{Equation 8}$$

where,

p_n = the percentile represented by the highest reported concentration

n = the number of samples

confidence level = 99% = 0.99

and

$$RPM = \frac{C_{99}}{C_{P_n}} = \frac{e^{Z_{99} \times \sigma - 0.5 \times \sigma^2}}{e^{Z_{P_n} \times \sigma - 0.5 \times \sigma^2}} \qquad \text{Equation 9}$$

Where,

σ^2 = $\ln(CV^2 + 1)$

Z_{99} = 2.326 (z-score for the 99th percentile)

Z_{Pn} = z-score for the P_n percentile (inverse of the normal cumulative distribution function at a given percentile)

CV = coefficient of variation (standard deviation ÷ mean)

The maximum projected effluent concentration is determined by simply multiplying the maximum reported effluent concentration by the RPM:

$C_e = (RPM)(MRC)$ Equation 10

where MRC = Maximum Reported Concentration

Maximum Projected Effluent Concentration at the Edge of the Mixing Zone

Once the maximum projected effluent concentration is calculated, the maximum projected effluent concentration at the edge of the acute and chronic mixing zones is calculated using the mass balance equations presented previously.

Reasonable Potential

The discharge has reasonable potential to cause or contribute to an exceedance of water quality criteria if the maximum projected concentration of the pollutant at the edge of the mixing zone exceeds the most stringent criterion for that pollutant.

B. WQBEL Calculations

Calculate the Wasteload Allocations (WLAs)

Wasteload allocations (WLAs) are calculated using the same mass balance equations used to calculate the concentration of the pollutant at the edge of the mixing zone in the reasonable potential analysis. To calculate the wasteload allocations, C_d is set equal to the acute or chronic

criterion and the equation is solved for C_e. The calculated C_e is the acute or chronic WLA. Equation 6 is rearranged to solve for the WLA, becoming:

$$C_e = WLA = D \times (C_d - C_u) + C_u \qquad \text{Equation 11}$$

Idaho's water quality criteria for some metals are expressed as the dissolved fraction, but the Federal regulation at 40 CFR 122.45(c) requires that effluent limits be expressed as total recoverable metal. Therefore, the EPA must calculate a wasteload allocation in total recoverable metal that will be protective of the dissolved criterion. This is accomplished by dividing the WLA expressed as dissolved by the criteria translator, as shown in equation __. As discussed in Appendix ___, the criteria translator (CT) is equal to the conversion factor, because site-specific translators are not available for this discharge.

$$C_e = WLA = \frac{D \times (C_d - C_u) + C_u}{CT} \qquad \text{Equation 12}$$

The next step is to compute the "long term average" concentrations which will be protective of the WLAs. This is done using the following equations from the EPA's *Technical Support Document for Water Quality-based Toxics Control* (TSD):

$$LTA_a = WLA_a \times e^{(0.5\sigma^2 - z\,\sigma)} \qquad \text{Equation 13}$$

$$LTA_c = WLA_c \times e^{(0.5\sigma_4^2 - z\sigma_4)} \qquad \text{Equation 14}$$

where,

σ^2 = $\ln(CV^2 + 1)$

Z_{99} = 2.326 (z-score for the 99th percentile probability basis)

CV = coefficient of variation (standard deviation ÷ mean)

σ_4^2 = $\ln(CV^2/4 + 1)$

For ammonia, because the chronic criterion is based on a 30-day averaging period, the Chronic Long Term Average (LTAc) is calculated as follows:

$$LTA_c = WLA_c \times e^{(0.5\sigma_{30}^2 - z\sigma_{30})} \qquad \text{Equation 15}$$

where,

σ_{30}^2 = $\ln(CV^2/30 + 1)$

The LTAs are compared and the more stringent is used to develop the daily maximum and monthly average permit limits as shown below.

Derive the maximum daily and average monthly effluent limits

Using the TSD equations, the MDL and AML effluent limits are calculated as follows:

$$MDL = LTA \times e^{(z_m\sigma - 0.5\sigma^2)} \qquad \text{Equation 16}$$

$$AML = LTA \times e^{(z_a\sigma_n - 0.5\sigma_n^2)}$$ Equation 17

where σ, and σ² are defined as they are for the LTA equations above, and,

σ_n^2 = $\ln(CV^2/n + 1$

z_a = 1.645 (z-score for the 95th percentile probability basis)

z_m = 2.326 (z-score for the 99th percentile probability basis)

n = number of sampling events required per month. With the exception of ammonia, if the AML is based on the LTA_c, i.e., $LTA_{minimum} = LTA_c$), the value of ‘‘n’’ should is set at a minimum of 4. For ammonia, In the case of ammonia, if the AML is based on the LTA_c, i.e., $LTA_{minimum} = LTA_c$), the value of ‘‘n’’ should is set at a minimum of 30.

C. Critical Low Flow Conditions

The low flow conditions of a water body are used to determine water quality-based effluent limits. In general, Idaho’s water quality standards require criteria be evaluated at the following low flow receiving water conditions (See IDAPA 58.01.02.210.03) as defined below:

Acute aquatic life	1Q10 or 1B3
Chronic aquatic life	7Q10 or 4B3
Non-carcinogenic human health criteria	30Q5
Carcinogenic human health criteria	harmonic mean flow
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 exceedance 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.

4. The 4B3 is biologically based and indicates an allowable exceedance for 4 consecutive days once every 3 years.

5. The 30Q5 represents the lowest average 30 consecutive day flow with an average recurrence frequency of once in 5 years.

6. The 30Q10 represents the lowest average 30 consecutive day flow with an average recurrence frequency of once in 10 years.

7. The harmonic mean is a long-term mean flow value calculated by dividing the number of daily flow measurements by the sum of the reciprocals of the flows.

Appendix D. Reasonable Potential and Water Quality-Based Effluent Limit Calculations

Reasonable Potential Analysis (RPA) and Water Quality Effluent Limit (WQBEL) Calculations

Facility Name	Orofino WWTP
Facility Flow (mgd)	.88 mgd
Facility Flow (cfs)	1.36

Critical River Flows (CFS)		(IDAPA 58.01.02 03. b)	Annual Crit. Flows	Annual Crit. Flows
Aquatic Life - Acute Criteria - Criterion Max. Concentration (CMC)		**1Q10**	671	670.9
Aquatic Life - Chronic Criteria - Criterion Continuous Concentration (CCC)		**7Q10 or 4B3**	839	839.4
Ammonia		**30B3 or 30Q10/30Q5** (seasonal)	1147	1,146.6
Human Health - Non-Carcinogen		**Harmonic Mean Flow**	3123	3,123.2
Human Health - carcinogen		**Harmonic Mean Flow**	3123	3,123.2

DF at defined percent of river flow allow	25%	**124.3**	
DF at defined percent of river flow allow	25%	**155.3**	

Receiving Water Data		Notes:	Annual Crit. Flows
Hardness, as mg/L $CaCO_3$	= 100 mg/L	5^{th} % at critical flows	
Temperature, °C	Temperature, °C	95^{th} percentile	21.5
pH, S.U.	pH, S.U.	95^{th} percentile	7.89

Pollutants of Concern			**AMMONIA,** default: cold water, fish early life stages	**CHLORINE (Total Residual)**
Effluent Data	**Number of Samples in Data Set (n)**		55	56
	Coefficient of Variation (CV) = Std. Dev./Mean (default CV = 0.6)		2.296677	0.247028
	Effluent Concentration, µg/L (Max. or 95th Percentile) - (C_e)		1,059	415
	Calculated 50^{th} % Effluent Conc. (when n>10), Human Health Only			
Receiving Water Data	**90^{th} Percentile Conc., µg/L - (C_u)**			
	Geometric Mean, µg/L, Human Health Criteria Only			
Applicable Water Quality Criteria	Aquatic Life Criteria, µg/L	Acute	6,891	19.
	Aquatic Life Criteria, µg/L	Chronic	1,808	11.
	Human Health Water and Organism, µg/L		--	--
	Human Health, Organism Only, µg/L		--	--
	Metals Criteria Translator, decimal (or default use Conversion Factor)	Acute		--
		Chronic		--
	Carcinogen (Y/N), Human Health Criteria Only		--	--
Percent River Flow Default Value = **25%**	**Aquatic Life - Acute**	**1Q10**	25%	25%
	Aquatic Life - Chronic	7Q10 or 4B3		25%
		30B3 or 30Q10/30Q5		25%
	Human Health - Non-Carcinogen	Harmonic Mean	25%	25%
	Human Health - Carcinogen	Harmonic Mean		25%
Calculated Dilution Factors (DF) (or enter Modeled DFs)	Aquatic Life - Acute	1Q10	124.3	124.3
	Aquatic Life - Chronic	7Q10 or 4B3		155.3
	Aquatic Life - Chronic Ammonia	30B3 or 30Q10/30Q5	211.8	211.8
	Human Health - Non-Carcinogen	Harmonic Mean		575.1
	Human Health - Carcinogen	Harmonic Mean		575.1

Aquatic Life Reasonable Potential Analysis

σ	$\sigma^2=\ln(CV^2+1)$		1.355	0.243
P_n	=(1-confidence level)$^{1/n}$, where confidence level =	**99%**	0.920	0.921
Multiplier (TSD p. 57)	$=\exp(z\sigma-0.5\sigma^2)/\exp[\text{normsinv}(P_n)\sigma-0.5\sigma^2]$, where	**99%**	3.5	1.2
Statistically projected critical discharge concentration (C_e)			3702	518.41
Predicted max. conc.(ug/L) at Edge-of-Mixing Zone		Acute	30	4.17
(note: for metals, concentration as dissolved using conversion factor as translator)		Chronic	17	3.34
Reasonable Potential to exceed Aquatic Life Criteria			**NO**	**NO**

Appendix E. Antidegradation Analysis

Overview

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 water quality standards, including antidegradation requirements. The fact that the State of Idaho has not identified methods for implementing its antidegradation policy does not prevent EPA from establishing such permit conditions. The City of Orofino NPDES permit contains limits as stringent as necessary to ensure compliance with all applicable water quality standards, including Idaho's antidegradation policy (IDAPA 58.01.02.051). As explained in detail below, the reissued permit ensures that "the existing in stream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected" consistent with the requirements of 40 CFR 131.12(a)(1) and IDAPA 58.01.02.051.01. Relative to the previous permit issued in 2011, the reissued permit does not allow lower water quality for those parameters where the receiving water quality "exceeds levels necessary to support propagation of fish, shellfish and wildlife and recreation in and on the water." Therefore, the reissued permit maintains and protects the existing level of water quality, consistent with 40 CFR 131.12(a)(2) and IDAPA 58.01.02.051.02. Finally, the antidegradation policy for outstanding resource waters is inapplicable in this reissued permit because no waters of the State of Idaho are designated as "outstanding resource waters" (IDAPA 58.01.02.051.03). The draft reissued permit ensures compliance with the State of Idaho's antidegradation policy and CWA regulations because the permit conditions ensure protection of existing uses and do not allow lower water quality relative to the prior permit. Under the circumstances of this draft reissued permit, EPA may issue an NPDES permit even though the State has not yet identified methods for implementing its antidegradation policy. In its antidegradation analysis below, EPA is applying a parameter-by-parameter approach in determining compliance with Idaho's antidegradation requirements.

Protection of Existing Uses (IDAPA 58.01.02.051.01 and 40 CFR 131. 12(a)(l))

The segment of the Clearwater River where the WWTP discharges has the following designated beneficial uses: cold water aquatic life; special resource water; salmonid spawning; primary contact recreation; aesthetics; wildlife habitats; and domestic, agricultural, and industrial water supply. The effluent limits in the draft permit ensure compliance with applicable numeric and narrative water quality criteria. The numeric and narrative water quality criteria are set at levels that ensure protection of the designated uses. As there is no information indicating the presence of existing beneficial uses other than those that are designated the draft permit ensures a level of water quality necessary to protect the designated uses and, in compliance with IDAP A 58.01.02.051.01 and 40 CFR 131.12(a)(1), also ensures that the level of water quality necessary to protect existing uses is maintained and protected. If EPA receives information during the public comment period demonstrating that there are existing uses for which the Clearwater River is not designated, EPA will consider this information before issuing a final permit and will establish additional or more stringent effluent limitations if necessary to ensure protection of existing uses.

High Quality Waters (lDAPA 58.01.02.051.02 and 40 CFR 13 1. 12(a)(2))

The WWTP discharges to a segment (assessment unit) of the Clearwater River that is considered high quality for all of the pollutants of concern. As such, the quality of the Clearwater River must be maintained and protected unless it is deemed appropriate and necessary to allow a lowering of water quality (IDAPA 58.01.02.051.02, 40 CFR 131.12(a)(2). All of the effluent limits in the reissued permit are as stringent as or more stringent than the corresponding limits in the prior (2011) permit. Because the limits are as stringent as or more stringent than the corresponding limits in the prior permit, the reissued permit will not allow lower water quality for pollutants that were limited in the prior permit. As to those pollutants present in the discharge without effluent limits in both the reissued permit and the prior permit, there is no factual basis to expect that those pollutants will be discharged in greater amounts under the reissued permit than were authorized in the prior permit. Similarly, there is no factual basis to expect that the effluent contains any new pollutants that have not been discharged previously. EPA reached these conclusions because the permit application and the discharge monitoring report data indicate no changes in the design flow, influent quality or treatment processes that could result in a new or increased discharge of pollutants.

Summary

As explained above, the effluent limits in the draft reissued permit are adequately stringent to ensure that existing uses are maintained and protected in compliance with IDAPA 58.01.02.051.01 and 40 CFR 131.12(a)(i). The effluent limits in the reissued permit are as stringent as or more stringent than the corresponding limits in prior permit for all parameters. Furthermore. the reissued permit will not authorize an increased discharge of any pollutants that were not subject to effluent limits under the prior permit. The reissuance of the City of Orofino NPDES permit will therefore not allow lower water quality relative to the prior permit, in compliance with IDAPA 58.10.02.051.02 and 40 CFR 131. 12(a)(2). Consequently, there is no need for the State of Idaho to make a finding that "allowing lower water quality is necessary to accommodate important economic or social development" under IDAPA 58.01.02.051.02. Under these circumstances, EPA may issue an NPDES permit even though the State of Idaho has not yet identified methods for implementing its antidegradation policy.

Appendix F. CWA 401 Certification

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, WA 98101

Clean Water Act (CWA) Section 401 Certification for Discharger Located within Tribal Boundaries

Facility:	Orofino Wastewater Treatment Plant
NPDES Permit Number:	ID0020150
Location:	Nez Perce Tribe
Receiving Water:	Clearwater River
Facility Location:	10200 Highway 12 Orofino, Idaho 83544

EPA hereby certifies that the conditions in the National Pollutant Discharge Elimination System (NPDES) permit for the Orofino wastewater treatment plant, are necessary to assure compliance with the applicable provisions of Sections 301, 302, 303, 306, and 307 of the CWA. See CWA Section 401(a)(1), 33 U.S.C. 1341(a)(1); 40 CFR 124.53(e).

The State in which the discharge originates is responsible for issuing the CWA Section 401 certification pursuant to CWA Section 401(a)(1). When a NPDES permit is issued on Tribal Land, the Tribe is the certifying authority where the Tribe has been approved by EPA for Treatment as a State (TAS) pursuant to CWA Section 518(e) and 40 CFR § 131.8. Where a Tribe does not have TAS, EPA is the certifying authority. The Nez Perce does not have TAS for the portion of the reservation where the discharge occurs. Therefore, EPA is responsible for issuing the CWA Section 401 Certification for this permit.

Daniel D. Opalski
Director