Fact Sheet

Public Comment Start Date: April 12, 2012
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U.S. Environmental Protection Agency Region 10
M/S OWW-130
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Seattle, WA 98101-3140

Proposed Reissuance of a National Pollutant Discharge Elimination System (NPDES) Permit to Discharge Pollutants Pursuant to the Provisions of the Clean Water Act (CWA)

City of Pocatello
Pocatello Water Pollution Control Facility (WPCF)

The EPA proposes to reissue 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

State Certification
EPA is requesting that the Idaho Department of Environmental Quality (IDEQ) certify the NPDES permit for this facility, under Section 401 of the Clean Water Act. Comments regarding the certification should be directed to:

Idaho Department of Environmental Quality
Pocatello Regional Office
444 Hospital Way, #300
Pocatello, ID 83201
(208) 236-6160
toll-free: (888) 655-6160

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, 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.

Documents are Available for Review
The draft NPDES permit and related documents can be reviewed or obtained by visiting or contacting 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."

U.S. Environmental Protection Agency Region 10
M/S OWW-130
1200 Sixth Avenue
Seattle, Washington 98101-3140

(206) 553-0523 or toll-free at (800) 424-4372

The fact sheet and draft permits are also available at:

U.S. Environmental Protection Agency Region 10
1435 N. Orchard
Boise, ID 83706
(208) 378-5746

Idaho Department of Environmental Quality
Pocatello Regional Office
444 Hospital Way, #300
Pocatello, ID 83201

(208) 236-6160 or toll-free at (888) 655-6160

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Acronyms

1Q10	The lowest 1-day average flow that occurs on average once every 10 years
7Q10	The lowest 7-day average flow that occurs on average once every 10 years
30B3	Biologically-based design flow intended to ensure an excursion frequency of less than once every three years, for a 30-day average flow.
30Q5	The lowest 30-day average flow that occurs on average once every 5 years
30Q10	The lowest 30-day average flow that occurs on average once every 10 years
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
BMP	Best Management Practices
BPT	Best Practicable
°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
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FR	Federal Register
gpd	Gallons per day
HUC	Hydrologic Unit Code
IC	Inhibition Concentration
ICIS	Integrated Compliance Information System
IDEQ	Idaho Department of Environmental Quality
I/I	Infiltration and Inflow
LA	Load Allocation
lbs/day	Pounds per day
LC	Lethal Concentration
LC_{50}	Concentration at which 50% of test organisms die in a specified time period
LD_{50}	Dose at which 50% of test organisms die in a specified time period
LOEC	Lowest Observed Effect Concentration
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
ML	Minimum Level
MPN	Most Probable Number
N	Nitrogen
NEPA	National Environmental Policy Act
NOAA	National Oceanic and Atmospheric Administration
NOEC	No Observable Effect Concentration
NPDES	National Pollutant Discharge Elimination System
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
RPA	Reasonable Potential Analysis
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
TU_a	Toxic Units, Acute
TU_c	Toxic Units, Chronic
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
WET	Whole Effluent Toxicity
WLA	Wasteload allocation
WQBEL	Water quality-based effluent limit
WQS	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:

City of Pocatello
Pocatello Water Pollution Control Facility
NPDES Permit No. ID0021784

Contact:
Jon B. Herrick
Water Pollution Control Superintendent
208-234-6254

Physical Address:
Pocatello Water Pollution Control Facility
10733 North Rio Vista Road
Pocatello, ID 83201

Mailing Address:
Pocatello Water Pollution Control Facility
P.O. Box 4169
Pocatello, ID 83305-4169

B. Permit History

The facility's previous permit became effective on September 7, 1999 and expired on September 4, 2004. A complete application for permit reissuance was submitted to the EPA on March 11, 2004. Since the permit was not reissued before the expiration date of September 4, 2004 and since the City submitted a timely application, the permit was administratively extended pursuant to 40 CFR § 122.6. An updated application was received on October 21, 2011 upon which the reissued permit will be based.

II. Facility Information

A. Treatment Plant Description

The City of Pocatello owns, operates, and maintains the Pocatello Water Pollution Control Facility (WPCF) located in Pocatello, Idaho. The secondary treatment plant discharges treated municipal wastewater to the Portneuf River. The collection system has no combined sewers. The facility serves the cities of Pocatello and Chubbuck with resident populations of 54,255 and 13,922, respectively[1]. The design flow of the facility is 12 mgd.

Pocatello's WPCF process includes screen and grit removal, primary clarification, activated sludge and nitrogen reduction, final clarification, disinfection using a chlorine gas and dechlorination using sulfur dioxide gas. The treated wastewater is then discharge to the Portneuf River. Solids are further processed using anaerobic digestion and a sludge lagoon for thickening the solids before being distributed for beneficial use as a fertilizer on local agriculture fields owned by the City of Pocatello. In addition, the digestion process produces Biogas which fuels cogeneration engines that produce electricity used within the WPCF.

Details about the wastewater treatment process and a map showing the location of the treatment facility and discharge are included in Appendix A.

[1] 2010 Census Data

B. Permit Compliance

The facility's previous permit became effective on September 7, 1999 and expired on September 4, 2004 and was administratively extended until reissuance.

The EPA reviewed the discharge monitoring report (DMR) data for the duration of the permit from the issuance date to July 2011. The past five years of DMR data is presented in Appendix B.

Overall, the facility has had a good compliance record. Discharge violations of the ammonia limit(s) occurred as recently as November 2010 through January 2011. Compliance records show that the incident was triggered by an increase in ammonia loading to the aeration basin caused by an overflow from the biosolids lagoon. This was concurrent with a process computer error that led to excessive purging of nitrifying bacteria from the aeration basins. Plant operation was adjusted to re-grow nitrifying bacteria to re-establish full nitrification mode.

The EPA conducted an inspection of the facility in March 2009. The inspection encompassed the wastewater treatment process, records review, operation and maintenance, the collection system and sanitary sewer overflows (SSOs). Overall, the results of the inspection were positive with the EPA noting some concerns about problems with pump alarms and the appropriate reporting of basement backups as SSOs. Compliance records show consistent reporting of basement backups in recent years.

III. Receiving Water

The WPCF discharges to the Portneuf River just northwest of the City of Pocatello. The facility has done additional receiving water monitoring throughout the permit cycle. Appendix C summarizes receiving water monitoring data provided by the City of Pocatello, the IDEQ and from the U.S. Geological Survey webpage. Available information about the flow and quality of the receiving water were used to establish appropriate permit limits for the discharge.

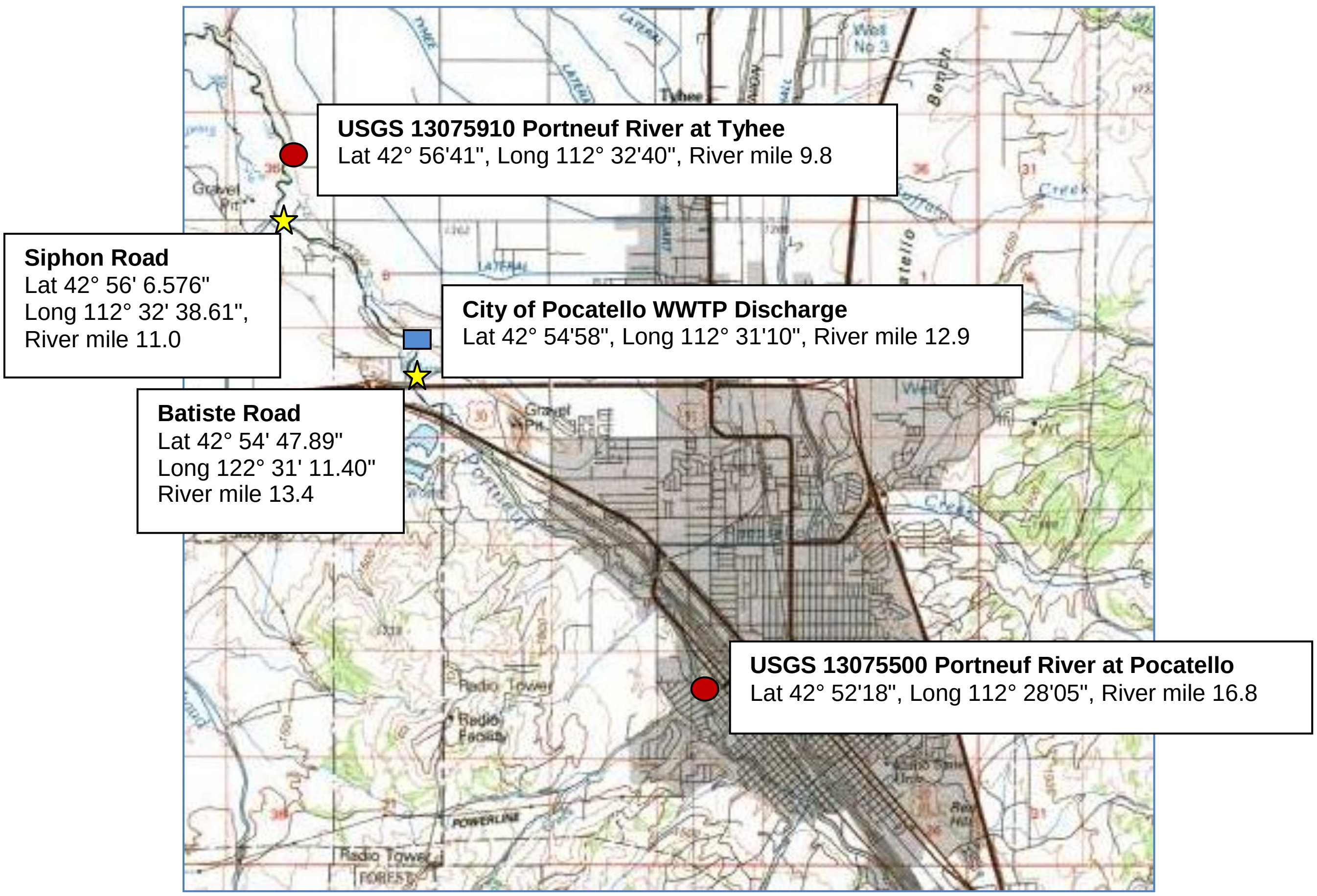
A. Low Flow Conditions

The *Technical Support Document for Water Quality-Based Toxics Control* (hereafter referred to as the TSD) (EPA, 1991) and the Idaho 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 Idaho 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 EPA uses a biologically-based flow rate designed to ensure an excursion frequency of no more than once every three years for a 30-day average flow rate (30B3) to evaluate ammonia. This evaluation criteria aligns with Idaho's ammonia criteria being based on the 30-day average concentration not to be exceeded more than once every three years. The lowest 30-day average flow rate expected to occur once every ten years (30Q10) may be used for ammonia in cases where seasonal variation in flow is used. The Idaho water quality standards recommend the lowest 30-day average flow rate expected to occur once every five years (30Q5) flow rate for the human health criteria for non-carcinogens, and the harmonic mean flow rate for the human health criteria for carcinogens.

River flow data from the following two U.S. Geological Survey (USGS) monitoring stations were used to evaluate critical flows along with limited flow data provided by the city of Pocatello. Figure 1 shows the locations of the monitoring stations in reference to the WPCF and Table 1 shows the critical design flows used as the basis for this permit. Refer to Appendix C for a detailed discussion of the derivation of the critical design flows.

Upstream Site: USGS 13075500 Portneuf River at Pocatello ID
Downstream Site: USGS 13075910 Portneuf River near Tyhee ID



Locations as show are approximate.

Figure 1. River Flow Monitoring Stations in the Vicinity of the Outfall

Table 1. Portneuf River Critical Design Flows – Estimate at WPCF

Critical Flow Parameter	Low Flow July-Oct. (cfs)	High Flow Nov. – June (cfs)	Use for Comparison to Water Quality Criteria for…
1Q10	53	87	Aquatic Life Uses - Acute
7Q10	68	109	Aquatic Life Uses - Chronic
30Q10	80	132	Ammonia

Critical Flow Parameter	Low Flow July-Oct. (cfs)	High Flow Nov. – June (cfs)	Use for Comparison to Water Quality Criteria for…
30Q5	95	159	Human Health – Non-carcinogen
Harmonic Mean	193	196	Human Health – Carcinogen

B. Water Quality Standards

Overview

Section 301(b)(1)(C) of the CWA requires the development of limitations in permits necessary to meet water quality standards. 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, narrative and numeric 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 narrative and numeric 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.

Designated Beneficial Uses

This facility discharges to the Portneuf River in the Portneuf River subbasin (USGS HUC 17040208). At the point of discharge, the Portneuf River is protected for the following designated uses as specified in IDAPA 58.01.02.150.10:

- COLD - Cold Water Communities
- SS - Salmonid Spawning
- SCR – Secondary Contact Recreation

In addition, the Idaho WQS state that all waters of the state of Idaho are protected for industrial and agricultural water supply (Section 100.03.b and c.), wildlife habitats (100.04) and aesthetics (100.05). The WQS state in Sections 252.02, 252.03 and 253 that these uses are to be protected by general criteria (sometimes referred to as narrative) which are stated in Section 200. The WQS also state, in Section 252.02 that the criteria from Water Quality Criteria 1972, also referred to as the "Blue Book" (EPA-R3-73-033) can be used to determine numeric criteria for the protection of the agricultural water supply use.

Surface Water Quality Criteria

The WQS establish both general and numeric surface water quality criteria which apply to all surface waters.

The general criteria (IDAPA 58.01.02.200) state that all surface waters of the state shall be free from:

- hazardous materials,
- toxic substances,
- deleterious materials,
- radioactive materials,
- floating, suspended or submerged matter,

- excess nutrients,
- oxygen-demanding materials

Surface water level shall not exceed allowable level for:

- radioactive materials, or
- sediments

If the natural background conditions exceed any criteria then the applicable criteria does not apply, but rather, there shall be no lowering of water quality from the natural background condition.

The WQS establish numeric criteria (IDAPA 58.01.02.210) that apply to waters designated for aquatic life, recreation and domestic water supply. The numeric criteria establish the maximum concentration of a pollutant that can be present surface waters.

The WQS establish additional surface water criteria to protect aquatic life uses (IDAPA 58.01.02.250). These include pH and total concentration of dissolved gasses which apply to all aquatic life designations and dissolved oxygen, temperature, ammonia, and turbidity which have unique criteria depending on the beneficial use designations of cold water, salmonid spawning, seasonal cold water or warm water.

The WQS establish surface water quality criteria for recreational use designation (IDAPA 58.01.02.251). Waters designated for recreation are not to contain E. coli bacteria in concentrations that exceed the established criterion as prescribed for primary and secondary contact recreation.

The following table summarizes the applicable water quality criteria and outlines how the permit ensures that the permitted discharge will not cause or contribute to non-attainment of the applicable criteria in the water body.

Table 2. Summary of Applicable Water Quality Criteria

Criteria for Water body	How the Criteria was evaluated…
General Criteria (IDAPA 58.01.02.200) Surface waters of the state shall be free from: • hazardous materials, • toxic substances, • deleterious materials, • radioactive materials, • floating, suspended or submerged matter, • excess nutrients, • oxygen-demanding materials Surface water level shall not exceed allowable level for: • radioactive materials, or • sediments	The treatment process utilizes screening, settling and secondary (biological) treatment. This level of treatment ensures that the effluent will not contribute to violations of the general criteria. Sewer ordinances prohibit the discharge of many of these pollutants into the sanitary sewer system. Priority pollutant monitoring and whole effluent toxicity testing are required to evaluate the presence of toxic substances and determine if the effluent is toxic to organisms.

<table>
<tr><th>Criteria for Water body</th><th>How the Criteria was evaluated…</th></tr>
<tr><td>

Numeric Criteria for Toxics (IDAPA 58.01.02.210)

The WQS contain a listing of pollutants for which numeric criteria have been established. Extensive monitoring of the effluent throughout the permit cycle has shown that the following toxic pollutants have been present at detectable levels in the effluent.

Ammonia
Arsenic (Dissolved)
Cadmium
Carbon Tetrachloride
Chlorine (Total Residual)
Chlorodibromomethane
Chloroform
Chromium(Tri)
Copper
Cyanide
Dichlorobromomethane
Lead
Mercury
Methylene Chloride
Nickel
Selenium
Silver
Toluene
Zinc

</td><td>

Refer to Appendix D for the numeric criteria used to evaluate the reasonable potential for the effluent to cause or contribute violation of the WQS for both low and high river flow conditions. Metal criteria that are hardness dependent are different for low and high river flow conditions based on the mixed dilution of the effluent and receiving water.

The reasonable potential analysis shows that ammonia and chlorine have a reasonable potential to contribute to violations of the aquatic life criteria. Effluent limitations are required and were calculated for ammonia and chlorine based on the reasonable potential for those pollutants to exceed the numeric criteria.

Chlorodibromomethane and Dichlorobromomethane showed a reasonable potential to contribute to violations of the human health criteria (for organism and water) based on the application data. Additional data was collected that confirmed the potential for these pollutants to contribute to violations of the human health criteria (for organism and water). Refer to Appendix D. The receiving water is not designated for domestic water supply so a limit is not required.

Although there is no numeric criterion for phosphorus, phosphorus is known to degrade water quality because it is a nutrient that contributes to algae growth and low dissolved oxygen concentrations in the water body. Wasteload allocations in the Portneur River TMDL were assigned to the permittee based on known water quality impairments caused by phosphorus. Effluent limitation for phosphorus and TSS were calculated based on the TMDL waste load allocation.
</td></tr>
</table>

Criteria for Water body	How the Criteria was evaluated…
Surface Water Criteria To Protect Aquatic Life Uses **(IDAPA 58.01.02.250)** pH – Range 6.5-9.0 s.u. Total Dissolved Gas – <110% saturation at atm. pressure. **Cold Water** Dissolved Oxygen – 6 mg/L Temperature – Cold Water, 22ºC instantaneous max. 19ºC max daily average. Ammonia – refer to appendix D, temperature and pH dependent Turbidity – 50 NTU, but no more than 25 NTU for more than 10 days. **Salmonid Spawning** Dissolved Oxygen (DO) – Intergravel DO 1 day minimum not less than 5.0 mg/L, 7-day average mean not less than 6.0 mg/L. Water Column DO 1 day minimum not less than 6.0 or 90% of saturation whichever is greater Temperature – Instantaneous water temperature of 13ºC or less with daily average less than 9ºC	Refer to Appendix D for the evaluation of the reasonable potential for the effluent to cause or contribute to violation of the WQS for both low and high river flow conditions. pH – The permit includes end-of-pipe effluent limits for pH based on the potential of the effluent to contribute to violations of the criteria. The 1999 permit has a pH limit range of 6.0 to 9.0. Appendix D includes an analysis that considers worst case effluent and receiving water conditions to determine if there is a reasonable potential for the discharge to contribute to violations of the WQS. The technology-based limits of pH 6.0 to 9.0 may contribute to violations at the low end of the range. This analysis shows that there is no reasonable potential for the discharge to cause the receiving water to above or below the WQS if pH is limited to a range of 6.5 to 9.0 s.u. Total Dissolved Gas – The effluent is not expected to contain dissolved gases. No further evaluation was done. Dissolved Oxygen - Based on the ratio of mixing of the effluent in the receiving water, the effluent does not have a reasonable potential to contribute to violations of the WQS for dissolved oxygen. Technology-based limits for BOD_5 and WQ-based limits for ammonia and phosphorus are protective of dissolved oxygen. Temperature – The effect of the effluent on the receiving water temperature was evaluated in very general terms in appendix D. The data set lacked daily temperature data needed to make a determination of reasonable potential. Additional monitoring for temperature in the receiving water and effluent is required to better characterize the seasonal variation of the temperature of the effluent and receiving water. This information is needed to better evaluate during which periods of the year the effluent may contribute to violations of the WQS. Ammonia – water quality-based effluent limits where established to ensure that the effluent does not contribute to violations of the ammonia criteria. Refer to Appendix D. Turbidity - Based on simple mixing, turbidity does not have a reasonable potential to contribute to WQS violations.

Criteria for Water body	How the Criteria was evaluated…
Surface Water Quality Criteria For Recreational Use Designation (IDAPA 58.01.02.251) **Secondary Recreation** E. Coli – 126 organisms per 100 ml on a minimum of 5 samples taken every 3 to 7 days in a 30 day period. 576 organisms per 100 ml a single sample maximum is not alone a violation but indicates a likely exceedance of the geometric mean criterion.	The permit applies end-of-pipe limitations for E. Coli, therefore, the discharge will not contribute to non-attainment of the criteria.

Antidegradation

The 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 IDEQ integrates antidegradation review into the 401 certification process. IDEQ staff will provide concurrent antidegradation review and 401 certification of this permit. Both the antidegradation review and 401 certification of this permit will be open to public comment prior to the final issuance of this permit, refer to Appendix G.

IV. Effluent Limitations

A. Basis for Effluent Limitations

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 water body are being met and may be more stringent than technology-based effluent limits. The technical basis for the effluent limitations established for the permit are discussed in Appendix D.

B. Proposed Effluent Limitations

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

1. The permittee must not discharge floating, suspended, or submerged matter of any kind in amounts causing nuisance or objectionable conditions or that may impair designated beneficial uses of the receiving water.
2. Removal requirements for biochemical oxygen demand (BOD_5) and total suspended solids (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 concentrations and the arithmetic mean of the effluent concentrations for that month.

Influent and effluent samples must be taken over approximately the same time period preferably as a flow-paced 24-hour composite sample.

The table below presents the proposed average monthly, average weekly, maximum daily, minimum daily and other effluent limits as apply. Refer to Appendix D for the derivation for effluent limits.

Table 3. Basis for Proposed Effluent Limits

Parameter	Effluent Limitations				
	Units	Average Monthly	Average Weekly	Maximum Daily	
Numeric Effluent Limits					**Basis for Permit Limit**
Biochemical Oxygen Demand (BOD_5)	mg/L	30	45	—	The effluent limit for BOD_5 is based on the technology-based limit and remains the same as in the 1999 permit.
	lb/day	3,000	4,500	—	
	% removal	85% min.	—	—	
Total Suspended Solids (TSS) *TMDL-based limit*	mg/L	30	45	—	The effluent limit for TSS is based on the technology-based limit and remains the same as in the 1999 permit. Additionally, the Portneuf River TMDL provided a WLA for TSS of 1.5 tons/day which is equal to the technology-based limit established in the 1999 permit.
	lb/day	3,000	4,500	—	
	% removal	85% min.	—	—	
E. Coli Bacteria[1,2]	#/100 ml	126 (geometric mean)	—	576	The effluent limit for bacteria is based on the water quality criteria with no mixing zone allowed. The 1999 permit included a bacteria limit for *fecal coliform* only. The indicator for pathogenic organisms in WQS was changed from *fecal coliform* to *E. Coli* bacteria since issuance of the 1999 permit. The numeric criterion for *E. Coli* is more stringent than the fecal coliform limit in the 1999 permit. Refer to discussion under **Anti-backsliding**, section IV.C.
pH	s.u.	Daily minimum 6.5 Daily maximum 9.0			The effluent for pH is based on the WQS criteria with no mixing zone allowed. The pH limits are more stringent than in 1999 permit.
Total Residual Chlorine[2] *High Flow Period (November – June)*	µg/L	16		41	WQ-based limit more stringent than 1999 permit due to new lower dilution based on critical design river flow. Zone of dilution allowed.
	lb/day	1.6		4.1	
Total Residual Chlorine[2] *Low Flow Period (July–October)*	µg/L	12		32	WQ-based limit more stringent than 1999 permit due to new lower dilution based on critical design river flow. Zone of dilution allowed.
	lb/day	1.2		3.2	

Parameter	Effluent Limitations: Units	Average Monthly	Average Weekly	Maximum Daily	Basis for Permit Limit
Numeric Effluent Limits					
Total Ammonia (as N) *High Flow Period (November – June)*	mg/L	6.3		16.4	WQ-based seasonal limits are less stringent than 1999 permit due to change in WQ criteria, the methodology for calculating ammonia limits and change to application of seasonal-based limit. Refer to discussion under **Anti-backsliding,** section IV.C.
	lb/day	630		1,640	
Total Ammonia (as N) *Low Flow Period (July–October)*	mg/L	5.0		13	WQ-based seasonal limits are less stringent than 1999 permit due to change in WQ criteria, the methodology for calculating ammonia limits and change to application of seasonal-based limit. Refer to discussion under **Anti-backsliding,** section IV.C.
	lb/day	500		1,300	
Numeric Effluent Limits with Compliance Schedule - Effective December 31, 2017					
Total Phosphorus (as P) *TMDL-based limit*	mg/L	Report	Report	—	WQ-based limit is consistent with the approved WLA in the TMDL. See 40 CFR122.44 (d)(1)(vii)(B). A compliance schedule is authorized by the State. Refer to the discussion under **Compliance Schedule,** section V.B.
	lb/day	25.1	58.7	—	

Total Maximum Daily Load (TMDL)-Based Limits

In February 2010, the EPA approved the Portneuf River Total Maximum Daily Load (TMDL) Revisions and Addendum which address known impairments to surface waters within the Portneuf River subbasin[2]. The reference document incorporates both the original TMDL and amendment to the document. The TMDL established wasteload allocations for the WPCF for TSS and total phosphorus based on a monthly average.

For TSS, the TMDLwasteload target for the City of Pocatello is based on the current permit limit of 3,000 lbs/day[3]. The TMDL provides a wasteload allocation of 1.5 tons/day or 3,000 lbs/day on a monthly average basis. The proposed permit will retain the same permit limits for TSS as the current permit.

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[2] Portneuf River Total Maximum Daily Load (TMDL) Revisions and Addendum, Idaho Department of Environmental Quality, Feb. 2010.
http://www.epa.gov/waters/tmdldocs/portneuf_river_revision_addendum_final.pdf
[3] Ibid., p 119.

For Phosphorus, the TMDL wasteload allocation is based on the design flow of 12 mgd and a monthly concentration target of 0.250 mg/L total phosphorus[4]. The TMDL provides a wasteload allocation of 25.1 lbs/day on a monthly average basis. Federal Regulation [40 CFR § 122.45(d)(2)] requires that limits for POTWs be expressed in as an average weekly limit as well. The permit establishes a weekly average limit of 1.5 times the monthly average limit or 37.7 lbs/day total phosphorus. Concentration based limits are not required to ensure compliance because the TMDL was established on the basis of mass loading and impairment can be addressed by limiting mass only.

Refer to Appendix D, section C for the calculation of permit limits based on the TMDL.

C. Basis for Less Stringent Effluent Limits (Anti-backsliding)

Clean Water Act Section 402(o)(3) Requirements

Section 402(o) of the CWA sets forth the general rule prohibiting backsliding from effluent limitations contained in previously issued permits that were based on §§402(a)(1)(B), 301(b)(1)(C), 303(d), or 303(e). Section 402(o), as it applies to water quality-based effluent limitations, establishes a prohibition against backsliding except in certain limited circumstances. The first paragraph, (o)(1), establishes the conditional prohibition against backsliding. It prohibits backsliding from water quality-based effluent limits unless the revised limits are established in compliance with §303(d)(4). The second paragraph, (o)(2), provides a number of exceptions to backsliding. The last paragraph, (o)(3), establishes a baseline which requires that all revised effluent limits assure compliance with applicable technology-based guidelines, and State WQS, include State's antidegradation policy.

Pathogenic Indicators – E. Coli replaces Fecal Coliform

The draft permit proposes to remove the water quality-based fecal coliform limits as imposed by the 1999 permit and replace the bacteria limit with an E. coli bacteria limit, consistent with the current Idaho WQS criterion for protection of recreational uses.

The new effluent limits were established using the new water quality criteria and the indicator organism currently specified in Idaho's WQS (IDAPA 58.01.02.251). The new E. coli limits provide the equivalent or higher level of protection for the beneficial use of secondary contact recreation than was provided by the fecal coliform effluent limits in the previous permit, as shown in the table below.

The change in the pathogenic indicator organism is not viewed as less stringent than the previous permit. Therefore, this change is not subject to the anti-backsliding provisions of the CWA section 402(o)(3) of the CWA.

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[4] Ibid., p 128.

Table 4. Comparison of Bacteria Limits

Parameter	Effluent Limitations			
	Units	**Average Monthly**	**Average Weekly**	**Maximum Daily**
Proposed Permit				
E. Coli Bacteria	#/100 ml	**126 (geometric mean)**	**—**	**576**
1999 Permit				
Fecal Coliform Bacteria	#/100 ml	**200 (geometric mean)**	**200**	**800**

This change is consistent with Idaho's antidegradation policy (IDAPA 58.01.02.051) for Tier I protection because the change from fecal coliform limits to E. coli limits will not result in a lowering of water quality and is equally protective of water quality relative to the 1999 permit.

Ammonia Limits

The water quality-based ammonia limits proposed in the draft permit are less stringent than the water quality-based ammonia limits in the 1999 permit. Section 303(d)(4)(B) provides that a permittee may backslide from a water quality-based effluent limitation where water quality meets or exceeds applicable water quality standards, if the revision is consistent with the State's approved antidgradation policy.

Two factors contributed to the change in the permit limits for ammonia as compared to the 1999 permit.

1. The change in the methodology for calculating the chronic ammonia criterion in the Idaho's WQS resulted in a higher ammonia criterion than was used in the current permit. In 2002, the IDEQ adopted new WQS which changed the methodology for calculating the chronic criterion for ammonia. Based on the same receiving water pH assumption, the criterion based on the current WQS is higher than was used in the current permit. Additionally, the EPA published a notice in the Federal Register, December, 22, 1999[5], new ambient water quality criteria for ammonia which changed the methodology used to calculate the effluent limits for ammonia.
2. Idaho's WQS require that the potential for a discharge to contribute to violations of the criteria be evaluated under critical flow conditions. The availability and use of new flow data to estimate critical design flows for the Portneuf River in the vicinity of the discharge resulted in lower dilution than were used in the current permit, and allowed for the determination of seasonally-based critical flows. The previous permit did not use critical flows to evaluate reasonable potential or establish permit limits, but rather use the minimum of only four river flow values.

The availability of new river flow information in the vicinity of the discharge allowed for the determination of critical river flows on a seasonal basis (refer to Appendix C, page 41).

[5] http://www.epa.gov/fedrgstr/EPA-WATER/1999/December/Day-22/w33152.pdf

Table 5. Comparison of Ammonia Limits

Parameter	Effluent Limitations		
	Units	Average Monthly	Maximum Daily
Proposed Permit			
Total Ammonia as N *High Flow Period - (November – June)*	mg/L	**6.3**	**16.4**
	lb/day	**630**	**1,640**
Total Ammonia as N *Low Flow Period -(July–October)*	mg/L	**5.0**	**13**
	lb/day	**500**	**1,300**
1999 Permit			
Total Ammonia as N *Previous Permit Year-around Limit*	mg/L	**4.4**	**8.1**
	lb/day	**440**	**810**

The proposed limits meet the requirements of Tier I antidegration because the limits are water quality-based to ensure beneficial uses are maintained.

If the State of Idaho specifies different ammonia effluent limits or authorizes different mixing zones for ammonia in its Clean Water Act Section 401 certification of this permit, EPA will recalculate ammonia effluent limits for the final permit, which ensure compliance with Idaho's water quality criteria at the edges of the mixing zones, as well as the State of Idaho's antidegradation policy.

V. Compliance Schedule

A. Legal Basis

The Idaho Water Quality Standards at IDAPA 58.01.02.400.03 allows for compliance schedules "which allow a discharger to phase in, over time, compliance with water quality based effluent limitations when new limitations are in the permit for the first time". In this case, a water quality-based effluent limits for total phosphorus is required for the first time in the proposed permit.

The federal regulation at 40 CFR §122.47 requires that any compliance schedule achieve compliance as soon as possible. Furthermore, if a permit establishes a compliance schedule which exceeds one year from the date of permit issuance, the schedule shall set forth interim requirements and the dates for their achievement. The time between the interim dates shall generally not exceed one year. If the time necessary for completion of any interim requirement is more than one year (such as construction of a control facility), the schedule shall specify interim dates for the submission of reports of progress toward completion of the interim requirements and indicate a projected completion date. The regulation requires that the permit be written to require that no later than 14 days following each interim date and final date of compliance, the permit shall notify the EPA in writing of its compliance or non-compliance with the interim or final requirements, or submit progress reports as stated.

In order to grant a compliance schedule the permitting authority must make a reasonable finding that the discharger cannot immediately comply with the water quality based effluent limit upon the effective date of the permit and that a compliance schedule is appropriate (see 40 CFR §122.47 (a)). See Section B. below. The compliance schedule is based on the draft Clean Water Act Section 401 certification provided to EPA by the IDEQ. The final permit will contain compliance schedules consistent with the State of Idaho's final Clean Water Act Section 401 certification, which may differ from the draft certification.

EPA believes that the compliance schedule proposed for phosphorus complies with the regulatory requirement that compliance be achieved "as soon as possible" [(40 CFR 122.47(a)(1)], as explained below.

Because the compliance schedule is authorized by the State of Idaho in the Section 401 certification, comments on the compliance schedules should be directed to the IDEQ at the address listed on the front page of this Fact Sheet and in the public notice of the availability of this draft permit, in addition to EPA.

B. Compliance Schedule

The facility provided monitoring data for effluent phosphorus as shown on the figure below. The graph shows the average monthly load of phosphorus in the effluent as compared to the TMDL-based waste load allocation for phosphorus. Although the facility is able to meet the limit during some months, it cannot reliably meet the limit with the current wastewater treatment process. Significant upgrades to the WPCF are needed in order for the facility to comply with the phosphorus average monthly and weekly average limits of 25.1 lbs/day and 37.7 lbs/day, respectively.

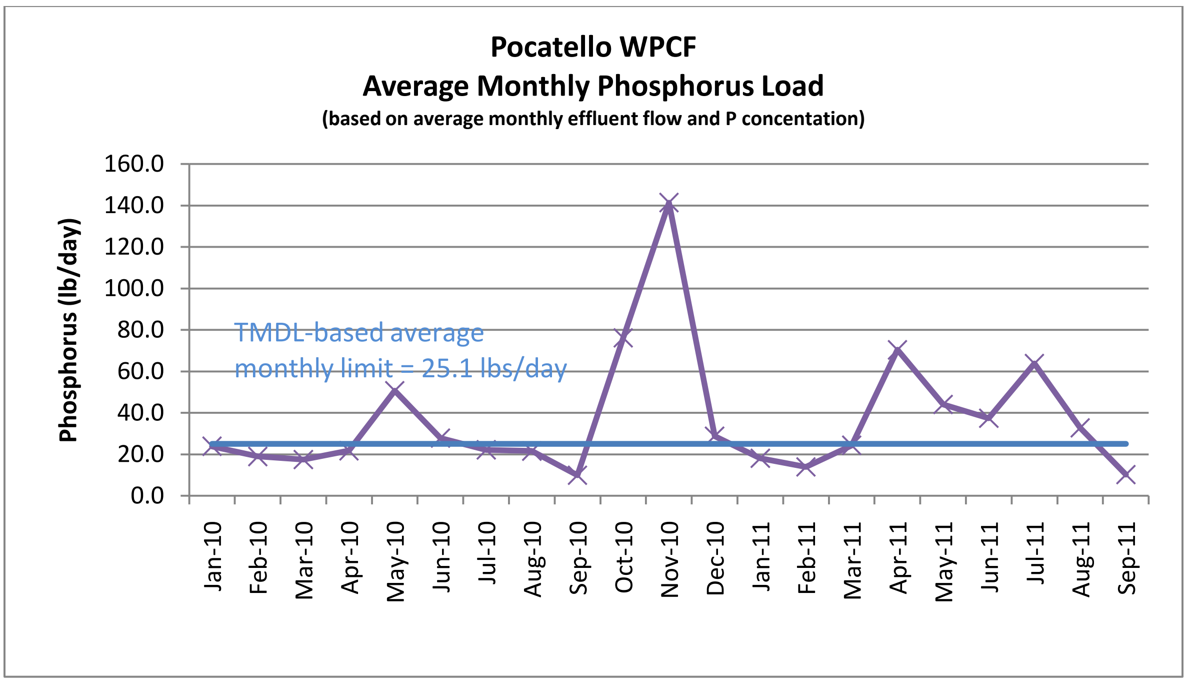


Figure 2. WCPF Historic Effluent Phosphorus Load vs. WLA

The permit allows for a 5-year compliance schedule for the permittee to plan, design and construct the necessary upgrades to the facility. The permit allows for an additional year for the permittee to optimize the process for the removal of phosphorus before the final TMDL-based limits will be in effect. The compliance schedule aims to achieve completion of construction of the necessary treatment process modifications to meet the limits within the establish 5-year NPDES permit cycle. The permit requires both submission of written notification of completed tasks within 14 days and annual progress reports.

The WPCF will need a compliance schedule in order to allow time for the necessary process changes to meet the water quality-based limits.

Table 6. Tasks Required Under the Schedule of Compliance - Phosphorus

Task No.	Due By	Task Description
1	**December 31, 2013**	**Planning** The permittee must develop a facility plan that evaluates the options that would allow the facility to meet the phosphorus effluent limitations and select a preferred alternative. Deliverable: The permittee must provide written notice to EPA that the facility plan has been submitted to the IDEQ for the necessary approvals.
2	**December 31, 2014**	**Design** The permittee must complete design of the selected alternative for meeting the phosphorus effluent limitations. Deliverable: The permittee must provide written notice to EPA that the design plans and specifications have been submitted to the IDEQ for the necessary approvals.
3	**December 31, 2015**	**Award Bid for Construction** The permittee must complete the awarding of the bid for construction of the project to meet the phosphorus effluent limitations. Deliverable: The permittee must provide written notice to the EPA and the IDEQ that the bid award is complete.
4	**December 31, 2016**	**Construction Complete** The permittee must complete construction to reduce phosphorus in the discharge from outfalls 001 to achieve the phosphorus effluent limitations. Deliverable: The permittee must submit construction completion reports to the EPA and the IDEQ.
5	**December 31. 2017**	**Meet Effluent Limitation for Phosphorus** Construction and optimization of process such that compliance with the phosphorus effluent limitations are achieved. Deliverable: The permittee must provide written notice to the EPA and the IDEQ that the phosphorus effluent limitations are achieved.

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 including parts B.6 and D 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 Discharge Monitoring Reports (DMRs) and/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 and the 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 can be used for averaging if they are conducted using EPA-approved test methods (generally found in 40 CFR part 136) and if the Method Detection Limits are less than the effluent limits.

The following table presents the proposed effluent monitoring requirements for the facility. The sampling location for the final effluent 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" must be reported on the DMR.

Table 7. Permit Monitoring Requirements

Parameter	Monitoring Requirements		
	Sample Location	**Sample Frequency**	**Sample Type**
Biochemical Oxygen Demand (BOD_5)	Influent & Effluent	3/week[5]	24-hour composite
	% removal	1/month	calculation
Total Suspended Solids (TSS) *TMDL-based limit*	Influent & Effluent	3/week[5]	24-hour composite
	% removal	1/month	calculation
E. Coli Bacteria[1,2]	Effluent	3/week[5]	grab
pH	Effluent	5/week[5] or continuous	Grab or measurement
Total Residual Chlorine[2] *High Flow Period (November – June)*	Effluent	5/week[5] or continuous	Grab or measurement
Total Residual Chlorine[2] *Low Flow Period (July–October)*	Effluent	5/week[5] or continuous	Grab or measurement
Total Ammonia (as N) *High Flow Period (November – June)*	Effluent	5/week[5]	24-hour composite
Total Ammonia (as N) *Low Flow Period (July–October)*	Effluent	5/week[5]	24-hour composite
Chlorodibromomethane *WQ-based limit*	Effluent	1/month	24-hour composite
Dichlorobromomethane *WQ-based limit*	Effluent	1/month	24-hour composite
Total Phosphorus (as P) *TMDL-based limit*	Effluent	1/month	24-hour composite
Flow	Influent or Effluent	Continuous	Measurement
Temperature	Effluent	Continuous or 5/week[7]	Measurement or Grab[7]

Parameter	Monitoring Requirements		
	Sample Location	Sample Frequency	Sample Type
Dissolved Oxygen	Effluent	1/month	grab
Alkalinity, Total	Effluent	1/month	24-hour composite
Nitrate + Nitrite	Effluent	1/month	24-hour composite
Oil and Grease	Effluent	1/month	grab
Orthophosphate, Total (as P)	Effluent	1/month	24-hour composite
Total Dissolved Solids	Effluent	1/month	24-hour composite
Total Kjeldahl Nitrogen	Effluent	1/month	24-hour composite
Hardness (as $CaCO_3$)	Influent & Effluent	2/year[3]	24-hour composite
Arsenic Total Recoverable	Influent & Effluent	2/year[3]	24-hour composite
Cadmium, Total Recoverable	Influent & Effluent	2/year[3]	24-hour composite
Chromium VI, Dissolved	Influent & Effluent	2/year[3]	24-hour composite
Chromium, Total	Influent & Effluent	2/year[3]	24-hour composite
Copper Total Recoverable	Influent & Effluent	2/year[3]	24-hour composite
Cyanide	Influent & Effluent	2/year	See I.B.10. of the permit
Lead Total Recoverable	Influent & Effluent	2/year[3]	24-hour composite
Mercury Total Recoverable	Influent & Effluent	2/year[3]	24-hour composite
Molybdenum Total Recoverable	Influent & Effluent	2/year[3]	24-hour composite
Nickel Total Recoverable	Influent & Effluent	2/year[3]	24-hour composite
Selenium Total Recoverable	Influent & Effluent	2/year[3]	24-hour composite
Silver Total Recoverable	Influent & Effluent	2/year[3]	24-hour composite
Zinc Total Recoverable	Influent & Effluent	2/year[3]	24-hour composite
Whole Effluent Toxicity, Chronic[4]	Effluent	1/year[4]	24-hour composite
Expanded Effluent Testing			
Expanded Effluent Testing[6]	Effluent	3 per permit cycle	As specified in footnote 5.

Parameter	Monitoring Requirements		
	Sample Location	Sample Frequency	Sample Type

1. The average monthly E. Coli bacteria counts must not exceed a geometric mean of 126/100 ml. See Part VI for a definition of geometric mean.
2. Reporting is required within 24 hours of a maximum daily limit or instantaneous maximum limit violation. See I.B.2. and III.G.

   The limits for total residual chlorine may not be quantifiable using EPA approved analytical methods. The Minimum Level (ML) for chlorine is 50 µg/L. When the daily maximum and average monthly effluent concentration is below the ML, EPA will consider the permittee in compliance with the total residual chlorine limitations. For the purposes of averaging, the permittee shall use the actual values for the values measured above the method detection limit (MDL) of 10 µg/L.
3. Refer to I.B.10 for the detailed sampling and reporting requirements and II.A.8. for sample frequency.
4. Refer to I.C.
5. See NPDES Permit Application Form 2A, Part D for the list of pollutants to include in this testing. Testing is required during once per year in 2014, 2015 and 2016. The expanded effluent testing must occur on the same day as a whole effluent toxicity test and must be submitted with the WET test results as well as with the next permit application. The analytical test methods must, at a minimum, meet the interim minimum level or minimum level specified in Appendix A.7.

   Priority pollutant metals (except mercury), acid extractable compounds, base-neutral compounds use 24-hour composite sample.

   Priority pollutants mercury, total phenolic compounds and volatile organic compounds use grab sample.

Monitoring Changes from the Previous Permit

Monitoring frequencies BOD_5 and TSS have been reduced as compared to the current permit. The reductions in the monitoring frequency are based on EPA's *Interim Guidance for Performance-based Reduction of NPDES Permit Monitoring Frequencies* (April 19, 1996). The following table shows that the ratio of the long term average (LTA) to the monthly average permit limit for BOD_5 and TSS are 14% and 16%, respectively for the 2-year period. The monitoring frequency for BOD_5 and TSS were reduced from 5/week to 3/week on the basis of the EPA's guidance.

Table 8. Justification for Reduced Monitoring for BOD_5 and TSS

Sample Location	Effluent	Effluent	Effluent	Effluent	Percent Removal	Effluent	Effluent	Effluent	Effluent
Parameter Descriptoin	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, percent removal	Solids, total suspended	Solids, total suspended	Solids, total suspended	Solids, total suspended
Statistical Base	MO AVG	MO AVG	WKLY AVG	WKLY AVG	MN % RMV	MO AVG	MO AVG	WKLY AVG	WKLY AVG
Units	lb/d	mg/L	lb/d	mg/L	%	lb/d	mg/L	lb/d	mg/L
Limits	**3000**	**30**	**4500**	**45**	**85**	**3000**	**30**	**4500**	**45**
8/31/2009	131	2.2	170	2.9	99	141	2.4	232	4
9/30/2009	167	2.9	194	3.3	99	392	6.7	576	10
10/31/2009	167	2.8	182	3.1	99	164	2.8	184	3.1
11/30/2009	189	3.2	193	3.3	99	155	2.6	182	3.1
12/31/2009	188	3.2	201	3.4	99	130	2.2	148	2.5
1/31/2010	256	4.4	270	4.6	98	136	2.3	149	2.6
2/28/2010	245	4.2	259	4.4	99	130	2.2	148	2.5
3/31/2010	267	4.6	315	5.4	98	171	2.9	231	4
4/30/2010	306	5.2	485	8.2	98	359	6.1	819	13.9
5/31/2010	478	8.2	721	12.3	97	1034	17.6	1682	28.7
6/30/2010	315	5.4	516	8.8	98	587	10.1	1268	21.6
7/31/2010	254	4.3	336	5.7	99	385	6.5	572	9.7
8/31/2010	263	4.5	411	7	99	417	7.1	904	15.4
9/30/2010	181	3.1	248	4.2	99	244	4.2	526	9
10/31/2010	264	4.4	406	6.8	99	386	6.4	653	10.9
11/30/2010	334	5.7	404	6.9	98	311	5.3	523	8.9
12/31/2010	272	4.7	341	5.9	98	252	4.4	368	6.4
1/31/2011	210	3.6	235	4	99	186	3.2	237	4.2
2/28/2011	213	3.6	251	4.4	99	191	3.3	227	3.9
3/31/2011	280	4.8	312	5.3	98	240	4.1	275	4.8
4/30/2011	254	4.4	283	4.8	98	187	3.2	223	3.8
5/31/2011	212	3.6	217	3.8	99	134	2.3	147	2.6
6/30/2011	197	3.4	228	3.9	99	137	2.3	173	3
7/31/2011	188	3.2	258	4.4	99	150	2.6	250	4.3
Average	243.0	4.2	309.8	5.3	98.6	275.8	4.7	445.7	7.6
Minimum	131	2.2	170	2.9	97	130	2.2	147	2.5
Maximum	478	8.2	721	12.3	99	1034	17.6	1682	28.7
LTA/Monthly Average Limit	8%	**14%**	7%	12%		9%	**16%**	10%	17%

The monitoring frequency for pollutants that do not have assigned effluent limitations was streamlined to allow for easier implementation of sampling events by the permittee. The sample frequencies were determined based on the historic variation in the effluent and the EPA's best professional judgement. The effluent quality has been of consistently high quality throughout the permit cycle, refer to Appendix B. The monitoring for conventional pollutants without effluent limits was set at once per month, and monitoring for metals, and toxicity is twice per year, and monitoring for priority pollutants as required by the permit application is 3 sample events during the permit cycle of 5 years. Pretreatment requirements include twice per year monitoring for metals in the influent to ensure that industrial related discharges are not negatively impacting the quality of the effluent.

Based on the historical analytical data, this level of monitoring will be sufficient to capture the variation in the level of pollutants in the effluent, provide the necessary data to evaluate compliance with the permit and evaluate the discharge for the subsequent permit reissuance.

C. Surface Water Monitoring

Surface water monitoring is necessary to fully evaluate the potential of the permitted discharge to cause or contribute to non-attainment of the water quality standards.

The following table presents the proposed surface water monitoring requirements for the draft permit. Pocatello must continue receiving water monitoring at the established locations or at alternate locations as approved by IDEQ. Surface water monitoring results must be submitted with the DMRs.

Table 9. Receiving Water Monitoring

Parameter	Units	Sample Locations	Sample Frequency	Sample Type	Method Detection Limit (MDL)
River Flow	cfs	Upstream of the point of discharge as described in I.D.1.a. and as approved by IDEQ	Continuous	Measurement, as daily average	—
Temperature	ºC		Continuous	Measurement, as daily max.	—
Alkalinity (as $CaCO_3$)	mg/L	Upstream **and** Downstream of the point of discharge as described in I.D.1.a. and as approved by IDEQ	1/Quarter[1]	Composite[3]	—
E. Coli	#/100 ml			Grab[2]	—
Dissolved Oxygen	mg/L			Continuous[3] or composite	—
pH	standard units			Grab	—
Turbidity	NTU			Grab	—
Total Phosphorus	mg/L			Composite[3]	As in Table 2.
Ortho-phosphorus	mg/L			Composite[3]	As in Table 2.
Total Ammonia (as N)	mg/L			Composite[3]	As in Table 2.
Total Kjeldahl Nitrogen	mg/L			Composite[3]	—
Nitrate-Nitrite	mg/L			Composite[3]	As in Table 2.
Hardness (as $CaCO_3$)	mg/L	Upstream of the point of discharge as described in I.D.1.a. and as approved by IDEQ	1/year[1]	Composite[3]	As in Table 2.
Arsenic[4]	µg/L			Composite[3]	As in Table 2.
Cadmium[5]	µg/L			Composite[3]	As in Table 2.
Chromium[5]	µg/L			Composite[3]	As in Table 2.
Copper[5]	µg/L			Composite[3]	As in Table 2.
Cyanide	µg/L			Composite[3]	As in Table 2.
Lead[5]	µg/L			Composite[3]	As in Table 2.
Mercury[4]	µg/L			Composite[3]	As in Table 2.
Nickel[5]	µg/L			Composite[3]	As in Table 2.
Selenium[5]	µg/L			Composite[3]	As in Table 2.
Silver[5]	µg/L			Composite[3]	As in Table 2.

D. Monitoring and Reporting

The draft permit includes new provisions to allow the permittee the option to submit Discharge Monitoring Report (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.

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 training events and contacts, is provided on the following website: http://www.epa.gov/netdmr.

VII. Sludge (Biosolids) Requirements

The EPA Region 10 separates wastewater and sludge permitting. The EPA has the authority under the CWA to issue separate sludge-only permits for the purpose 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.

VIII. 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 permittee is required to update the Quality Assurance Plan for the facility within 60 days of the effective date of the final permit. The Quality Assurance Plan shall include standard operating procedures the permittee must follow for collecting, handling, storing and shipping samples, laboratory analysis, and data reporting.

B. Operation and Maintenance Plan

The permit requires the permittee 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 of the effective date of the final permit. The plan shall be retained on site and made available to the EPA and the IDEQ 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 toxic pathogens and other toxic pollutants. 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 EPA-approved state water quality standards.

The permit contains language to address SSO reporting, public notification, and operation and maintenance of the collection system. The permit requires that the permittee identify SSO occurrences and their causes. Additionally, 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 systems 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 previous permit included a condition that required the permittee to compute average values for flow, TSS and BOD_5 loading entering the facility. When average values reached

85% of the design criteria below, the permittee was to develop a plan and schedule for addressing design capacity constraints. The facility has several incidents in the past 5 years where the TSS influent loading exceeded the design criteria in the current permit.

City of Pocatello commissioned a capacity analysis study to evaluate the plant capacity following the 2004 facility upgrades and changes to industrial users. In a letter to the EPA dated January 27, 2010, the City requested that the new design criteria be adopted in the renewed permit.

The Capacity Analysis evaluated the treatment plant operations and determined that the facility is able provide treatment according the new design criteria show in the table below.

The proposed draft permit adopts the new design criteria based on the information provided with the January 27, 2010 request to the EPA.

Table 10. WPCF Design Criteria

Parameter	Units	Previous Permit Design Criteria	New Design Criteria	Percent Change from current Permit
Design Flow	mgd	12	12	0
BOD_5	lb/day	28,000	24,600	-12%
TSS	lb/day	20,000	27,400	+37%

The proposed draft permit again contains a provision requiring 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. Pretreatment Requirements

The proposed draft permit requires the permittee to control industrial dischargers, pursuant to 40 CFR part 403. Indirect dischargers to the treatment plant must comply with the applicable requirements of 40 CFR Part 403, any categorical pretreatment standards promulgated by the EPA, and any additional or more stringent requirements imposed by the City of Pocatello as part of its approved pretreatment program or sewer use ordinance (e.g. local limits).

The application for permit renewal lists the following significant industrial dischargers that send industrial process water to the facility.

The proposed draft permit requires the permittee to inspect and monitor industrial discharges to ensure that these discharges do not contribute to process upsets or permit violations.

Table 11. Significant Industrial Dischargers

Name	Industry	Process wastewater (gpd)	Non-process wastewater (gpd)	Pretreatment Local Limits	Categorical Pretreatment Standards
SK Transport, LLC	Transportation Equipment Cleaning	max. 4000 batch	max 240	yes	yes

Name	Industry	Process wastewater (gpd)	Non-process wastewater (gpd)	Pretreatment Local Limits	Categorical Pretreatment Standards
Heinz Frozen Foods Co.	Production frozen foods	111,068	225,502	yes	
Great Western Malting Co.	Malt Manufacturing	484,929	1,088	yes	
Larson & Associates	Treatment of oily waste and food grease		70	yes	yes
Union Pacific Railroad	rail yard activities	53,000	70,000	yes	
Gateway West Industrial Center	Industrial complex - Motor rewinding, manufacturing homes	19,747		yes	no
ON Semiconductors	Integrated circuit manufacturing	225,000	5,000	yes	yes

F. Standard Permit Provisions

Sections III, IV and V of the draft permit contains 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.

IX. Other Legal Requirements

A. Endangered Species Act

The Endangered Species Act (ESA) requires federal agencies to consult with the National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NMFS) 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 threatened and endangered species located in Idaho finds that there are no threatened and endangered species in Bannock or Power Counties, refer to Appendix E. Based on lack of species present and the stringent effluent limits imposed by the NPDES permit, the EPA has determined that reissuance of the permit will have no effect on threatened or endangered species or their critical habitat in the vicinity of the discharge. Therefore, consultation with NMFS and USFWS is not required under Section 7 of ESA.

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 requires the EPA to consult with NMFS when a proposed discharge has the potential to adversely affect 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.

A review of EFH areas in Idaho finds that there is no EFH in Bannock or Power Counties. As such, the EPA has determined that reissuance of the NPDES permit will not adversely affect EFH, reference Appendix E.

C. State Certification and Tribal Consultation

Section 401 of the CWA requires EPA to seek State certification before issuing a final permit. As a result of the certification, the State may require more stringent permit conditions or additional monitoring requirements to ensure that the permit complies with water quality standards, or treatment standards established pursuant to any State law or regulation.

The Portneuf River flows onto the tribal lands of the Shoshone-Bannock Tribes, therefore, the tribe was invited to consult on the proposed permit concurrent with the preliminary 401 certification review by the IDEQ. Refer to Appendix F and G.

D. Permit Expiration

The permit will expire five years from the effective date.

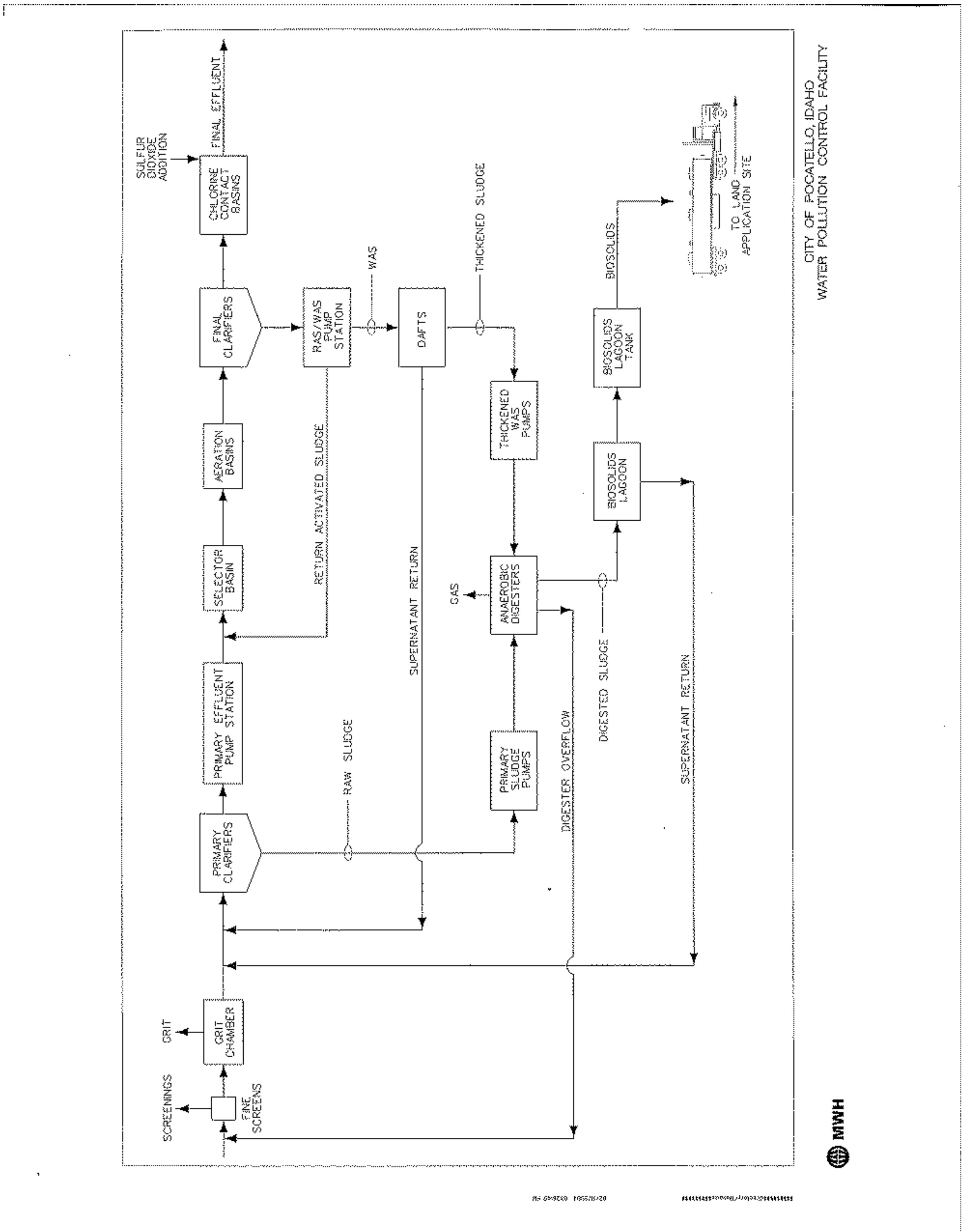
X. References

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

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

Portneuf River TMDL Revision and Addendum, Idaho Department of Environmental Quality, February 2010.

Appendix A: Process Description and Diagrams


SCREENINGS
FINE SCREENS
GRIT
GRIT CHAMBER
PRIMARY CLARIFIERS
RAW SLUDGE
PRIMARY EFFLUENT PUMP STATION
SELECTOR BASIN
AERATION BASINS
FINAL CLARIFIERS
CHLORINE CONTACT BASINS
SULFUR DIOXIDE ADDITION
FINAL EFFLUENT
RETURN ACTIVATED SLUDGE
RAS/WAS PUMP STATION
WAS
DAFTS
THICKENED SLUDGE
SUPERNATANT RETURN
THICKENED WAS PUMPS
PRIMARY SLUDGE PUMPS
ANAEROBIC DIGESTERS
GAS
DIGESTER OVERFLOW
DIGESTED SLUDGE
BIOSOLIDS LAGOON
BIOSOLIDS LAGOON TANK
BIOSOLIDS
TO LAND APPLICATION SITE
SUPERNATANT RETURN
CITY OF POCATELLO, IDAHO
WATER POLLUTION CONTROL FACILITY
MWH

Appendix B: Discharge Monitoring Report Summary and Effluent Data

A. DMR Data Summary August 2006 through July 2011

Sample Location	Raw Sewage Influent	Raw Sewage Influent	Raw Sewage Influent	Raw Sewage Influent	Effluent	Effluent	Effluent	Effluent	Effluent	Percent Removal	Effluent	Effluent	Effluent	Effluent	Percent Removal	Effluent	Effluent	Effluent	Effluent
Parameter Descriptoin	BOD, 5-day, 20 deg. C	BOD, 5-day, 20 deg. C	Solids, total suspended	Solids, total suspended	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, percent removal	Solids, total suspended	Solids, total suspended	Solids, total suspended	Solids, total suspended	Solids, suspended percent removal	Chlorine, total residual	Chlorine, total residual	Chlorine, total residual	Chlorine, total residual
Statistical Base	MO AVG	MO AVG	MO AVG	MO AVG	MO AVG	MO AVG	MO AVG	WKLY AVG	WKLY AVG	MN % RMV	MO AVG	MO AVG	WKLY AVG	WKLY AVG	MN % RMV	DAILY MX	DAILY MX	MO AVG	MO AVG
Units	lb/d	mg/L	lb/d	mg/L	Mgal/d	lb/d	mg/L	lb/d	mg/L	%	lb/d	mg/L	lb/d	mg/L	%	lb/d	ug/L	lb/d	ug/L
Limits	**28000**	**na**	**20000**	**na**	**12**	**3000**	**30**	**4500**	**45**	**85**	**3000**	**30**	**4500**	**45**	**85**	**5.8**	**58**	**2.5**	**25**
New Design Criteria	**24600**		**27400**		**12**														
8/31/2006	14932	257	15695	272	6.92	246	4.3	301	5.2	98	217	3.8	288	5	99	1.8	30	0.26	4.6
9/30/2006	13824	242	14823	260	6.95	242	4.2	297	5.1	98	200	3.5	285	4.9	99	0.59	10	0.19	3.3
10/31/2006	14887	255	14609	250	6.98	207	3.5	249	4.2	99	187	3.2	224	3.8	99	1.75	30	0.23	3.9
11/30/2006	15110	261	13528	233	6.96	269	4.6	379	6.6	98	336	5.8	551	9.6	98	0.6	10	0.25	4.3
12/31/2006	17028	293	14525	250	7	322	5.5	348	5.9	98	395	6.8	551	9.5	97	1.28	20	0.14	2.4
1/31/2007	17029	295	16245	282	7	257	4.4	402	6.8	98	291	5	364	6.2	98	1.17	20	0.22	3.7
2/28/2007	15945	272	14270	243	7.02	264	4.5	285	4.8	98	342	5.8	417	7.1	98	0.67	10	0.2	3.3
3/31/2007	15306	263	16936	291	6.96	308	5.3	411	7	98	549	9.4	746	12.7	97	1.17	20	0.17	3
4/30/2007	15000	261	17711	311	6.94	201	3.5	247	4.3	99	230	4	269	4.7	99	0.67	10	0.08	1.4
5/31/2007	19102	333	25173	439	6.91	155	2.7	169	3	99	307	5.4	439	7.7	99	1.16	20	0.15	2.6
6/30/2007	19127	336	24382	428	6.96	170	3	188	3.3	99	358	6.4	530	9.8	99	0.71	10	0.14	2.4
7/31/2007	17821	310	21357	369	6.92	140	2.4	146	2.5	99	152	2.6	176	3	99	1.18	20	0.37	6.4
8/31/2007	15783	278	15312	269	6.92	152	2.7	176	3.1	99	97	1.7	109	1.9	99	1.17	20	0.26	4.6
9/30/2007	15473	269	14467	251	6.93	114	2	157	2.5	99	68	1.2	77	1.3	100	0.71	10	0.25	4.3
10/31/2007	16632	291	18740	327	6.94	202	3.5	267	4.6	99	123	2.1	168	2.9	99	2.33	40	0.31	5
11/30/2007	17392	304	16728	292	6.88	236	4.1	245	4.3	99	169	2.9	202	3.5	99	1.2	20	0.25	4.3
12/31/2007	16691	289	18208	315	6.94	173	3	195	3.3	99	235	4.1	268	4.8	99	1.68	30	0.33	5.7
1/31/2008	16183	278	15007	257	7.01	234	4	274	4.7	99	252	4.3	335	5.8	98	2.4	40	0.28	4.9
2/29/2008	17977	301	20507	339	7.16	274	4.6	314	5.4	98	297	4.9	384	5.9	99	1.25	20	0.17	2.9
3/31/2008	17757	306	21421	370	6.98	233	4	355	6.1	99	275	4.7	341	5.8	99	4.66	80	0.19	3.3
4/30/2008	18879	329	24781	431	6.94	335	5.8	773	13.2	98	613	10.6	1608	27.5	98	2.33	40	0.35	6
5/31/2008	20611	355	22931	395	6.99	181	3.1	206	3.5	99	164	2.8	174	3	99	1.17	20	0.28	4.8
6/30/2008	19429	335	25409	446	6.94	213	3.7	309	5.3	99	310	5.4	397	7	99	1.74	30	0.43	7.5
7/31/2008	17334	299	20550	358	6.87	200	3.5	286	4.9	99	406	7.1	972	16.7	98	1.15	20	0.35	6.1
8/31/2008	14872	260	14472	253	6.84	116	2	126	2.2	99	113	2	133	2.3	99	1.14	20	0.46	8.1
9/30/2008	16323	291	17476	311	6.72	136	2.4	166	2.9	99	140	2.5	188	3.3	99	1.21	20	0.44	7.9
10/31/2008	16313	296	15551	282	6.62	146	2.6	162	3	99	130	2.4	168	3.1	99	1.2	20	0.51	9.1
11/30/2008	16913	304	17130	306	6.63	180	3.2	237	4.2	99	193	3.4	253	4.3	99	1.18	20	0.37	6.7
12/31/2008	16225	300	13555	250	6.52	179	3.3	204	3.7	99	188	3.5	224	4.1	99	1.63	30	0.4	7.4
1/31/2009	15725	287	14797	270	6.6	286	5.2	292	5.5	98	313	5.7	337	5.9	98	1.59	30	0.37	6.7
2/28/2009	16483	285	13055	225	6.96	371	6.4	431	7.5	98	537	9.3	687	1.2	96	0.176	30	0.33	5.7
3/31/2009	17246	307	15785	282	6.77	216	3.8	276	5	99	199	3.5	279	5	99	1.08	20	0.28	5.4
4/30/2009	16706	295	15653	278	6.8	201	3.5	220	3.8	99	213	3.8	258	4.6	90	1.7	30	0.39	6.9
5/31/2009	17767	322	16095	292	6.6	191	3.4	212	3.8	99	260	4.7	308	5.6	98	0.61	1	0.08	1.4
6/30/2009	16665	291	19090	336	6.93	173	3	198	3.4	99	239	4.2	292	5.1	99	1.19	20	0.33	5.7
7/31/2009	18206	312	21168	366	6.96	192	3.3	299	5.1	99	268	4.6	335	5.8	99	3.08	50	0.51	8.9
8/31/2009	18501	315	19908	339	7.08	131	2.2	170	2.9	99	141	2.4	232	4	99	0.6	10	0.17	2.9
9/30/2009	16136	276	16515	282	7.02	167	2.9	194	3.3	99	392	6.7	576	10	98	1.16	20	0.27	4.6
10/31/2009	16421	280	17475	297	7.03	167	2.8	182	3.1	99	164	2.8	184	3.1	99	1.17	20	0.22	3.8
11/30/2009	16958	289	15655	268	7.01	189	3.2	193	3.3	99	155	2.6	182	3.1	99	1.19	20	0.42	7.1
12/31/2009	15535	266	12001	205	7.02	188	3.2	201	3.4	99	130	2.2	148	2.5	99	2.32	40	0.4	6.9
1/31/2010	15926	273	11638	199	7.02	256	4.4	270	4.6	98	136	2.3	149	2.6	99	1.74	30	0.22	3.8
2/28/2010	18060	308	13828	236	7.05	245	4.2	259	4.4	99	130	2.2	148	2.5	99	1.2	20	0.44	7.5
3/31/2010	17499	301	15137	261	6.99	267	4.6	315	5.4	98	171	2.9	231	4	99	1.77	30	0.52	8.9
4/30/2010	17165	292	16910	287	6.98	306	5.2	485	8.2	98	359	6.1	819	13.9	98	1.22	20	0.61	10.5
5/31/2010	18737	321	17796	305	7.01	478	8.2	721	12.3	97	1034	17.6	1682	28.7	94	1.76	30	0.72	12.4
6/30/2010	20456	353	25465	440	6.97	315	5.4	516	8.8	98	587	10.1	1268	21.6	98	1.75	30	0.43	7.4
7/31/2010	18494	314	21810	370	7.04	254	4.3	336	5.7	99	385	6.5	572	9.7	98	1.23	20	0.53	9
8/31/2010	24995	427	33034	565	7.01	263	4.5	411	7	99	417	7.1	904	15.4	99	2.36	40	0.77	13.2
9/30/2010	26391	451	38818	664	7.01	181	3.1	248	4.2	99	244	4.2	526	9	99	1.76	30	0.73	12.6
10/31/2010	24260	404	27115	453	7.07	264	4.4	406	6.8	99	386	6.4	653	10.9	99	2.36	40	0.53	9
11/30/2010	18993	324	18764	320	7.04	334	5.7	404	6.9	98	311	5.3	523	8.9	98	2.94	50	0.5	8.6
12/31/2010	16150	280	14967	259	7	272	4.7	341	5.9	98	252	4.4	368	6.4	98	2.33	40	1.27	21.7
1/31/2011	15641	269	10999	189	6.99	210	3.6	235	4	99	186	3.2	237	4.2	98	2.34	40	0.94	16.2
2/28/2011	14763	254	10438	179	6.97	213	3.6	251	4.4	99	191	3.3	227	3.9	98	2.85	50	1.31	22.5
3/31/2011	15597	268	11718	202	6.99	280	4.8	312	5.3	98	240	4.1	275	4.8	98	2.52	40	1.08	18.6
4/30/2011	15598	268	11714	201	7.01	254	4.4	283	4.8	98	187	3.2	223	3.8	98	2.34	40	0.75	12.9
5/31/2011	15733	269	13173	224	6.98	212	3.6	217	3.8	99	134	2.3	147	2.6	99	2.36	40	1.02	17.5
6/30/2011	15986	274	13771	236	7	197	3.4	228	3.9	99	137	2.3	173	3	99	2.33	40	0.77	13.1
7/31/2011	16260	279	17128	294	7.01	188	3.2	258	4.4	99	150	2.6	250	4.3	99	2.31	40	1	17.1
Average	17249.2	298.6	17715.3	306.7	6.9	225.8	3.9	287.3	4.9	98.7	266.4	4.6	400.6	6.7	98.4	1.6	27.5	0.4	7.5
Minimum	13824	242	10438	179	6.52	114	2	126	2.2	97	68	1.2	77	1.2	90	0.176	1	0.08	1.4
Maximum	26391	451	38818	664	7.16	478	8.2	773	13.2	99	1034	17.6	1682	28.7	100	4.66	80	1.31	22.5
Std. Deviation	2344.2	39.0	5240.2	89.4	0.1	66.8	1.1	121.9	2.1	0.5	158.9	2.7	329.0	5.6	1.4	0.8	13.3	0.3	4.9
CV =std/ave	0.14	0.13	0.30	0.29	0.02	0.30	0.29	0.42	0.42	0.01	0.60	0.59	0.82	0.84	0.01	0.49	0.48	0.66	0.65
95th Percentile	20793.5	357.5	25547.5	446.4	7.1	334.1	5.7	486.6	8.2	99.0	550.9	9.4	986.8	16.9	99.0	2.9	50.0	1.0	17.6
5th Percentile	14886.3	256.9	11710.2	200.9	6.6	135.8	2.4	161.8	2.9	98.0	122.5	2.1	146.3	2.3	97.0	0.6	10.0	0.1	2.4
	Green Shading indicates exceedance of new design criteria																		
Violation	Red Shading indicates exceedance design critiera (influent) or violation of permit limit (effluent).																		

B. DMR Data Summary August 2006 through July 2011 (continued)

Sample Location	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent
Parameter Descriptoin	Coliform, fecal MF, MFC broth, 44.5 C	Coliform, fecal MF, MFC broth, 44.5 C	Coliform, fecal MF, MFC broth, 44.5 C	E. coli, MTEC-MF	pH	pH	Temperature, water deg. centigrade	Temperature, water deg. centigrade	Temperature, water deg. centigrade	Toxicity, ceriodaphnia chronic	Toxicity, pimephales chronic	Nitrogen, ammonia total (as N)	Nitrogen, ammonia total (as N)	Nitrogen, ammonia total (as N)	Nitrogen, ammonia total (as N)	Nitrogen, Kjeldahl, total (as N)	Oxygen, dissolved (DO)	Oxygen, dissolved (DO)	Oxygen, dissolved (DO)
Statistical Base	DAILY MX	MO GEO	WKLY GEO	MO GEO	MAXIMUM	MINIMUM	AVERAGE	MAXIMUM	MINIMUM	MAXIMUM	MAXIMUM	DAILY MX	DAILY MX	MO AVG	MO AVG	MO AVG	AVERAGE	MAXIMUM	MINIMUM
Units	#/100mL	#/100mL	#/100mL	#/100mL	SU	SU	deg C	deg C	deg C	toxic	toxic	lb/d	mg/L	lb/d	mg/L	mg/L	mg/L	mg/L	mg/L
Limits	**800**	**200**	**200**	**na**	**9**	**6**	**na**	**na**	**na**	**na**	**na**	**810**	**8.1**	**440**	**4.4**	**na**	**na**	**na**	**na**
8/31/2006	19	4	10	2	7.3	7.1	20	21	20			34	0.58	29	0.5		7.28	8.9	6.67
9/30/2006	8	2	4	1	7.4	7.1	19	20	18			297	5.18	56	0.96		7.07	7.5	6.84
10/31/2006	67	2	6	1	7.3	7.2	17	19	16	1	1	31	0.52	29	0.5		7.09	7.25	7
11/30/2006	4	1	2	1	7.3	7.2	15	17	12			96	1.76	36	0.62		7.41	8.06	7.1
12/31/2006	4	1	2	1	7.3	7	14	15	11			68	1.14	37	0.64		7.57	7.7	7.3
1/31/2007	6	1	2	2	7.3	7.1	12	14	9			32	0.5	29	0.5		8.11	8.6	7.8
2/28/2007	3	1	2	1	7.3	7.1	13	14	12			49	0.82	31	0.53		7.6	8.1	6.3
3/31/2007	48	2	4	1	7.3	7.1	13	14	10			89	1.5	35	0.6		7.49	8.04	6.3
4/30/2007	84	2	7	1	7.3	7.1	14	15	13			50	0.86	31	0.53		7.65	8.5	7.3
5/31/2007	4	1	2	1	7.4	7.2	16	18	15	1	1	30	0.5	29	0.5		7.46	7.6	7.3
6/30/2007	6000	4	41	600	7.4	7.2	18	20	16			190	3.48	38	0.7		7.29	7.52	7.1
7/31/2007	464	2	10	1	7.4	7.2	21	22	20			33	0.5	29	0.5		6.94	7.1	6.5
8/31/2007	14	2	4	4	7.4	7.3	21	22	19	1	1	30	0.5	29	0.5		7.04	7.68	6.8
9/30/2007	9	1	2	1	7.4	7.2	20	21	18			35	0.5	29	0.5		7	7.2	6.8
10/31/2007	57	2	3	2	7.4	7.2	17	19	16			125	2.22	41	0.7		7.08	7.44	6.8
11/30/2007	13	1	2	11	7.4	6.9	16	18	14	1	1	64	1.15	31	0.53		7.23	7.4	7.1
12/31/2007	10	2	2	1	7.3	7.1	14	16	11			30	0.5	29	0.5		7.6	8.38	7.4
1/31/2008	3	1	1	1	7.3	7.1	11	13	10			56	1	31	0.53		7.82	8.38	7.12
2/29/2008	158	6	23	11	7.3	7.1	12	13	11			36	0.56	30	0.5		7.87	8.4	7.6
3/31/2008	46	9	24	1	7.3	7	12	14	11	1	1	100	1.76	36	0.61		8.1	8.9	6.9
4/30/2008	24	2	5	3	7.4	6.9	13	15	9			283	4.86	57	0.99		8	8.6	7.4
5/31/2008	5	2	3	4	7.3	7.2	16	17	13			29	0.5	29	0.5		7.7	8.3	7.3
6/30/2008	10	3	8	2	7.4	7.2	18	20	16	1	1	873	15.1	118	2.03		7.33	7.6	7.11
7/31/2008	12	2	4	1	7.4	7.2	20	21	19			40	0.69	30	0.52		7.6	8.4	7
8/31/2008	2	1	1	2	7.4	7.3	20	22	19			29	0.5	29	0.5		7.4	7.9	7
9/30/2008	4	2	3	2	7.4	7.1	19	20	18	1	1	32	0.5	28	0.5		7.2	7.4	7
10/31/2008	3	1	2	1	7.5	7.3	17	19	15			29	0.5	28	0.5		7.6	8.2	7.3
11/30/2008	2	1	1	1	7.4	7	15	17	13	1	1	31	0.5	28	0.5		7.9	8.8	7.5
12/31/2008	19	3	7	1	7.5	7.1	12	15	10			103	1.96	34	0.62		8	8.6	7.7
1/31/2009	94	3	4	4	7.4	7	12	13	9			180	3.33	60	1.1		8.1	8.5	7.8
2/28/2009	76	4	6	1	7.2	7	11	13	10			47	0.83	30	0.52		8.2	8.8	7.5
3/31/2009	9	2	5	2	7.4	7.1	12	14	10			80	1.41	38	0.67		8.01	8.6	7.8
4/30/2009	35	11	22	3	7.3	7.1	13	16	11			121	2.08	40	0.7		7.82	8.03	7.6
5/31/2009	191	4	10	3	7.4	7.2	16	19	14	1	1	50	0.91	28	0.5		7.65	8.4	7.34
6/30/2009	16	4	10	5	7.4	7.2	18	20	16			81	1.58	34	0.59		8.05	8.8	7.5
7/31/2009	60	8	13	2	7.4	7.3	20	21	19	1	1	33	0.5	29	0.5		7.24	8.24	6.87
8/31/2009	8	2	3	1	7.4	7.3	20	21	19			36	0.5	30	0.5		7.06	7.14	7
9/30/2009	345	2	7	2	7.6	7.3	19	22	17			31	0.5	29	0.5		7.28	7.56	7.1
10/31/2009	13	3	4	3	7.5	7.2	17	18	14			124	2.12	39	0.66		7.34	7.7	7.1
11/30/2009	4	2	3	1	7.4	7.2	15	16	13	1	1	30	0.5	29	0.5		8	8.7	7.2
12/31/2009	6	2	3	1	7.4	7.2	12	14	9			265	4.52	63	1.07		7.9	8.3	7.2
1/31/2010	2	1	1	1	7.5	7.1	12	13	6			297	5.1	102	1.74		7.9	8.3	7.4
2/28/2010	1	1	1	1	7.3	7	12	15	11			353	6.14	108	1.84		8.2	8.3	8
3/31/2010	1	1	1	1	7.4	7.2	13	14	11	1	1	64	0.95	32	0.55		7.8	8.4	7.4
4/30/2010	1	1	1	1	7.4	7.2	14	16	12			249	4.25	90	1.54		7.7	8.2	7.2
5/31/2010	1	1	1	1	7.5	7.1	15	17	12	1	1	191	3.19	107	1.82		7.58	7.8	7.37
6/30/2010	8	2	4	3	7.4	7.2	17	19	16			504	8.59	73	1.25		7.32	7.86	7.07
7/31/2010	6	2	3	1	7.4	7.2	19	20	17	1	1	255	4.36	50	0.85		7.11	7.41	6.61
8/31/2010	29	5	6	1	7.4	7.3	20	21	18			30	0.5	29	0.5		6.92	7.1	6.7
9/30/2010	5	2	3	1	7.5	7.3	19	20	18			31	0.5	29	0.5		7.2	7.4	6.9
10/31/2010	6	2	2	1	7.4	7.2	18	20	14	1	1	70	1.19	34	0.58		7.27	7.56	6.93
11/30/2010	7	2	3	1	7.6	7.3	15	17	10			1360	23.57	628	10.7		7.6	8	7.3
12/31/2010	14	2	7	1	7.5	7.1	13	15	8			1192	22.86	325	5.57		7.81	8.34	7.47
1/31/2011	5	1	1	4	7.4	7.2	12	14	8			496	8.49	182	3.12		7.9	8.7	7.5
2/28/2011	3	1	1	1	7.4	7.1	11	13	8			180	2.89	61	1.05		8.1	8.5	7.7
3/31/2011	9	1	2	1	7.4	7.1	12	14	10	1	1	42	0.73	30	0.51		8.1	8.7	7.4
4/30/2011	5	2	3	2	7.4	7.2	13	15	10	1	1	32	0.5	29	0.5		8.3	8.5	8
5/31/2011	13	2	8	1	7.4	7.2	14	16	13			45	0.76	31	0.53		8.1	8.5	7.8
6/30/2011	5	2	2	1	7.4	7.2	17	19	14			32	0.54	29	0.5		7.8	8.2	7.4
7/31/2011	9	2	3	7	7.4	7.3	19	21	19	1	1	31	0.5	29	0.5		7.48	7.61	7.14
Average	134.8	2.4	5.5	12.0	7.4	7.2	15.6	17.3	13.5	1.0	1.0	157.6	2.8	58.2	1.0		7.6	8.1	7.2
Minimum	1	1	1	1	7.2	6.9	11	13	6	1	1	29	0.5	28	0.5		6.92	7.1	6.3
Maximum	6000	11	41	600	7.6	7.3	21	22.0	20	1	1	1360	23.57	628	10.7		8.3	8.9	8
Standard	774.0	2.0	6.9	77.2	0.1	0.1	3.1	3.0	3.7	0.0	0.0	257.5	4.6	87.9	1.5		0.4	0.5	0.4
CV =std/ave	5.74	0.81	1.25	6.43	0.01	0.01	0.20	0.17	0.28	0.00	0.00	1.63	1.68	1.51	1.50		0.05	0.06	0.05
95th Percentile	198.7	6.1	22.1	7.2	7.5	7.3	20.0	22.00	19.0	1.0	1.0	522.4	8.9	121.2	2.1		8.1	8.8	7.8
5th Percentile	1.0	1.0	1.0	1.0	7.3	7.0	12.0	13.0	8.0	1.0	1.0	30.0	0.5	28.0	0.5		7.0	7.2	6.6

Influent flow and loading has only slightly increased over the 12 years since the permit was issued.

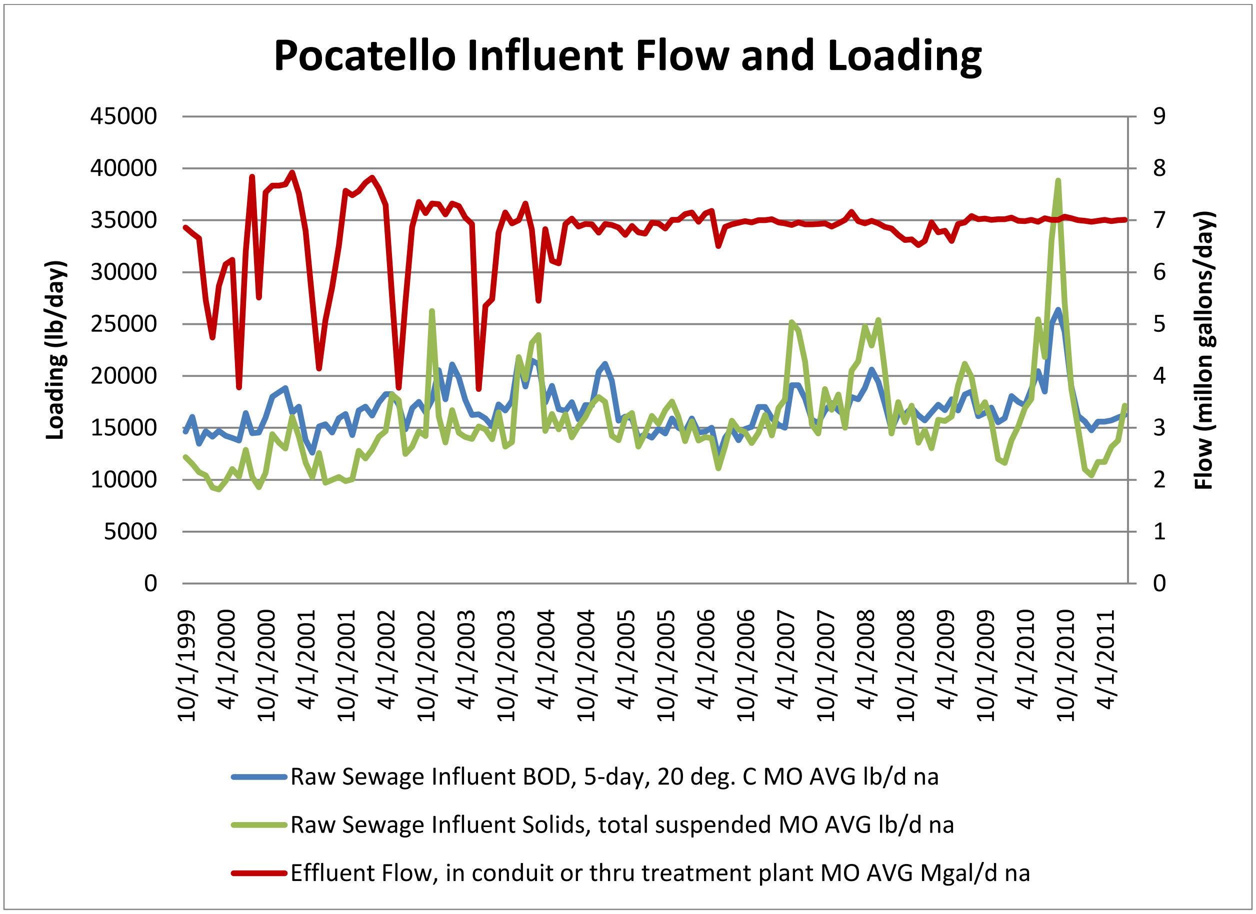


Figure 3. Pocatello WPCF Influent Flow and Loading current to 2011

C. Effluent Data from Permit Application

The permittee submitted supplemental metals data to provide a larger data set upon which to perform the reasonable potential analysis. For all pollutants except Selenium, ½ the detection level was used for pollutants values below the DL. For Selenium only detected values were used to calculate the summary due to questionable DLs. The calculated coefficient of variation (CV) and the 95th percentile were used in the reasonable potential analysis, Appendix D.

Table 12. Effluent Metals Data Summary

POCATELLO'S POTW METAL ANALYSES HISTORY										
2006 TO 2011										
FINAL EFFLUENT (micrograms per liter)										
Date	As	Cd	Cr	Cu	CN	Pb	Hg	Ni	Ag	Zn
Count	35	35	35	66	35	35	35	35	35	35
Min	1.0	0.0	0.5		2.5	0.4	0.1	0.3	0.3	35.6
Max	2.3	0.3	5.0	54.0	6.0	0.70	0.5	5.0	1.3	60.0
Average	1.7	0.1	1.1	10.7	2.6	0.36	0.1	1.9	0.3	44.9
Standard Dev	0.344	0.048	0.858	6.072	0.592	0.064	0.068	1.100	0.187	6.074
CV	**0.20**	**0.77**	**0.77**	**0.57**	**0.23**	**0.17**	**0.61**	**0.57**	**0.64**	**0.14**
50th Percentile	**2.30**	**0.12**	**2.48**	**14.80**	**2.50**	**0.40**	**0.10**	**4.40**	**0.42**	**53.70**
95th Percentile	**2.30**	**0.12**	**2.44**	**14.75**	**2.50**	**0.40**	**0.10**	**4.40**	**0.40**	**53.60**

The city of Pocatello provided analytical results of priority pollutants. Four analytical results were provided for each priority pollutant chemical. The majority of the pollutants were below the detection level. The following table shows the pollutants that were present at detectable levels. The highlight values where used in the reasonable potential analysis, Appendix D.

Table 13. Detected Priority Pollutants

Date	Pollutant	Conc.	Units	Analytical Method	MDL ug/L
3/24/09	**Carbon Tetrachloride**	0.57	ug/L	E624	0.50
3/23/09	**Chlorodibromomethane**	1.5	ug/L	E624	0.50
3/24/09	**Chlorodibromomethane**	0.64	ug/L	E624	0.50
3/25/09	**Chlorodibromomethane**	3.3	ug/L	E624	0.50
3/23/09	**Chloroform**	6.5	ug/L	E624	0.5
3/24/09	**Chloroform**	2.7	ug/L	E624	0.5
3/25/09	**Chloroform**	11	ug/L	E624	0.5
9/29/10	**Chloroform**	19	ug/L	E624	0.5
3/23/09	**Bromodichloromethane**	4.7	ug/L	E624	0.5
3/24/09	**Bromodichloromethane**	2.1	ug/L	E624	0.5
3/25/09	**Bromodichloromethane**	9.1	ug/L	E624	0.5
9/29/10	**Methylene Chloride**	0.45	ug/L	E624	0.50
3/23/09	**Toluene**	0.64	ug/L	E624	0.50
3/24/09	**Toluene**	0.67	ug/L	E624	0.50
3/25/09	**Toluene**	0.81	ug/L	E624	0.50
9/29/10	**Toluene**	0.28	ug/L	E624	0.50

Including supplemental data submitted to the EPA on 3-30-2012

Date	Pollutant	Conc.	Units	Analytical Method	MDL ug/L	
Volatile Organic Compounds						Average
3/23/09	**Chlorodibromomethane**	1.5	ug/L	E624	0.50	
3/24/09	**Chlorodibromomethane**	0.64	ug/L	E624	0.50	
3/25/09	**Chlorodibromomethane**	3.3	ug/L	E624	0.50	
9/29/10	**Chlorodibromomethane**	<0.50	ug/L	E624	0.50	
1/31/12 to 2/1/12	**Chlorodibromomethane**	3.0	ug/L	E625	1.50	
1/31/12 to 2/1/12	**Chlorodibromomethane**	3.5	ug/L	E626	2.50	
2/2/12 to 2/3/12	**Chlorodibromomethane**	4.4	ug/L	E627	3.50	
2/2/12 to 2/3/12	**Chlorodibromomethane**	3.7	ug/L	E628	4.50	
2/6/12 to 2/7/12	**Chlorodibromomethane**	3.0	ug/L	E629	5.50	
2/6/12 to 2/7/12	**Chlorodibromomethane**	3.4	ug/L	E630	6.50	2.94
3/23/09	**Chloroform**	6.5	ug/L	E624	0.5	
3/24/09	**Chloroform**	2.7	ug/L	E624	0.5	
3/25/09	**Chloroform**	11	ug/L	E624	0.5	
9/29/10	**Chloroform**	19	ug/L	E624	0.5	
1/31/12 to 2/1/12	**Chloroform**	11	ug/L	E625	1.5	
1/31/12 to 2/1/12	**Chloroform**	11	ug/L	E626	2.5	
2/2/12 to 2/3/12	**Chloroform**	12	ug/L	E627	3.5	
2/2/12 to 2/3/12	**Chloroform**	8.8	ug/L	E628	4.5	
2/6/12 to 2/7/12	**Chloroform**	11	ug/L	E629	5.5	
2/6/12 to 2/7/12	**Chloroform**	12	ug/L	E630	6.5	10.50
3/23/09	**Bromodichloromethane**	4.7	ug/L	E624	0.5	
3/24/09	**Bromodichloromethane**	2.1	ug/L	E624	0.5	
3/25/09	**Bromodichloromethane**	9.1	ug/L	E624	0.5	
9/29/10	**Bromodichloromethane**	<0.5	ug/L	E624	0.5	
1/31/12 to 2/1/12	**Bromodichloromethane**	8.7	ug/L	E625	1.5	
1/31/12 to 2/1/12	**Bromodichloromethane**	10	ug/L	E626	2.5	
2/2/12 to 2/3/12	**Bromodichloromethane**	11	ug/L	E627	3.5	
2/2/12 to 2/3/12	**Bromodichloromethane**	9	ug/L	E628	4.5	
2/6/12 to 2/7/12	**Bromodichloromethane**	8.9	ug/L	E629	5.5	
2/6/12 to 2/7/12	**Bromodichloromethane**	10	ug/L	E630	6.5	8.17

2012 supplemental data added 4/2/2012.

Appendix C: River Critical Design Flows

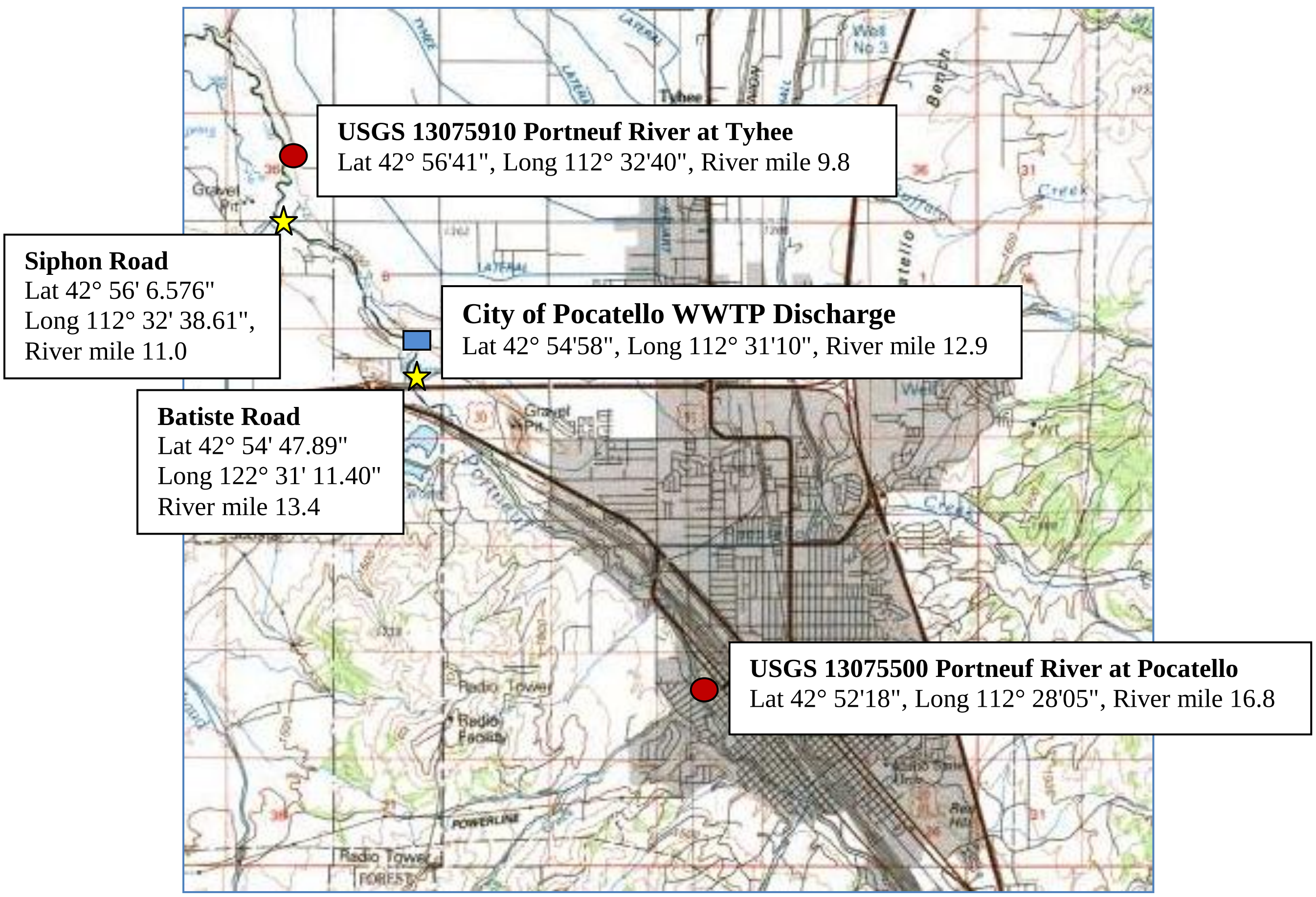
IDAPA 58.01.02.060 allows for mixing zones that utilizes up to 25% of the critical flow volumes. Further, IDAPA 58.01.02.210 requires that numeric standards be evaluated at the following low flow design discharge conditions:

Aquatic Life		Human Health	
CMC ("acute" criteria)	1Q10 or 1B3	Non-carcinogens	30Q5
CCC ("chronic" criteria)	7Q10 or 4B3	Carcinogens Harmonic	mean flow
Ammonia	30B3 or 30Q10		

A. Receiving Water Quantity

The EPA determined critical design flows in the vicinity of the discharge using U.S. Geological Survey (USGS) data from the following locations, as shown below, and estimated the critical design flows in the vicinity of the WPCF based on limited flow measurement data near the point of discharge.

Upstream Site USGS 13075500 Portneuf River at Pocatello, ID[1]
Downstream Site: USGS 13075910 Portneuf River near Tyhee, ID[2]



Locations as show are approximate.

Figure 4. River Flow Monitoring Stations in the Vicinity of the Outfall

[1] USGS data at http://waterdata.usgs.gov/nwis/inventory?agency_code=USGS&site_no=13075500
[2] USGS data at http://waterdata.usgs.gov/nwis/inventory?agency_code=USGS&site_no=13075910

Approximately 25 years (1985-2011) of daily flow data were used to estimate the critical flows. The following figure is a graph of the USGS data in comparison to the limited flow data in at the point of discharge. River flows at the point of discharge were on average lower than the flows experienced at Tyhee and greater than the flows experienced at Pocatello as shown in the table below. In addition, river flow data was evaluated on an average monthly basis to determine the low flow period. Low flows occur annually from July through October, Figure 6.

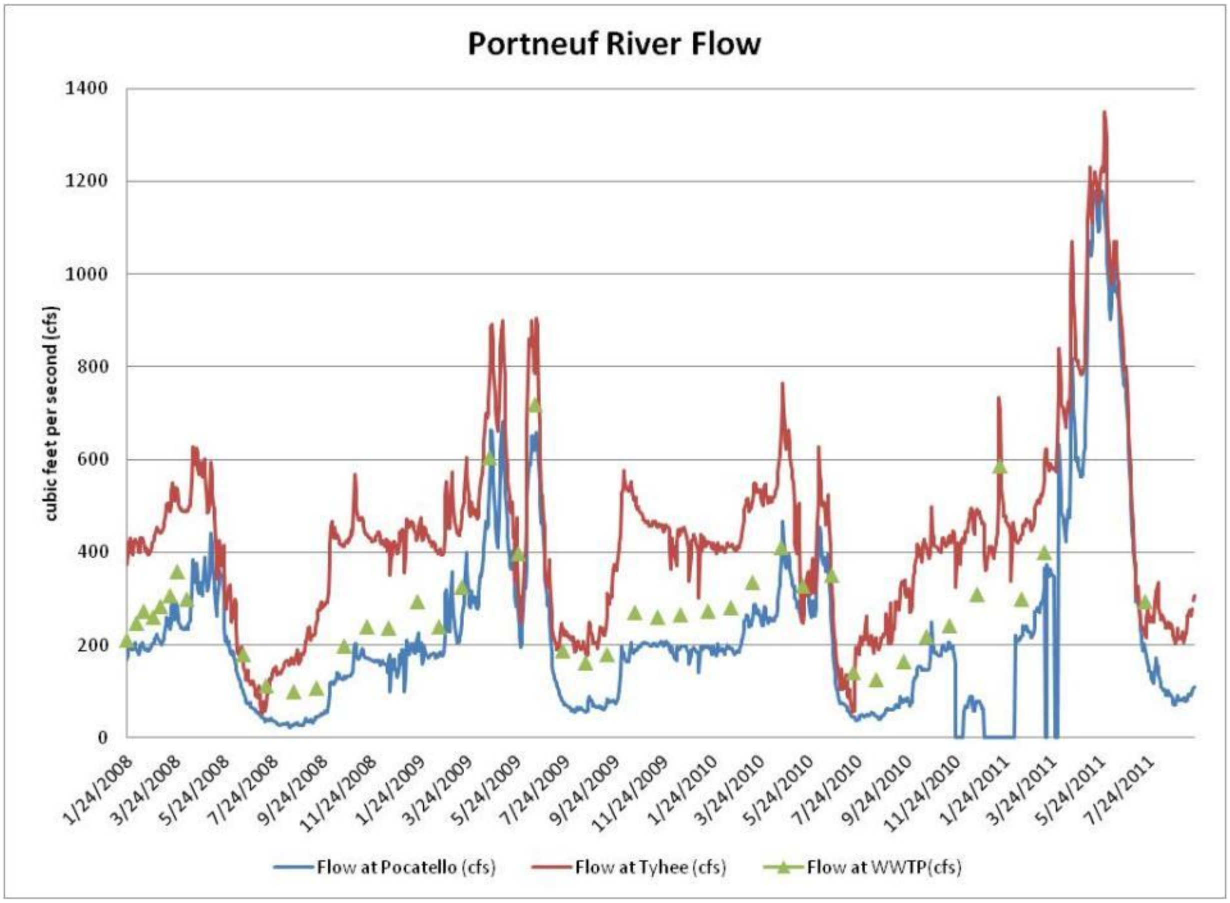


Figure 5. Portneuf River Flow – Seasonal Variation

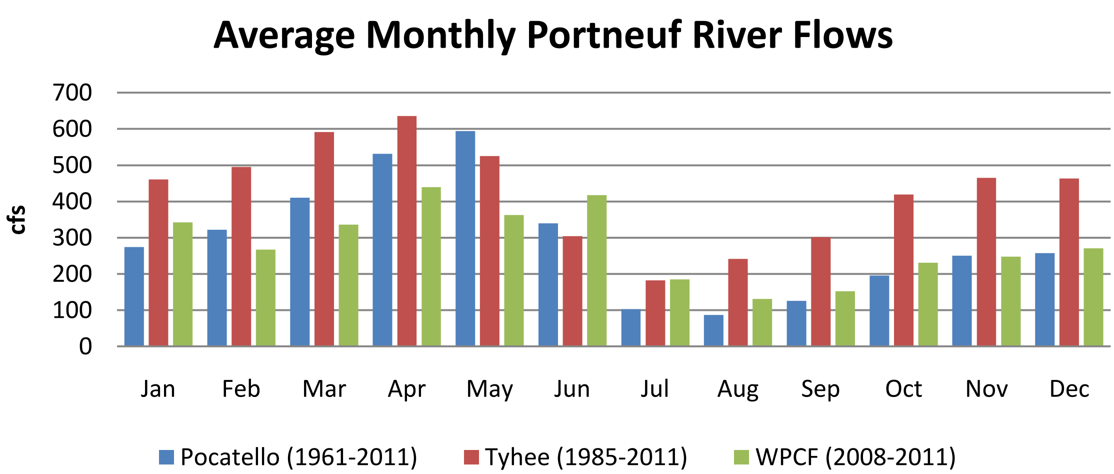


Figure 6. Portneuf River – Average Monthly Flows

Table 14. River Flow at USGS sites compared to limits data at WPCF site

Date	Flow at Pocatello (cfs)	Flow at Tyhee (cfs)	Flow near WPCF(cfs)
1/24/2008	170	375	212.5
2/4/2008	195	425	248.5
2/13/2008	200	431	274
2/25/2008	203	421	260.5
3/5/2008	212	447	284.4
3/17/2008	242	493	308.2
3/26/2008	290	541	359.1
4/7/2008	239	490	300.2
6/17/2008	100	156	182.2
7/15/2008	36	57	114.5
8/19/2008	28	160	102
9/16/2008	44	236	107.9
10/21/2008	130	414	199.2
11/18/2008	173	438	240
12/16/2008	170	422	236.8
1/20/2009	209	427	294
2/17/2009	182	403	240
3/17/2009	251	474	327
4/21/2009	539	774	605
5/26/2009	304	382	397.4
6/16/2009	621	791	720
7/21/2009	81	243	189
8/18/2009	58	194	164.1
9/15/2009	81	266	182
10/20/2009	189	512	272.7
11/17/2009	197	455	261.4
12/15/2009	190	435	265.4
1/19/2010	198	422	275.2
2/16/2010	196	414	281.4
3/16/2010	258	510	337.1
4/20/2010	347	622	412.3
5/18/2010	263	247	328.7
6/22/2010	268	363	350.6
7/20/2010	45	57	141.4
8/17/2010	49	217	126.6
9/21/2010	81	339	166.3
10/19/2010	147	408	219.8
11/16/2010	205	430	242.6
12/21/2010	78	494	309.8
1/18/2011	Ice	735	588.4
2/15/2011	219	439	300.1
3/15/2011	327	555	400.3
7/19/2011	203	232	294.6
Harmonic Mean	123	329	236
Average	238	432	282
Minimum	23	52	102
Maximum	1180	1350	720

Note: Average, minimum and maximum flow at Pocatello and Tyhee are of the 25-year daily data and not the smaller data set shown. This smaller data set represents only those days for which flow in the vicinity of the WWTP was available.

The critical design flows were calculated using the EPA's dFlow[3] program for flows at Pocatello and Tyhee using approximately 25 years of daily flow data. Critical design flows where estimated at the WPCF based on the historical flows experienced near the WPCF relative to upstream and downstream flows at Pocatello and Tyhee, respectively.

The EPA used the Maintenance of Variance Extension, Type 1 (MOVE.1) method described by Hirsch (1982) to correlate the limited river flow data near the WPCF outfall to the more extensive data available from the USGS gauge at Pocatello.

The correlation[4] of flows at both Pocatello and Tyhee stations were considered to estimate flows in the vicinity of the outfall. After comparing both, the Pocatello gauge data was used because flow data at Pocatello correlated most closely with the limited flow data available in the vicinity of the outfall. The following graphs show the correlation of the flow data between flow in the vicinity of the WPCF discharge and the Pocatello monitoring station. This same correlation was used to estimate the critical flows in the vicinity of the WPCF discharge based on the critical flows at Pocatello as estimated using dFlow. Critical flows at both Pocatello and Tyhee are provided for comparison.

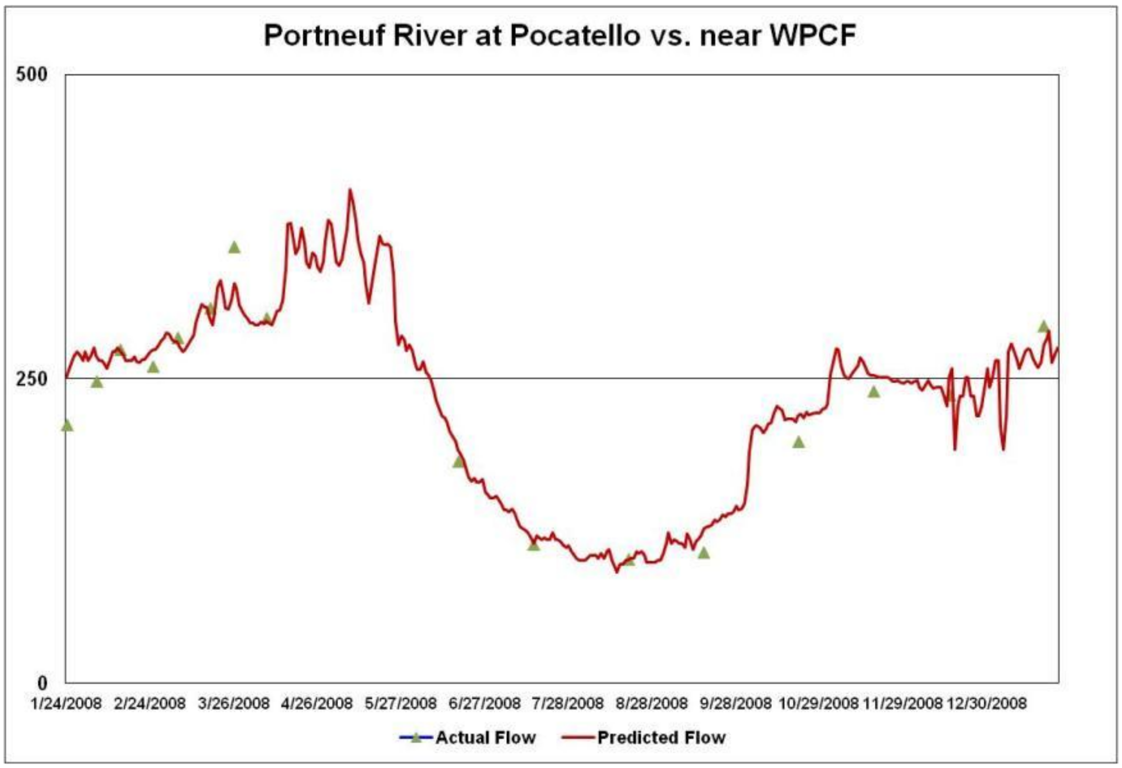


Figure 7. Portneuf River Flow at Pocatello vs. near WPCT outfall

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[3] Water Quality Models and Tools – DFLOW (http://water.epa.gov/scitech/datait/models/dflow/index.cfm)

[4] Hirsch, R. A Comparison of Four Streamflow Record Extension Techniques. Water Resources Research. Vol. 18, No. 4, Pages 1081-1088. August 1982.

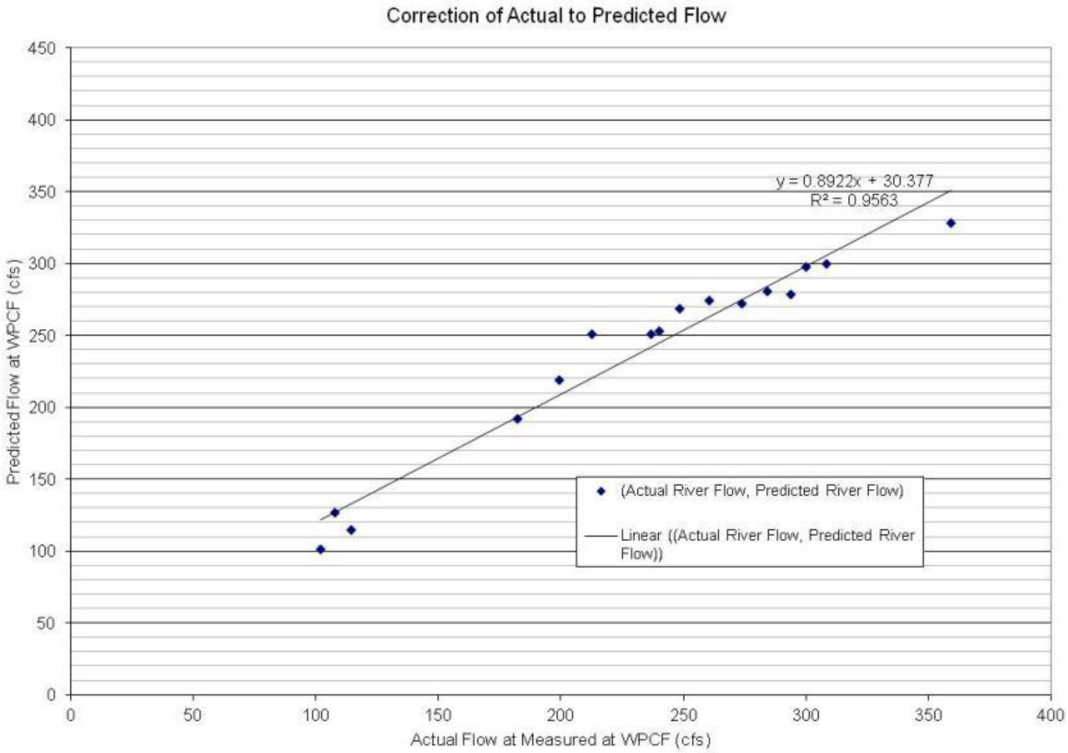

Figure 8 Correlation Estimated vs. Predicted River Flow

The following tables provide the estimates of the critical river flow in the vicinity of the WPCF outfall for year around, low flow and high flow periods, respectively. Estimates based on the correlations with the Pocatello flows will be used, as appropriate, to determine both the reasonable potential analysis and the calculation of permit limits as needed at the low river flow and high river flows conditions.

Table 15. Portneuf River Critical Design Flows – Annual Basis

Critical Flow Parameter	Portneuf River at Pocatello	Portneuf River at Tyhee	Portneuf River Estimated at WWTP based on correlation with Pocatello	Portneuf River Estimated at WWTP based on correlation with Tyhee
1Q10	7.5	41.9	**52**	41
7Q10	12.4	57.2	**67**	53
30Q10	17.3	78.9	**79**	70
30Q5	24.5	91.3	**94**	79
Harmonic Mean	105	291	**197**	205

Table 16. Portneuf River Critical Design Flows – Low Season – July-October

Critical Flow Parameter	Portneuf River at Pocatello	Portneuf River at Tyhee	Portneuf River Estimated at WWTP based on correlation with Pocatello	Portneuf River Estimated at WWTP based on correlation with Tyhee
1Q10	7.9	43	**53**	42
7Q10	12.6	59.9	**68**	55
30Q10	17.6	120	**80**	79
30Q5	24.9	130	**95**	105
Harmonic Mean	101	294	**193**	207

Table 17. Portneuf River Critical Design Flows – High Season – November - June

Critical Flow Parameter	Portneuf River at Pocatello	Portneuf River at Tyhee	Portneuf River Estimated at WWTP based on correlation with Pocatello	Portneuf River Estimated at WWTP based on correlation with Tyhee
1Q10	21	60.6	**87**	56
7Q10	32.8	74.1	**109**	66
30Q10	47.2	97.5	**132**	79
30Q5	69	129	**159**	105
Harmonic Mean	104	298	**196**	209

B. Mixing Zone and Dilution Factors

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 (U.S. EPA NPDES Permit Writers' Manual, 2010[5]). 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."

The Idaho Water Quality Standards at IDAPA 58.01.02.060 provides Idaho's mixing zone policy for point source discharges. The policy allows the Idaho Department of Environmental Quality (IDEQ) to authorize a mixing zone for a point source discharge after a biological, chemical, and physical appraisal of the receiving water and the proposed discharge.

Idaho's water quality standards suggest applying the following low flow conditions for surface water quality criteria.

1. The 1Q10 flow is used for the protection of aquatic life from acute effects. It represents the lowest one day flow with an average recurrence frequency of once in 10 years.
2. The 7Q10 flow is used for the protection of aquatic life from chronic effects. It represents lowest average 7 consecutive day flow with an average recurrence frequency of once in 10 years.
3. The 30Q10 flow is used for the protection of aquatic life for the chronic ammonia criterion. It represents the lowest average 30 consecutive day flow with an average recurrence frequency of once in 10 years.
4. The 30Q5 flow is used for the protection of human health from non-carcinogens. It represents the lowest average 30 consecutive day flow with an average recurrence frequency of once in 5 years.
5. The harmonic mean flow is a long-term mean flow and is used for the protection of human health from carcinogens. It is the number of daily flow measurements divided by the sum of the reciprocals of the flows.

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

Dilution Factor $$DF = \frac{Q_d + Q_{critical\ flow} \times (\text{percentage of river allowble for mixing})}{Q_d}$$

Where Q_d = WPCF discharge flow (cfs); $Q_{critical\ flow}$ = applicable critical river flow (cfs)

5 http://www.epa.gov/npdes/pubs/pwm_2010.pdf, p. 6-20.

Dilution factor where calculated at three assumed WPCF discharge flows for average, 5-year maximum and design flows. The design flow of 12 mgd was used to evaluate the reasonable potential of the discharge to cause or contribute to violations of the WQS and to establish WQBEL as required. Additional, dilution factors were calculated based on yearly and seasonal flows. The draft permit established seasonal limits for both chlorine and ammonia.

Table 18 Dilution Factors – Annual Critical River Flows

Plant Data	Units	Actual Ave. Flow (2006-2011)	Actual Max. Flow (1999-2011)	Design Flow
Design Flow	mgd	7.16	9	12
Design Flow	cfs - calculated	11.1	13.9	18.6
BOD_5	lb/day	17,249	24,600	24,600
TSS	lb/day	17,715	27,400	27,400

Annual Flows (April - March)

Estimated Critical Design Flows Portneuf River near WPCF

Critical Flow Parameter	Portneuf Est. at WPCF based on established correlation			Used for evaluating criteria for:
1Q10	52	52	52	**Aquatic Life Uses - Acute**
7Q10	67	67	67	**Aquatic Life Uses - Chronic**
30B3	79	79	79	**Ammonia**
30Q5	94	94	94	**Human Health – Non-carninogen**
Harmonic Mean	197	197	197	**Human Health – Carcinogen**

Calculation of Dilution Factors based on Critical Design Flows WPCF Flows

Dilution Factors	Allowable % of river flow	Dilution Factors	Dilution Factors	Dilution Factor	Basis	Receiving Water Concentration (RCW)
DF-edge of Acute zone	25%	**2.2**	**1.9**	**1.7**	**1Q10**	
DF-edge of Chronic zone	25%	**2.5**	**2.2**	**1.9**	**7Q10**	**53%**
Ammonia	25%	**2.8**	**2.4**	**2.1**	**30B3**	
HH-Non-Carcinogen	25%	**3.1**	**2.7**	**2.3**	**30Q5**	
HH-Carcinogen	25%	**5.4**	**4.5**	**3.7**	**Harmonic Mean**	

Table 19 Dilution Factors – Low Season Critical River Flows – July – October

Low Flow (July - October)						
Estimated Critical Design Flows Portneuf River near WPCF						
Critical Flow Parameter		Portneuf Est. at WPCF based on established correlation			Used for evaluating criteria for:	
1Q10		53	53	53	Aquatic Life Uses - Acute	
7Q10		68	68	68	Aquatic Life Uses - Chronic	
30B3		80	80	80	Ammonia	
30Q5		95	95	95	Human Health – Non-carninogen	
Harmonic Mean		193	193	193	Human Health – Carcinogen	
Calculation of Dilution Factors based on Critical Design Flows for actual and design WPCF flow conditions						
Dilution Factors	Allowable % of river flow	Dilution Factors	Dilution Factors	Dilution Factor	Basis	Receiving Water Concentration (RCW)
DF-edge of Acute zone	25%	**2.2**	**2.0**	**1.7**	1Q10	
DF-edge of Chronic zone	25%	**2.5**	**2.2**	**1.9**	7Q10	52%
Ammonia	25%	**2.8**	**2.4**	**2.1**	30B3	
HH-Non-Carcinogen	25%	**3.2**	**2.7**	**2.3**	30Q5	
HH-Carcinogen	25%	**5.4**	**4.5**	**3.6**	Harmonic Mean	

Table 20 Dilution Factors – High Season Critical River Flows – Nov. - June

High Flow (November - June)						
Estimated Critical Design Flows Portneuf River near WPCF						
Critical Flow Parameter		Portneuf Est. at WPCF based on established correlation			Used for evaluating criteria for:	
1Q10		87	87	87	Aquatic Life Uses - Acute	
7Q10		109	109	109	Aquatic Life Uses - Chronic	
30B3		132	132	132	Ammonia	
30Q5		159	159	159	Human Health – Non-carninogen	
Harmonic Mean		196	196	196	Human Health – Carcinogen	
Calculation of Dilution Factors based on Critical Design Flows for actual and design WPCF flow conditions						
Dilution Factors	Allowable % of river flow	Dilution Factors	Dilution Factors	Dilution Factor	Basis	Receiving Water Concentration (RCW)
DF-edge of Acute zone	25%	**3.0**	**2.6**	**2.2**	1Q10	
DF-edge of Chronic zone	25%	**3.5**	**3.0**	**2.5**	7Q10	40%
Ammonia	25%	**4.0**	**3.4**	**2.8**	30B3	
HH-Non-Carcinogen	25%	**4.6**	**3.9**	**3.1**	30Q5	
HH-Carcinogen	25%	**5.4**	**4.5**	**3.6**	Harmonic Mean	

C. Receiving Water Quality

Receiving water quality is used to evaluate the overall impact of the discharge on receiving water. Both USGS monitoring sites included some receiving water data. Where pollutant data were available, data provided by the city of Pocatello at a sample point just upstream of the discharge was used to characterize the receiving water upstream of the point of discharge, refer to table 4. The tables below summarize the receiving water data used to evaluate the reasonable potential of the discharge to contribute to violations of the WQS.

Table 21: Summary Receiving Water Quality from USGS (1990 to Present)

Parameter	Units	Percentile	Portneuf River at Pocatello	Portneuf River Nr Tyhee	
Temperature	degrees C	95^{th}	24.5	16	Refer to table 22
pH (field analysis)	S.U.	95th	8.5	8.15	Refer to table 22
Dissolved Oxygen	mg/L	5^{th} to 95^{th}	7.78-12.76	6.1-11.2	Refer to table 22
Hardness	mg/L as $CaCO_3$	5^{th} to 95^{th}	185-332	257-301	185
Ammonia	mg/L	95^{th}	0.115	0.68	Refer to table 23, 0.06 mg/L
Phosphorus	mg/L	5^{th} to 95^{th}	0.1884	0.63	No WQ criteria TMDL-based limit
Arsenic	µg/L	5^{th} to 95^{th}	1.55-4.45	4-5.5	4.45
Copper	µg/L	5^{th} to 95^{th}	ND	ND	0
Lead	µg/L	5^{th} to 95^{th}	ND	ND	0
Zinc	µg/L	5^{th} to 95^{th}	5.35-14.3	3-17.8	14.3

The City of Pocatello provided receiving water data upstream (Batiste Road) and downstream (Siphon Road) of the point of discharge. Nutrients, such as nitrate + nitrite, ortho phosphate and total phosphorus, are, on average, found in concentrations higher downstream than upstream due to the influence of the springs and associated nonpoint load of nutrients.

Table 22. Summary of Receiving Water Quality from Pocatello WPCF

Summary of data from 57 sampling event from Jan. 2007 through Sept. 2011

	UPSTREAM FROM POTW - PBATR				DOWNSTREAM FROM POTW - PS PB				POTW EFFLUENT - PSTPE			
Pamameter	Minimum	Maximum	**Average**	95th Percentile	Minimum	Maximum	**Average**	95th Percentile	Minimum	Maximum	**Average**	95th Percentile
Lab Turbidity	3.28	551	**40.26**	131 8	1 3	386	**27.20**	103.56	0.114	103.56	**5.74**	15.3
Total Dissolved Solids	274	414	**352.40**	406.4	371	470	**414.80**	463 8	463 8	1101	**944.97**	1097
Total Suspended Solids	4 2	636	**79.60**	294	1 5	480	**56.77**	216	1 6	216	**11.18**	31.13
Suspended Sediment Conc	4.1	441.35	**70.98**	249.49	2 8	440	**53.14**	178.23	0 9	178.23	**9.09**	13 68
Total Alkalinity	132	336	**245.23**	304 2	157	280	**236.79**	265 2	218	389	**259.65**	293
Chloride	15	57	**39.58**	52.4	20	51	**40.88**	50	50	409	**336.41**	383
Sulfate	11	45	**30.82**	42.4	23	62	**46.07**	60	57	112	**90.86**	107
Nitrate + Nitrite	0.05	1.44	**0.54**	1.136	0.37	4.76	**2.14**	3.062	1.14	27	**16.61**	22 95
Ammonia Nitrogen	0.05	0.39	**0.06**	0.062	0.05	0.42	**0.07**	0.18	0.05	20	**0.65**	1 55
TKN	0.1	5.1	**0.60**	1.54	0.1	4.5	**0.53**	1.58	0.1	24 8	**1.92**	6.075
Dissolved Ortho Phosphate	0.0021	0.253	**0.03**	0.069	0.125	2.18	**0.76**	1.725	0.021	8 6	**0.53**	2.533
Total Phosphorus	0.026	3.44	**0.18**	0.352	0.356	2.35	**0.89**	1.88	0.121	8 2	**0.83**	2.785
Fecal Coliform	4	658	**137.46**	476 6	1	391	**83.93**	265 5	0	265 5	**19.06**	81 25

Indicates downstream concentration on average higher than upstream concentration of pollutant.

Table 23. Summary of Receiving Water pH and Temperature from IDEQ

pH and temperature at high and low flow river conditions at monitoring point T2B (provided by the IDEQ-Pocatello Office). Data was used to calculate applicable ammonia criteria.

Date/Tech/Sonde	Temp C°	Spec. Cond ms/cm²	D.O. %	D.O. mg/L	pH	NTU	Season
6/17/2008	16.07	0.631	72.3	7.04	7.54	8.90	High
11/18/2008	7.38	0.741	88.68	10.67	7.77	4.52	High
12/16/2008	3.44	0.726	80.85	10.64	7.72	3.63	High
1/20/2009	4.12	0.8	84.58	11.08	7.76	6.38	High
2/17/2009	4.98	0.75125	79.25	10.16	7.77	7.35	High
3/17/2009	9.03	0.73725	68.38	7.87	7.97	31.30	High
4/21/2009	12.50	0.5105	86.20	9.17	7.74	92.18	High
5/26/2009	14.16	0.435	79.45	8.14	7.49	32.30	High
6/16/2009	14.07	0.51925	90.48	9.30	7.55	53.80	High
11/17/2009	5.00	0.72775	78.65	10.07	7.45	7.28	High
12/15/2009	4.19	0.767	78.53	10.31	7.26	1.65	High
1/19/2010	5.44	0.7935	72.90	9.21	7.43	16.36	High
2/16/2010	6.19	0.68375	74.60	9.24	7.55	7.53	High
3/16/2010	7.65	0.78775	81.65	9.73	7.30	25.68	High
4/20/2010	12.75	0.61175	66.88	7.09	7.59	47.65	High
5/18/2010	13.93	0.524	66.63	6.86	7.38	26.97	High
6/22/2010	15.90	0.594	91.23	9.01	7.76	28.10	High
11/16/2010	8.02	0.7255	73.83	8.68	7.85	4.28	High
12/21/2010	4.65	0.736	75.75	9.99	7.69	14.35	High
1/18/2011	12.88	1.828	75.20	7.84	7.38	1.80	High
2/15/2011	12.60	1.882	72.90	7.71	7.37	1.40	High
3/15/2011	13.29	1.839	86.90	8.99	7.33	2.00	High
4/19/2011	13.81	1.859	101.10	10.30	7.36	1.20	High
5/17/2011	15.57	1.938	81.00	8.02	7.46	1.10	High
6/21/2011	18.20	1.866	88.50	8.30	7.40	1.20	High
7/15/2008	16.24	0.661	68.78	6.72	7.28	4.65	Low
9/16/2008	13.73	0.729	67.03	6.93		4.03	Low
10/21/2008	10.78	0.752	73.70	8.16	7.65	6.08	Low
7/21/2009	17.46	0.64825	73.15	6.97	7.36	9.35	Low
8/18/2009	14.46	0.6535	68.70	7.01	7.35	4.35	Low
9/15/2009	14.45	0.70325	80.08	8.14	7.49	4.98	Low
10/20/2009	11.53	0.74975	87.70	9.54	7.64	14.13	Low
7/20/2010	16.29	0.6615	72.38	7.06	7.33	4.13	Low
8/17/2010	15.76	0.693	68.43	6.76	7.15	2.53	Low
9/21/2010	13.57	0.71825	76.88	7.98	7.26	3.50	Low
10/19/2010	11.26	0.728	75.13	8.22	7.59	10.18	Low
7/19/2011	18.83	1.939	81.70	7.56	7.28	4.10	Low
8/16/2011	20.59	1.768	81.10	7.25	7.37	3.90	Low
9/28/2011	20.40	1.935	85.60	7.67	7.44	3.10	Low
10/17/2011	18.94	1.805	80.80	7.43	7.38	1.30	Low
Count	40.00	40	40	40	39.00	40.00	
Min	3.44	0.4	66.6	6.7	7.15	1.10	
Max	20.59	1.9	101.1	11.1	7.97	92.18	
Average	12.25	1.0	78.4	8.5	7.50	12.73	
Standard Dev	4.88	0.525	7.896	1.280	0.19	18.11	
CV	0.40	0.54	0.10	0.15	0.03	1.42	
95th Percentile	**19.01**	1.935	90.513	10.641	**7.77**	**47.96**	
5th Percentile	4.19	0.519	67.018	6.858	7.26	1.20	
Seaonal 95th Percentile Numbers							
95th Percentile-High	**16.04**	**1.88**	**91.08**	**10.66**	**7.84**	**52.57**	
95th Percentile-Low	**20.46**	**1.94**	**86.23**	**8.62**	**7.64**	**11.36**	

Appendix D: 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 technology-based effluent limits, Part B discusses water quality-based effluent limits in general, and Part C discusses facility specific water quality-based effluent limits.

A. Technology-Based Effluent Limits

Federal Secondary Treatment Effluent Limits for BOD_5, TSS and pH

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 below.

Table 24. Secondary Treatment Effluent Limits (40 CFR § 133.102)

Parameter	Average Monthly Limit	Average Weekly Limit	Range
Biochemical Oxygen Demand (BOD_5)	30 mg/L	45 mg/L	---
Total Suspended Solids (TSS)	30 mg/L	45 mg/L	---
Removal Rates for BOD_5 and TSS	85% (minimum)	---	---
pH	---	---	6.0 - 9.0 s.u.

Chlorine

The Pocatello WPCF 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. 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.

EPA has determined that the technology-based effluent limit for chlorine is not sufficiently stringent to meet water quality standards. Refer to discussion on water quality-based effluent limits below.

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[11]

Following are the mass-based effluent limits for the technology-based effluent limits for BOD_5 and TSS.

Table 25. Mass-Based Effluent for BOD_5 and TSS

Parameter	Average Monthly Limit (lb/day)	Average Weekly Limit (lb/day)
Biochemical Oxygen Demand (BOD_5)	30 mg/L x 12 mgd x 8.34 = 3,002 Rounded to 3,000	45 mg/L x 12 mdg x 8.34 = 5,403 Rounded to 5,400
Total Suspended Solids (TSS)	30 mg/L x 12 mgd x 8.34 = 3,002 Rounded to 3,000	45 mg/L x 12 mgd x 8.34 = 5,403 Rounded to 5,400

B. Water Quality-Based Effluent Limitations (WQBELs)

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 by July 1, 1977. 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) prohibit the issuance of an NPDES permit that does not ensure compliance with the water quality standards of the 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.

C. Applicable Water Quality Standards (or Criteria)

Hardness-Dependent Metals and Toxics

The toxicities of some metals vary with the hardness of the water. Therefore, the water quality criteria for these metals also vary with hardness. EPA uses the hardness of the receiving water when mixed with the effluent to determine the water quality criteria for such metals. Since toxicity decreases (and numeric water quality criteria increase) as hardness

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[11] 8.34 is a conversion factor with units $(lb \times L)/(mg \times gallon \times 10^6)$

increases, EPA has used the 5th percentile of the effluent hardness as a worst-case assumption for effluent and ambient hardness.

The hardness-dependent water quality criteria for the metals of concern are expressed as dissolved metal. The dissolved fraction of the metal is the fraction that will pass through a 0.45-micron filter. However, the federal regulation at 40 CFR 122.45(c) requires that NPDES permit effluent limits must be expressed as total recoverable metal. Total recoverable metal is the concentration of the metal in an unfiltered sample. To develop effluent limits for total recoverable metals which are protective of the dissolved metals criteria, “translators” are used in the equations to determine reasonable potential and derive effluent limits. The table below shows the applicable criteria for metals based on the mixed hardness and other toxic chemicals that were detected in the effluent.

The EPA evaluated the potential of the discharge to have reasonable potential to cause or contribute to violations of Idaho’s water quality criteria for the pollutants that were found in detectable level in the effluent. See Appendices D for reasonable potential and effluent limit calculations for these pollutants.

Table 26. Applicable Numeric Criteria – High Flow – Nov. - June

Idaho - Numeric Criteria for Toxic Substances (IDAPA 50.01.02.210)

Sources: IDAPA 58.01.02; EPA National Recommended Water Quality Criteria

Receiving water Hardness, mg/L as	185	5th Percentile USGS data
Receiving pH	7.8	95th Percentile IDEQ Supplement Data
Receiving water TSS, mg/L (leave blank if unknown)		
If TSS is annual data, enter 'A'; if from critical period, enter 'S'; If no TSS,		
Criteria below calculated using:		
Acute Hardness, mg/L:	258.5	
Chronic Hardness, mg/L:	249.7	
Mixed Hardness:		
Apply 'Mixed Hardness' (Y/N)?:	Y	
Effluent Hardness, mg/L:	345.0	5th percentile WET data
Acute Mixed Hardness, mg/L:	258.5	based on RP worksheet
Chronic Mixed Hardness, mg/L:	249.7	based on RP worksheet

Pollutant	Select Pollutant of Concern or enter µg/L	Idaho (Number)	Priority Pollutant?	Carcinogen?	Aquatic Life Criteria, µg/L Acute	Aquatic Life Criteria, µg/L Chronic	Human Health Criteria Water and Organisms, µg/L	Human Health Criteria Organisms only, µg/L	Metals Translators Acute	Metals Translators Chronic
AMMONIA unionized	**23.57**	**0.1**	N	N						
ARSENIC (dissolved)	**2.3**	**2**	Y	Y	340	150			1.00	1.00
CADMIUM	**0.119**	**4**	Y	N	2.7	1.0	Narrative	Narrative	0.904	0.869
CARBON TETRACHLORIDE	**0.57**	**21**	Y	Y			0.23	1.6		
CHLORINE (Total Residual)	**80**	**121**	N	N	19	11				
CHLORODIBROMOMETHANE	**3.3**	**23**	Y	Y			0.400	13.000		
CHLOROFORM	**19**	**26**	Y	Y			5.700	470.000		
CHROMIUM(TRI)	**2.44**	**5**	N	N	1240	157	Narrative	Narrative	0.316	0.860
COPPER	**14.75**	**6**	Y	N	41.6	24.81			0.960	0.960
CYANIDE	**2.5**	**14**	Y	N	22	5.20	140	140		
DICHLOROBROMOMETHANE	**9.1**	**27**	Y	Y			0.550	17.000		
LEAD	**0.745**	**7**	Y	N	178.5	6.7	Narrative	Narrative	0.653	0.653
MERCURY	**0.53**	**8**	Y	N	Narrative	Narrative				
METHYLENE CHLORIDE	**0.45**	**36**	Y	Y			4.6	590.0		
NICKEL	**4.4**	**9**	Y	N	1046	112.8	610		0.998	0.997
SELENIUM - criteria expressed as to	**5**	**10**	Y	N	20	5	170.00			
SILVER	**0.4**	**11**	Y	N	17.7				0.85	na
TOLUENE	**0.81**	**39**	Y	N			1300	15000		
ZINC	**53.6**	**13**	Y	N	262	256	7400.00	26000.00	0.978	0.986

Table 27. Applicable Ammonia Criteria – High Flow – Nov. – June

Freshwater Un-ionized Ammonia Criteria Calculation

Based on IDAPA 58.01.02

INPUT	
1. Receiving Water Temperature (deg C):	16.0
2. Receiving Water pH:	7 84
3. Is the receiving water a cold water designated use?	Yes
4. Are non-salmonid early life stages present or absent?	Present
OUTPUT	
1. Unionized ammonia NH3 criteria (mg NH3/L)	
Acute:	0.184
Chronic:	0.039
Total ammonia nitrogen criteria (mg N/L):	
Acute Criterion (CMC)	**7.55**
Chronic Criterion (CCC)	**2.74**

Acute Criteria Equation:

$$\frac{0.275}{1+10^{7.204-pH}}+\frac{39}{1+10^{pH-7.204}}$$

Chronic Criteria Equation

$$\left(\frac{0.0577}{1+10^{7.688-pH}}+\frac{2.487}{1+10^{pH-7.688}}\right)\times MIN\left(2.85, 1.45\times10^{0.028\times(25-T)}\right)$$

Table 28. Applicable Numeric Criteria – Low Flow – July - Oct.

Idaho - Numeric Criteria for Toxic Substances (IDAPA 50.01.02.210)

Sources: IDAPA 58.01.02
EPA National Recommended Water Quality Criteria

Receiving water Hardness, mg/L as	185	5th Percentile USGS data
Receiving pH	7.6	95th Percentile IDEQ Supplement Data
Receiving water TSS, mg/L (leave blank if unknown)		
If TSS is annual data, enter 'A'; if from critical period, enter 'S'; If no TSS,		
Criteria below calculated using:		
Acute Hardness, mg/L:	278.4	
Chronic Hardness, mg/L:	268.5	
Mixed Hardness:		
Apply 'Mixed Hardness' (Y/N)?:	Y	
Effluent Hardness, mg/L:	345.0	5th percentile WET data
Acute Mixed Hardness, mg/L:	278.4	based on RP worksheet
Chronic Mixed Hardness, mg/L:	268.5	based on RP worksheet

Pollutant	Select Pollutant of Concern or enter µg/L	Idaho (Number)	Priority Pollutant?	Carcinogen?	Aquatic Life Criteria, µg/L Acute	Aquatic Life Criteria, µg/L Chronic	Human Health Criteria Water and Organisms, µg/L	Human Health Criteria Organisms only, µg/L	Metals Translators Acute	Metals Translators Chronic
AMMONIA unionized	23.57	0.1	N	N						
ARSENIC (dissolved)	2.3	2	Y	Y	340	150			1.00	1.00
CADMIUM	0.119	4	Y	N	2.8	1.0	Narrative	Narrative	0.901	0.866
CARBON TETRACHLORIDE	0.57	21	Y	Y			0.23	1.6		
CHLORINE (Total Residual)	80	121	N	N	19	11				
CHLORODIBROMOMETHANE	3.3	23	Y	Y			0.400	13.000		
CHLOROFORM	19	26	Y	Y			5.700	470.000		
CHROMIUM(TRI)	2.44	5	N	N	1318	166	Narrative	Narrative	0.316	0.860
COPPER	14.75	6	Y	N	44.6	26.40			0.960	0.960
CYANIDE	2.5	14	Y	N	22	5.20	140	140		
DICHLOROBROMOMETHANE	9.1	27	Y	Y			0.550	17.000		
LEAD	0.745	7	Y	N	192.9	7.2	Narrative	Narrative	0.642	0.642
MERCURY	0.53	8	Y	N	Narrative	Narrative				
METHYLENE CHLORIDE	0.45	36	Y	Y			4.6	590.0		
NICKEL	4.4	9	Y	N	1113	119.9	610		0.998	0.997
SELENIUM - criteria expressed as to	5	10	Y	N	20	5	170.00			
SILVER	0.4	11	Y	N	20.1				0.85	na
TOLUENE	0.81	39	Y	N			1300	15000		
ZINC	53.6	13	Y	N	279	273	7400.00	26000.00	0.978	0.986

Table 29. Applicable Ammonia Criteria – Low Flow – July – Oct.

Freshwater Un-ionized Ammonia Criteria Calculation

Based on IDAPA 58.01 02

INPUT	
1. Receiving Water Temperature (deg C):	20.5
2. Receiving Water pH:	7.64
3. Is the receiving water a cold water designated use?	Yes
4. Are non-salmonid early life stages present or absent?	Present
OUTPUT	
1. Unionized ammonia NH3 criteria (mg NH3/L)	
Acute:	0.228
Chronic:	0.031
Total ammonia nitrogen criteria (mg N/L):	
Acute Criterion (CMC)	**10.66**
Chronic Criterion (CCC)	**2.60**

Acute Criteria Equa ion:

$$\frac{0.275}{1+10^{7.204-\mathrm{pH}}}+\frac{39}{1+10^{\mathrm{pH}-7.204}}$$

Chronic Criteria Equation

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

D. Reasonable Potential Analysis

The EPA projects the receiving water concentration (downstream of where the effluent enters the receiving water) for each pollutant of concern when evaluating the effluent to determine if water quality-based effluent limits are needed. 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. The discharge has the reasonable potential to cause or contribute to an exceedance of the applicable water quality standard if the projected concentration of the pollutant in the receiving water exceeds the numeric criterion for that specific chemical. A water quality-based effluent limit is required if there is a reasonable potential of the pollutant to exceed the water quality criteria.

Mixing Zones

The methodology for estimating the dilution within the mixing zone at critical conditions is discussed in appendix C. If the IDEQ does not grant a mixing zone, the water quality-based effluent limits will be recalculated such that the criteria are met before the effluent is discharged to the receiving water.

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.

The criterion becomes the WLA when a mixing zone is not authorized. A mixing zone may not be authorized by the IDEQ because the receiving water already exceeds the criterion or the receiving water flow is too low to provide dilution, for example. 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, the EPA calculates effluent limits which are protective of the WLA using statistical procedures described in Appendix D.

E. Methodology for Determining Reasonable Potential

The following describes the process the 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 Idaho's federally approved water quality standards. The EPA uses the process described in the *Technical Support Document for Water Quality-based Toxics Control* (EPA, 1991) to determine reasonable potential.

The first step is 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. To determine if there is a reasonable potential, 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. This section discusses how the maximum projected receiving water concentration is determined.

Mass Balance to Determine Maximum Receiving Water Concentration

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:

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

Or in the case where the dilution factor is used to describe the allowable mixing.

Where the dilution factor is expressed as

$$\text{Dilution Factor} \qquad DF = \frac{Q_d + Q_{\text{critical flow}} \times (\text{percentage of river allowble for mixing})}{Q_d}$$

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,"

$$\text{Dilution Factor} \qquad DF = \frac{Q_d + Q_{\text{critical flow}} \times (\text{percentage of river allowble for mixing})}{Q_d} \qquad \text{(Equation D-5)}$$

Dilution factor were calculated based on low and high seasonal flows using the WPCF design flow. The following table provides the dilution factors used to calculate reasonable potential.

Table 30. Dilution Factors

Dilution Factors	Dilution Factor Low Flow (July - October)	Dilution Factor High Flow (November - June)
Dilution Factor - edge of Acute zone	1.7	2.2
Dilution Factor - edge of Chronic zone	1.9	2.5
Ammonia	2.1	2.8
Human Health - Non-Carcinogen	6.1	9.6
Human Health - Carcinogen	11.4	11.5

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.

Maximum Projected Effluent Concentration and Reasonable Potential Determination

The EPA has used the procedure described in section 3.3 of the TSD to calculate the maximum projected effluent concentration. The 99^{th} percentile of the effluent data is the maximum projected effluent concentration in the mass balance equation.

Since there are a limited number of data points available, the 99^{th} percentile is calculated by multiplying the maximum reported effluent concentration by a “reasonable potential multiplier” (RPM). The RPM is the ratio of the 99^{th} percentile concentration to the maximum reported effluent concentration. The RPM is calculated from the coefficient of variation (CV) of the data and the number of data points. The CV is defined as the ratio of the standard deviation of the data set to the mean, but when fewer than 10 data points are available, the TSD recommends making the assumption that the CV is equal to 0.6.

Using the equations in section 3.3.2 of the TSD, the reasonable potential multiplier (RPM) is calculated based on the CV and the number of samples in the data set as follows. The following discussion presents the equations used to calculate the RPM, and also works through the calculations for the RPM for copper as an example. Reasonable potential calculations for all pollutants are provided in the following table.

All pollutants for which there was a detectable level of the pollutant were evaluated for the reasonable potential to contribute to violations of the aquatic life criteria. It has been determined that ammonia and chlorine have the potential to contribute to violations of the standards during both the high and low river flow periods.

F. WQ-based Effluent Limitations for the Protection of Aquatic Life Criteria

The following calculations demonstrate how the water quality-based effluent limits (WQBELs) in the draft permit were calculated. The WQBELs ammonia and chlorine are intended to protect aquatic life criteria. The following discussion presents the general equations used to calculate the water quality-based effluent limits, then works through the calculations for the November-May copper WQBEL as an example. The calculations for all WQBELs based on aquatic life criteria are summarized in Table F-1.

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 (Equations D-6 and D-7). 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 D-6 is rearranged to solve for the WLA, becoming:

$$C_e = WLA = D \times (C_d - C_u) + C_u \qquad \text{(Equation F-1)}$$

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. 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 F-2. As discussed in Appendix C, the criteria translator (CT) is equal to the conversion factor, because site-specific translators are not available for this discharge.

$$C_e = WLA = \frac{D \times (C_d - C_u) + C_u}{CT} \qquad \text{(Equation F-2)}$$

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 EPA's *Technical Support Document for Water Quality-based Toxics Control* (TSD):

$$LTA_a = WLA_a \times \exp(0.5\sigma^2 - z\sigma) \qquad \text{(Equation F-3)}$$
$$LTA_c = WLA_c \times \exp(0.5\sigma_4^2 - z\sigma_4) \qquad \text{(Equation F-4)}$$

where,

$\sigma^2 = \ln(CV^2 + 1)$
$\sigma = \sqrt{\;}$
$\sigma_4^2 = \ln(CV^2/4 + 1)$
$\sigma_4 = \sqrt{\;}$
$z = 2.326$ for 99th percentile probability basis

Derive the maximum daily and average monthly effluent limits

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

$$MDL = LTA \times \exp(z_m\sigma - 0.5\sigma^2) \qquad \text{(Equation F-5)}$$
$$AML = LTA \times \exp(z_a\sigma_n - 0.5\sigma_n^2) \qquad \text{(Equation F-6)}$$

where σ, and σ^2 are defined as they are for the LTA equations (F-2 and F-3) and,

$\sigma_n^2 = \ln(CV^2/n + 1)$
$\sigma_n = \sqrt{}$
$z_a = 1.645$ for 95th percentile probability basis
$z_m = 2.326$ for 99th percentile probability basis
n = number of sampling events required per month (minimum of 4)

The following details the calculations for water quality-based effluent limits based on two-value aquatic life criteria.

The following tables show the calculations for the reasonable potential analysis and, where required, the WQ-based effluent limitations.

Ammonia and chlorine show a reasonable potential to contribute to violations of the WQS. WQ-based effluent limits were established for ammonia and chlorine on a seasonal basis.

Reasonable Potential Analysis - pH

The most stringent water quality criterion for pH is for the protection of aquatic life and aquaculture water supply. The pH criteria for these uses state that the pH must be no less than 6.5 and no greater than 9.0 standard units.

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. The draft permit requires that the effluent have a pH of no less than 6.5 and no greater than 9.0 standard units. The following table shows that under worst case receiving water conditions at both the high and low river flow conditions the WQ-based effluent limits have no reasonable potential in contributing to non-attainment of the surface water criteria for pH.

Table 31. Reasonable Potential Analysis for pH

Calculation of pH of a Mixture of Two Flows

Based on the procedure in EPA's DESCON program (EPA, 1988. Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling. USEPA Office of Water, Washington D.C.)

	High Flow (Nov-June)		Low Flow (July-Oct)		
INPUT	**Min Limit**	**Max Limit**	**Min Limit**	**Max Limit**	**Comments**
1. Dilution Factor at Mixing Zone Boundary	1.9	1.9	1.9	1.9	Chronic Dilution Factor at WPCF Design
2. Ambient/Upstream/Background Condi ions					
Temperature (deg C):	25.50	0.00	26.10	1.00	Min and max temperature for lower and upper pH, respectively, based on USGS data
pH:	8.20	8.80	8.20	8.80	5th and 95th percentile for lower limit and upper pH, respectively based on USGS Data
Alkalinity (mg $CaCO_3$/L):	132.00	132.00	132.00	132.00	Minimum based on WPCF upstream data
3. Effluent Characteris ics					
Temperature (deg C):	8.00	22.00	8.00	22.00	Max effluent 22, min effluent 8 based on DMR data
pH:	**6.50**	**9.00**	**6.50**	**9.00**	Limts estiablished based on WQS. Actual max effluent 7.6, min effluent 6.9.
Alkalinity (mg CaCO3/L):	389.00	389.00	389.00	389.00	Maximum based on WPCF effluent
OUTPUT					
1. Ionization Constants					
Upstream/Background pKa:	6.35	6.57	6.34	6.56	
Effluent pKa:	6.48	6.37	6.48	6.37	
2. Ionization Fractions					
Upstream/Background Ionization Frac ion:	0.99	0.99	0.99	0.99	
Effluent Ioniza ion Fraction:	0.51	1.00	0.51	1.00	
3. Total Inorganic Carbon					
Upstream/Background Total Inorganic Carbon (mg CaCO3/L):	134	133	134	133	
Effluent Total Inorganic Carbon (mg CaCO3/L):	763	390	763	390	
4. Condtions at Mixing Zone Boundary					
Temperature (deg C):	16.37	11.48	16.65	11.96	
Alkalinity (mg CaCO3/L):	266.15	266.15	266.15	266.15	
Total Inorganic Carbon (mg CaCO3/L):	462.42	267.00	462.41	266.99	
pKa:	6.41	6.45	6.41	6.45	
RESULTS					
pH at Mixing Zone Boundary:	**6.54**	**8.95**	**6.54**	**8.95**	Effluent limits based on WQS do not have a reasonable poten ial to contibute to viola ions of the pH standards.

Reasonable Potential Analysis – Temperature

The **current EPA- approved aquatic life criteria** for temperature are as follows:

Cold Water Aquatic Life:	Daily Average = 19°C; Max Daily = 22°C
	This criterion applies from July 16 – September 30.
	(see IDAPA 58.01.02.250.02.b)
Salmonid Spawning:	Daily Average = 9°C; Max Daily = 13°C
	This criterion is applicable from October 1 – July 15 (see IDAPA 58.01.02.250.02.f)
Wastewater Provision:	The wastewater must not affect the receiving water outside the mixing zone so that :…If the water is designated for cold water aquatic life, seasonal cold water aquatic life, or salmonid spawning, the induced variation is more than one (+1) degree C (see IDAPA 58.01.02.401.01.d).

On July 20, 2011 the IDEQ submitted the temporary changes to the criteria to the EPA for review and approval/disapproval. The EPA has not yet acted on these changes. Without approval by the EPA the new temperature criteria cannot be used in NPDES permits. However, because the new salmonid criteria may be approved by the EPA prior to final issuance of the permit, the EPA is providing an analysis of the current EPA-approved salmonid spawning temperature criteria (i.e., daily average of 9°C and a max Daily of 13°C), and an analysis of the State's newly adopted salmonid spawning temperature criteria.

The newly adopted salmonid aquatic life criteria for temperature are as follows:

Cold Water Aquatic Life:	Daily Average = 19°C; Max Daily = 22°C
	This criterion applies from June 1 – October 30.
Salmonid Spawning:	Maximum Weekly Maximum Temperature of 13°C
	This criterion is applicable from November 1 – May 31
Point Source Thermal Requirement:	Wastewater must not affect the receiving water outside the mixing zone so that (1) the temperature of the receiving water or of downstream waters will interfere with designated beneficial uses, and, (2) daily and seasonal temperature cycles characteristics of the water body are maintained.

If the EPA approves the newly adopted temperature criteria prior to final issuance of the permit, the effluent limits based on the newly adopted criteria will be incorporated into the final permit.

Continuous temperature monitoring of the effluent and the receiving water is necessary to determine daily average and daily maximum temperatures. The daily average and maximum temperatures of both the effluent and receiving water are necessary to accurately determine the reasonable potential to contribute to violations of the various temperature criteria.

The permit required the permittee to collected grab samples for temperature 5 days per week. Temperature data was reported on the DMR as a monthly average, monthly maximum and monthly minimum. The average of the monthly maximum temperatures was used to determine the effluent's impact on the receiving water, as below. In this case it would be overly restrictive to use the 95th percentile of the monthly maximum temperature since each value already represents the absolute maximum in a given month.

The reasonable potential to contribute to violations of the temperature standards were evaluated on the basis of a simple mix model as shown in the table below. There is insufficient daily data to fully evaluate compliance with temperature standard.

The permit will incorporate daily monitoring of effluent temperature, and the river temperature upstream and downstream from the point of discharge to better evaluate the need for temperature limits in the future.

Table 32. Reasonable Potential for Temperature

			High Flow Dilution 2.5		Low Flow Dilution 1.9						
Temp. in units of degree C Month	**Average of Monthly Max. Effluent Temp (DMR data)**	**Average Portneuf River Temp at T2B**	**Temp.at edge of Chronic Zone**	**Induced Variation High Flow**	**Temp. at edge of Chronic Zone**	**Induced Variation Low Flow**	**Spawning Criteria, Daily Average**	**Spawning Criteria, Daily Max**	**Cold Water Criteria, Daily Average**	**Cold Water Criteria, Daily Max**	**Reasonable Potential to Exceed any one Temp. Criteria**
Jan	13.4	7.5	9.8	2.4			9	13			Yes
Feb	13.6	7.9	10.2	2.3			9	13			Yes
Mar	14	10.0	11.6	1.6			9	13			Yes
Apr	15.4	13.0	14.0	1.0			9	13			Yes
May	17.4	14.6	15.7	1.1			9	13			Yes
Jun	19.6	16.1	17.5	1.4			9	13			Yes
Jul	21	17.2			19.2	2.0	9	13			Yes
Aug	21.4	16.9			19.3	2.3			19	22	Yes
Sep	20.6	15.5			18.2	2.7			19	22	No
Oct	19	13.1			16.2	3.1	9	13			Yes
Nov	17	6.8	10.9	4.1			9	13			Yes
Dec	15	4.1	8.5	4.4			9	13			No

Red indicates - based on limited data set river temp may exceed criteria
Induced Variaion - temperature that effluent added to the river temperture based on simple mixing.

Reasonable Potential Analysis – Whole Effluent Toxicity

Whole Effluent Toxicity (WET) refers to the aggregate toxic effect to aquatic organisms from all pollutants contained in a facility's effluent. At this time, the EPA is including a trigger in the draft permit, the rationale is explained below.

The Idaho water quality standards have a narrative criterion at IDAPA 58.01.02.200.02 that requires surface waters of the state to be free from toxic substances in concentrations that impair designated beneficial uses. This narrative criterion is the basis for establishing WET controls in NPDES permits (see 40 CFR 122.44(d)(1)). For protection against chronic effects to aquatic life the EPA recommends using 1.0 chronic toxic units (TUc) to the most sensitive of at least three test species (*EPA Region 10 Toxicity Training Tool*, Debra Denton, Jeff Miller, Robyn Stuber, September2007).

Chronic toxicity tests were conducted on the effluent from the facility according to procedures in the EPA's *Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms* (EPA-821-R-02-013). The procedures involved a 7-day static-renewal exposure to the effluent. The endpoints from these tests were *Ceriodaphnia dubia* survival and reproduction, and fathead minnow survival and growth. Toxicity tests from 2007 onward were provided with the application for permit renewal and were reviewed by the EPA.

WET testing from 2006 through July 2011 show no toxicity caused by the effluent, refer to Appendix B, Summary of DMR data. There is no reasonable potential for the effluent to cause toxicity, however, toxicity testing is required by the permit to continue to monitor for toxicity.

Low Flow (July –October)

$$C_e = \frac{(C_d \text{ x } Q_d) - (C_u \text{ X } Q_u)}{Q_e} = \frac{(1 \text{ X } ((68 \text{ x } 0.25) + 18.6)) - (0 \text{x } 68 \text{ x } 0.25)}{18.6} = 1.9 \text{ TU}_c$$

High Flow (November – June)

$$C_e = \frac{(C_d \text{ x } Q_d) - (C_u \text{ x } Q_u)}{Q_e} = \frac{(1 \text{ x } ((109 \text{ x } 0.25)+18.6)) - (0 \text{ x } 109 \text{ x } 0.25)}{18.6} = 2.5 \text{ TU}_c$$

Where
C_d = criterion not to be exceeded in the water body = 1 TUc
Q_d = receiving water flow downstream of the effluent discharge = Qu + Qe
C_e = allowable effluent concentration
Q_e = maximum effluent flow = 12 mgd = 18.6 cfs
C_u = upstream concentration of pollutant = 0 (no data available)
$_{Qu}$ = upstream flow = 68 cfs (July - October); 109 csf (November - June)
MZ = 25% =0.25

These triggers are included in the proposed permit. Any test results above these values will result in increased testing, and TIE/TRE if necessary.

Additionally, the toxicity testing on each organism must include a series of five test dilutions and a control. The dilution series must include the receiving water concentration (RWC), which is the dilution associated with the chronic toxicity trigger (i.e. 48% from May through September and 67% from October through May); two dilutions above the RWC, and two dilutions below the RWC. The receiving water concentration is calculated as follows:

RWC = $Q_e \div [(\text{Mixing Zone x } Q_u) + Q_e]$

RWC (low flow) =- 18.6/[0.25x68+18.6] x 100% = 52%

RWC (high flow) =- 18.6/[0.25x109+18.6] x 100% = 40%

Reasonable Potential Analysis - E. Coli

Calculation of E. Coli at Chronic Mixing Zone

INPUT		Data Source
Chronic Dilution Factor	2.5	
Ambient E. Coli, #/100 ml		No data available.
Effluent E. Coli- worst case, #/100 ml	126	Maximum monthly geomean during previous permit cycle 600 on 6-30-2007
Surface Water Criteria, #/100 ml	*126*	
OUTPUT		
E. Coli at Mixing Zone Boundary, #/100 ml	**36**	
Difference between mixed and ambient, #/100 ml	36	

Conclusion: At design flow, the discharge has no reasonable potential to violate water quality standards for E. Coli.

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a	126	Geometric Mean of 5 samples taken of over 3-7 days over a 30 day period.
b.i	576	Single sample max for secondary contact recreation.
b.ii	406	Single sample max for primary contact recreation.
b.iii	235	Single sample max forprimary contact and public swimming beachers recreation.

Calculation of E. Coli at Chronic Mixing Zone

INPUT		Data Source
Chronic Dilution Factor	1.9	
Ambient E. Coli, #/100 ml		No data available.
Effluent E. Coli- worst case, #/100 ml	126	Maximum monthly geomean during previous permit cycle 600 on 6-30-2007
Surface Water Criteria, #/100 ml	*126*	
OUTPUT		
E. Coli at Mixing Zone Boundary, #/100 ml	**43**	
Difference between mixed and ambient, #/100 ml	43	

Conclusion: At design flow, the discharge has no reasonable potential to violate water quality standards for E. Coli.

ID 58.01.02 251.01

a	126	Geometric Mean of 5 samples taken of over 3-7 days over a 30 day period.
b.i	576	Single sample max for secondary contact recreation.
b.ii	406	Single sample max for primary contact recreation.
b.iii	235	Single sample max forprimary contact and public swimming beachers recreation.

Reasonable Potential Analysis - Dissolved Oxygen

Calculation of Dissolved Oxygen at Chronic Mixing Zone

INPUT		**Data Source**
Chronic Dilution Factor	2.5	
Ambient DO Concentration, mg/L	7.5	5th percentile based on long term data USGS at Pocatello
Effluent DO Concentration, mg/L	6.3	DMR data minimum.
Effluent Immediate DO Demand, mg/L		Unknown
Surface Water Criteria, mg/L	6	
OUTPUT		
DO at Mixing Zone Boundary, mg/L	**7.01**	
DO decrease caused by effluent at chronic boundary, mg/L	**0.49**	

Conclusion: At design flow, the discharge has no reasonable potential to violate water quality standards for dissolved oxygen.

References: EPA/600/6-85/002b and EPA/430/9-82-011

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02.a	Cold Water	6 mg/L at all times. Exceptions for lakes and reservoirs.
02.f.	Salmonid Spawing	1-day min. 5.0 mg/L intergravel DO, 6.0 7-day average
03.a.	Seasonal Cold	6 mg/L at all times. Exceptions for lakes and reservoirs.
04.a.	Warn Water	5 mg/L at all times. Exceptions for lakes and reservoirs.

Calculation of Dissolved Oxygen at Chronic Mixing Zone

INPUT		**Data Source**
Chronic Dilution Factor	1 9	
Ambient DO Concentration, mg/L	7.5	5th percentile based on long term data USGS at Pocatello
Effluent DO Concentration, mg/L	6.3	DMR data minimum.
Effluent Immediate DO Demand, mg/L		Unknown
Surface Water Criteria, mg/L	6	
OUTPUT		
DO at Mixing Zone Boundary, mg/L	**6.87**	
DO decrease caused by effluent at chronic boundary, mg/L	**0.63**	

Conclusion: At design flow, the discharge has no reasonable potential to violate water quality standards for dissolved oxygen.

References: EPA/600/6-85/002b and EPA/430/9-82-011

<u>ID 58.01 02 250</u>

02.a	Cold Water	6 mg/L at all times. Exceptions for lakes and reservoirs.
02.f.	Salmonid Spawing	1-day min. 5.0 mg/L intergravel DO, 6.0 7-day average
03 a.	Seasonal Cold	6 mg/L at all times. Exceptions for lakes and reservoirs.
04 a.	Warn Water	5 mg/L at all times. Exceptions for lakes and reservoirs.

Reasonable Potential Analysis – Numeric Criteria

Table 33. Reasonable Potential and Limits for Aquatic Life Criteria – High Flow

Reasonable Potential Calculation **High Flow (Nov.-June)**

			Nov-June (high)	July - Oct (low)	IDEQ supplemental Data at T2B
Facility:	City of Pocatello WWTP		16.04	20.46	temperature - 95th Percentile
Water Body Type	Freshwater		7.84	7.64	pH - 95th Percentile

Water Designation	Dilution Factors	Basis (IDAPA 58.01.02 03. b)
Aquatic Life - Acute Criteria - Criterion Max. Concentration (CMC)	2.2	1Q10
Aquatic Life - Chronic Criteria - Criterion Continuous Concentration (CCC)	2.5	7Q10 or 4B3
Ammonia	2.8	30B3
Human Health - Non-Carcinogen	3.1	30Q5
Humn Health - carcinogen	3.6	Harmonic Mean Flow

Receiving Water Hardness = 185 mg/L

Pollutant			AMMONIA, Criteria as Total NH3	CHLORINE (Total Residual)	ARSENIC (dissolved)	CADMIUM	CHROMIUM(TRI)	COPPER	CYANIDE	LEAD	MERCURY	NICKEL	SELENIUM - criteria expressed as total recoverable	SILVER	ZINC
Effluent Data	# of Samples (n)		1366	1856	35	35	35	66	35	35	35	35	45	35	35
	Coeff of Variation (Cv)		0.6	0.6	0.2	0.77	0.77	0.57	0.23	0.48	1.27	0.57	0.7	0.64	0.14
	Effluent Concentration, µg/L (Max. or 95th Percentile)		23,570	80	2.3	0.119	2.44	14.75	2.5	0.745	0.53	4.4	1	0.4	53.6
	Calculated 50th percentile Effluent Conc. (when n>10)														
Mizing Zone Used	Aquatic Life - Acute		2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
	Aquatice Life - Chronic			2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
	Ammonia		2.8												
	Human Health - Non-Carcinogen			3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
	Humn Health - carcinogen			3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Receiving Water Data	90th Percentile Conc., µg/L		60.0		4.4			0		0					14.3
	Geo Mean, µg/L														
Water Quality Criteria	Aquatic Life Criteria, µg/L	Acute	7,547	19	340.000	2.683	1,240	42	22	178	Narrative	1,046	20	18	262
		Chronic	2,744	11	150.000	0.965	157	25	5	7	Narrative	113	5		256
	Human Health Water and Organism, µg/L		-	-	-	Narrative	Narrative	-	140	Narrative	-	610	170	-	7400
	Human Health, Organism Only, µg/L		-	-	-	Narrative	Narrative	-	140	Narrative	-	-	-	-	26000
	Metal Criteria Translator, decimal	Acute	-	-	1	0.9042693	0.316	0.96	-	0.6526256	-	0.998	-	0.85	0.978
		Chronic	-	-	1	0.8692693	0.86	0.96	-	0.6526256	-	0.997	-		0.986
	Carcinogen?		N	N	Y	N	N	N	N	N	N	N	N	N	N

Aquatic Life Reasonable Potential

σ	$\sigma 2=\ln(CV^2+1)$		0.555	0.555	0.198	0.682	0.682	0.530	0.227	0.455	0.980	0.530	0.631	0.586	0.139
Pn	$=(1\text{-confidence level})^{1/n}$	99%	0.997	0.998	0.877	0.877	0.877	0.933	0.877	0.877	0.877	0.877	0.903	0.877	0.877
Multiplier	$=\exp(2.3262\sigma-0.5\sigma^2)/\exp(\text{invnorm}(P_N)\sigma-$	99%	1.0	1.0	1.3	2.2	2.2	1.6	1.3	1.7	3.1	1.9	1.9	2.0	1.2
Max. conc.(ug/L) at		Acute	10,857	36.741	3.710	0.110	0.785	10.103	1.497	0.380	0.764	3.746	0.879	0.309	36.059
		Chronic	8,545	32.335	3.793	0.093	1.881	8.891	1.317	0.334	0.672	3.293	0.774	0.320	33.653
Reasonable Potential? Limit Required?			**YES**	**YES**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

Aquatic Life Limit Calculation

# of Compliance Samples Expected per month			20	20											
LTA Coeff. Var. (CV),	default = 0.6 or calculate from data		0.6	0.6											
Permit Limit Coeff. Var. (CV), decimal			0.6	0.6											
Waste Load	$C_d=(C_r x MZ_a)-C_{sa} x(MZ_a-1)$	Acute	16362.625	41.37											
	$C_d=(C_r x MZ_c)-C_{sc}*(MZ_c-1)$	Chronic	7496.42	27.22											
Long Term Averages, ι	WLAc x $\exp(0.5\sigma^2-2.326\sigma)$	Acute	5253.76	13.28											
	WLAa x $\exp(0.5\sigma^2-2.326\sigma)$ n =30	Chronic	5849.46	14.35											
Limiting LTA, ug/L	used as basis for limits calculation		5253.76	13.28											
Metal Translator or 1?			1.00	1.00											
Average Monthly Limit (AML), ug/L (n=30 ammonia)		95%	**6250**	**16**											
Maximum Daily Limit (MDL), ug/L		99%	**16365**	**41**											
Average Monthly Limit (AML), mg/L			**6.3**	**0.02**											
Maximum Daily Limit (MDL), mgL			**16.4**	**0.04**											
Average Monthly Limit (AML), lb/day			626	1.6	27	0	28.3	2	0	0	0	0	0	0	0
Maximum Daily Limit (MDL), lb/day			1638	4.1	66	1	74.2	9	0	0	0	0	0	0	0

Human Health Reasonable Potential

σ	$\sigma 2=\ln(CV^2+1)$								0.227			0.530	0.631		0.139
Pn	$=(1\text{-confidence level})^{1/n}$	95%				0.918	0.918		0.918	0.918		0.918	0.936		0.918
Multiplier		50%							0.73			0.48	0.38		0.82
Dilution Factor						3.1	3.1		3.1	3.1		3.1	3.1		3.1
Max Conc. at edge of Chronic Zone, ug/L									0.580			0.669	0.122		14.042
Reasonable Potential to exceed HH Water & Organism						NO	NO		**NO**	NO		**NO**	**NO**		**NO**
Reasonable Potential to exceed HH Organism only						NO	NO		**NO**	NO		**n/a**	**n/a**		**NO**

Human Health Limit Calculation

# of Compliance Samples Expected per month	
Average Monthly Effluent Limit, ug/L	
Maximum Daily Effluent Limit, ug/L	

Comments/Notes:

References: IDAPA 58.01.02

Technical Support Document for Water Quality-based Toxics Control US EPA March 1991 EPA/505/2-90-001 pages 56/99

Reasonable Potential Calculation **High Flow (Nov.-June)**

Facility:	City of Pocatello WWTP
Water Body Type	Freshwater

Water Designation
Aquatic Life - Acute Criteria - Criterion Max. Concentration (CMC)
Aquatic Life - Chronic Criteria - Criterion Continuous Concentration (CCC)
Ammonia
Human Health - Non-Carcinogen
Humn Health - carcinogen

Receiving Water Hardness = 185 mg/L

Pollutant			CARBON TETRACHLORIDE	CHLORODIBROMOMETHANE	CHLOROFORM	DICHLOROBROMOMETHANE	METHYLENE CHLORIDE	TOLUENE
Effluent Data	# of Samples (n)		4	10	10	10	4	4
	Coeff of Variation (Cv)		0.6	0.6	0 6	0.6	0.6	0.6
	Effluent Concentration, µg/L (Max. or 95th Percentile)		0.522	4.4	17 8	11	0.45	0.81
	Calculated 50th percentile Effluent Conc. (when n>10)			2.9	10 5	8.17		
Mizing Zone Used	Aquatic Life - Acute		2.2	2 2	2.2	2.2	2 2	2.2
	Aquatice Life - Chronic		2.5	2 5	2.5	2.5	2 5	2.5
	Ammonia							
	Human Health - Non-Carcinogen		3.1	3.1	3.1	3.1	3.1	3.1
	Humn Health - carcinogen		3.6	3 6	3.6	3.6	3 6	3.6
Receiving Water Data	90th Percentile Conc., µg/L							
	Geo Mean µg/L							
Water Quality Criteria	Aquatic Life Criteria, µg/L	Acute	0	0	0	0	0	0
		Chronic	0	0	0	0	0	0
	Human Health Water and Organism, µg/L		0.23	0.4	5.7	0.55	4.6	1300
	Human Health, Organism Only, µg/L		1.6	13	470	17	590	15000
	Metal Criteria Translator, decimal	Acute	-	-	-	-	-	-
		Chronic	-	-	-	-	-	-
	Carcinogen?		Y	Y	Y	Y	Y	N

Aquatic Life Reasonable Potential

σ	σ2=ln(CV^2+1)								
Pn	=(1-confidence level)$^{1/n}$	99%							
Multiplier	=exp(2.3262σ-0.5$σ^2$)/exp(invnorm(P_N)σ-	99%							
Max. conc (ug/L) at		Acute							
		Chronic							
Reasonable Potential? Limit Required?									

Aquatic Life Limit Calculation

# of Compliance Samples Expected per month									
LTA Coeff. Var. (CV),	default = 0 6 or calculate from data								
Permit Limit Coeff. Var. (CV), decimal									
Waste Load	C_d=(C_rxMZ_a)-C_{sa}x(MZ_a-1)	Acute							
	C_d=(C_rxMZ_c)-C_{sc}*(MZ_c-1)	Chronic							
Long Term Averages, u	WLAc x exp(0.5$σ^2$-2.326σ)	Acute							
	WLAa x exp(0.5$σ^2$-2.326σ) n =30	Chronic							
Limiting LTA, ug/L	used as basis for limits calculation								
Metal Translator or 1?									
Average Monthly Limit (AML), ug/L (n=30 ammonia)		**95%**							
Maximum Daily Limit (MDL), ug/L		**99%**							
Average Monthly Limit (AML), mg/L									
Maximum Daily Limit (MDL), mgL									
Average Monthly Limit (AML), lb/day			0	0	0	0	0	0	
Maximum Daily Limit (MDL), lb/day			0	0	0	0	0	0	

Human Health Reasonable Potential

σ	σ2=ln(CV^2+1)		0.555	0.555	0 555	0.555	0.555	0.555
Pn	=(1-confidence level)$^{1/n}$	95%	0.473	0.741	0.741	0.741	0.473	0.473
Multiplier		50%	1.04	0.70	0.70	0.70	1.04	1.04
Dilution Factor			3.6	3.6	3 6	3.6	3.6	3.1
Max Conc. at edge of Chronic Zone, ug/L			0.149	0.797	2 887	2.246	0.128	0.268
Reasonable Potential to exceed HH Water & Organism			**NO**	**YES**	**NO**	**YES**	**NO**	**NO**
Reasonable Potential to exceed HH Organism only			**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

Human Health Limit Calculation

# of Compliance Samples Expected per month		1		1		
Average Monthly Effluent Limit, ug/L		**1.5**		**2.0**		
Maximum Daily Effluent Limit, ug/L		**2.1**		**2.9**		

Comments/Notes:
References: IDAPA 58 01.02
Technical Support Document for Water Quality-based Toxics Control US EPA March 1991 EPA/505/2-90-001 pages 56/99

Table 34. Reasonable Potential and Limits for Aquatic Life Criteria –Low Flow

Reasonable Potential Calculation **Low Flow (July-Oct.)**

			Nov-June (high)	July - Oct (low)	IDEQ supplemental Data at T2B
Facility:	City of Pocatello WWTP		16.04	20.46	temperature - 95th Percentile
Water Body Type	Freshwater		7.84	7.64	pH - 95th Percentile

Water Designation	Dilution Factors	Basis (IDAPA 58.01.02 03. b)
Aquatic Life - Acute Criteria - Criterion Max. Concentration (CMC)	1.7	1Q10
Aquatic Life - Chronic Criteria - Criterion Continuous Concentration (CCC)	1.9	7Q10 or 4B3
Ammonia	2.1	30B3
Human Health - Non-Carcinogen	2.3	30Q5
Humn Health - carcinogen	3.6	Harmonic Mean Flow

Receiving Water Hardness = 185 mg/L

Pollutant			AMMONIA, Criteria as Total NH3	CHLORINE (Total Residual)	ARSENIC (dissolved)	CADMIUM	CHROMIUM(TRI)	COPPER	CYANIDE	LEAD	MERCURY	NICKEL	SELENIUM - criteria expressed as total recoverable	SILVER	ZINC
Effluent Data	# of Samples (n)		1366	1856	35	35	35	66	35	35	35	35	45	35	35
	Coeff of Variation (Cv)		0.6	0.6	0.2	0.77	0.77	0.57	0.23	0.48	1.27	0.57	0.7	0.64	0.14
	Effluent Concentration, µg/L (Max. or 95th Percentile)		23,570	80	2.3	0.119	2.44	14.75	2.5	0.745	0.53	4.4	1	0.4	53.6
	Calculated 50th percentile Effluent Conc. (when n>10)														
Mizing Zone Used	Aquatic Life - Acute		1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
	Aquatice Life - Chronic			1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
	Ammonia		2.1												
	Human Health - Non-Carcinogen			2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
	Humn Health - carcinogen			3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Receiving Water Data	90th Percentile Conc., µg/L		60.0		4.4			0		0					14.3
	Geo Mean, µg/L														
Water Quality Criteria	Aquatic Life Criteria, µg/L	Acute	10,660	19	340.000	2.845	1,318	45	22	193	Narrative	1,113	20	20	279
		Chronic	2,603	11	150.000	1.006	166	26	5	7	Narrative	120	5		273
	Human Health Water and Organism, µg/L		-	-	-	Narrative	Narrative	-	140	Narrative	-	610	170	-	7400
	Human Health, Organism Only, µg/L		-	-	-	Narrative	Narrative	-	140	Narrative	-	-	-	-	26000
	Metal Criteria Translator, decimal	Acute	-	-	1	0.901169	0.316	0.96	-	0.6418281	-	0.998	-	0.85	0.978
		Chronic	-	-	1	0.866169	0.86	0.96	-	0.6418281	-	0.997	-		0.986
	Carcinogen?		N	N	Y	N	N	N	N	N	N	N	N	N	N

Aquatic Life Reasonable Potential

			AMMONIA	CHLORINE	ARSENIC	CADMIUM	CHROMIUM(TRI)	COPPER	CYANIDE	LEAD	MERCURY	NICKEL	SELENIUM	SILVER	ZINC
σ	σ2=ln(CV²+1)		0.555	0.555	0.198	0.682	0.682	0.530	0.227	0.455	0.980	0.530	0.631	0.586	0.139
Pn	=(1-confidence level)$^{1/n}$	99%	0.997	0.998	0.877	0.877	0.877	0.933	0.877	0.877	0.877	0.877	0.903	0.877	0.877
Multiplier	=exp(2.3262σ-0.5σ²)/exp(invnorm(P_N)σ-	99%	1.0	1.0	1.3	2.2	2.2	1.6	1.3	1.7	3.1	1.9	1.9	2.0	1.2
Max. conc.(ug/L) at		Acute	13,778	46.681	3.524	0.139	0.998	12.836	1.901	0.475	0.971	4.759	1.117	0.393	41.946
		Chronic	11,377	41.759	3.616	0.119	2.429	11.483	1.701	0.425	0.868	4.253	1.000	0.414	39.294
Reasonable Potential? Limit Required?			YES	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

Aquatic Life Limit Calculation

			AMMONIA	CHLORINE	ARSENIC	CADMIUM	CHROMIUM(TRI)	COPPER	CYANIDE	LEAD	MERCURY	NICKEL	SELENIUM	SILVER	ZINC
# of Compliance Samples Expected per month			20	20											
LTA Coeff. Var. (CV),	default = 0.6 or calculate from data		0.6	0.6											
Permit Limit Coeff. Var. (CV), decimal			0.6	0.6											
Waste Load	C_d=(C_rxMZ_a)-C_{sa}x(MZ_a-1)	Acute	18225.519	32.56											
	C_d=(C_rxMZ_c)-C_{sc}*(MZ_c-1)	Chronic	5341.79	21.07											
Long Term Averages, u	WLAc x exp(0.5σ²-2.326σ)	Acute	5851.91	10.45											
	WLAa x exp(0.5σ²-2.326σ) n=30	Chronic	4168.20	11.11											
Limiting LTA, ug/L	used as basis for limits calculation		4168.20	10.45											
Metal Translator or 1?			1.00	1.00											
Average Monthly Limit (AML), ug/L (n=30 ammonia)		95%	**4958**	**12**											
Maximum Daily Limit (MDL), ug/L		99%	**12984**	**32**											
Average Monthly Limit (AML), mg/L			**4.96**	**0.01**											
Maximum Daily Limit (MDL), mgL			**12.98**	**0.03**											
Average Monthly Limit (AML), lb/day			496	1.2	21	0	23.2	2	0	0	0	0	0	0	0
Maximum Daily Limit (MDL), lb/day			1299	3.2	52	0	60.9	8	0	0	0	0	0	0	0

Human Health Reasonable Potential

			AMMONIA	CHLORINE	ARSENIC	CADMIUM	CHROMIUM(TRI)	COPPER	CYANIDE	LEAD	MERCURY	NICKEL	SELENIUM	SILVER	ZINC
σ	σ2=ln(CV²+1)								0.227			0.530	0.631		0.139
Pn	=(1-confidence level)$^{1/n}$	95%				0.918	0.918		0.918	0.918		0.918	0.936		0.918
Multiplier		50%							0.73			0.48	0.38		0.82
Dilution Factor						2.3	2.3		2.3	2.3		2.3	2.3		2.3
Max Conc. at edge of Chronic Zone, ug/L									0.800			0.923	0.168		19.371
Reasonable Potential to exceed HH Water & Organism						NO	NO		**NO**	NO		**NO**	**NO**		**NO**
Reasonable Potential to exceed HH Organism only						NO	NO		**NO**	NO		**n/a**	**n/a**		**NO**

Human Health Limit Calculation

# of Compliance Samples Expected per month	
Average Monthly Effluent Limit, ug/L	
Maximum Daily Effluent Limit, ug/L	

Comments/Notes:

References: IDAPA 58.01.02

Technical Support Document for Water Quality-based Toxics Control, US EPA, March 1991, EPA/505/2-90-001, pages 56/99

Reasonable Potential Calculation **Low Flow (July-Oct.)**

Facility:	City of Pocatello WWTP
Water Body Type	Freshwater

Water Designation
Aquatic Life - Acute Criteria - Criterion Max. Concentration (CMC)
Aquatic Life - Chronic Criteria - Criterion Continuous Concentration (CCC)
Ammonia
Human Health - Non-Carcinogen
Humn Health - carcinogen

Receiving Water Hardness = 185 mg/L

Pollutant			CARBON TETRACHLORIDE	CHLORODIBROMOMETHANE	CHLOROFORM	DICHLOROBROMOMETHANE	METHYLENE CHLORIDE	TOLUENE
Effluent Data	# of Samples (n)		4	10	10	10	4	4
	Coeff of Variation (Cv)		0.6	0.6	0.6	0 6	0 6	0 6
	Effluent Concentration, µg/L (Max. or 95th Percentile)		0.522	4.4	17.8	11	0.45	0 81
	Calculated 50th percentile Effluent Conc. (when n>10)			2.9	10.5	8.17		
Mizing Zone Used	Aquatic Life - Acute		1.7	1.7	1.7	1.7	1.7	1.7
	Aquatice Life - Chronic		1.9	1.9	1.9	1.9	1.9	1.9
	Ammonia							
	Human Health - Non-Carcinogen		2.3	2.3	2.3	2.3	2.3	2.3
	Humn Health - carcinogen		3.6	3.6	3.6	3.6	3.6	3.6
Receiving Water Data	90th Percentile Conc., µg/L							
	Geo Mean, µg/L							
Water Quality Criteria	Aquatic Life Criteria, µg/L	Acute	0	0	0	0	0	0
		Chronic	0	0	0	0	0	0
	Human Health Water and Organism, µg/L		0.23	0.4	5.7	0 55	4 6	1300
	Human Health, Organism Only, µg/L		1.6	13	470	17	590	15000
	Metal Criteria Translator, decimal	Acute	-	-	-	-	-	-
		Chronic	-	-	-	-	-	-
	Carcinogen?		Y	Y	Y	Y	Y	N

Aquatic Life Reasonable Potential

σ	$\sigma 2=\ln(CV^2+1)$			
Pn	$=(1\text{-confidence level})^{1/n}$		99%	
Multiplier	$=\exp(2.3262\sigma-0.5\sigma^2)/\exp(\text{invnorm}(P_N)\sigma-$		99%	
Max. conc.(ug/L) at		Acute		
		Chronic		
Reasonable Potential? Limit Required?				

Aquatic Life Limit Calculation

# of Compliance Samples Expected per month									
LTA Coeff. Var. (CV),	default = 0.6 or calculate from data								
Permit Limit Coeff. Var. (CV), decimal									
Waste Load	$C_d=(C_r x MZ_a)-C_{sa}x(MZ_a-1)$	Acute							
	$C_d=(C_r x MZ_c)-C_{sc}*(MZ_c-1)$	Chronic							
Long Term Averages, ι	WLAc x $\exp(0.5\sigma^2$-2 326σ)	Acute							
	WLAa x $\exp(0.5\sigma^2$-2 326σ) n=30	Chronic							
Limiting LTA, ug/L	used as basis for limits calculation								
Metal Translator or 1?									
Average Monthly Limit (AML), ug/L (n=30 ammonia)		**95%**							
Maximum Daily Limit (MDL), ug/L		**99%**							
Average Monthly Limit (AML), mg/L									
Maximum Daily Limit (MDL), mgL									
Average Monthly Limit (AML), lb/day				0	0	0	0	0	0
Maximum Daily Limit (MDL), lb/day				0	0	0	0	0	0

Human Health Reasonable Potential

			CARBON TETRACHLORIDE	CHLORODIBROMOMETHANE	CHLOROFORM	DICHLOROBROMOMETHANE	METHYLENE CHLORIDE	TOLUENE
σ	$\sigma 2=\ln(CV^2+1)$		0.555	0 555	0 555	0 555	0 555	0 555
Pn	$=(1\text{-confidence level})^{1/n}$	95%	0.473	0.741	0.741	0.741	0.473	0.473
Multiplier		50%	1.04	0.70	0.70	0.70	1 04	1 04
Dilution Factor			3.6	3.6	3.6	3 6	3 6	2 3
Max Conc. at edge of Chronic Zone, ug/L			0.151	0 806	2 917	2 270	0.130	0 369
Reasonable Potential to exceed HH Water & Organism			**NO**	**YES**	**NO**	**YES**	**NO**	**NO**
Reasonable Potential to exceed HH Organism only			**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

Human Health Limit Calculation

	CARBON TETRACHLORIDE	CHLORODIBROMOMETHANE	CHLOROFORM	DICHLOROBROMOMETHANE	METHYLENE CHLORIDE	TOLUENE
# of Compliance Samples Expected per month		1		1		
Average Monthly Effluent Limit, ug/L		**1.4**		**2.0**		
Maximum Daily Effluent Limit, ug/L		**2.1**		**2.9**		

Comments/Notes:

References: IDAPA 58 01.02
Technical Support Document for Water Quality-based Toxics Control US EPA March 1991 EPA/505/2-90-001 pages 56/99

G. Calculate TMDL-based Effluent Limits for TSS and Phosphorus

The TMDL established the following load allocations at **average monthly limits**.

TSS = 1.5 tons/day or 3,000 lbs/day

Phosphorus = 25.1 lbs/day

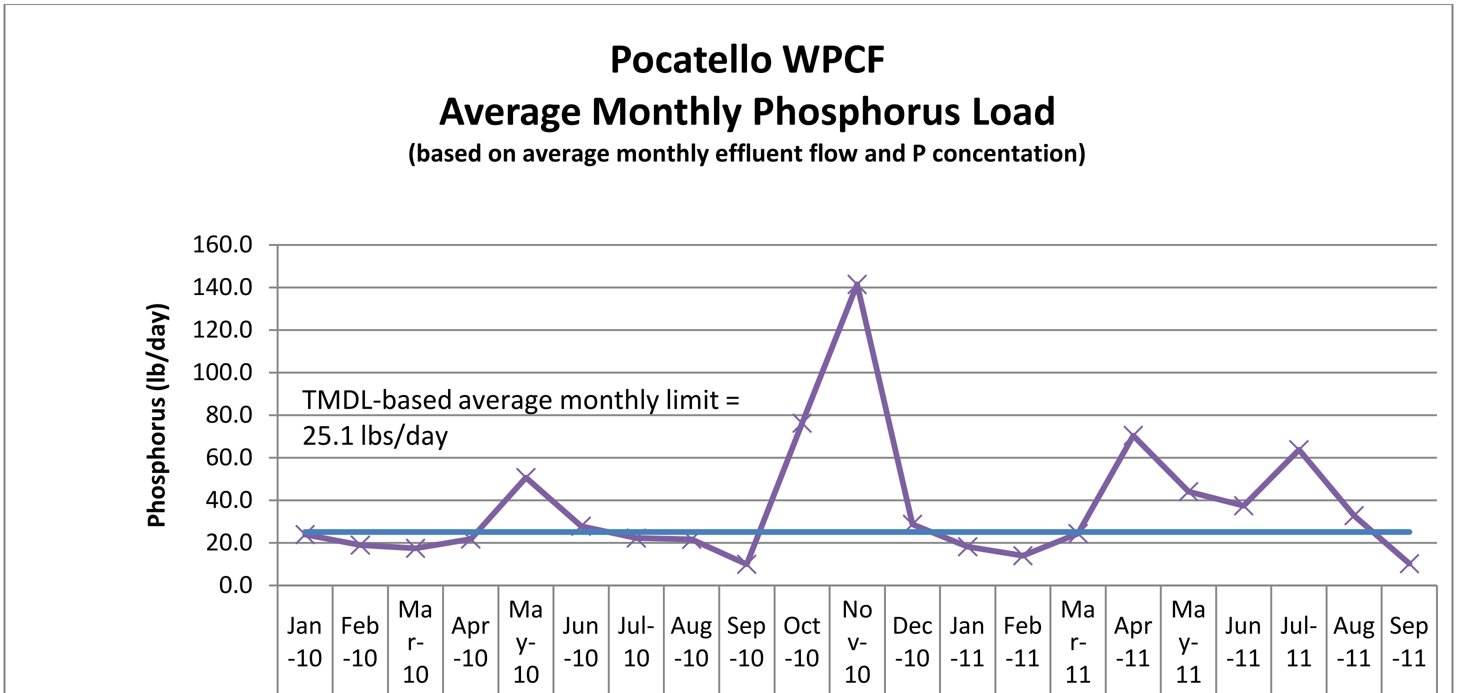
The weekly average limit for phosphorus is based on the historic variability in the effluent data as follows:

	Statistics	units		Phophorus	Weekly Average
Using data from Pocatello Jan. 2010-Oct. 2011	Average	mg/L		35.4	36.1
	Minimum	mg/L		7.2	7.7
	Maximum	mg/L		504.1	315.0
	Count	mg/L		472.0	95.0
	Std Dev	mg/L		51.2	
	CV	**mg/L**		**1.4**	
	95th Percentile	mg/L		145.1	122.5
	5th Percentile	mg/L		9.2	9.8
Method per TSD-Dynamic Model					
reference page 106	**samples per week**	**n=**		**3.0**	
	samples per month	**n=**		**12.0**	
	LTA Multiplier-AWL		0.99	4.2	formula modified to use weekly number of samples.
	LTA Multiplier-AML		0.95	1.8	
	Factor = AWL/AML			**2.34**	
Average Monthly Limit	AML	lb/day		**25.1**	TMDL mass based limit
Average Weekly Limit	AWL=AML x Factor	lb/day		**58.7**	Applied on a weekly average basis for POTW per 40 CFR § 122.45(d)(2)

In addition, a **weekly average limit** will be imposed at 1.5 times the daily maximum limit.

TSS = 1.5 x 3,000 lbs/day = 4,500 lbs/day

The following graphs show the historical performance for TSS and phosphorus. The facility is unable to meet the phosphorus limit at this time. The permit allows for a compliance schedule for the WPCF to design and construct the necessary treatment process to increase the removal of phosphorus, refer to compliance schedule discussion.



	Jan-10	Feb-10	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11
Average P load	23.9	18.9	17.4	21.7	50.7	27.8	22.2	21.6	9.9	76.1	141.	28.7	18.1	13.9	24.3	70.4	44.0	37.4	63.7	32.8	10.2
AML	25.1	25.1	25.1	25.1	25.1	25.1	25.1	25.1	25.1	25.1	25.1	25.1	25.1	25.1	25.1	25.1	25.1	25.1	25.1	25.1	25.1
Ave. Monthly P mg/L	0.41	0.32	0.30	0.37	0.87	0.48	0.38	0.37	0.17	1.29	2.41	0.49	0.31	0.24	0.42	1.20	0.76	0.64	1.09	0.56	0.18

Figure 9. Historic Phosphorus Load

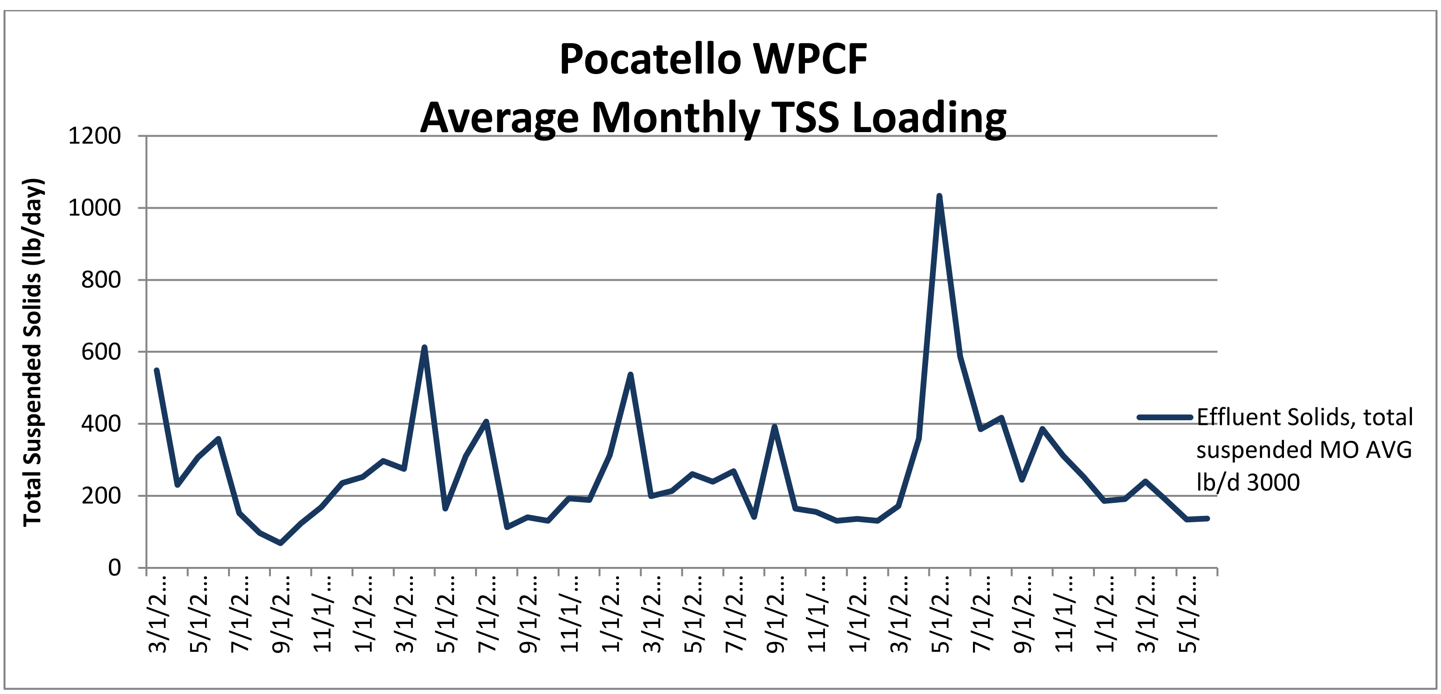


Figure 10. Historic TSS Load

Appendix E: No Effect Determination

Section 7 of the Endangered Species Act (ESA) requires federal agencies to consult with the National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS) and the U. S. Fish and Wildlife Service (USFWS) if their actions could beneficially or adversely affect any threatened or endangered species and/or their critical habitat. EPA has reviewed the ESA-listed species and critical habitat data on each of the agency's websites. EPA determines that the reissuance of the NPDES permit to the City of Pocatello for discharges of treated municipal wastewater to the Portneuf River will have "no effect" on any of the threatened or endangered species or their critical habitat in the vicinity of the discharges. Additionally, EPA determines that the reissuance of the NPDES permit will not adversely affect Essential Fish Habitat (EFH).

The information below summarizes the threatened and endangered species in the State of Idaho and in the vicinity of the discharges.

Threatened and Endangered Species in Idaho
http://www.fws.gov/idaho/species/T&E/TE072611IFWOREV.pdf

Mammals	
Selkirk Mountain caribou (*Rangifer tarandus caribou*)	Endangered
Canada lynx (*Lynx canadensis*)	Threatened, Designated Critical Habitat
Grizzly bear (*Ursus arctos horribilis*)	Threatened
Northern Idaho ground squirrel (*Spermophilus brunneus brunneus*)	Threatened
Fish	
Kootenai River white sturgeon (*Acipenser transmontanus*)	Endangered, Designated Critical Habitat
Bull trout (*Salvelinus confluentus*)	Threatened, Coterminous listing; Designated Critical Habitat ***NOAA Fisheries Jurisdiction***
Sockeye salmon (*Oncorhynchus nerka*)	Endangered
Spring/Summer chinook salmon (*Oncorhynchus tshawytscha)*	Threatened
Fall chinook salmon (*Oncorhynchus tshawytscha*)	Threatened
Steelhead trout (*Oncorhynchus mykiss*)	Threatened
Plants	
MacFarlane's four-o'clock (*Mirabilis macfarlanei*)	Threatened
Water howellia (*Howellia aquatilis)*	Threatened
Ute ladies'- tresses (*Spiranthes diluvialis*)	Threatened
Spalding's catchfly (*Silene spaldingii*)	Threatened
Slickspot peppergrass *(Lepidium papilliferum)*	Threatened
Invertebrates	
Snake River physa snail (*Haitia (Physa) natricina*)	Endangered
Bliss Rapids snail (*Taylorconcha serpenticola*)	Threatened
Banbury Springs lanx (*Lanx* sp.)	Endangered
Bruneau hot springsnail (*Pyrgulopsis bruneauensis*)	Endangered
Birds	
None listed currently in Idaho	

There are no listed endangered or threatened species present in the vicinity of the NPDES discharges of treated wastewater to the Portneuf River. A search of both Bannock County and neighboring Power County show only the following candidate species.

http://ecos.fws.gov/tess_public/countySearch!speciesByCountyReport.action?fips=16077

Group	Name	Population	Status	Lead Office
Birds	Yellow-billed Cuckoo (Coccyzus americanus)	Western U.S. DPS	Candidate	Sacramento Fish And Wildlife Office
Birds	Greater sage-grouse (Centrocercus urophasianus)	entire	Candidate	Wyoming Ecological Services Field Office
Mammals	Gray wolf (Canis lupus)	Northern Rocky Mountain DPS (delisted, except WY)	Recovery	Office Of The Regional Director

U.S Fish & Wildlife Service shows no designated critical habitat information in either Bannock or Power counties. http://criticalhabitat.fws.gov/crithab/. Critical habitat designations are shown in red.

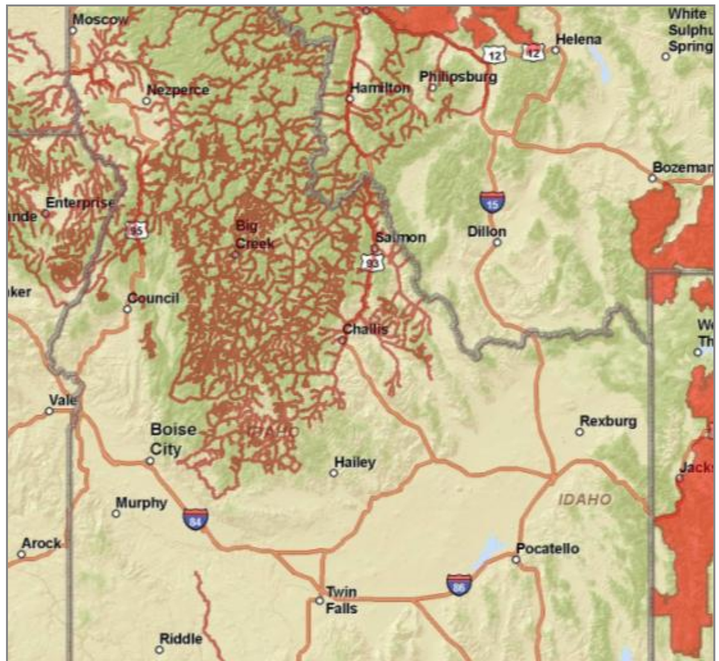


Figure 11. Critical Habitat

NOAA's Essential Fish Habitat Mapper (http://sharpfin.nmfs.noaa.gov/website/EFH_Mapper/map.aspx) shows no essential fish habitat areas in the vicinity of the proposed action. EFH areas are shown in yellow.

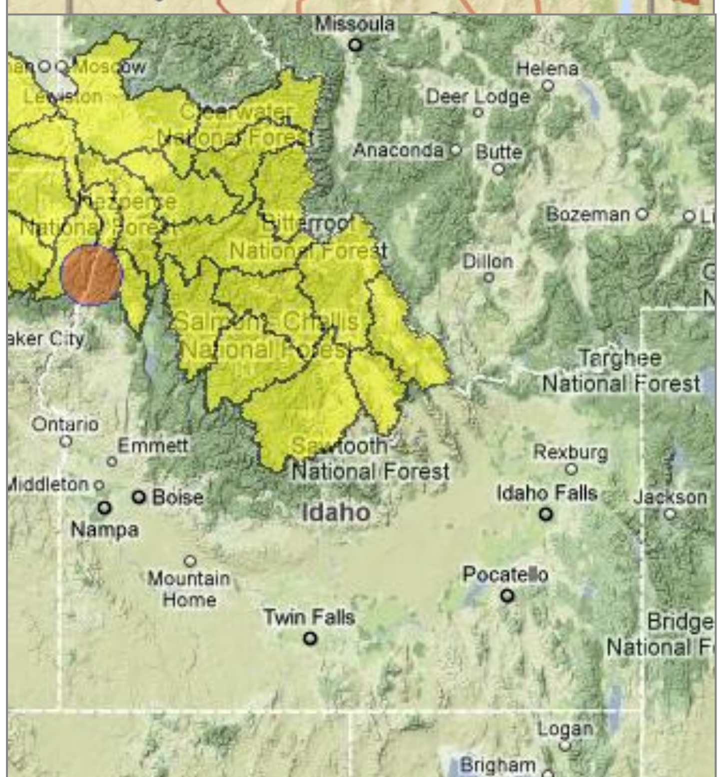


Figure 12. Essential Fish Habitat

Appendix F: Tribal Consultation

The Shoshone-Bannock Tribes were invited to consult on the preliminary draft NPDES permit on February 17, 2012. No comments were received by the date requested, March 22, 2012.

Appendix G: State Certification

The Idaho Department of Environmental Quality provided draft 401 Certification on March 28, 2012. The final 401 Certification will be completed after the public comment period.