Fact Sheet

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Technical Contact: Karen Burgess, PE
206-553-1644
800-424-4372, ext. 1644 (within Alaska, Idaho, Oregon and Washington)
Burgess.Karen@epa.gov

U.S. Environmental Protection Agency Region 10
M/S OWW-130
1200 Sixth Ave, Suite 900
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)

South Fork Coeur d'Alene River Sewer District
Mullan Wastewater Treatment Plant (WWTP)

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
Coeur d'Alene Regional Office
2110 Ironwood Parkway

Coeur d'Alene, ID 83814
(208) 769-1404 or toll-free at (887) 370-0017

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://yosemite.epa.gov/r10/WATER.NSF/NPDES+Permits/DraftPermitsID.

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

U.S. Environmental Protection Agency
Coeur d'Alene Field Office
1910 NW Boulevard
Coeur d'Alene, ID 83814
(208) 664-4588

Idaho Department of Environmental Quality
Coeur d'Alene Regional Office
2110 Ironwood Parkway
Coeur d'Alene, ID 83814
(208) 769-1404 or toll-free at (887) 370-0017

Kellogg Public Library
16 West Market Ave.
Kellogg, ID 83837
(208) 786-7231

Mullan Public Library
117 Hunter Ave.
Mullan, ID 83846
(208) 744-1220

Osburn Public Library
921 East Mullan Ave.
Osburn, ID 83849
(208) 752-9711

Kootenai-Shoshone Area Libraries – Pinehurst Branch
107 Main Ave.
Pinehurst, ID 83850
(208) 682-4579

Wallace Public Library
415 River Street
Wallace, Idaho 83873
(208) 752-4571

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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:

South Fork Coeur d'Alene River Sewer District
Mullan Wastewater Treatment Plant
NPDES Permit No. ID0021296

Contact:
Ross Stout, District Manager
208-753-8041

Physical Address:
Mullan Wastewater Treatment Plant
191 Mill Road
Mullan, ID 83846

Mailing Address:
1020 Polaris Ave.
Osburn, ID 83849

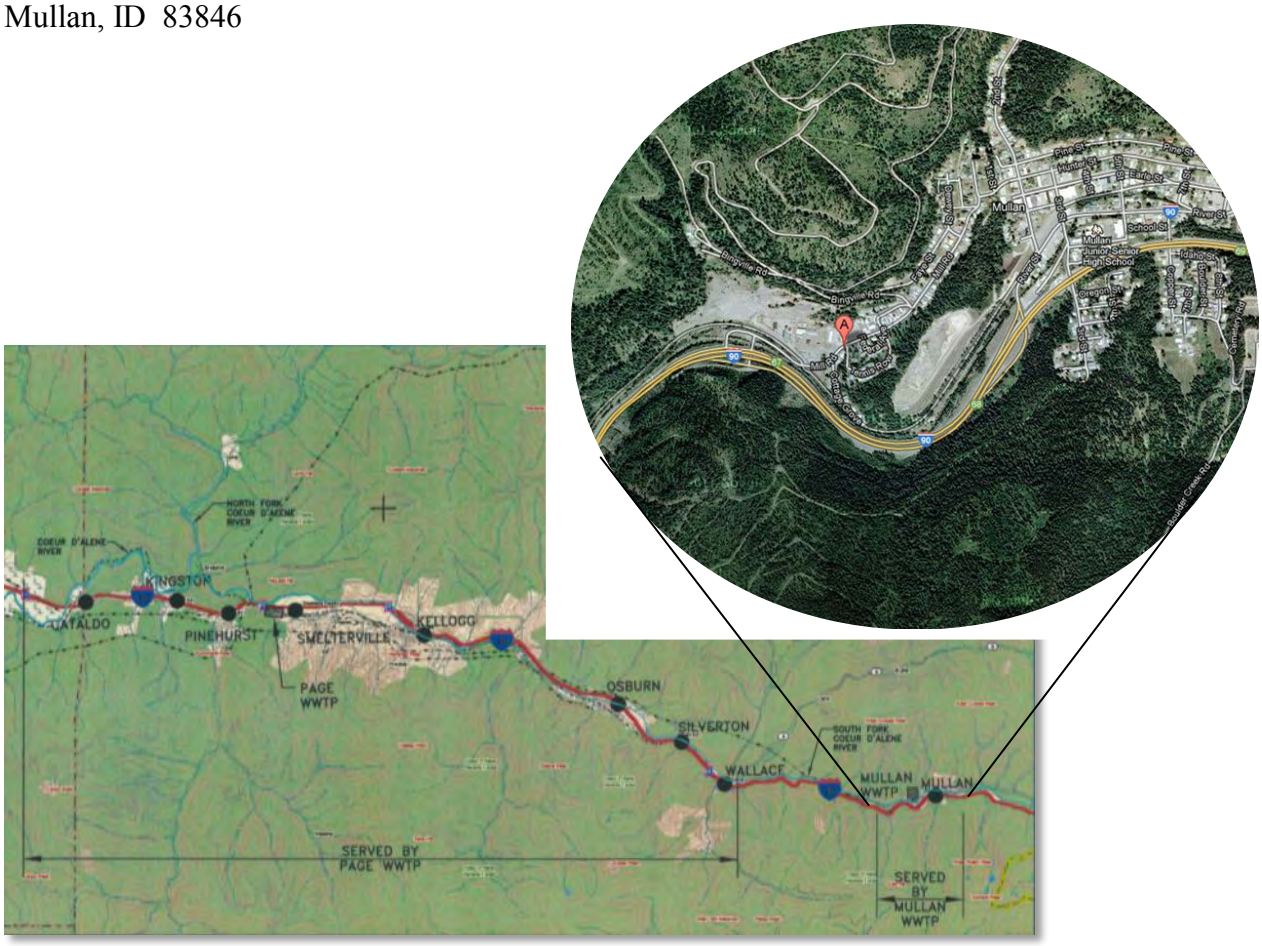


Figure 1. Vicinity Map

B. Permit History

The facility's previous permit became effective on August 1, 2004 and expired on August 1, 2009. A complete application for permit reissuance was submitted to the EPA on January 26, 2009. Since the permit was not reissued before the expiration date of August 1, 2009 and the District submitted a timely application, the permit was administratively extended pursuant to 40 CFR § 122.6.

II. Facility Information

A. Treatment Plant Description

The South Fork Coeur d'Alene River Sewer District (the "District") owns, operates, and maintains the Mullan wastewater treatment plant (WWTP) located in Mullan, Idaho, Shoshone County. The secondary treatment facility has been active since 1975. The Mullan WWTP treats domestic sewage from the City of Mullan. There are no industrial discharges to the system. The influent to the WWTP sewage is pumped from a wet well to the comminutor basin where solids are shredded to small pieces. The wastewater flows into one of two aeration basins for biological treatment before flowing to the secondary clarifiers. The clarifier settles out the sludge before the effluent is disinfected with chlorine and then dechlorinated with sodium bisulfate before discharge to the South Fork Coeur d'Alene River.

A map showing the location of the Page WWTP and details about the wastewater treatment processes (including a process diagram) are provided in Appendix A (page 37).

B. Permit Compliance

Compliance with Effluent Limitations

The EPA reviewed the discharge monitoring report (DMR) data for period from August 2004 through July 2011. DMR data for this period is presented in Appendix B: Discharge Monitoring Report Summary and Effluent Data (page 39).

The facility faced numerous compliance issues during the permit cycle and the extended permit period including violations of the effluent limitations for chlorine, *E. coli*, ammonia, cadmium and zinc. The current permit incorporates a variance from the water quality standards for cadmium and zinc. The facility was unable to achieve the water quality-based limits by the end of the permit cycle. The IDEQ issued a new variance that became effective on July 31, 2009 thus the final permit limits were never in effect. For additional information on violations refer to the DMR summary in Appendix B, violations are highlighted.

Receiving Water Testing

The permittee conducted receiving water monitoring as required by the permit as shown in Appendix B (page 39). This information was used to inform appropriate permit limits in the proposed permit.

Variance Reporting Requirements

The 2004 permit included a variance from the water quality standards and associated effluent limits for cadmium and zinc. The permit also included specific Variance Requirements to

demonstrate progress toward meeting the much lower water-quality based effluent limits. The permittee submitted annual reports and completed other milestones as required.

Best Management Practices (BMPs)

The permittee was required to incorporate specific BMPs into the Operations and Maintenance Plan by February 2005. This was done. The permittee should continue to identify and address BMPs to enhance and ensure compliance with effluent limitations.

Facility Planning

The permittee was required to begin facility planning when influent hydraulic or organic loading exceeded 85% of the design criteria on an average annual basis based on the previous twelve months of data. The planning and schedule for improvements was to begin within one year of first exceeding 85% of any of the design criteria. The design capacity is as follows.

Table 1. Design Capacity 2004 Permit

Criteria	Value	85% of Design	Units
Average Flow	0.55	0.47	mgd
Influent BOD_5 Loading	75	64	lbs/day
Influent TSS Loading	75	64	lbs/day

DMR data shows that the facility exceeded 85% of influent loading criterion for TSS and BOD_5 early in the permit cycle. The following graph shows the calculated organic loading based on the DMR data for TSS concentration, BOD_5 concentration and flow on a monthly average basis. Loading was calculated because loading on a monthly basis was not required to be submitted with the monthly DMRs. TSS loading was greater than the design criteria for much of the permit term. The monthly average hydraulic loading is significantly below the design capacity.

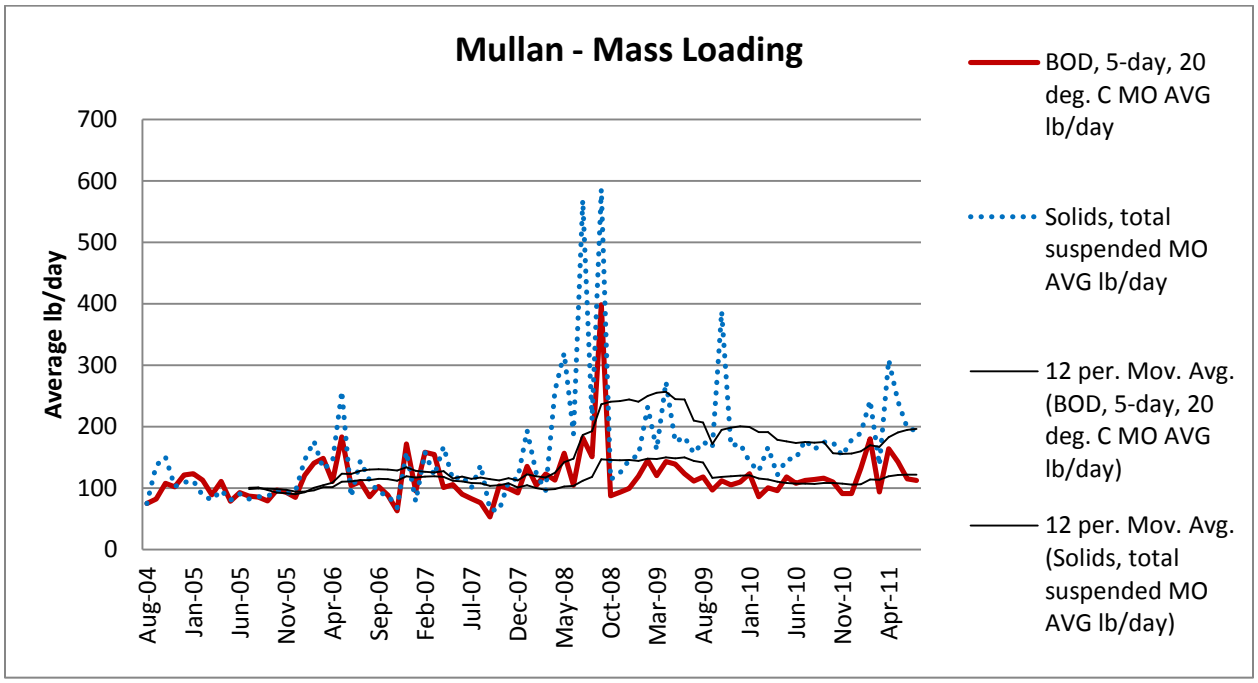


Figure 2. Average Annual Organic Loading

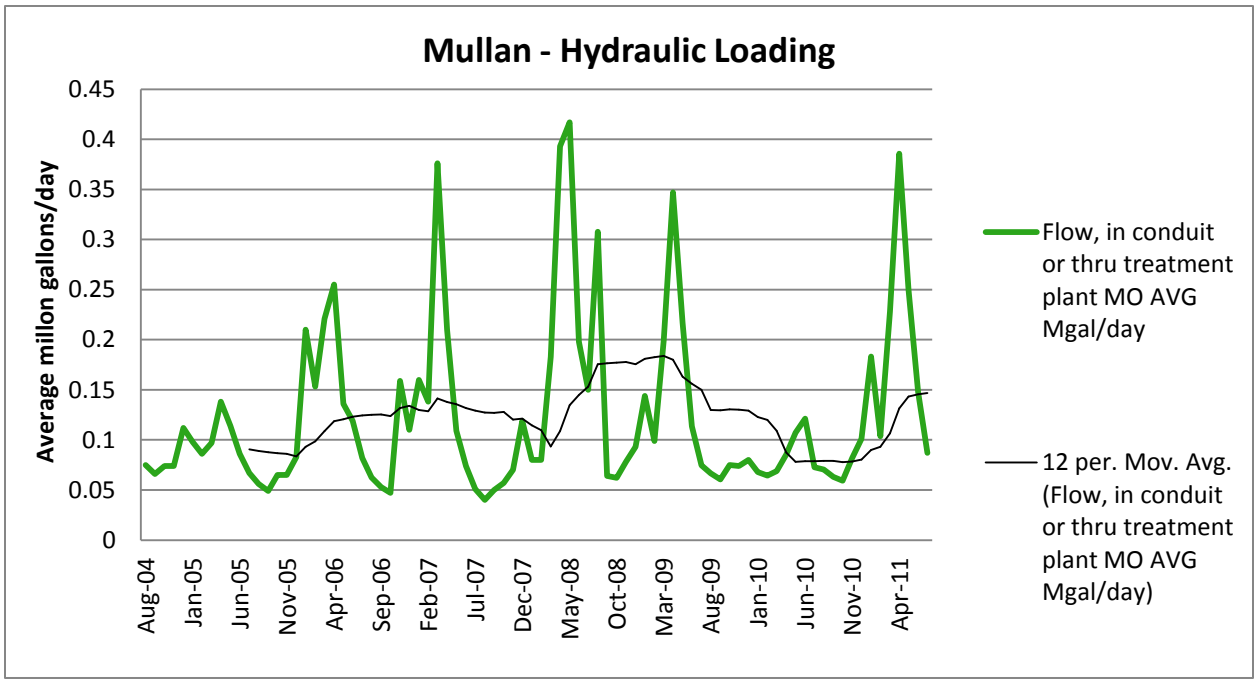


Figure 3. Average Annual Hydraulic Loading

The organic loading (both TSS and BOD_5) design criteria are low compared to typical municipal loading design standards. Organic loading in typical municipal sewage is assumed to be approximately 200 mg/L TSS and 200 mg/L BOD_5. In the case of Mullan, the design criteria would have assumed a concentration of approximately 16 mg/L [Concentration = mass load/(Flow x conversion factor) = 75/(0.55 x 8.34)]. Sometimes low organic loading

concentrations are used to account for known high levels of infiltration and inflows (I/I) into the conveyance system at the time of design. I/I dilutes influent sewage. The DMR data shows the average organic concentrations for the effective period of the permit was 184 mg/L TSS and 137 mg/L BOD_5. Actual influent concentrations are greater than were used in the design assumption.

The proposed permit requires the permittee to re-evaluate the capacity of the treatment process and, if possible, establish new design criteria based on the present influent characteristics, or begin planning to address new capacity.

III. Receiving Water

The facility discharges to the South Fork Coeur d'Alene River near the City of Mullan. The facility has done receiving water monitoring throughout the permit cycle as required by the permit, as summarized in Appendix B. Appendix C (page 49) summarizes receiving water monitoring data 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 criterion aligns with the 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 WQS 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 considered to evaluate critical flows. Figure 4 shows the locations of the monitoring stations in reference to the WWTP and Table 2 shows the critical design flows used as the basis for this permit.

The Mullan gauge included a limited set of flow data, from October 1998 through April 2000. Critical flows such as 7Q10 cannot be calculated with less than 10 years of data. The 2004 permit used this gauge data as the basis for establishing critical flows. Because of the limited data, the lowest flow during the period was 9.2 cfs which occurred on October 22, 1998.

The gauge near Elizabeth Park in Kellogg (USGS 12413210 SF COEUR D ALENE AT ELIZABETH PARK NR KELLOGG ID) has data from 1987 through 2009. These flow are considered representative of the flows and the larger data set allows appropriate critical flow to be calculated. Therefore, this gauge was used to establish critical flows for the proposed permit.

Refer to Appendix C for a detailed discussion of the derivation of the critical design flows.

Upstream: USGS 12413040
SF COEUR D ALENE R ABV DEADMAN GULCH NR MULLAN ID
Latitude 47°28'24", Longitude 115°45'56" NAD27

Downstream: USGS 12413210
SF COEUR D ALENE AT ELIZABETH PARK NR KELLOGG ID
Latitude 47°31'53", Longitude 116°05'33

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

Table 2. SF Coeur d'Alene River Critical Design Flows – Estimate at WWTP

Critical Flow Parameter	River Flow (cfs)	Use for Comparison to Water Quality Criteria for…
1Q10	4.6	Aquatic Life Uses - Acute
7Q10	5.8	Aquatic Life Uses - Chronic
30Q10	6.4	Ammonia
30Q5	6.6	Human Health – Non-carcinogen
Harmonic Mean	15.0	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 SF Coeur d'Alene River in the South Fork Coeur d'Alene River subbasin (USGS HUC 17010302). At the point of discharge, the South Fork Coeur d'Alene River is protected for the following designated uses as specified in IDAPA 58.01.02.150.10:

- COLD - Cold Water Communities
- 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 criteria) 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 secondary contact recreation. The following table summarized the applicable water quality criteria and outline 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 3. 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 secondary (biological) treatment an activated sludge treatment process. 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.

Criteria for Water body	How the Criteria was evaluated…
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 in at detectable levels in the effluent. • Ammonia • Cadmium • Chlorine (Total Residual) • Copper • Lead • Zinc	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. The reasonable potential analysis shows that ammonia, chlorine, cadmium, lead and zinc have a reasonable potential to contribute to violations of the aquatic life criteria. Effluent limitations are required and were calculated for these parameters. The ammonia criteria are both temperature and pH dependent. Upstream temperature and pH data was used to calculate the ammonia criteria. Ammonia limits were established on a year-around basis using critical river flows and assuming authorization of a mixing zone based on 25% of critical river flow. The WQBEL for chlorine was calculated assuming authorization of a mixing zone based on 25% of critical river flow. The metals criteria are a function of hardness and the mixture of the effluent and receiving water. Per Idaho's Water Quality Standards at IDAPA 58.01.02.210.03.c.ii: "The hardness values used for calculating aquatic life criteria for metals at design discharge conditions shall be representative of the ambient hardnesses for a receiving water that occur at the design discharge conditions given in Subsection 210.03.b." The reference to 210.03.b provides the 1Q10/1B3 and 7Q10/4B3 design conditions for aquatic life criteria. Variance-based, interim and final WQBELs where established for cadmium and zinc. The limits were calculated assuming no mixing zone will be authorized because the concentrations of these pollutants exceed the WQS in the river. A new WQBEL was established for lead. Receiving water data at Mullan shows that the 90th percentile concentration for lead is 13.5 μg/L, the chronic criteria is 19.4 μg/L. Due to the high concentration on zinc in the river, there is very little assimilative capacity for lead. The limit was calculated assuming no mixing zone will be authorized for lead. The facility would have difficulty reliably meeting the WQBEL at this time. An interim limit was established under the compliance schedule for cadmium, lead and zinc. Refer to Appendix D (page 58) for the evaluation of the reasonable potential for the effluent to cause or contribute to violation of the WQS for critical river flow conditions.

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 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 C, temperature and pH dependent Turbidity – 50 NTU, but no more than 25 NTU for more than 10 days.	Refer to Appendix D for the evaluation of the reasonable potential for the effluent to cause or contribute to violation of the WQS at critical 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 had 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. Refer to Appendix D, Streeter Phelps Analysis. 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 the times of the year the effluent may contribute to violations of the WQS. Ammonia – Analysis showed that there is a reasonable potential to contribute to violations of the ammonia criteria. Water quality-based effluent limits were established to ensure that the effluent does not contribute to violations of the ammonia criteria. Turbidity – No turbidity data was collected for the effluent. The technology-based limit for TSS of 30 mg/L ensures that receiving water turbidity standards are not exceeded.

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.

Receiving Water Water Quality Impairments

The IDEQ has identified the following water quality impairments.

Table 4. Causes of Impairment for Reporting Year 2010

Cause of Impairment	Cause of Impairment Group	State TMDL Development Status
Cadmium	Metals (other than Mercury)	TMDL needed
Lead	Metals (other than Mercury)	TMDL needed
Sedimentation/Siltation	Sediment	TMDL completed
Temperature		TMDL needed
Zinc	Metals (other than Mercury)	TMDL needed

IDEQ completed the *South Fork Coeur d'Alene River Sediment Subbasin Assessment and Total Maximum Daily Load* in May 2002[1]. The EPA approved the TMDL in August 2003. The TMDL assigned a wasteload allocation of 12.3 tons per year (equivalent to 67.4 lbs/day) of total suspended solids (TSS) for discharged from to the Mullan WWTP. Refer to section G (page 65) for development of effluent limitations based on the TMDL allocation.

Variance to Water Quality Standards

The IDEQ issued a document titled *Variance from Idaho Water Quality Aquatic Life Criteria for Cadmium, Lead and Zinc*[2] on June 5, 2009. The EPA approved the variance July 22, 2009, refer to Appendix E. The variance became effective on July 30, 2009 and expires on July 30, 2014. The variance established the applicable permit limits while the variance is in effect. The following table shows the permit limits established under the variance.

[1] http://www.deq.idaho.gov/water-quality/surface-water/tmdls/table-of-sbas-tmdls/coeur-d'alene-river-south-fork-subbasin.aspx
[2] http://www.deq.idaho.gov/water-quality/surface-water/standards/variances.aspx

Table 5. Variance-based Limits for Cadmium and Zinc

Parameter	Maximum Daily Limitation		Average Monthly Limitation	
	µg/L	Lbs/day	µg/L	Lbs/day
Cadmium, Total Recoverable	10.8	0.049	5.5	0.025
Zinc, Total Recoverable	3,682	17	1,610	7.4

The draft permit includes WQ-based effluent limits for cadmium, lead and zinc. The permittee will have to make significant modifications to the WWTP at significant cost to meet the WQ-based effluent limitations. Therefore, the proposed permit includes a compliance schedule to allow time to make the necessary upgrades. If the IDEQ chooses to extend or re-issue a variance beyond the July 30, 2014 deadline, the permit would need to be modified in order to incorporate the re-issued variance.

Site Specific Criteria

Site-specific water quality criteria (SSC) that reflect local environmental conditions are allowed by federal and state regulations. 40 CFR § 131.11 provides states with the opportunity to adopt water quality criteria that are "…modified to reflect site specific conditions."[3] SSC were adopted for cadmium, lead and zinc by IDEQ in the Water Quality Standards and approved by the EPA. The following equations were used to calculate the numeric criteria for these pollutants, refer to Appendix D (page 53).

Table 6. Site Specific Criteria Equations for Cadmium, Lead and Zinc

Parameter	CMC (µg/L)	CCC (µg/L)
Cadmium	exp(1.0166 x ln(hardness)-3.924)	[1.101672-(ln(hardness) x 0.041838] x exp(0.7852*LN(hardness)-3.49)
Lead	exp(0.9402 x ln(hardness)+1.1834)	exp(0.9402 x ln(hardness)-0.9875)
Zinc	exp(0.6624 x ln(hardness)+2.2235)	exp(0.6624 x ln(hardness)+2.2235)

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 provided 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 H.

This permit action is subject to Tier I protection, "Maintenance of Existing Uses". The permit limits for all pollutants permitted for discharge were established based on Idaho's

[3] Development of Site-Specific Water Quality Criteria for the South Fork Coeur d'Alene River, Idaho, Application Of Site-Specific Water Quality Criteria Developed In Headwater Reaches To Downstream Waters. Idaho Department of Environmental Quality, December 13, 2002, (http://www.deq.idaho.gov/media/445306-sfcda_criteria_downstream.pdf)

water quality criteria. Limits were set such that pollutants discharged will not contribute to violations of the WQS or negatively impact existing designated beneficial uses.

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. A discussion about the technical basis for the effluent limitations is provided in Appendix D: Basis for Effluent Limits (page 51).

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 as a 24-hour composite sample.

The table below presents the proposed average monthly, average weekly, maximum daily, minimum daily and other effluent limits that apply.

Table 7. Basis for Proposed Effluent Limits

Parameter	Effluent Limitations				Basis for Limit
	Units	Average Monthly	Average Weekly	Maximum Daily[2]	
Numeric Effluent Limits					
Biochemical Oxygen Demand (BOD_5)	mg/L	**30**	**45**	—	The average monthly and average weekly concentrations limits are technology-based. The mass loading limits limits were carried over from the current permit to avoid backsliding. Percent removal is technology-based for secondary treatment.
	lb/day	**75**	**113**	—	
	% removal	**85% min.**	—	—	

Parameter	Effluent Limitations				Basis for Limit
	Units	Average Monthly	Average Weekly	Maximum Daily[2]	
Total Suspended Solids (TSS) *TMDL-based limit*	mg/L	**30**	**45**	**—**	The average monthly and average weekly concentrations limits are technology-based. The mass loading limits are based on the TMDL (refer to section III.B). The average weekly limit mass loading limit is calculated based on the EPA's TSD, refer to Appendix D (page 65).
	lb/day	**67.5**	**176**	**—**	
	% removal	**85% min.**	**—**	**—**	
E. Coli Bacteria[1]	#/100 ml	**126 (geometric mean)**	**—**	**576**	Water-quality based, no mixing zone authorized.
pH	s.u.	**Daily minimum**		**6.5**	Water-quality based, no mixing zone authorized.
		Daily maximum		**9.0**	
Total Residual Chlorine[2]	µg/L	**18**	**—**	**45**	Water-quality based limit with regulatory mixing zone.
	lb/day	**0.082**	**—**	**0.21**	
Total Ammonia (as N)	mg/L	**8.4**	**—**	**22**	Water-quality based limit with regulatory mixing zone.
	lb/day	**39**	**—**	**101**	
Numeric Effluent Limits under Variance - Effective until midnight July 30, 2014					
Cadmium	µg/L	**5.5**	**—**	**10.8**	Effluent limits were established by the 2009 variance issued by IDEQ and approved by EPA.
	lb/day	**0.025**	**—**	**0.049**	
Zinc	µg/L	**1,610**	**—**	**3,682**	
	lb/day	**7.4**	**—**	**17**	
Interim Numeric Effluent Limits under Compliance Schedule					
Cadmium **7/31/2014 through 12/31/2034**	µg/L	**5.5**	**—**	**10.8**	Performance-based limits for concentration were established based on DMR data for the entire permit period, 8/2004 through 7/2011, refer to Appendix D. Mass limits were based on design flow [concentration x flow x 8.34]. The calculated interim performance based limits are less stringent than the variance limits so the variance limit were retained as the interim limits. The reasonable potential analysis showed there to be a potential to contribute to violations of the lead criteria. The effluent limit was calculated assuming no mixing zone will be authorized by IDEQ. The facility requires a compliance schedule to meet this new limit.
	lb/day	**0.025**	**—**	**0.049**	
Lead **Upon Permit Issuance through 12/31/2034**	µg/L	**30**	**—**	**49**	
	lb/day	**0.14**	**—**	**0.22**	
Zinc **7/31/2014 through 12/31/2034**	µg/L	**1,610**	**—**	**3,682**	
	lb/day	**7.4**	**—**	**17**	

Parameter	Effluent Limitations				Basis for Limit
	Units	Average Monthly	Average Weekly	Maximum Daily[2]	
Final Numeric Effluent Limits – Water Quality-Based – January 31, 2035					
Cadmium *Effective **January 1, 2035***	µg/L	**0.68**	**—**	**1.36**	Water-quality based limits. The final WQBELs where calculated assuming that no mixing zone will be authorized by IDEQ because the receiving water exceeds the WQS. Refer to Appendix D.
	lb/day	**0.0031**	**—**	**0.0062**	
Lead *Effective **January 1, 2035***	µg/L	**16**	**—**	**32**	
	lb/day	**0.073**	**—**	**0.15**	
Zinc *Effective **January 1, 2035***	µg/L	**103**	**—**	**150**	
	lb/day	**0.47**	**—**	**0.69**	

Footnotes in this table reference sections in the permit.

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 are not 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.
3. The monthly average percent removal must be calculated from the arithmetic mean of the influent concentration values and the arithmetic mean of the effluent concentration values for that month. Influent and effluent samples must be taken over approximately the same time period.

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

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

Section 402(o) of the CWA generally prohibits the establishment of effluent limits in a reissued NPDES permit that are less stringent than the corresponding limits in the previous permit (i.e. "backsliding") but provides limited exceptions. Section 402(o)(1) of the CWA states that a permit may not be reissued with less-stringent limits established based on Sections 301(b)(1)(C), 303(d) or 303(e) (i.e. water quality-based limits or limits established in accordance with State treatment standards) except in compliance with Section 303(d)(4). Section 402(o)(1) also prohibits backsliding on technology-based effluent limits established using best professional judgment (i.e. based on Section 402(a)(1)(B)).

Section 402(o) of the Clean Water Act and federal regulations at 40 CFR §122.44 (l) prohibit the renewal, reissuance or modification of an existing NPDES permit that contains effluent limits, permit conditions or standards that are less stringent than those established in the previous permit (*i.e.,* anti-backsliding). The Clean Water Act at Section 402(o)(2) sets forth some exceptions to

the prohibition against backsliding from effluent limitations provided the revised effluent limitation does not result in a violation of applicable water quality standards, including antidegradation requirements.

Ammonia Limits – maximum daily limit slightly higher

The ammonia limits are only slightly changed as compared to the current permit due both changes in the calculation methodology and to the use of long term critical river flows as measured at the Elizabeth Park USGS gauge station correlated with flows at USGS 12413040 SF COEUR D ALENE R ABV DEADMAN GULCH NR MULLAN ID.

Several changes and corrections were made to the methodology for calculating the ammonia limits. Individually, some of the calculation changes would result in lower limits and some of the changes would result in higher limits. Overall, it was determined that the limits should be calculated based on the current guidance, policies and current available data.

Table 8. Comparison of WQ-based Limits from Current Permit

Parameter	Effluent Limitations				
	Units	Average Monthly	Maximum Daily	Average Monthly	Maximum Daily
		Proposed Permit		Current Permit	
Total Ammonia as N	mg/L	8.2	**22**	8.95	20.2
	lb/day	39	**101**	41	93

CWA section 402(o)(3) allows relaxation (including elimination) of water quality based effluent limits if it is consistent with the provisions of CWA section 303(d)(4). Since the South Fork of the Coeur d'Alene meets water quality standards for ammonia, a water quality-based effluent limit may be relaxed where the action is consistent with the state's antidegradation policy. As provided in IDEQ's antidegradation review, this revision derives from and complies with the state's new water quality criteria.

Discussion of More Stringent Limits - Chlorine, Cadmium, Lead and Zinc Limits

The WQBEL for chlorine is lower in the proposed permit because of the change in the basis for critical river flows. This results in there being less dilution than was assumed in the current permit.

The WQBEL for cadmium and zinc were calculated in the same way as previous permit. The effluent limits are slightly changed due to the use of calculated multipliers instead of the table values provide in the TDS. The current permit used a hardness of 67 mg/L $CaCO_3$. The proposed permit will use the same hardness which is in the same range as both the typical effluent hardness and receiving water hardness at critical flows.

The WQBEL for lead is new in the proposed permit. There is a reasonable potential to contribute to violations of the water quality standard based on the more extensive data provided during the permit term.

Table 9. Comparison of WQ-based Limits for Chlorine, Cadmium, Lead and Zinc

Parameter	Effluent Limitations				
	Units	Average Monthly	Maximum Daily	Average Monthly	Maximum Daily
		Proposed Permit		Current Permit	
Chlorine	µg/L	18	45	33	55
	lb/day	0.082	0.21	0.15	0.25
Cadmium	µg/L	0.68	1.36	0.936	1.37
	lb/day	0.0031	0.0062	0.0043	0.0063
Lead	µg/L	16	32	No Limit	No Limit
	lb/day	0.073	0.15	No Limit	No Limit
Zinc	µg/L	**103**	150	95.9	153
	lb/day	**0.47**	0.69	0.44	0.70

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 cadmium and zinc have not yet be in effect under the current permit due to ongoing variances.

The federal regulation 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 permittee 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)). The EPA has found that the permittee needs a compliance schedule for cadmium and zinc, as discussed below.

B. Compliance Schedule Justification

The permittee will be unable to meet the proposed water quality-based effluent limits for cadmium and zinc upon expiration of the variance. The EPA proposes to allow additional time to comply with the WQ-based effluent limits under a compliance schedule.

The following graphs show the concentration of cadmium and zinc in the effluent under the current permit as compared to the proposed monthly average limits. The concentration of these metals has remained at a consistent level during the period shown (dotted linear trend line).

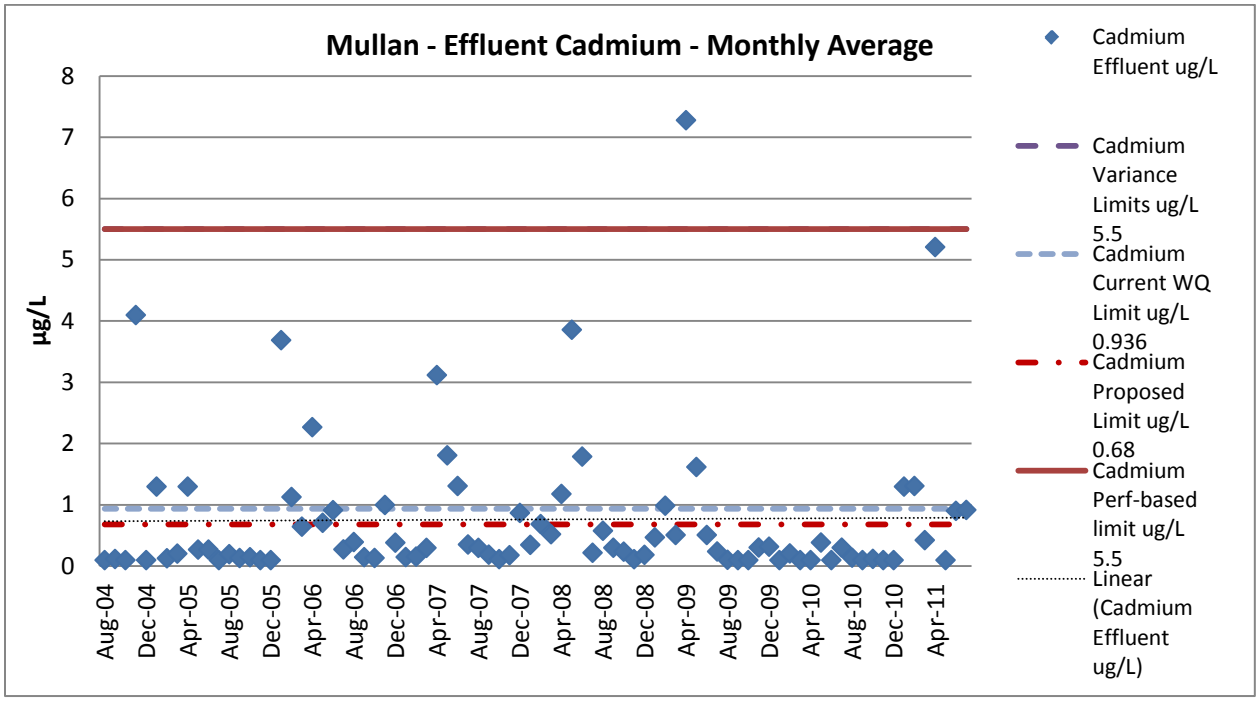


Figure 5. History of Effluent Cadmium Concentrations

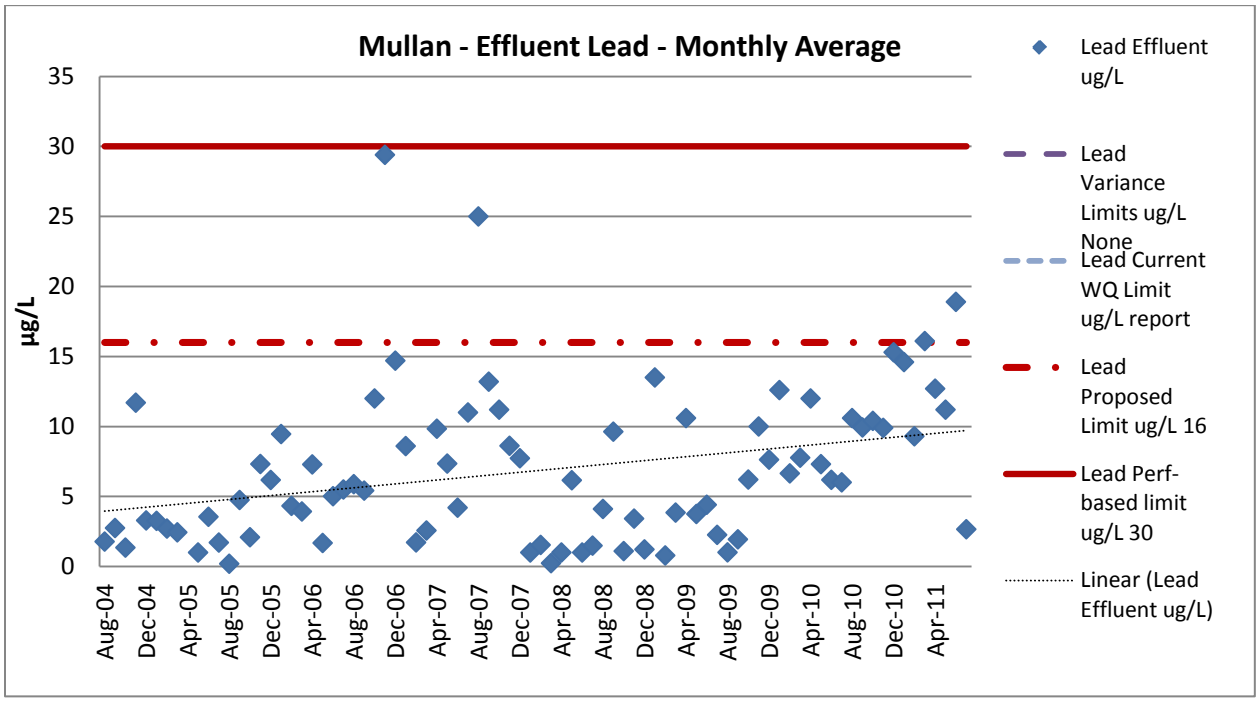


Figure 6. History of Effluent Lead Concentrations

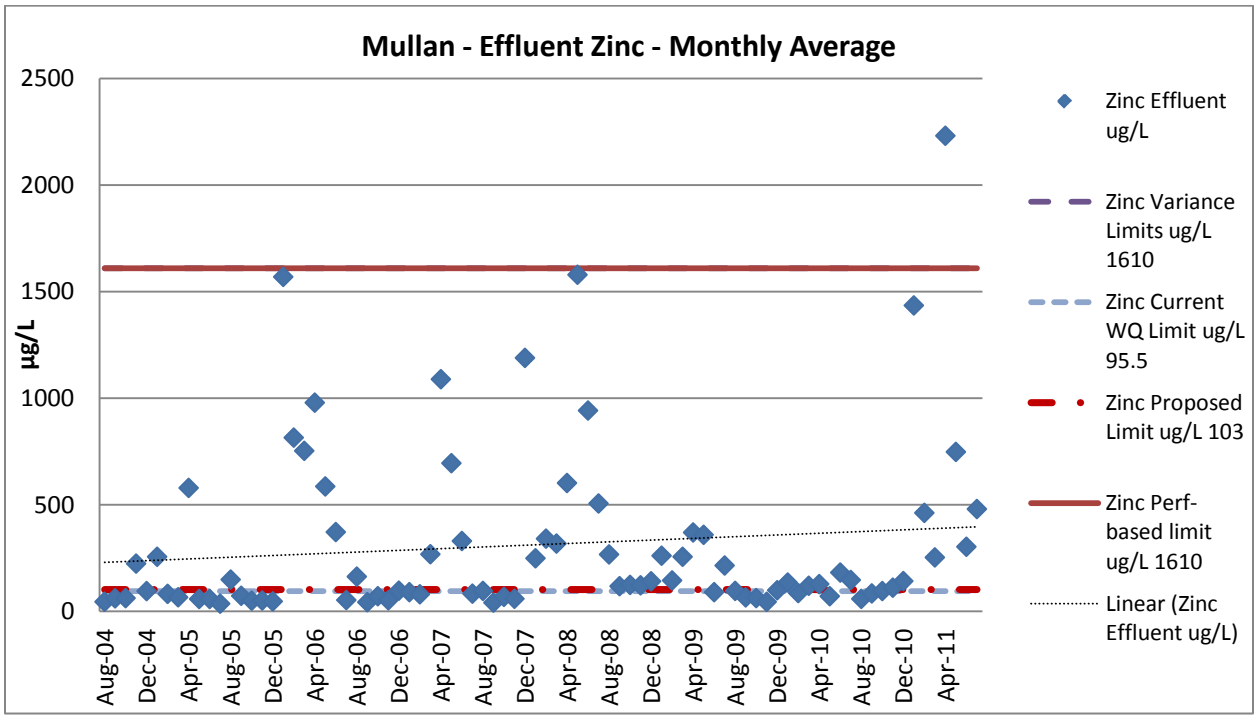


Figure 7. History of Effluent Zinc Concentrations

Much of the source of cadmium, lead and zinc in the effluent is due to I/I of metals-laden groundwater into the collection system. I/I must be addressed throughout the collection system as the primary means of source control to limit the intrusion of groundwater. In establishing the compliance schedule, both the IDEQ and the EPA recognized the importance of addressing I/I before embarking on costly process modifications and WWTP upgrades.

In proposing a compliance schedule, the EPA recognized the site-specific constraints related to the Superfund site. The length of the compliance schedule is set to align with the Bunker Hill Superfund remediation project. The duration of the remediation activities estimated to be 20 to 30 years. It is expected that the remediation efforts along with natural annenuation will reduce the concentrations of metals in the groundwater over the next 90 years.

The proposed permit allows for 20 years for the permittee to plan, design and construct a treatment system for metals. The EPA determined that 20-years would be the soonest that the facility could fund and construct projects related to both I/I reduction and WWTP upgrade.

The following proposed compliance schedule is based on Idaho DEQ's determination regarding the soonest possible time that compliance with the WQBELs could be achieved. The compliance schedule aims to achieve completion of construction of the necessary treatment process modifications to meet the limits within a 20-year period. The proposed permit requires both submission of written notification of completed tasks within 14 days and annual progress reports.

C. Compliance Schedule – Cadmium, Lead and Zinc

1. The permittee must achieve compliance with the cadmium, lead and zinc effluent limitations of Part I.A.1. (Table 1) in the permit, by December 31, 2034.

2. Until compliance with the final effluent limitations for cadmium, lead and zinc are achieved, at a minimum, the permittee must complete the tasks and reports listed in the Table 10.

Table 10. Tasks Required Under the Schedule of Compliance

Task No.	Due By	Task Description
1	**December 31, 2015**	**I/I Reduction Study** The permittee must complete the I/I Reduction Study to identify and prioritize I/I reduction projects, and serve as justification to appropriate funding. The study must establish a schedule to address I/I projects. The permittee should collaborate with satellite entities to produce a comprehensive study. Deliverable: The permittee must provide the I/I Reduction Study to the IDEQ for review and approval, and submit a copy to the EPA.
2	**June 30, 2016**	**Facility Planning** The permittee must develop a facility plan that evaluates the options that would allow the facility to meet the final water quality-based effluent limitations for cadmium, lead and zinc, and select a preferred alternative. The plan may include a combination of I/I reduction projects and WWTP upgrades. Deliverable: The permittee must provide the facility plan to the IDEQ for review and the necessary approvals and submit a copy to the EPA.
3	**December 31, 2016 and annually through December 31, 2029**	**Progress Report to Address I/I** The permittee must indicate progress toward removing I/I within its own collection system to implement I/I reduction projects. Deliverable: The permittee must submit a progress report to the EPA and the IDEQ on an annual basis. The report must discuss progress of the past year, projects implemented and the cost of sewer rehabilitation projects and proposed projects for the next year.
4[a]	**December 31, 2031**	**Treatment System Design** The permittee must complete design of the selected alternative for meeting the cadmium, lead and zinc effluent limitations. (The permittee may engage in renewed facility planning efforts to identify any new technologies for metals treatment. Another alternative may be implemented upon IDEQ approval. Planning must be done with respect to the design deadline without extending the design phase.) Deliverable: The permittee must provide written notification to the EPA and the IDEQ that the final design is complete.
5[a]	**December 31, 2031**	**Award Bid for Construction** The permittee must complete the awarding of the bid for construction of the project to meet the cadmium, lead and zinc effluent limitations. Deliverable: The permittee must provide written notification the EPA and the IDEQ that the bid award is complete.
6[a]	**December 31, 2032**	**Annual Report of Progress on Construction** Deliverable: The permittee must provide a report on the progress of construction.

Task No.	Due By	Task Description
7 [a]	December 31, 2033	**Construction Complete** The permittee must complete construction to achieve the final water quality-based effluent limitations for cadmium, lead and zinc. Deliverable: The permittee must submit construction completion reports to the EPA and the IDEQ.
8	December 31, 2034	**Meet WQ-based Effluent Limitation for Cadmium, Lead and Zinc** The permittee must achieve compliance with the final water quality-based effluent limitations for cadmium, lead and zinc. Deliverable: The permittee must provide written verification to the EPA and the IDEQ that the final water quality-based effluent limitations for cadmium, lead and can be reliably met.

Footnote a. Tasks 4-7 are required only if the permittee is unable to meet the final water quality-based effluent limitation through I/I reduction.

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) or on the application for renewal, as appropriate, to the EPA.

B. Effluent Monitoring

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

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 11. Permit Monitoring Requirements

Parameter	Monitoring Requirements			
	Units	Sample Location	Sample Frequency	Sample Type
Biochemical Oxygen Demand (BOD_5)	mg/L	Influent & Effluent	1/week	24-hour composite
	lb/day			
	% removal	% removal	1/month	Calculation[3]
Total Suspended Solids (TSS)	mg/L	Influent & Effluent	1/week	24-hour composite
	lb/day			
	% removal	% removal	1/month	Calculation[3]
E. coli Bacteria[1,2]	#/100 ml	Effluent	5/month	grab
pH	s.u.	Effluent	5/week or continuous	Grab or measurement
Total Residual Chlorine[2]	µg/L	Effluent	5/week or continuous	Grab or measurement
	lb/day			
Total Ammonia (as N)	mg/L	Effluent	1/week	24-hour composite
	lb/day			
Lead	µg/L	Effluent	1/month	24-hour composite
	lb/day			Calculation
Cadmium	µg/L	Effluent	1/month	24-hour composite
	lb/day			Calculation
Zinc	µg/L	Effluent	1/month	24-hour composite
	lb/day			Calculation
Flow	mgd	Influent or Effluent	Continuous	Measurement
Temperature	ºC	Effluent	5/week	Grab
Dissolved Oxygen	mg/L	Effluent	1/month	Grab
Alkalinity, Total	mg/L as $CaCO_3$	Effluent	1/month	24-hour composite
Hardness, with metals sampling	mg/L as $CaCO_3$	Effluent	1/month	24-hour composite
Nitrate + Nitrite	mg/L	Effluent	2/year	24-hour composite
Oil and Grease	mg/L	Effluent	2/year	Grab
Total Phosphorus	mg/L	Effluent	2/year	24-hour composite
Total Kjeldahl Nitrogen	mg/L	Effluent	2/year	24-hour composite

Footnotes reference sections in the permit.

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 are not 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.
3. The monthly average percent removal must be calculated from the arithmetic mean of the influent concentration values and the arithmetic mean of the effluent concentration values for that month. Influent and effluent samples must be taken over approximately the same time period.

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.

Table 12. Receiving Water Monitoring

Parameter	Units	Sample Locations	Sample Frequency	Sample Type	Method Detection Limit (MDL)
River Flow	cfs	Upstream only	Continuous	Measurement, as daily average	—
Temperature	°C	Upstream only	Continuous (in 2014 only)	Measurement, as daily max.	—
Temperature	°C	Upstream of the point of discharge as described in I.C.1.a. and as approved by IDEQ	Semi-Annually[1]	Grab	—
pH	standard units			Grab	—
Total Phosphorus	mg/L			Grab	Refer to 1.B.5
Total Ammonia (as N)	mg/L			Grab	Refer to 1.B.5
Hardness (as $CaCO_3$)	mg/L			Grab	Refer to 1.B.5
1. Once during low flow (June-November) period and once during high flow (December-May) period					

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 trainings 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.

Table 13. WWTP Design Criteria

Criteria	Value	85% of Design	Units
Average Flow	0.55	0.47	mgd
Influent BOD_5 Loading	75	64	lbs/day

Influent TSS Loading	75	64	lbs/day

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. 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 Shoshone County, refer to Appendix F. 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 Shoshone County. As such, the EPA has determined that reissuance of the NPDES permit will not adversely affect EFH, reference Appendix F.

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 Coeur d'Alene Tribe reservation is located at the south end of Lake Coeur d'Alene. The South Fork Coeur d'Alene River joins the North Fork Coeur d'Alene River near Pinehurst to form the Coeur d'Alene River. The Coeur D'Alene River flows into Lake Coeur d'Alene just north of the reservation boundary as shown in the figure below. The EPA invited the tribe to review and/or consult on this permit because of the discharge's potential to impact Lake Coeur d'Alene.Refer to Appendix G and H.

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.

SF Coeur d'Alene River TMDL Revision and Addendum, Idaho Department of Environmental Quality, February 2010.

Appendix A: Diagrams[4]

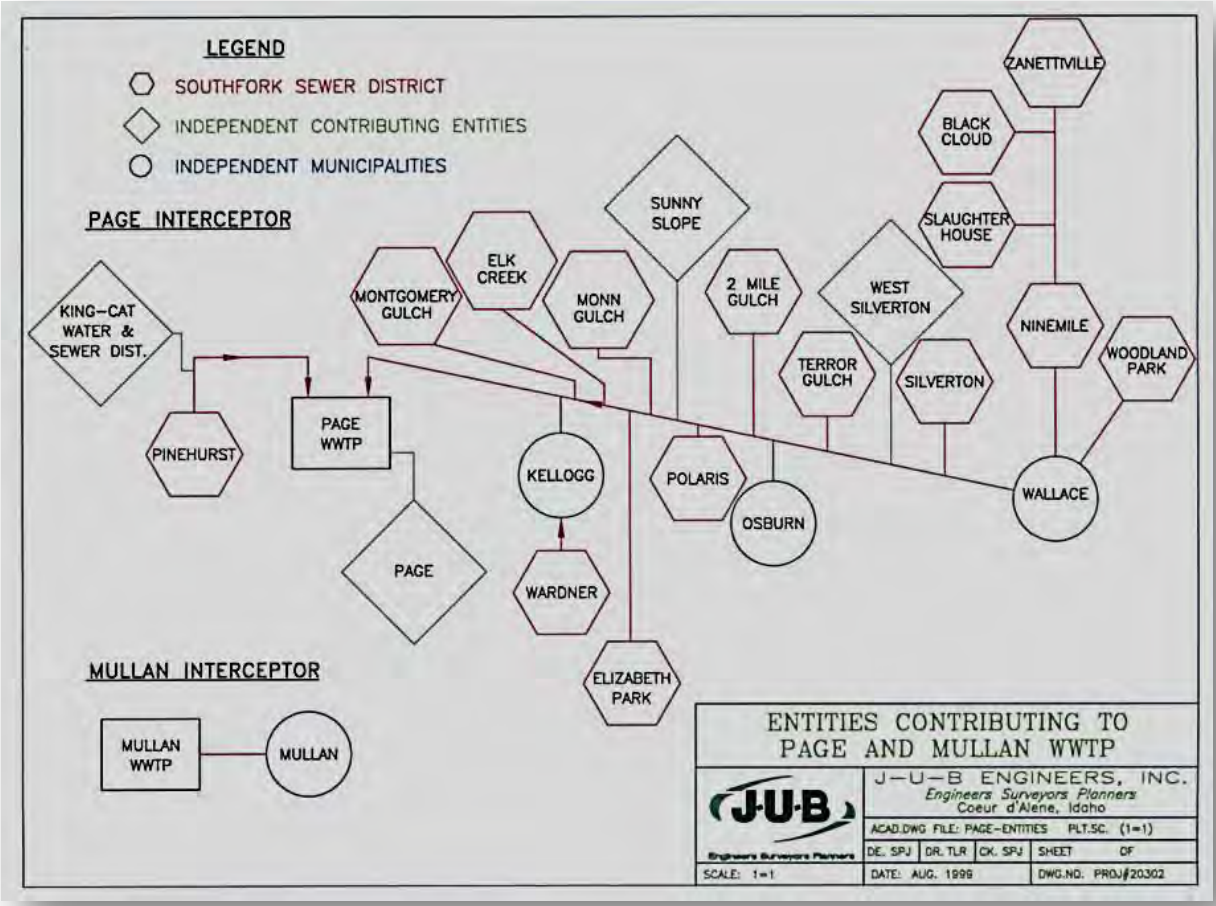


Figure 8. Entities Contributing to Page and Mullan WWTPs

[4] South Fork Coeur d'Alene River Sewer District, I/I Evaluation and Wastewater Treatment Facility Plan, J-U-B Engineers, Inc., April, 2000.

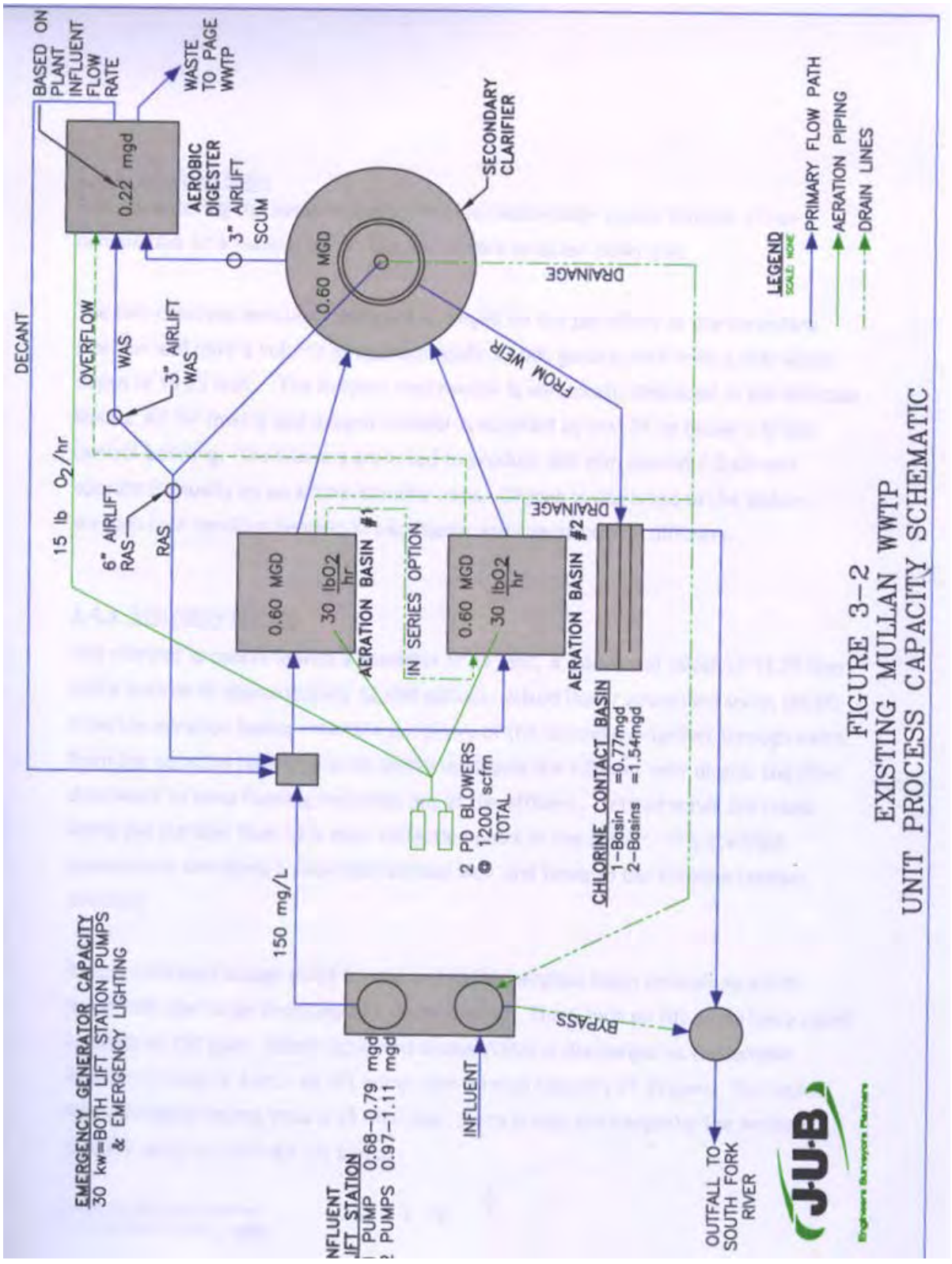


Figure 9. Mullan WWTPs Process Flow Diagram

Appendix B: Discharge Monitoring Report Summary and Effluent Data

A. DMR Data Summary August 2006 through July 2011

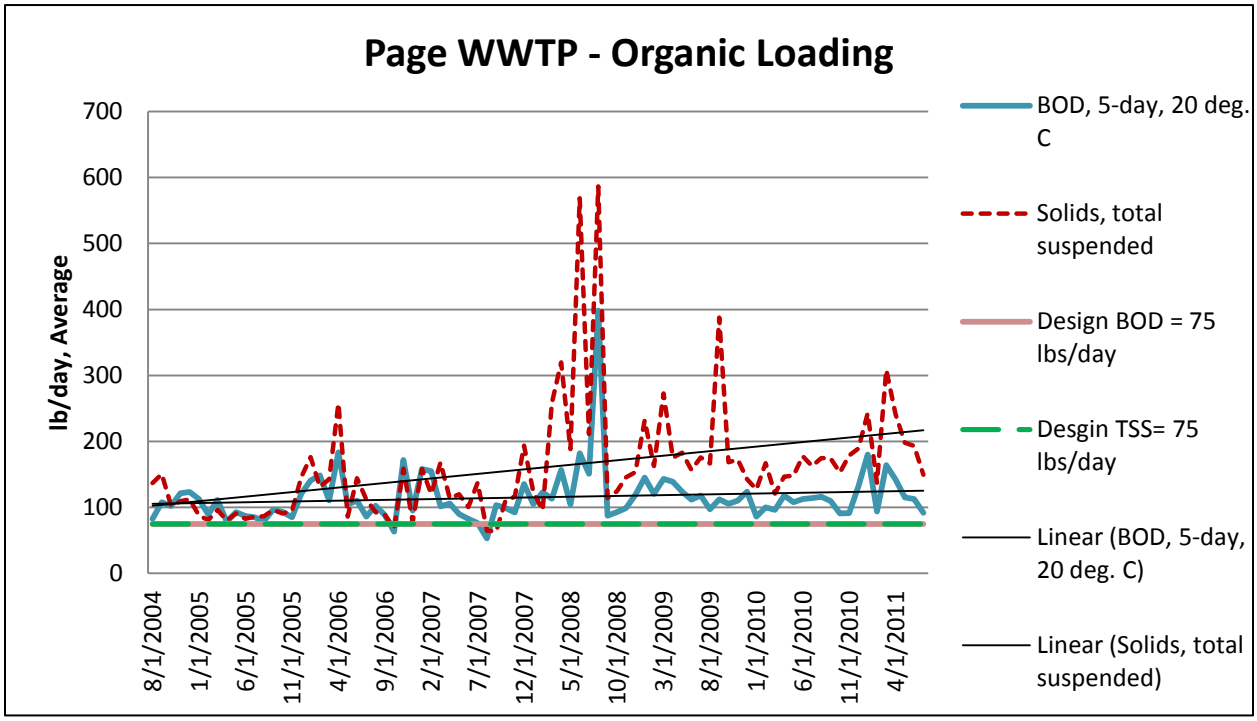
Monitoring Location Desc	Raw Sewage Influent	Raw Sewage Influent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Percent Removal	Effluent	Effluent	Effluent	Effluent	Percent Removal	Effluent	Effluent
Parameter Desc	BOD, 5-day, 20 deg. C	Solids, total suspended	Flow, in conduit or thru treatment plant	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	pH	pH
Statistical Base Short Desc	MO AVG	MO AVG	MAXIMUM	MO AVG	MO AVG	MO AVG	WKLY AVG	WKLY AVG	MN % RMV	MO AVG	MO AVG	WKLY AVG	WKLY AVG	MN % RMV	MAXIMUM	MINIMUM
Limit Unit Short Desc	mg/L	mg/L	Mgal/d	Mgal/d	lb/d	mg/L	lb/d	mg/L	%	lb/d	mg/L	lb/d	mg/L	%	SU	SU
Limits	**na**	**na**	**report**	**report**	**75**	**30**	**113**	**45**	**85**	**67.4**	**30**	**176**	**45**	**85**	**9**	**6.5**
eff 7/31/09																
8/31/2004	131.9	219.3	0.169	0.075	2.3	4	4	7.2	97	1.6	2.8	2.5	3.8	99	6.7	6.4
9/30/2004	196.3	273.4	0.084	0.066	1.8	3.5	2.8	5.3	98	1.1	2.1	1.4	2.6	99	6.8	6.6
10/31/2004	165.3	166.2	0.095	0.074	1.8	2.96	2.2	3.2	98	2.7	4.5	3.4	5	97	6.8	6.5
11/30/2004	196.6	177.3	0.143	0.074	1.2	2	1.9	2.4	99	1.7	2.8	2.5	3.3	98	6.7	6.5
12/31/2004	132.2	119.9	0.289	0.112	1.5	2	2.6	2.9	98	2.9	3.5	6	4.9	97	6.9	6.7
1/31/2005	138	107.5	0.159	0.098	2.5	3	3.5	4.4	94	3.1	3.7	5.6	4.9	95	7	6.5
2/28/2005	124.4	112.5	0.103	0.086	2.1	3	3.1	3.8	98	3	4.3	3.3	5.2	96	6.9	6.7
3/31/2005	137.4	118.8	0.209	0.097	3.5	4.4	6.4	9.3	97	2.9	4	4	6.5	97	7	6.7
4/30/2005	68.2	69.5		0.138	2.6	2.4	3.5	3.3	96	4.1	3.8	6.4	5.5	95	7.1	6.7
5/31/2005	97.6	95.5	0.141	0.114	3.3	3.3	5.1	4.3	97	2.9	3	3.9	3.3	97	6.7	6.7
6/30/2005	121	114.9	0.121	0.086	5.8	8.5	9.1	12.8	93	4	4.5	5	6.2	96	6.8	6.6
7/31/2005	152.5	153.8	0.073	0.067	4.9	9.4	6.1	13.4	94	2.2	4.2	3.3	6	97	6.9	6.5
8/31/2005	169.4	185	0.065	0.056	12.9	28.6	19	43.7	83	5.4	12.1	10.6	25.5	93	6.9	6.7
9/30/2005	236.6	235.7	0.133	0.049	10.2	28.1	13.1	35	88	6.1	16.9	7.1	18.8	93	6.9	6.8
10/31/2005	171.7	167.8	0.129	0.065	2.5	5.5	3.2	7	97	2.8	6	3.2	6.5	96	6.9	6.8
11/30/2005	156.5	174.8	0.104	0.065	1.6	3	2.8	4.1	98	1.3	2.4	2.1	3.1	99	7	6.8
12/31/2005	174.6	211	0.176	0.083	2.6	3.5	5.4	3.7	98	4.4	5.4	10.4	7.1	97	7	6.9
1/31/2006	80.4	100.7	0.444	0.21	8.6	4.4	19.6	5.8	95	14.2	7.6	27.7	9.5	92	6.8	6.5
2/28/2006	116.3	102.9	0.315	0.153	2.5	2.5	3.4	3.8	98	7.3	7.4	11.1	12.6	93	7	6.7
3/31/2006	60.1	77.4	0.309	0.221	5.7	3.2	7.5	4.1	95	10.8	6	14.6	8	92	7	6.5
4/30/2006	86.2	121.2	0.445	0.255	5.1	2.2	7.4	2.8	97	10.2	4.4	14.1	5.3	96	6.8	6.5
5/31/2006	91.9	75.9	0.184	0.136	3.9	3.3	5.6	4.1	96	4.3	3.6	9.8	7.2	95	6.6	6.5
6/30/2006	111.3	145.4	0.165	0.119	4.2	3.8	9.6	7	97	6.6	3.4	13.1	9.5	98	6.7	6.5
7/31/2006	125.8	164.3	0.092	0.082	3.8	5.6	7.2	10.5	96	2.5	3.6	3.1	4.3	98	6.7	6.6
8/31/2006	197.1	178	0.096	0.0625	2.4	4.5	3.3	6.8	98	2.5	4.6	3.6	6.3	97	6.7	6.5
9/30/2006	200.1	200.5	0.077	0.053	3.17	7.39	5.25	12.1	96	1.8	4.1	2.6	6.1	98	7	6.5
10/31/2006	160.9	174.6	0.08	0.047	1.9	5.2	3.4	9.3	97	1.5	4.3	2.1	6.6	98	7.3	6.7
11/30/2006	129.7	119.8	0.544	0.159	5.9	4.8	10.1	6.4	96	7.2	6	11.4	8.1	95	7.6	7.1
12/31/2006	103.8	85.1	0.241	0.11	4.5	4.6	7	6.3	96	5.5	6.1	7	8.6	93	7.4	7
1/31/2007	118.7	118.6	0.299	0.16	8.9	5.5	22.5	9.8	95	17.6	9.7	52	22.7	92	7.3	6.7
2/28/2007	134.5	104.7	0.273	0.138	4.1	3.9	5.6	6.7	97	6.4	5.5	10.6	6.6	95	7.3	7
3/31/2007	32.3	53.5	0.686	0.376	6	1.8	12.6	3	94	32.5	9.1	50.2	12.1	83	7.3	6.9
4/30/2007	60.4	64.8	0.4	0.21	8.2	5.3	12.7	6.7	91	10.1	5.7	19.6	7.8	91	7.4	7.1
5/31/2007	99.1	131.8	0.131	0.109	5	5.8	8.5	11.5	94	3.5	3.9	5.7	5.2	97	7.2	6.9
6/30/2007	134.2	163.2	0.094	0.074	5.8	9.5	6.3	11.2	93	2.5	4	3.6	5	98	7.1	6.9
7/31/2007	179	322.8	0.073	0.051	7.7	14.7	9.8	20.6	92	1.55	3.05	2.2	4	99	7.2	6.6
8/31/2007	159.4	193.3	0.059	0.04	1.9	5.4	2.8	7.9	98	1.54	4.16	3.1	6.9	98	6.8	6.5
9/30/2007	248.7	153.3	0.083	0.05	2.1	4.9	5.5	12.5	95	1.9	4.3	3.9	8.9	97	6.7	6.5
10/31/2007	208.9	231.8	0.093	0.057	1.6	3.3	2.9	5.6	98	1.8	3.6	3.3	5.2	98	6.6	6.5
11/30/2007	157.9	199.2	0.142	0.07	1.4	2.54	2	3.53	98	1.7	3.05	2.1	3.8	98	6.7	6.5
12/31/2007	136.4	195.1	0.553	0.119	2.07	2.33	3.5	3.77	98	3.36	2.3	10.4	3.9	99	6.6	6.5
1/31/2008	157.1	185.1	0.134	0.08	2.07	3.47	5.56	10.58	98	3.1	4.9	5.5	10.5	97	6.8	6.5
2/29/2008	184	143.4	0.15	0.08	1.5	2.5	2.64	3.6	99	2.3	3	2.83	3.86	98	6.5	6.5
3/31/2008	74.2	169.3	0.242	0.183	2.56	1.38	2.67	1.5	98	2.9	1.9	3.5	2.3	99	6.7	6.5
4/30/2008	47.9	97.6	0.673	0.393	6.89	1.62	11.2	1.93	97	9.02	2.48	14.7	3.5	97	6.7	6.5
5/31/2008	30.1	54.1	0.63	0.417	6.72	2.06	9	2.8	93	9.27	2.6	15.59	3.5	95	6.6	6.5
6/30/2008	110.2	344.3	0.291	0.198	3.62	1.95	5.3	2.2	98	6.33	3.25	9.7	4	99	6.5	6.5
7/31/2008	120.6	168.7	0.15	0.15	2.84	3.22	4.13	5.43	97	2.16	2.34	3.9	3.3	99	6.5	6.5
8/31/2008	155.2	228.5	0.099	0.3077	2.1	3.1	3.8	5.3	98	3.3	4.53	3.6	5.4	98	6.5	6.5
9/30/2008	163.9	213.9	0.077	0.064	1.77	3.22	2.65	4.54	98	2.05	3.8	2.63	5	98	6.6	6.5
10/31/2008	179.9	240.7	0.067	0.062	1.73	3.45	2.8	5.4	98	1.65	3.32	2.2	4.3	99	6.7	6.5
11/30/2008	152.7	224.1	0.166	0.078	2.19	3.41	2.75	4.85	98	3.48	4.28	7.1	5.1	98	6.9	6.5
12/31/2008	153.54	197.8	0.186	0.093	5.36	6.57	12.31	16.05	96	5.67	6.65	9.9	11	97	7.8	6.7
1/31/2009	121.07	193.2	0.679	0.144	17.8	7.84	59.04	16.35	94	12.9	7.95	33.6	9.3	96	7.71	6.85
2/28/2009	145.68	196.73	0.234	0.099	6.86	9.33	9.16	13.44	94	8.37	11.23	16.1	23.54	94	7.76	6.76
3/31/2009	86.29	164.3	0.3477	0.199	8.24	5.02	11.54	5.57	94	6.7	4.13	8.78	4.9	97	7.75	6.71
4/30/2009	48.06	60.55	0.5705	0.347	17.48	6.17	35.1	8.78	87	18.18	6.33	38.15	9.55	90	6.97	6.54
5/31/2009	68.44	101.35	0.335	0.2166	6.81	3.83	8.48	5.38	94	16.89	9.23	24.26	13.4	91	6.83	6.59
6/30/2009	117.7	165.5	0.1731	0.1137	7.49	8.15	13.35	16.38	93	5.36	5.73	7	8.3	97	7	6.62
7/31/2009	190	282.8	0.0987	0.0745	4	6.69	9.94	16.78	96	2.38	3.9	3.43	5.8	99	8.53	6.5
8/31/2009	174.28	299.03	0.078	0.0667	1.37	2.58	2.04	3.64	99	1.33	2.55	1.97	3.9	99	6.88	6.5
9/30/2009	221.95	768	0.075	0.0605	1.82	3.63	2.73	4.37	98	1.49	2.88	2.34	4.7	99	6.74	6.55
10/31/2009	168.94	270.14	0.13	0.0748	2.51	4.01	2.79	4.78	98	3.47	5.44	5.64	8.45	98	7.1	6.52
11/30/2009	178.83	279.75	0.098	0.0738	3.49	5.77	4.73	7.89	97	3.11	5.07	3.38	5.5	98	6.86	6.51
12/31/2009	185.32	214.15	0.1195	0.08	3.43	5.07	3.86	6.16	97	3.48	4.82	6.28	6.4	98	7.29	6.68
1/31/2010	151.59	224.68	0.0884	0.068	3.25	4.93	4.75	6.44	97	3.06	4.59	4.94	6.7	98	7.43	6.53
2/28/2010	186.38	310.26	0.0772	0.0645	3.66	7.12	5.85	11.94	96	1.61	3.09	2.43	4.38	99	7.77	6.71
3/31/2010	167.4	211.1	0.1348	0.0688	4.13	5.97	5.88	8.21	96	2.21	3.48	4.62	5.64	98	7.57	6.68
4/30/2010	166.15	206.37	0.1703	0.0853	5.38	7.08	8.89	9.68	96	2.91	3.95	3.4	4.2	98	7.21	6.51
5/31/2010	120.4	165.31	0.1909	0.1073	5.05	5.69	8.62	7.63	95	1.7	1.9	2.94	2.6	99	7.01	6.52
6/30/2010	111.39	176	0.1734	0.1212	4.21	4.06	5.18	4.31	96	2.25	2.16	3.33	3	99	6.81	6.52
7/31/2010	188.25	268.93	0.1031	0.0726	3.33	5.45	4.37	6.78	97	1.79	2.88	2.87	4	99	7.24	6.58
8/31/2010	197.8	297.45	0.0827	0.0705	2.91	4.78	3.9	6.23	98	2.24	3.68	2.75	4.4	99	7.21	6.58
9/30/2010	208.39	330.88	0.0714	0.0632	1.57	2.87	1.93	3.42	99	1.02	1.9	1.89	3.4	99	6.88	6.55
10/31/2010	184.4	310.01	0.0718	0.0591	2.04	4.17	2.72	5.31	98	1.92	3.93	2.23	4.6	99	7.13	6.54
11/30/2010	133.84	261.6	0.1251	0.0818	3.51	4.69	4.73	5	96	1.62	2.03	2.61	2.9	99	7.21	6.54
12/31/2010	156.91	224.88	0.3098	0.101	5.42	6.85	8.65	10.54	96	4.16	4.98	9.34	7	98	7.31	6.75
1/31/2011	117.79	158.94	0.6166	0.1832	6.81	4.89	10.23	8.62	96	6.81	5.6	15.3	8.25	97	7.65	6.59
2/28/2011	108.53	159.26	0.1584	0.1035	7.83	8.03	8.61	9.61	93	6.1	6.34	7.61	8.5	96	7.28	6.77
3/31/2011	86.3	162.3	0.432	0.228	15.16	8	22.95	11.9	91	13.2	6.17	28	10.25	96	7.85	7.01
4/30/2011	44.27	74.95	0.7276	0.3858	16.18	5.23	24.6	7.29	88	16.9	5.72	25.81	7.83	92	7.51	6.67
5/31/2011	55.17	94.98	0.3398	0.25	8.77	4.33	10.56	6	92	14.53	6.66	22.69	10.23	93	7.46	6.76
6/30/2011	91.27	156.68	0.2068	0.1478	9.33	7.58	10.64	8.64	92	4.27	3.37	6.52	4.8	98	7.73	6.71
7/31/2011	126.38	205.95	0.1187	0.0872	2.81	3.83	4.11	4.78	97	2.09	2.88	3.24	4.7	98	7.2	6.51
Average	137.4	183.9	0.2	0.1	4.8	5.3	7.9	7.9	95.7	5.2	4.7	9.0	6.8	96.6	7.1	6.6
Minimum	30.1	53.5	0.059	0.04	1.2	1.38	1.9	1.5	83	1.02	1.9	1.4	2.3	83	6.5	6.4
Maximum	248.7	768	0.7276	0.417	17.8	28.6	59.04	43.7	99	32.5	16.9	52	25.5	99	8.53	7.1
Count	84	84	83	84	84	84	84	84	84	84	84	84	84	84	84	84
Std Dev	49.4	104.8	0.2	0.1	3.7	4.6	8.9	6.9	3.0	5.5	2.6	10.5	4.5	2.9	0.4	0.2
CV	0.36	0.57	0.81	0.71	0.78	0.87	1.13	0.87	0.03	1.07	0.55	1.17	0.66	0.03	0.06	0.02
95th Percentile	207.1	310.2	0.6	0.3	12.5	9.4	22.1	16.4	98.0	16.5	9.2	28.0	13.3	99.0	7.8	7.0
5th Percentile	49.1	70.3	0.1	0.1	1.5	2.0	2.3	2.8	91.0	1.5	2.1	2.1	3.0	92.0	6.6	6.5

Monitoring Location Desc	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent
Parameter Desc	Chlorine, total residual	Chlorine, total residual	Chlorine, total residual	Chlorine, total residual	Chlorine, total residual	E. coli, MTEC-MF	E. coli, MTEC-MF	Hardness, total (as CaCO3)	Nitrite plus nitrate total 1 det. (as N)	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)	Temperature, water deg. centigrade	Phosphorus, total (as P)
Statistical Base Short Desc	DAILY MX	DAILY MX	DAILY MX	MO AVG	MO AVG	DAILY MX	MO GEOMN	DAILY MX	DAILY MX	DAILY MX	DAILY MX	MO AVG	MO AVG	DAILY MX	DAILY MX	DAILY MX
Limit Unit Short Desc	mg/L	lb/d	ug/L	lb/d	ug/L	#/100mL	#/100mL	mg/L	mg/L	lb/d	mg/L	lb/d	mg/L	mg/L	deg C	mg/L
Limits	**0.1**					**576**	**126**	**report**	**report**	**93**	**20.2**	**41**	**8.95**	**report**	**report**	**report**
eff 7/31/09		**0.25**	**55**	**0.15**	**33**											
8/31/2004	0.7		70			10	10	50.1	0.05	5.9	8.99	5.9	8.99	9.3	17.5	1.46
9/30/2004	0.7		70			1299.9	3.3	58	6.8	5.7	11.4	5.6	10.2	17.4	15.7	1.6
10/31/2004	1		100			58.3	3.3	55.4	2.77	4.3	8.2	4.6	7.6	9.9	13.6	1.2
11/30/2004	0.7		70			52	1.6	57.3	1.86	8.6	9.3	4.5	7.4		10.6	1.49
12/31/2004	0.7		70			2419.6	2.4		1.98	7.7	12.3	8.3	8.93	9.42	8.9	1.04
1/31/2005	0.8		80			241.5	1.8	63.7	0.382	9.1	15.6	10	12.3	15.1	8.1	1.49
2/28/2005	1.2		120			1	1		0.531	10	15.5	8.9	12.5	13.3	7.7	1.01
3/31/2005	1		100			20.1	1.4		0.05	9.5	15.7	9.2	11.6	11.2	8.1	1.92
4/30/2005	0.8		80													
5/31/2005	0.7		70			26.6	2.33		0.436	7.4	8.4	7.4	7.8	9.68	11.5	1.17
6/30/2005	0.9		90			47.5	2.6		0.05	8.7	13.4	8.6	12	11.6	12.9	1.73
7/31/2005	0.86		86			2	1.2	59.9	0.092	7.8	14.3	7.4	13.4	15.4	15.6	2.04
8/31/2005	0.96		96			1	1		0.099	7.3	17.6	7.1	15.3	13.5	16.4	1.99
9/30/2005	0.99		99			16	1.73		0.05	6.9	19.7	7.6	18.6	20.9	15.4	3.47
10/31/2005	1.1		110			2419.6	3.4	74.7	0.248	8.2	18.4	7.8	14.8		13.5	0.955
11/30/2005	0.85		85			1	1		0.511	6.8	15.5	6.7	12.4	8.15	11.4	1.58
12/31/2005	0.17		17			49.6	1.88		0.05	8.4	16.8	9.8	14.2	17.7	7.9	1.86
1/31/2006	0.89		89			28.2	1.4	91.6	0.152	6.1	6.5	7	4	8.01	8.1	0.96
2/28/2006	0.93		93			5.2	1.34		0.1	8.06	9.12	6.5	7.4	4.9	8.1	0.862
3/31/2006	0.83		83			113.7	3		0.274	6.5	4.7	6	3.3	3.48	7.2	0.251
4/30/2006	0.72		72			5.2	1.74	79	1.48	6.8	4.44	6.08	2.86	2.09	8	0.45
5/31/2006	0.85		85			15.5	1.7		0.675	8.75	7.73	7.13	6.25	6.17	11.8	0.592
6/30/2006	0.84		84			20.1	1.4		0.786	16.5	12.5	10.55	10.4	9.41	13.5	0.531
7/31/2006	0.91		91			22.8	1.7	61.9	0.235	10.3	14.8	7.7	11.3	15	16.6	1.03
8/31/2006	0.98		98			9.7	2.3		1.56	6.6	14.2	4.88	9.06	9.96	16.7	1.56
9/30/2006	0.69		69			4.1	0.04		0.802	4.47	10.3	3.05	6.85	12.9	16.3	1.32
10/31/2006	0.98		98			7.5	1.6	54.5	4.28	5.88	14.7	4.34	11.4	10.3	11.9	1.83
11/30/2006	2		200			2419.6	7.4		2.29	8.75	11.9	6.88	6.94	12.7	10.1	1.99
12/31/2006	1.7		170			478.6	47.1		0.973	8.7	11.7	6.7	7.43	12.1	7.4	1.88
1/31/2007	1.98		198			1299	5.7	66.1	1.01	26.2	13.1	15.4	10.1	11.8	8.8	0.366
2/28/2007	1.3		130			2	1.1		0.762	9.78	11.9	8.55	7.77	13.5	7.2	2.99
3/31/2007	1.58		158			21.1	1.4		1.05	10.75	7.12	5.64	2.55	8.46	7.4	0.914
4/30/2007	0.94		94			5.2	1.6	98.3	1.5	10.3	8.87	9.17	5.94	5.92	9.5	0.548
5/31/2007	0.98		98			6.3	1.2		0.898	9.66	11.6	8.73	9.8	10.4	11.6	0.985
6/30/2007	0.71		71			1	1		0.55	8.6	15	7.8	12.85	12.9	13.5	1.24
7/31/2007	1.17		117			2	1.1	73.5	0.565	8.3	15.6	6.7	13.08	16.6	17.4	0.774
8/31/2007	1.47		147			1	1		18.1	8.96	19.9	4.18	12.3	8.96	16.8	2.16
9/30/2007	0.91		91			113.7	1.8		1.39	7.65	17.3	4.83	11.19	2.08	16.1	2.36
10/31/2007	1.4		140			1986.3	2.3	67.2	2.67	8.53	16.6	6.81	15.08	12.7	13.7	1.64
11/30/2007	0.92		92			3.1	1.5		0.944	9.5	19	6.16	11.5	20	11.4	1.22
12/31/2007	0.95		95			3.1	1		1.68	4.59	7	3.66	4.29	6.85	8.6	1.17
1/31/2008	1.04		104			1	1	88.3	19.7	2.4	4.58	0.82	1.46	3.3	6.8	2.91
2/29/2008	0.92		92			1.1	1		18.1	1.43	1.95	0.856	1.19	2.38	6.9	3.25
3/31/2008	1.2		120			2	2		5.4	5.92	3.43	5.33	3.32	3.67	6.6	1.81
4/30/2008	0.91		91			113.7	4.7	124	2.52	8.7	5	7.31	2.79	5.94	7.3	1.37
5/31/2008	0.75		75			14.4	1.6		2.57	5.72	2.82	4.33	1.54	1.36	9.3	0.527
6/30/2008	0.71		71			2	1.1		1.88	11.24	6.44	8.99	5.08	5.55	11.4	1.1
7/31/2008	0.87		87			9.8	2.1	87.1	2.89	6.95	5.91	1.89	1.7	7.82	14.5	0.559
8/31/2008	0.8		80			88.2	7.3		13.6	0.373	0.588	0.137	0.211	1.87	16.4	2.15
9/30/2008	0.7		70			72.7	4.9		16.4	0.072	0.178	0.078	0.143	1.69	15.4	1.9
10/31/2008	0.84		84			4.1	1.6	136	22.3	0.094	0.204	0.058	0.118	1.84	15	2.61
11/30/2008	0.88		88			1	1		18.6	0.18	0.261	0.131	0.184	1.83	12	1.95
12/31/2008	1.03		103			15.8	1.3		11.8	8.632	7.55	4.01	4.39	1.43	10.5	2.01
1/31/2009	1.46		146			30.1	1.7	44.3	1.96	12.1	9.04	7.5	6.4	4.58	9.2	0.984
2/28/2009	1.39		139			4	1.2		0.1	13.57	13	9.34	11.78	13.4	7.2	2.06
3/31/2009	0.93		93			228.2	14.5		1.65	14.5	9.49	8.24	6.22	7.2	8	1.08
4/30/2009	0.84		84			18.3	2	113	1.56	9.15	4.85	7.65	3.08	7.09	8	0.911
5/31/2009	0.75		75			7.5	1.8		0.99	8.91	5.65	7.77	4.36	5.79	10.2	0.785
6/30/2009	0.97		97			3.1	1.4		0.66	7.88	8.25	6.93	6.88	7.42	14	0.362
7/31/2009	0.76		76			72.9	3.4	73.4	6.4	3.92	10	1.58	2.62	4	15.7	1.17
8/31/2009	50	0.027	50	0.015	27	9.8	2.6		10	0.15	0.276	0.068	0.126	1.66	17.5	1.55
9/30/2009	0.04	0.019	40	0.003	6	63.8	5.1		10.12	0.111	0.227	0.07	0.142	1.72	17.2	2.38
10/31/2009	0.04	0.025	40	0.007	40	47.1	7	193	16	0.069	0.119	0.052	0.084	1.37	13.7	1.8
11/30/2009	0.04	0.035	40	0.024	7	35.9	3		15.1	0.099	0.134	0.07	0.112	1.62	11.2	2.02
12/31/2009	0.03	0.02	30	0.0039	6.8	20.1	2.4		18	0.557	0.973	0.26	0.383	1.6	8.8	2.25
1/31/2010	0.03	0.014	30	0.007	13	1	1	129	0.1	0.242	0.493	0.16	0.267	1.45	10.5	2.22
2/28/2010	0.04	0.02	40	0.037	7	1	1		12.8	1.39	2.51	0.74	1.42	3.02	7.8	2.3
3/31/2010	0.02	0.012	20	0.0027	6.5	17.1	1.4		8.78	2.27	2.77	0.986	1.54	3.36	5	1.98
4/30/2010	0.02	0.018	20	0.0035	4.5	4.1	1.2	76.9	10.8	4.34	5.13	3.27	4.42	5.53	6	1.9
5/31/2010	0.016	0.01	16	0.048	1.9	22.8	1.7		2.44	4.45	4.34	2.97	3.36	5.4	12.9	1.08
6/30/2010	0.02	0.02	20	0.003	3	3.1	1.2		5.2	1.2	1.25	1	0.97	2.3	13.5	1.01
7/31/2010	0	0	0	0	0	142.1	8.1	150	7.1	1.545	2.78	1.141	1.97	2.91	15.9	3.94
8/31/2010	0.01	0.001	10	0.001	10	1986.3	14.9		2.81	3	4.8	0.97	1.57	6.53	17.3	0.865
9/30/2010	0.04	0.02	40	0.0026	5	12.1	4		3.62	0.127	0.225	0.071	0.126	1.91	16.9	1.74
10/31/2010	0.02	0.01	20	0.0048	10	8.3	2.1	122	15.6	0.098	0.191	0.054	0.109	1.4	14.8	1.65
11/30/2010	0.03	0.021	30	0.005	9.5	29.4	2.3	98.9	13.8	0.642	0.615	0.33	0.413	2.21	12.3	1.51
12/31/2010	0.03	0.031	30	0.012	10	10.9	1.6		16.1	3.55	2.32	1.07	1.07	4.73	9.4	2.33
1/31/2011	0.03	0.04	30	0.015	13	2419.6	4.3	69.5	2.73	9.16	9.63	4.23	4.91	12	7.5	1.58
2/28/2011	0.02	0.024	20	0.009	10	33.2	2.4		0.406	8.69	8.56	6.99	7.28	9.07	6.9	0.894
3/31/2011	0.03	0.064	30	0.039	12	268.2	8.9		0.2	8.31	9.44	7.55	5.02	8.01	7.5	1.4
4/30/2011	0.02	0.05	20	0.012	4.8	980.4	10.1	88.8	1.91	8.64	3.17	7.43	2.59	3.2	8	0.411
5/31/2011	0.02	0.047	20	0.025	12	42.6	3.2		1.5	7.83	4.54	6.56	3.21	4.86	9.3	0.536
6/30/2011	0.02	0.029	20	0.009	6	114.5	2.3		1.57	11.64	8.57	8.19	6.56	9.7	12.1	0.382
7/31/2011	0.01	0.008	10	0.001	1	46.4	3.7	69	17.1	0.6	0.699	0.234	0.296	2.53	14.6	1.36
Average	1.3	0.0	77.1	0.0	9.4	244.0	3.4	86.3	4.9	6.5	8.2	5.1	6.1	7.5	11.5	1.5
Minimum	0	0	0	0	0	1	0.04	44.3	0.05	0.069	0.119	0.052	0.084	1.36	5	0.251
Maximum	50	0.064	200	0.048	40	2419.6	47.1	193	22.3	26.2	19.9	15.4	18.6	20.9	17.5	3.94
Count	84	24	84	24	24	83	83	31	83	83	83	83	83	81	83	83
Std Dev	6.5	0.0	43.4	0.0	9.3	632.7	6.5	35.6	6.3	4.7	5.8	3.5	4.9	5.1	3.6	0.8
CV	5.01	0.68	0.56	1.14	0.99	2.59	1.91	0.41	1.30	0.72	0.71	0.69	0.81	0.68	0.31	0.51
95th Percentile	1.6	0.0	146.9	0.0	24.9	1986.3	9.9	143.0	18.1	12.1	17.6	9.3	14.1	16.6	17.2	2.9
5th Percentile	0.0	0.0	17.5	0.0	1.1	1.0	1.0	52.3	0.1	0.1	0.2	0.1	0.1	1.5	6.9	0.4

Monitoring Location Desc	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Upstream Monitoring	Upstream Monitoring	Upstream Monitoring	Downstream Monitoring	Downstream Monitoring
Parameter Desc	Cadmium, total recoverable	Cadmium, total recoverable	Cadmium, total recoverable	Cadmium, total recoverable	Lead, total recoverable	Zinc, total recoverable	Zinc, total recoverable	Zinc, total recoverable	Zinc, total recoverable	Chlorine, total residual	Nitrogen, ammonia total (as N)	Phosphorus, total (as P)	pH	Temperature, water deg. centigrade
Statistical Base Short Desc	DAILY MX	DAILY MX	MO AVG	MO AVG	DAILY MX	DAILY MX	DAILY MX	MO AVG	MO AVG	DAILY MX	DAILY MX	DAILY MX	DAILY MX	DAILY MX
Limit Unit Short Desc	lb/d	ug/L	lb/d	ug/L	ug/L	lb/d	ug/L	lb/d	ug/L	mg/L	mg/L	mg/L	SU	deg C
Limits	**0.05**	**11**	**0.025**	**5.5**	**report**	**17**	**3682**	**7.4**	**1610**	**report**	**report**	**report**	**na**	**na**
eff 7/31/09	0.0063	1.37	0.0043	0.936	report	0.7	153	0.44	95.9					
8/31/2004	0.00006	0.1	0.00006	0.1	1.78	0.03	46	0.03	46					
9/30/2004	0.00006	0.118	0.00006	0.118	2.75	0.03	62	0.03	62					
10/31/2004	0.00006	0.1	0.00006	0.1	1.35	0.03	63	0.03	63					
11/30/2004	0.002	4.1	0.002	4.1	11.7	0.13	225	0.13	225					
12/31/2004	0.00009	0.1	0.00009	0.1	3.29	0.08	96	0.08	96					
1/31/2005	0.001	1.3	0.001	1.3	3.26	0.21	257	0.21	257					
2/28/2005	0.00009	0.13	0.00009	0.13	2.71	0.05	83	0.05	83					
3/31/2005	0.0001	0.206	0.0001	0.206	2.44	0.05	67	0.05	67					
4/30/2005	0.001	1.3	0.001	1.3		0.66	580	0.66	580					
5/31/2005	0.0002	0.272	0.0002	0.272	1	0.05	59	0.05	59					
6/30/2005	0.0001	0.272	0.0001	0.272	3.55	0.04	59	0.04	59					
7/31/2005	0.00005	0.1	0.00005	0.1	1.71	0.02	37	0.02	37	0	0.05	0.05	7.4	15
8/31/2005	0.00009	0.197	0.00009	0.197	0.197	0.07	150	0.07	150					
9/30/2005	0.000002	0.134	0.000002	0.134	4.75	0.03	74	0.03	74					
10/31/2005	0.00007	0.147	0.00007	0.147	2.09	0.02	51	0.02	51	0	0.01	0.02	7.2	7
11/30/2005	0.00005	0.1	0.00005	0.1	7.32	0.02	52	0.02	52					
12/31/2005	0.00006	0.1	0.00006	0.1	6.18	0.03	48	0.03	48					
1/31/2006	0.0032	3.69	0.0032	0.183	9.46	3.02	1570	1.39	787					
2/28/2006	0.001	1.13	0.001	1.13	4.33	0.99	816	0.99	816					
3/31/2006	0.001	0.646	0.001	0.646	3.93	1.6	754	1.6	754					
4/30/2006	0.004	2.27	0.004	2.27	7.29	2.08	980	2.08	980					
5/31/2006	0.0009	0.709	0.0009	0.709	1.68	0.73	587	0.73	587					
6/30/2006	0.0082	0.915	0.0082	0.915	5.02	0.33	373	0.33	373					
7/31/2006	0.00017	0.275	0.00017	0.275	5.5	0.033	54	0.033	54	0	0.05	0.057	7.21	12
8/31/2006	0.00024	0.395	0.00024	0.395	5.88	0.098	164	0.098	164					
9/30/2006	0.008	0.148	0.008	0.148	5.42	0.019	44	0.019	44					
10/31/2006	4.95E-05	0.135	4.95E-05	0.135	12	0.026	72	0.026	72	0	0.0263	0.073	7.4	8
11/30/2006	0.00034	1	0.00034	1	29.4	0.018	53	0.018	53					
12/31/2006	0.0002	0.385	0.0002	0.385	14.7	0.057	98	0.057	98					
1/31/2007	0.00015	0.15	0.00015	0.15	8.6	0.0895	91	0.0895	91					
2/28/2007	0.00012	0.157	0.00012	0.157	1.72	0.064	81	0.064	81					
3/31/2007	0.00014	0.3	0.00014	0.3	2.57	0.406	269	0.406	269					
4/30/2007	0.0079	3.12	0.0079	3.12	9.84	2.74	1090	2.74	1090					
5/31/2007	0.00198	1.81	0.00198	1.81	7.35	0.76	696	0.76	696					
6/30/2007	0.00102	1.31	0.00102	1.31	4.2	0.257	331	0.257	331					
7/31/2007	0.00019	0.355	0.00019	0.355	11	0.045	84	0.045	84					
8/31/2007	0.00006	0.3	0.00006	0.3	25	0.019	97	0.019	97	0.02	0.05	0.05	7.78	15.5
9/30/2007	0.00008	0.189	0.00008	0.189	13.2	0.0186	42	0.0186	42					
10/31/2007	0.00009	0.116	0.00009	0.116	11.2	0.054	69	0.054	69					
11/30/2007	0.00009	0.18	0.00009	0.18	8.62	0.03	60	0.03	60	0	0.05	0.05	6.69	6
12/31/2007	0.0023	0.87	0.0023	0.87	7.73	3.17	1190	3.17	1190					
1/31/2008	0.000204	0.349	0.000204	0.349	1	0.146	250	0.146	250					
2/29/2008	0.000344	0.688	0.000344	0.688	1.54	0.171	342	0.171	342					
3/31/2008	0.000567	0.523	0.000567	0.523	0.238	0.345	319	0.345	319					
4/30/2008	0.00174	1.18	0.00174	1.18	1	0.89	603	0.89	603					
5/31/2008	0.0194	3.86	0.0194	3.86	6.16	7.95	1580	7.95	1580					
6/30/2008	0.0033	1.79	0.0033	1.79	1	1.75	943	1.75	943					
7/31/2008	0.00026	0.22	0.00026	0.22	1.49	0.596	507	0.596	507					
8/31/2008	0.000367	0.579	0.000367	0.579	4.11	0.1699	268	0.1699	268	0.02			6.33	9.5
9/30/2008	0.000176	0.302	0.000176	0.302	9.63	0.069	119	0.069	119		0.195	0.05		
10/31/2008	0.000109	0.238	0.000109	0.238	1.1	0.0573	125	0.0573	125					
11/30/2008	6.52E-05	0.115	6.52E-05	0.115	3.42	0.0698	123	0.0698	123	0.02	0.05	0.072	7.5	5
12/31/2008	0.00011	0.186	0.00011	0.186	1.22	0.084	142	0.084	142					
1/31/2009	0.0017	0.471	0.0017	0.471	13.5	0.946	262	0.946	262					
2/28/2009	0.000674	0.988	0.000674	0.988	0.789	0.0996	146	0.0996	146					
3/31/2009	0.009	0.51	0.009	0.51	3.85	0.454	257	0.454	257					
4/30/2009	0.012	7.28	0.012	7.28	10.6	0.612	371	0.612	371					
5/31/2009	0.0032	1.62	0.0032	1.62	3.75	0.7169	360	0.7169	360					
6/30/2009	0.000667	0.51	0.000667	0.51	4.41	0.119	91	0.119	91					
7/31/2009	0.000157	0.241	0.000157	0.241	2.26	0.141	216	0.141	216					
8/31/2009	0.000057	0.105	0.000057	0.105	1.01	0.0527	97	0.0527	97					
9/30/2009	4.88E-05	0.1	4.88E-05	0.1	1.94	0.0325	66.4	0.0325	66.4	0	0.0608	0.05	7.2	13
10/31/2009	0.00006	0.1	0.00006	0.1	6.21	0.0383	63.2	0.0383	63.2					
11/30/2009	0.00017	0.306	0.00017	0.306	10	0.025	45.7	0.025	45.7	0.01	0.102	0.05	7	4.5
12/31/2009	0.000186	0.319	0.000186	0.319	7.63	0.0582	100	0.0582	100					
1/31/2010	0.000069	0.1	0.000069	0.1	12.6	0.094	136	0.094	136					
2/28/2010	0.0001	0.209	0.0001	0.209	6.65	0.038	86.7	0.038	86.7					
3/31/2010	0.00005	0.1	0.00005	0.1	7.77	0.0614	121	0.0614	121					
4/30/2010	0.00007	0.1	0.00007	0.1	12	0.092	129	0.092	129					
5/31/2010	0.000437	0.387	0.000437	0.387	7.31	0.0813	72	0.0813	72					
6/30/2010	0.00012	0.1	0.00012	0.1	6.19	0.221	183	0.221	183					
7/31/2010	0.000217	0.303	0.000217	0.303	6.01	0.106	148	0.106	148					
8/31/2010	0.000088	0.14	0.000088	0.14	10.6	0.037	59.6	0.037	59.6	0.02	0.0204	0.05	7	14.5
9/30/2010	0.000056	0.1	0.000056	0.1	9.93	0.048	85.1	0.048	85.1					
10/31/2010	0.000059	0.12	0.000059	0.12	10.4	0.0472	96.3	0.0472	96.3	0.02	0.0086	0.05	7	7
11/30/2010	0.000048	0.1	0.000048	0.1	9.9	0.054	112	0.054	112					
12/31/2010	0.000059	0.1	0.000059	0.1	15.3	0.0838	143	0.0838	143					
1/31/2011	0.00078	1.3	0.00078	1.3	14.6	0.866	1436	0.866	1436					
2/28/2011	0.0014	1.31	0.0014	1.31	9.3	0.49	463	0.49	463					
3/31/2011	0.000343	0.426	0.000343	0.426	16.1	0.204	254	0.204	254					
4/30/2011	0.025	5.21	0.025	5.21	12.7	10.77	2232	10.77	2232					
5/31/2011	0.00022	0.1	0.00022	0.1	11.2	1.66	749	1.66	749					
6/30/2011	0.00123	0.904	0.00123	0.904	18.9	0.413	304	0.413	304					
7/31/2011	0.00079	0.919	0.00079	0.919	2.66	0.413	481	0.413	481					
Average	0.0	0.8	0.0	0.7	6.9	0.6	313.8	0.6	304.5	0.0	0.1	0.1	7.1	9.8
Minimum	0.000002	0.1	0.000002	0.1	0.197	0.018	37	0.018	37	0	0.0086	0.02	6.33	4.5
Maximum	0.025	7.28	0.025	7.28	29.4	10.77	2232	10.77	2232	0.02	0.195	0.073	7.78	15.5
Count	84	84	84	84	83	84	84	84	84	12	12	12	12	12
Std Dev	0.0	1.3	0.0	1.3	5.7	1.7	433.1	1.7	414.4	0.0	0.1	0.0	0.4	4.0
CV	2.73	1.71	2.73	1.76	0.83	2.90	1.38	2.97	1.36	1.04	0.97	0.28	0.06	0.41
95th Percentile	0.0	3.6	0.0	3.0	15.2	2.6	1175.0	2.0	1073.5	0.0	0.1	0.1	7.6	15.2
5th Percentile	0.0	0.1	0.0	0.1	1.0	0.0	46.3	0.0	46.3	0.0	0.0	0.0	6.5	4.8

B. Organic and Hydraulic Loading to WWTP

Influent flow and loading has increased since issuance of the 2004 permit.



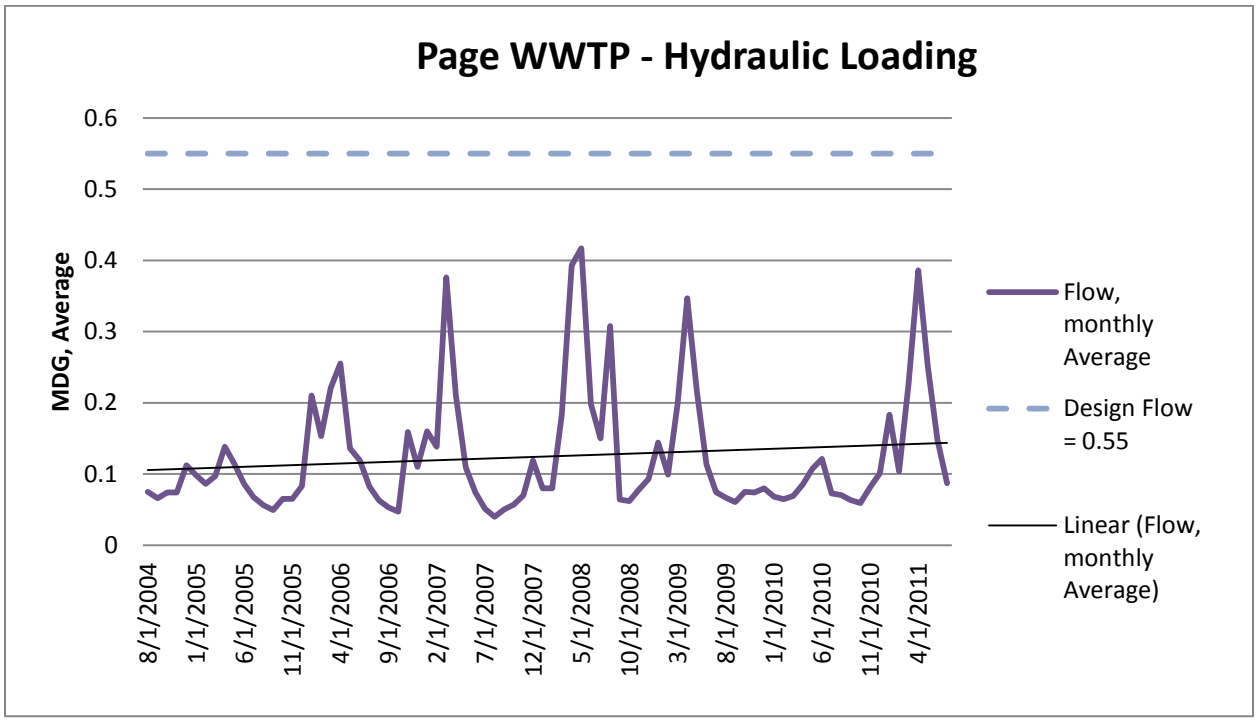


Figure 10. Page WWTP Average Monthly Influent Loading - 2004 to 2011

C. Effluent Metal Concentration

The following graphs are of the metals effluent data as submitted on the DMRs. Cadmium and zinc were only slightly changed over the period from 2004 to 2011. There has been an increase in lead concentrations since 2008. The higher concentrations of lead coupled with the high variability in the concentrations has lead contribute to there being a reasonable potential to cause or contribute to violations of the WQS for lead. A WQBEL is needed to lead and should be achievable based on historical effluent data.

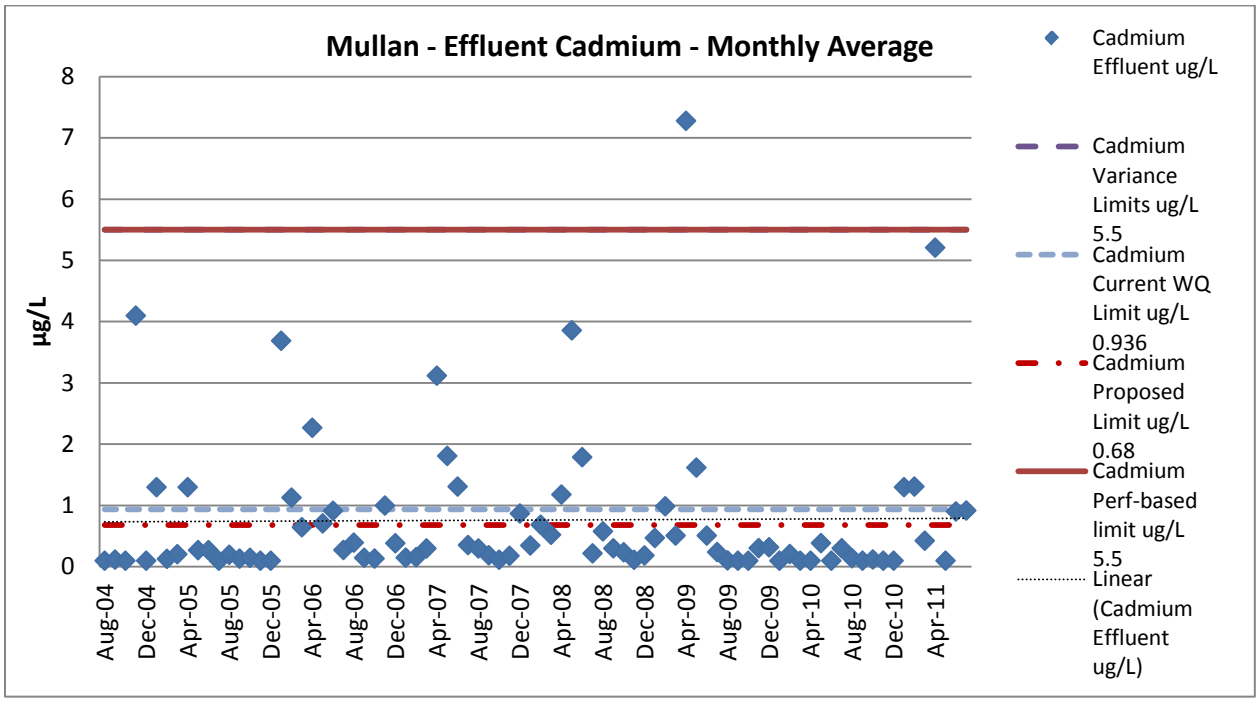


Figure 11. History of Effluent Cadmium Concentrations

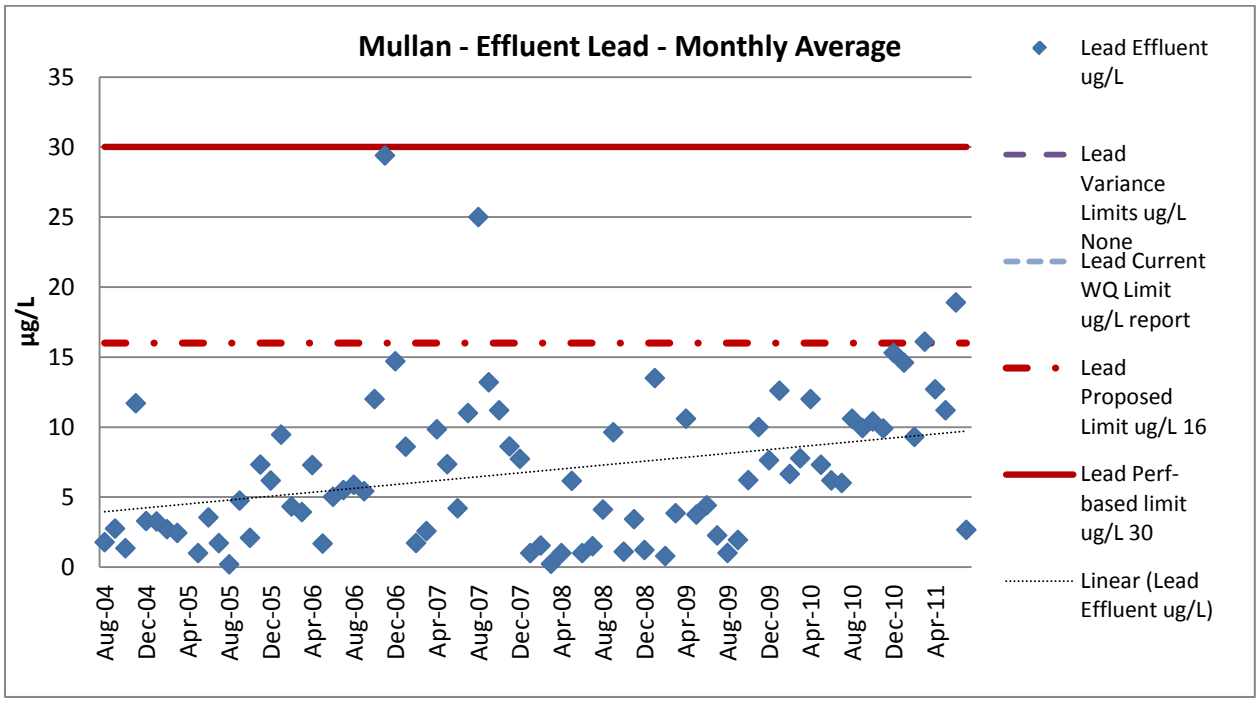


Figure 12. History of Effluent Lead Concentrations

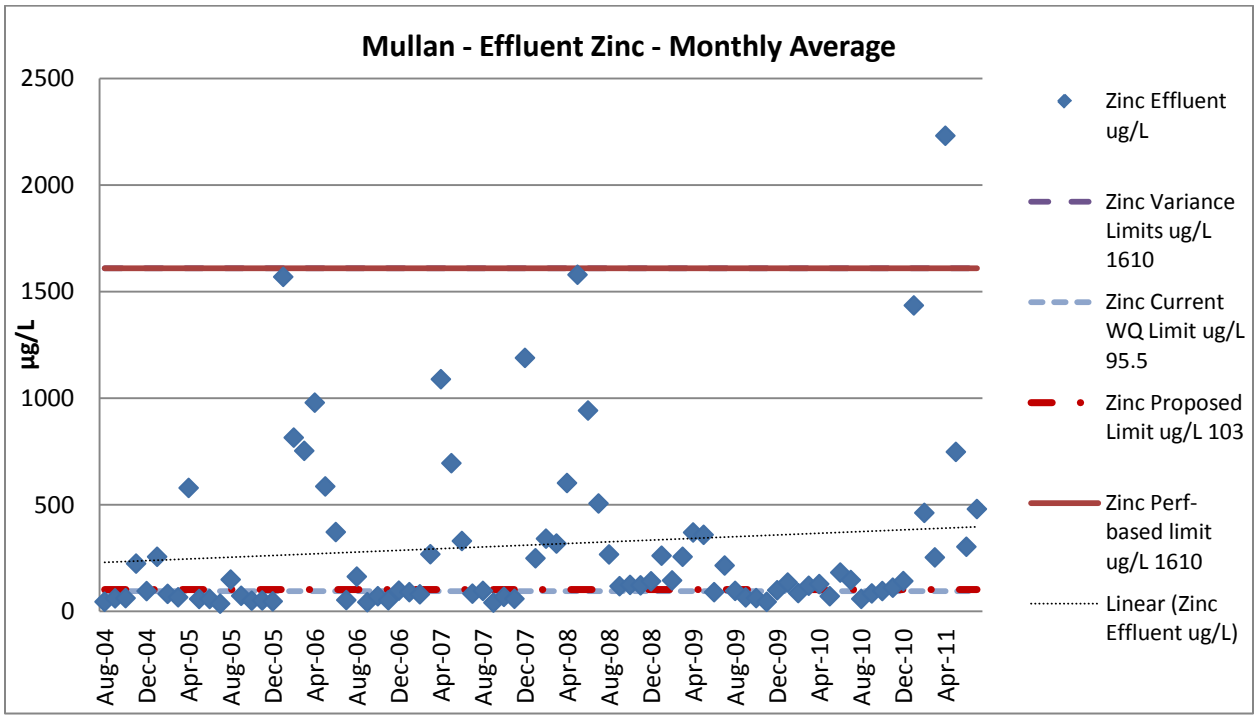


Figure 13. History of Effluent Zinc Concentrations

D. Effluent Data from Permit Application

The permit application data provided no additional data than was available in the discharge monitoring report summary, Appendix B.

Since the application was submitted in January 2009, additional data was reported in the monthly DMRs. DMR data as shown in Appendix B was used for evaluating reasonable potential and establishing permit limits. The calculated coefficient of variation (CV) and the 95th percentile was used in the reasonable potential analysis, Appendix D.

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		

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.

A. Receiving Water Quantity

The EPA determined critical design flows in the vicinity of the discharge considering stream flow data from the from the following U.S. Geological Survey (USGS) monitoring locations:

Upstream: USGS 12413040
SF COEUR D ALENE R ABV DEADMAN GULCH NR MULLAN ID
Latitude 47°28'24", Longitude 115°45'56" NAD27

Downstream: USGS 12413210
SF COEUR D ALENE AT ELIZABETH PARK NR KELLOGG ID
Latitude 47°31'53", Longitude 116°05'33

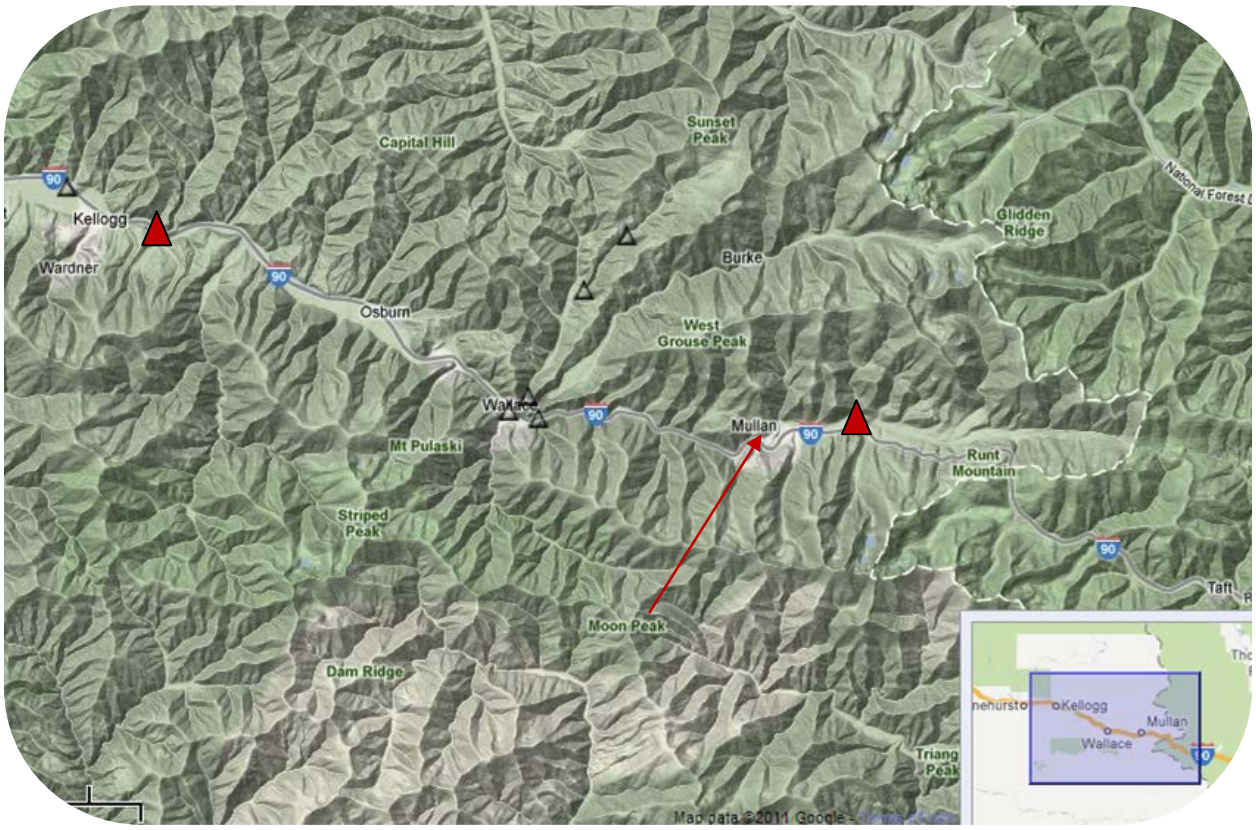


Figure 14. River Flow Monitoring Stations in the Vicinity of the Outfall

Data from the upstream Mullan's monitoring site was used as the basis for critical flow data for the 2004 permit. Monitoring data for this location spans only 20 months, from October 1998 through April 2000. According to the previous fact sheet, the 1Q10 and 7Q10 were set as the lowest flow observed during the time period. The lowest flow during the permit was 9.2 cfs. This flow was used for both the 1Q10 and 7Q10 flows as the basis for evaluating reasonable potential and for establishing permit limits.

Because the data is relatively old and of a very short duration for establishing critical flows, the proposed permit will be based on flow data correlated from the active gauge at Kellogg near Elizabeth Park. The Elizabeth Park monitoring location has daily flow beginning in 1987 through 2009.

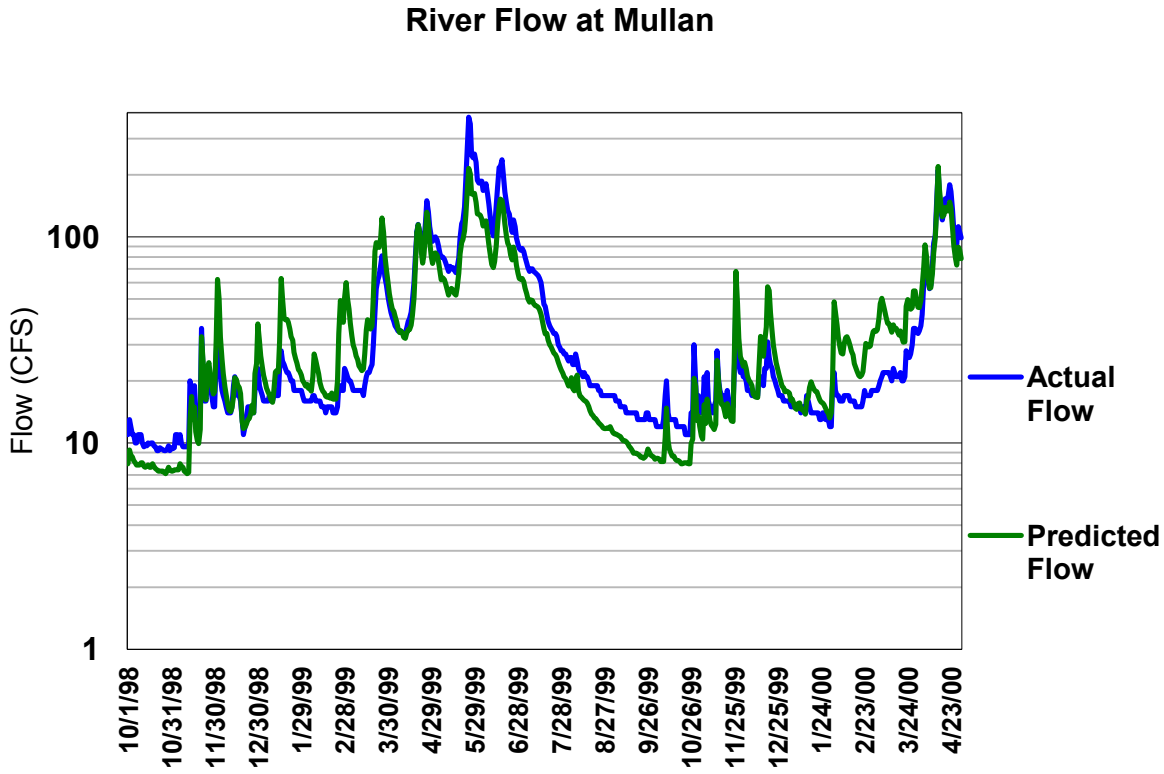


Figure 15. SF Coeur d'Alene River Flow – Predicted vs. Actual Flow at Mullans

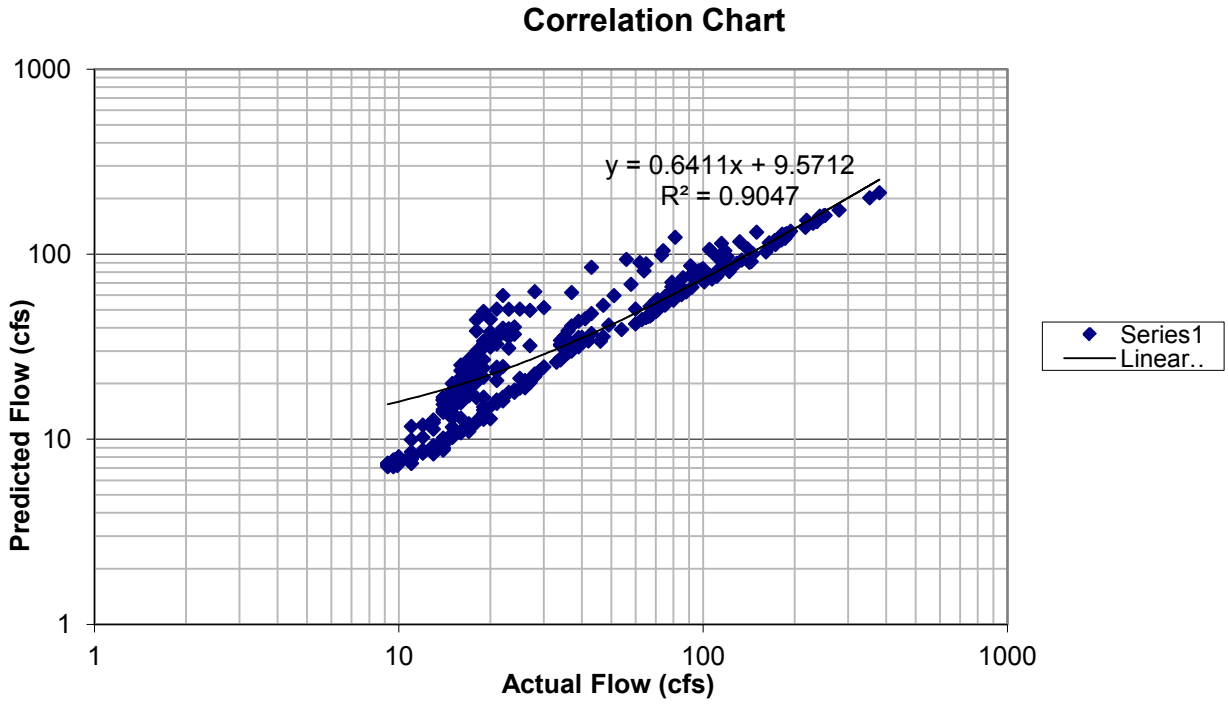


Figure 16. Correlation River Flow vs. Effluent Flow

The critical design flows were calculated using the EPA's dFlow[1] program for flows at Kellogg near Elizebeth Park using 25 years of data and correlated with the available flow data near Mullan's (20 months of flow data).

Table 14. River Critical Design Flows – Estimated Near Mullan

Critical Flow Parameter	SF Coeur d'Alene River Near Mullan (year around)	SF Coeur d'Alene River Near Mullan Low Flow (July – December)	SF Coeur d'Alene River Near Mullan High Flow (January – June)
1Q10	**4.6**	5.3	4.8
7Q10	**5.8**	6.6	5.9
30Q10	**6.4**	7.9	6.3
30Q5	**6.6**	9.9	6.8
Harmonic Mean	**15.0**	15.0	14.8

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[2]). 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 following formula is used to calculate a dilution factor based on the allowed mixing.

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

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

Dilution factor is calculated based on the design flow. The design flow of 0.55 mgd was used to evaluate the reasonable potential of the discharge to cause or contribute to violations of the WQS. Additional, dilution factors were calculated based on yearly and seasonal flows. The draft permit established seasonal limits for both chlorine and ammonia.

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

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

Table 15. Dilution Factors Yearly Critical River Flows

Plant Data	Units	Design Flow
Design Flow	mgd	0.55
Design Flow	cfs - calculated	0.851
BOD_5	lb/day	
TSS	lb/day	

Annual Flows (April - March)

Estimated Critical Design Flows USGS 12413470 SF COEUR D ALENE RIVER NR PINEHURST ID

Critical Flow Parameter		Used for evaluating criteria for:
1Q10	4.6	**Aquatic Life Uses - Acute**
7Q10	5.8	**Aquatic Life Uses - Chronic**
30B3	6.4	**Ammonia**
30Q5	6.6	**Human Health – Non-carninogen**
Harmonic Mean	15.0	**Human Health – Carcinogen**

Calculation of Dilution Factors based on Critical Design Flows and design WWTP Flows

Dilution Factors	Allowable % of river flow	Dilution Factor	Basis	Receiving Water Concentration (RCW)
DF-edge of Acute zone	0.25	**2.4**	**1Q10**	
DF-edge of Chronic zone	0.25	**2.7**	**7Q10**	**37%**
Ammonia	0.25	**2.9**	**30B3**	
HH-Non-Carcinogen	1	**8.8**	**30Q5**	
HH-Carcinogen	1	**18.6**	**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 SFCDRSD at a sample point just upstream of the discharge was used to characterize the receiving water upstream of the point of discharge. The tables below summarize the receiving water data used to evaluate the reasonable potential of the discharge to contribute to violations of the WQS.

The SFCDRSD provided receiving water data upstream of the point of the discharge. Refer to Appendix B.

Table 16: Receiving Water Quality

Summary of data -		USGS 12413040 SF COEUR D ALENE R ABV DEADMAN GULCH NR MULLAN ID											
Date	# P00010 - Temperature, water, degrees Celsius	# P00400 - pH, water, unfiltered, field, standard units	# P00418 - Alkalinity, water, filtered, fixed endpoint (pH 4.5) titration, field, milligrams per liter as calcium carbonate	# P00608 - Ammonia, water, filtered, milligrams per liter as nitrogen	# P00631 - Nitrate plus nitrite, water, filtered, milligrams per liter as nitrogen	# P00665 - Phosphorus, water, unfiltered, milligrams per liter as phosphorus	# P00900 - Hardness, water, milligrams per liter as calcium carbonate	# P01027 - Cadmium, water, unfiltered, micrograms per liter	# P01051 - Lead, water, unfiltered, recoverable, micrograms per liter	# P01092 - Zinc, water, unfiltered, recoverable, micrograms per liter	# P01350 - Turbidity, severity, code	# P29801 - Alkalinity, water, filtered, fixed endpoint (pH 4.5) titration, laboratory, milligrams per liter as calcium carbonate	# P62855 - Total nitrogen (nitrate + nitrite + ammonia + organic-N), water, unfiltered, analytically determined, milligrams per liter
10/22/1998	7	7.6					58.4	< 1.0	< 1.0	< 10			
11/16/1998	5.4	7.7					55.6	< 1.0	9.7	60			
12/14/1998	2.5	7.7					52.4	< 1.0	6.9	30			
1/20/1999	2	7.5					52.1	< 1.0	3.9	20			
3/22/1999	2	7.7					41.8	< 1.0	24.5	52			
4/19/1999	3.5	7.5					31.6	< 1.0	4.7	E 33			
5/5/1999	3.5	7.3					32.2	< 0.10	2.33	9		30	
5/22/1999	8.5	7.4					20.3	< 0.10	3.54	9			
5/25/1999	6.4	7.3					12.3	0.11	12.6	20		14	
5/27/1999	6	7.3					14.3	< 0.10	4.66	10			
5/31/1999	5.5	7.4					15	< 0.10	2.38	6			
6/16/1999	5.9	7.2					12.4	< 0.10	2.94	6		13	
6/16/1999							12.3	< 0.10	3.03	7		13	
7/12/1999	11.8	7.3					20.6	< 0.10	1.8	4		21	
8/12/1999	10.5	7.5					39.4	< 0.10	1.41	7		38	
8/31/1999	9.5	8					49.8	< 0.10	1.26	8		43	
11/15/1999	6	7.8					52.2	< 0.10	5.02	13		42	
1/13/2000	0	7.5	44				56.8	< 1.00	3.75	19			
1/13/2000							57	< 1.00	3.71	16			
2/14/2000	1.5	7.5	41				49.7	< 1.00	1.6	11			
3/21/2000	4	7.7	45				58.2	< 1.00	6.6	< 19			
8/24/2000								M					
10/14/2003	6.7	7.3					69						
10/7/2004	8.3	7.4					59.6						
10/17/2005	8.1	7.4					68.5						
10/2/2006	9	7.2					66.8				1		
10/15/2007	6.1	7.3		0.131	0.083	E 0.007	73.2	0.19	4.08	31.7			0.2
12/3/2007	0.9	7.4		0.06	0.094	0.019	53.8	0.33	6.3	52.2			0.27
2/4/2008	0.8	7.4		0.109	0.168	E 0.005	64.6	0.28	12.4	56	0		0.32
5/6/2008	3.5	7.4		< 0.020	0.126	0.023	37.4	0.15	4.82	29			0.26
5/17/2008	7	7.1		< 0.020	0.076	0.083	21.7	0.23	13.6	40.8			0.39
5/17/2008													
6/23/2008	6	7.1		< 0.020	0.02	0.011	15.2	0.06	1.2	13.9			0.09
8/8/2008	12.4	7.8		< 0.020	0.037	E 0.008	55.4	0.12	3.37	21.5	0		0.06
9/10/2008	10	7.9		0.028	0.047	E 0.007	59.1	0.1	2.15	19.8	0		0.1
10/14/2008	6.5	7.5					66.8				0		
10/15/2009	5.7	7.5					75.7				0		
4/21/2010	4.6	6.9		E 0.016	0.062	0.028	20.9	0.16	4.71	23.1	1		0.18
10/4/2010	10.7	7.7		0.021	0.194	0.061	65.3	0.25	28.9	45.7	2		2.38
6/7/2011	5.1	6.3		< 0.010	0.034	0.025	16.2	0.05	2.98	11.2			0.06
10/11/2011	8.4	7.8		< 0.010	0.047	0.01	51.6	0.11	24.9	< 30.0	0		0.08
Count	37	37	3	5	12	8	39	13	32	29	9	8	12
Min	0	6.3	41	0.021	0.02	0.01	12.3	0.05	1.2	4	0	13	0.06
Max	12.4	8	45	0.131	0.194	0.083	75.7	0.33	28.9	60	2	43	2.38
Ave	5.98	7.44	43.33	0.07	0.08	0.03	44.49	0.16	6.74	22.48	0.44	26.75	0.37
Std. Dev.	3.16	0.31	2.08	0.05	0.05	0.03	20.34	0.09	7.13	16.83	0.73	13.13	0.64
CV = average/std	0.53	0.04	0.05	0.70	0.67	0.80	0.46	0.52	1.06	0.75	1.63	0.49	1.76
95th Percentile	10.9	7.8	44.9	0.1	0.2	0.1	69.4	0.3	24.7	54.5	1.6	42.7	1.3
90th Percentile	**10.2**	**7.8**	**44.8**	**0.1**	**0.2**	**0.1**	**67.1**	**0.3**	**13.5**	**52.0**	**1.2**	**42.3**	**0.4**
5th Percentile	0.88	7.06	41.3	0.0224	0.0277	0.01035	12.39	0.056	1.3425	6	0	13	0.06
SUMMARY DATA FOR 2000-2011													
Count	21	21	3	5	12	8	22	12	16	14	9		12
Min	0	6.3	41	0.021	0.02	0.01	15.2	0.05	1.2	11	0		0.06
Max	12.4	7.9	45	0.131	0.194	0.083	75.7	0.33	28.9	56	2		2.38
Ave	5.97	7.39	43.33	0.07	0.08	0.03	52.84	0.17	7.82	27.92	0.44		0.37
Std. Dev.	3.37	0.35	2.08	0.05	0.05	0.03	18.62	0.09	8.24	15.17	0.73		0.64
CV = average/std	0.57	0.05	0.05	0.70	0.67	0.80	0.35	0.52	1.05	0.54	1.63		1.76
95th Percentile	10.7	7.8	44.9	0.1	0.2	0.1	73.0	0.3	25.9	53.5	1.6		1.3
90th Percentile	**10.0**	**7.8**	**44.8**	**0.1**	**0.2**	**0.1**	**69.0**	**0.3**	**19.3**	**50.3**	**1.2**		**0.4**
5th Percentile	0.8	6.9	41.3	0.0224	0.0277	0.01035	16.435	0.0555	1.5	11.13	0		0.06
WQS - chronic								0.77	19.41	149.71			

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 17. 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 Mullan WWTP uses chlorine disinfection. A 0.5 mg/L average monthly limit for chlorine is derived from standard operating practices. The Water Pollution Control Federation's *Chlorination of Wastewater* (1976) states that a properly designed and maintained wastewater treatment plant can achieve adequate disinfection if a 0.5 mg/L chlorine residual is maintained after 15 minutes of contact time. Therefore, a wastewater treatment plant that provides adequate chlorine contact time can meet a 0.5 mg/L total residual chlorine limit on a monthly average basis. In addition to average monthly limits (AMLs), NPDES regulations require effluent limits for POTWs to be expressed as average weekly limits (AWLs) unless impracticable. 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[7]

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

Table 18. 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 0.55 mgd x 8.34 = 137.6 Round to 138	45 mg/L x 0.55 mdg x 8.34 = 206.4 Round to 206
Total Suspended Solids (TSS)	30 mg/L x 0.55 mgd x 8.34 = 137.6 Round to 138	45 mg/L x 0.55 mdg x 8.34 = 206.4 Round to 206

The water quality-based limits for TSS established by the TMDL are more stringent than the technology-based limits above. The permit uses the more stringent limit established by the TMDL as discussed in the next sections.

The loading limits for BOD_5 in the current permit are more stringent than the technology-based limits above. The permit retains the more stringent limits in the current permit.

EPA methodology and Federal regulations at 40 CFR §122.45 (b) and 122.45 (f)) require BOD_5 limitations to be expressed as mass-based limits using the design flow (0.55 mgd) of the facility. The loading limits were taken from the previous permit to avoid backsliding.

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 all affected States.

The NPDES regulation 40 CFR 122.44(d)(1) implementing Section 301(b)(1)(C) of the CWA requires that permits include limits for all pollutants or parameters which are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State or Tribal water quality standard, including narrative criteria for water quality, and that the level of water quality to be achieved by limits on point sources is derived from and complies with all applicable water quality standards.

The regulations require the permitting authority to make this evaluation using procedures which account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant in the effluent, species sensitivity (for toxicity), and where appropriate,

[7] 8.34 is a conversion factor with units (lb ×L)/(mg × gallon×10^6)

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 increases, EPA has used the 5th percentile 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.

Site Specific Criteria (SSC) for Cadmium, Lead and Zinc

Site-specific water quality criteria (SSC) that reflect local environmental conditions are allowed by federal and state regulations. 40 CFR 131.11 provides States with the opportunity to adopt water quality criteria that are "…modified to reflect site specific conditions."[8] SSC were for cadmium, lead and zinc were adopted by IDEQ in the Water Quality Standards and approved by EPA. The following equations were used to calculate the numeric criteria for these pollutants. The same hardness that was used to established criteria in the previous permit was used in the proposed permit. A hardness of 67 mg/L $CaCO_3$ was used to calculate the applicable criteria.

[8] Development of Site-Specific Water Quality Criteria for the South Fork Coeur d'Alene River, Idaho, Application Of Site-Specific Water Quality Criteria Developed In Headwater Reaches To Downstream Waters. Idaho Department of Environmental Quality, December 13, 2002, (http://www.deq.idaho.gov/media/445306-sfcda_criteria_downstream.pdf)

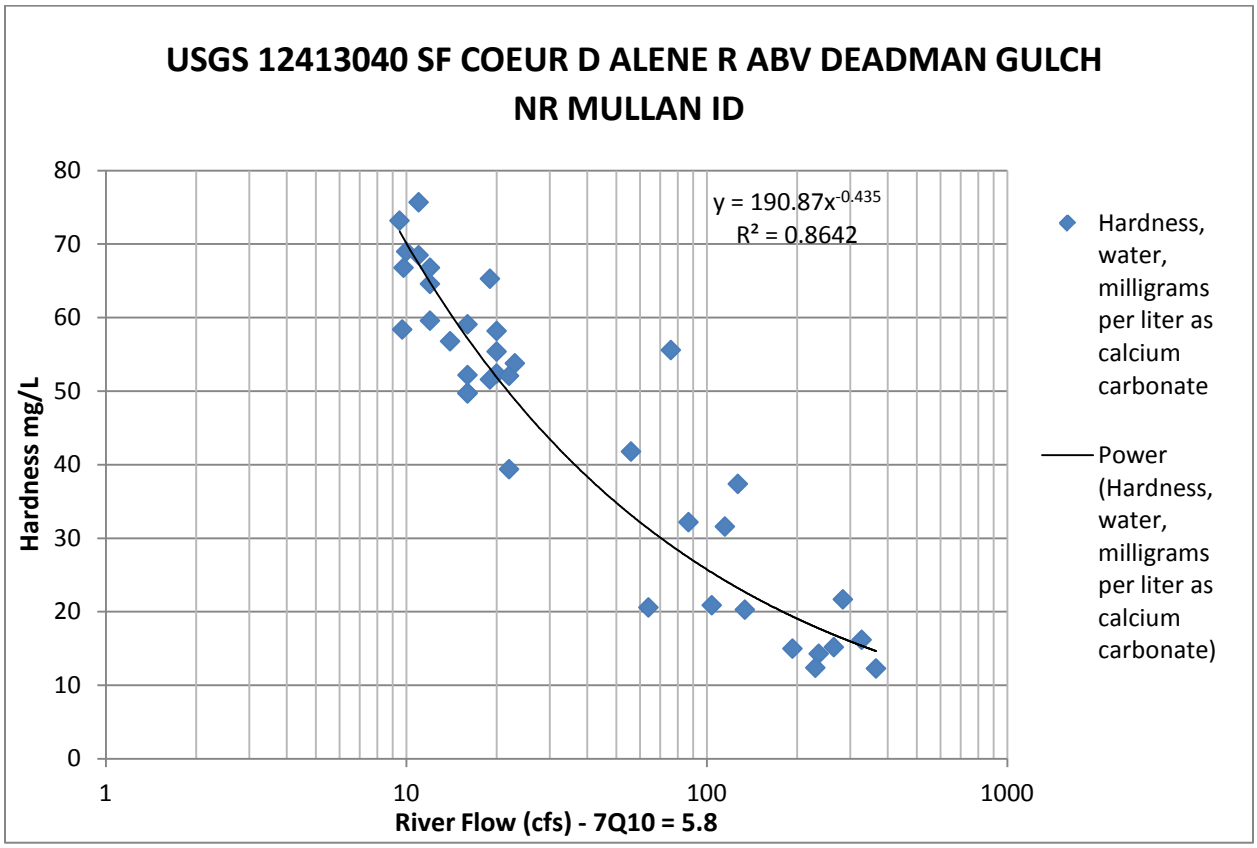


Figure 17. Receiving Water Hardness at Critical Condtions

Table 19. Site Specific Criteria Equations for Cadmium, Lead and Zinc

Parameter	CMC (µG/L)	CCC (µG/L)
Cadmium	exp(1.0166 x ln(hardness)-3.924)	[1.101672-(ln(hardness) x 0.041838] x exp(0.7852*LN(hardness)-3.49)
Lead	exp(0.9402 x ln(hardness)+1.1834)	exp(0.9402 x ln(hardness)-0.9875)
Zinc	exp(0.6624 x ln(hardness)+2.2235)	exp(0.6624 x ln(hardness)+2.2235)

Table 20. Applicable Numeric Criteria

Idaho - Numeric Criteria for Toxic Substances (IDAPA 50.01.02.210)

Sources: IDAPA 58.01.02; EPA National Recommended Water Quality Criteria

		Notes:
Receiving water Hardness, mg/L as	67.0	Used in 2004 permit. Consistent with hardness ar critical river flow conditions.
Receiving pH	7.8	95th Percentile DMR 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, leave blank		
Criteria below calculated using:		
Acute Hardness, mg/L:	**67.0**	Use effluent hardness for Cd, Pb, Zn since no mixing zone authorized. Used mixed hardness for Cu.
Chronic Hardness, mg/L:	**67.0**	
Mixed Hardness:		
Apply 'Mixed Hardness' (Y/N)?:	N	No mixing zone authorized. Receiving water exceed stanards for metals.
Effluent Hardness, mg/L:	52.3	5th percentile DMR Data
Acute Mixed Hardness, mg/L:	60.8	If mixing zone authorized.
Chronic Mixed Hardness, mg/L:	61.5	If mixing zone authorized.

Pollutant	Select Pollutant of Concern or enter µg/L	Idaho (Number)	Acute Hardness, mg/L	Chronic Hardness, mg/L	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	yes	**0.1**			N	N						
CADMIUM	yes	**4**	67	67	Y	N	1.38	0.77	Narrative	Narrative	0.973	0.926
CHLORINE (Total Residual)	yes	**121**			N	N	19	11				
LEAD	yes	**7**	67	67	Y	N	170	19.4	Narrative	Narrative	1.000	1.000
ZINC	yes	**13**	67	67	Y	N	150	150	7400.00	26000.00	1.000	1.000

Table 21. Applicable Ammonia Criteria

Freshwater Un-ionized Ammonia Criteria Calculation

Based on IDAPA 58.01.02

INPUT	
1. Receiving Water Temperature (deg C):	15.2
2. Receiving Water pH:	7.60
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:	0.151
Chronic:	0.028
Total ammonia nitrogen criteria (mg N/L):	
Acute Criterion (CMC)	**11.37**
Chronic Criterion (CCC)	**3.80**

DMR data 95th Percentile
DMR data 95th Percentile

Acute Criteria Equation:

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

Chronic Criteria Equation

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

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 (*refer to as TSD*)* (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:

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

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:

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

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:

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

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

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

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

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

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

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

Table 22. Dilution Factors

Dilution Factors	**Dilution Factor Year Around**	Dilution Factor Low Flow (July - November)	Dilution Factor High Flow (December - June)
Dilution Factor - edge of Acute zone	**3.5**	3.6	3.7
Dilution Factor - edge of Chronic zone	**3.8**	3.8	4.2
Ammonia	**4.1**	4.1	4.8
Human Health - Non-Carcinogen	**14.0**	10.55	20.7
Human Health - Carcinogen	**33.8**	33.8	33.9

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 99th 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 99th percentile is calculated by multiplying the maximum reported effluent concentration by a "reasonable potential multiplier" (RPM). The RPM is the ratio of the 99th 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. The calculations are incorporated into the reasonable potential worksheet, Tables 28 and 29.

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,

$\sigma^2 = \ln(CV^2 + 1)$
$\sigma_4^2 = \ln(CV^2/4 + 1)$
$z = 2.326$ for 99^{th} 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,

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

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, chlorine, cadmium, lead, and zinc show a reasonable potential to contribute to violations of the WQS. WQ-based effluent limits were established for ammonia chlorine, cadmium, lead and zinc.

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 23. Reasonable Potential Analysis for pH

Calculation of pH of a Mixture of Two Flows

Supplementary Stream Design Conditions for Steady State Modeling. USEPA Office of Water, Washington D.C.)

	Yr. Aournd Basis		
INPUT	**Min Limit**	**Max Limit**	**Comments**
1. Dilution Factor at Mixing Zone Boundary	2.7	2.7	Chronic Dilution Factor at Design Flow and Low River Flow Conditions
2. Ambient/Upstream/Background Conditions			
Temperature (deg C):	14.40	0.00	Max. and min. temperature for lower and upper pH, respectively, based on USGS data
pH	6.90	7.80	5th and 95th percentile values for pH for lower and upper pH, respectively, based on USGS data.
Akalinity (mg $CaCO_3$/L):	41.00	41.00	5th percentile USGS data
3. Effluent Characteristics			
Temperature (deg C):	17.50	5.00	Max and min for lower and upper temperature, DMR data
pH	**6.50**	**9.00**	Limts estiablished based on WQS. Actual max effluent 7.7, min effluent 7.1 based on permit application.
Akalinity (mg CaCO3/L):	100.00	100.00	No data available. Assume based on typical effluent.
OUTPUT			
1. Ionization Constants			
Upstream/Background pKa:	6.42	6.57	
Effluent pKa:	6.40	6.51	
2. Ionization Fractions			
Upstream/Background Ionization Fraction:	0.75	0.94	
Effluent Ionization Fraction:	0.56	1.00	
3. Total Inorganic Carbon			
Upstream/Background Total Inorganic Carbon (mg CaCO3/L):	55	43	
Effluent Total Inorganic Carbon (mg CaCO3/L):	179	100	
4. Condtions at Mixing Zone Boundary			
Temperature (deg C):	15.55	1.86	
Akalinity (mg CaCO3/L):	62.90	62.90	
Total Inorganic Carbon (mg CaCO3/L):	101.03	64.54	
pKa:	6.42	6.55	
RESULTS			
pH at Mixing Zone Boundary:	**6.63**	**8.13**	Effluent limits based on WQS do not have a reasonable potential to contibute to violations 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)

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).

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 twice per month. Temperature data was reported on the DMR as a monthly average and monthly maximum, refer to DMR data summary, Appendix B. 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.

Reasonable Potential Analysis - E. Coli

The proposed permit does not allow for a mixing zone for bacteria. The permittee must meet the water quality standards at the point of discharge. Therefore, there is not reasonable potential when the permittee is in compliance with the effluent limitations.

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

The Idaho water quality standards also state that a water sample that exceeds certain "single sample maximum" values indicates a likely exceedance of the geometric mean criterion, although it is not, in and of itself, a violation of water quality standards. For waters designated for primary contact recreation, the "single sample maximum" value is 406 organisms per 100 ml (IDAPA 58.01.02.251.01.b.ii.).

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

Reasonable Potential Analysis – Dissolved Oxygen

Discharge from the Mullan WWTP are is expected to have an appreciable effect on the dissolved oxygen concentration in the SFCDA River because BOD_5 and ammonia limitations are expected to control the discharge of oxygen demanding constituents into the SFCDA River. The water body is not impaired for dissolved oxygen.

Changes in dissolved oxygen must be evaluated through modeling such as a steady state model using the Streeter-Phelps Analysis. The best available information was used in the model. The model shows that the discharge will not cause the downstream dissolved oxygen to drop below the standard of 6.0 mg/L of dissolved oxygen.

Streeter-Phelps Analysis of Critical Dissolved Oxygen Sag

INPUT		
1. EFFLUENT CHARACTERISTICS		
Discharge (cfs):	0.85085	Design Flow
CBOD5 (mg/L):	25	Maximium Allowed under Seocndary Treatment Standards
NBOD (mg/L):	2.6	estimate
Dissolved Oxygen (mg/L):	2	estimate
Temperature (deg C):	17.2	DMR data 95th Percentile
2. RECEIVING WATER CHARACTERISTICS		
Upstream Discharge (cfs):	5.77	Low Flow 7Q10
Upstream CBOD5 (mg/L):	1.5	estimate
Upstream NBOD (mg/L):	0.2	estimate
Upstream Dissolved Oxygen (mg/L):	10.8	USGS 12413210 SF COEUR D ALENE AT ELIZABETH PARK NR KELLOGG ID, 2 data points low 10.8
Upstream Temperature (deg C):	12.4	Max Value at USGS 124123040
Elevation (ft NGVD):	3200	Topo Map
Downstream Average Channel Slope (ft/ft):	0.00088	estimate
Downstream Average Channel Depth (ft):	4	estimate
Downstream Average Channel Velocity (fps):	1	estimate
3. REAERATION RATE (Base e) at 20 deg C (day^-1):	3.57	

Reference	Applic. Vel (fps)	Applic. Dep (ft)	Suggested Values
Churchill	1.5 - 6	2 - 50	1.14
OConnor and Dobbins	0.1 - 1.5	2 - 50	1.62
Owens	0.1 - 6	1 - 2	1.66
Tsivoglou-Wallace	0.1 - 6	0.1 - 2	6.08

4. BOD DECAY RATE (Base e) AT 20 deg C (day^-1):	2.51
(Suggested value = 2.51, *Wright and McDonnell, 1979*)	

OUTPUT	
1. INITIAL MIXED RIVER CONDITION	
CBOD5 (mg/L):	4.5
NBOD (mg/L):	0.5
Dissolved Oxygen (mg/L):	9.7
Temperature (deg C):	13.0
2. TEMPERATURE ADJUSTED RATE CONSTANTS (Base e)	
Reaeration (day^-1):	3.03
BOD Decay (day^-1):	1.82
3. CALCULATED INITIAL ULTIMATE CBODU AND TOTAL BODU	
Initial Mixed CBODU (mg/L):	6.6
Initial Mixed Total BODU (CBODU + NBOD, mg/L):	7.2
4. INITIAL DISSOLVED OXYGEN DEFICIT	
Saturation Dissolved Oxygen (mg/L):	9.335
Initial Deficit (mg/L):	-0.33
5. TRAVEL TIME TO CRITICAL DO CONCENTRATION (days):	0.45
6. DISTANCE TO CRITICAL DO CONCENTRATION (miles):	7.31
7. CRITICAL DO DEFICIT (mg/L):	1.91
8. CRITICAL DO CONCENTRATION (mg/L):	**7.42**

Reasonable Potential Analysis – Turbidity

There was insufficient information to adequately evaluate the impacts of the discharge on turbidity. Typical a simple mixing model can be used to evaluate the final turbidity downstream from the point of discharge. There was limited data about turbidity upstream and downstream from the USGS gauge stations at Smelterville and Pinehurst, respectively. Additionally, the permittee is required to monitoring total suspended solids (TSS) and not turbidity.

It is assumed that the technology-based limit for TSS is protective of water quality for turbidity. The waterbody is impaired for TSS for which a TMDL has completed and a wasteload has been allocated to the Page WWTP.

Reasonable Potential Analysis – Numeric Criteria

The following Excel® worksheets incorporate both Reasonable Potential Analysis and, as needed, water-quality based effluent limitations (WQBELs). TSD calls for using $n \geq 4$ if the limit is based on the chronic long term average (LTAc) because the chronic criterion is based on 4-days. (Reference EPA Technical Support Document, March 1991, Section 5.5.3, page 107)

The default value CV of o.6 was used for the statistical calculation of the monthly average and daily maximum limits. There data shows high variability at this time due to low and non-detect values. The long term CV will likely approach the default value.

Table 24. Reasonable Potential and Limits for Aquatic Life Criteria

Reasonable Potential Calculation

Facility:	SFCDSD - Mullan WWTP
Water Body Type	Freshwater

Water Designation	Dilution Factors	
Aquatic Life - Acute Criteria - Criterion Max. Concentration (CMC)	2.4	1Q10
Aquatic Life - Chronic Criteria - Criterion Continuous Concentration (CCC)	2.7	7Q10 or 4B3
Ammonia	2.9	30B3
Human Health - Non-Carcinogen	8.8	30Q5
Humn Health - carcinogen	18.6	Harmonic Mean Flow

Receiving Water Hardness = 67 mg/L

Receiving Water Temp, °C	15.2	95th percentile DMR Data
Receiving Water pH	7.6	96th percentile DMR Data

Pollutant			AMMONIA,as Total NH3	CHLORINE (Total Residual)	CADMIUM	LEAD	ZINC
Effluent Data	# of Samples (n)		156	780	84	83	84
	Coeff of Variation (Cv)		0.6	0.6	1.71	0.83	1.38
	Effluent Concentration, µg/L (Max. or 95th Percentile)		12,100	1600	3.6	15.2	1175
	Calculated 50th percentile Effluent Conc. (when n>10)				0.8	6.9	313.8
Mizing Zone Used	Aquatic Life - Acute		2.4	2.4	1.0	1.0	1.0
	Aquatice Life - Chronic			2.7	1.0	1.0	1.0
	Ammonia		2.9				
	Human Health - Non-Carcinogen			8.8	1.0	1.0	1.0
	Humn Health - carcinogen			18.6	1.0	1.0	1.0
Receiving Water Data	90th Percentile Conc., µg/L		1,000.0	0	0.3	13.5	50.3
	Geo Mean, µg/L						
Water Quality Criteria	Aquatic Life Criteria, µg/L	Acute	11,375	19	1.4	170	150
		Chronic	3,805	11	0.77	19.4	150
	Human Health Water and Organism, µg/L		-	-	Narrative	Narrative	7400
	Human Health, Organism Only, µg/L		-	-	Narrative	Narrative	26000
	Metal Criteria Translator, decimal	Acute	-	-	0.973	1.000	1.000
		Chronic	-	-	0.926	1.000	1.000
	Carcinogen?		N	N	N	N	N

Aquatic Life Reasonable Potential

σ	σ2=ln(CV²+1)		0.555	0.555	1.169	0.724	1.033
Pn	=(1-confidence level)^1/n	99%	0.971	0.994	0.947	0.946	0.947
Multiplier	=exp(2.3262σ-0.5σ²)/exp(invnorm(Pn,σ-0.5σ²)	99%	1.3	0.9	2.3	1.7	2.1
Max. conc.(ug/L) at		Acute	7,075	607.7	8.1	25.6	2453
		Chronic	5,989	533.6	7.7	25.6	2453
Reasonable Potential? Limit Required?			**YES**	**YES**	**YES**	**YES**	**YES**

Aquatic Life Limit Calculation

n = # samples assumed to calculate AML			30	20	4	4	1
# of Compliance Samples Expected per month			**4**	**20**	**1**	**1**	**1**
LTA Coeff. Var. (CV),	default = 0.6 or calculate from data		0.6	0.6	0.6	0.6	0.6
Permit Limit Coeff. Var. (CV), decimal			0.6	0.6	0.6	0.6	0.6
Waste Load Allocations,	$C_{ft}=(C_r x MZ_a)-C_{ea} x (MZ_a-1)$	Acute	25,542.9	44.95	1.38	170.15	149.71
	$C_{ft}=(C_r x MZ_c)-C_{ec} * (MZ_c-1)$	Chronic	9,080.6	29.64	0.77	19.41	149.71
Long Term Averages, ug	WLAa x exp(0.5σ²-2.326σ)	Acute	8,201.4	14.43	0.44	54.63	**48.07**
	WLAc x exp(0.5σ²-2.326σ); ammonia n=30	Chronic	7,085.6	15.63	0.40	10.24	78.96
Limiting LTA, ug/L	used as basis for limits calculation		7,085.6	14.43	**0.40**	**10.24**	48.07
Metal Translator or 1?			1.00	1.00	0.926	1.000	1.000
Average Monthly Limit (AML), ug/L		**95%**	**8430**	**18**	**0.68**	**16**	**103**
Maximum Daily Limit (MDL), ug/L		**99%**	22072	**45**	**1.36**	**32**	**150**
Average Monthly Limit (AML), mg/L			**8.4**	0.018	0.001	0.016	0.103
Maximum Daily Limit (MDL), mgL			**22**	0.045	0.001	0.032	0.150
Average Monthly Limit (AML), lb/day			**39**	**0.082**	**0.0031**	**0.073**	**0.47**
Maximum Daily Limit (MDL), lb/day			**101**	**0.21**	**0.0062**	**0.15**	**0.69**

Human Health Reasonable Potential

s							1.033
Pn							0.965
Multiplier							0.15
Dilution Factor							8.8
Max Conc. at edge of Chronic Zone, ug/L							35.693
Reasonable Potential to exceed HH Water & Organism					NO	NO	**NO**
Reasonable Potential to exceed HH Organism only					NO	NO	**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

G. Calculate TMDL-based Effluent Limits for TSS

The TMDL established a wasteload allocation for TSS of 12.3 tons per year. The weekly average limit is calculated by multiplying the monthly average limit by the appropriate multiplier.

$$\text{Monthly Avearge Mass Limit} = \frac{12.3 \text{ tons}}{\text{year}} \times \frac{2000 \text{ lbs}}{\text{ton}} \times \frac{\text{year}}{365 \text{ days}} = 67.4 \frac{\text{lbs}}{\text{day}}$$

The weekly average limit is calculated based on EPA's TSD Table 5-3 using a CV of 2.62 and n equal to 4 (4 sample per month).

$$\text{Weekly Averge Mass Limit} = 67.4 \frac{\text{lbs}}{\text{day}} \times 2.62 = 176 \frac{\text{lbs}}{\text{day}}$$

The following graphs show the historical performance for TSS. Based on historical performance, the WWTP should be able to meet the TSS effluent limitations in the proposed permit.

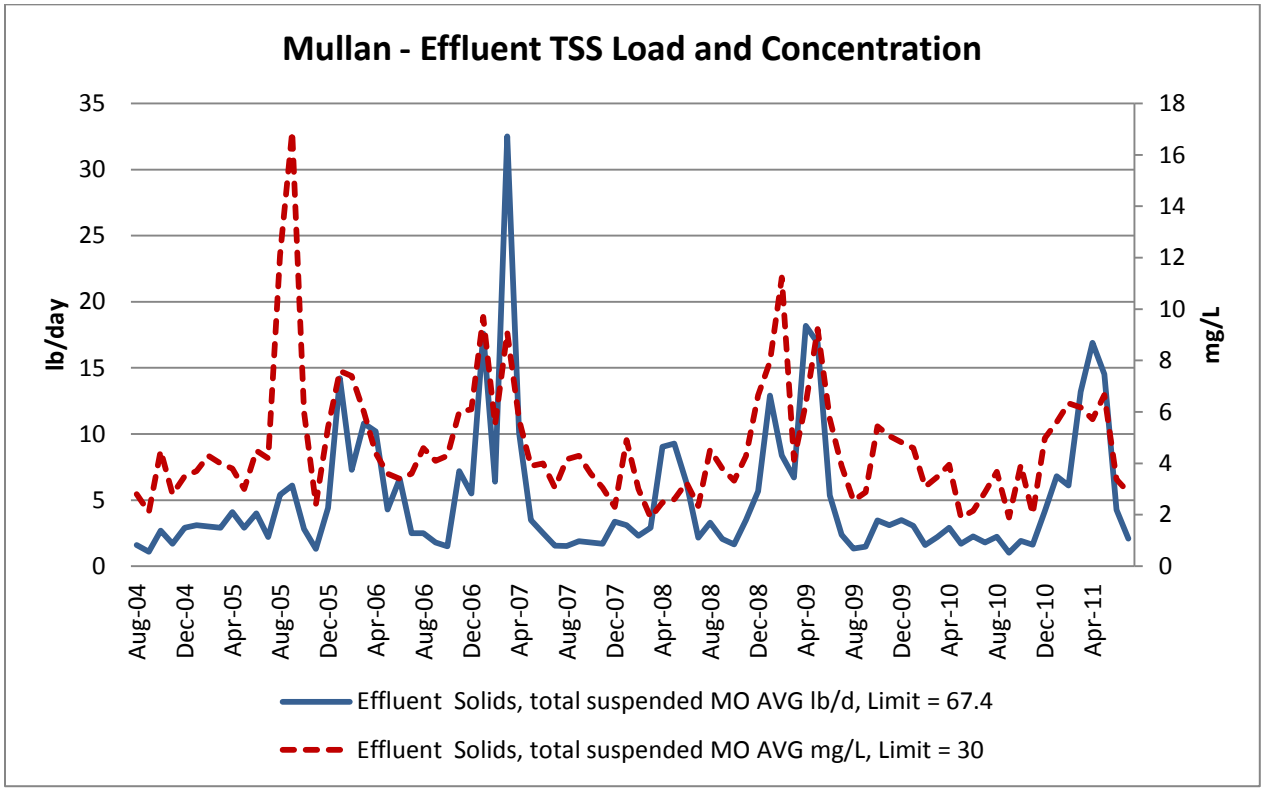


Figure 18. Historic TSS Loading

H. Interim Effluent Limitations for Cadmium, Lead and Zinc

The EPA has established an interim performance-based effluent limitation based on the existing ability to treat these pollutants and based on the level of these pollutants in the discharge over the past two years. The interim performance based limits will take effect when the variance expires in July 2014.

An interim limit has been established for lead since the facility will be unable to meet the new WQBEL upon issuance of the permit.

For consistency, the performance-based limits were calculated using the same methodology as previous variance-based limits incorporating addition new data collected (Nov. 2008-July 2011) since the variance limits were developed. Due to very high values in the added data, the calculated performance-based limits are higher than the current variances. Therefore, the current variances values will be retain as interim performance-based permit limits.

Figure 19. Performance-based Effluent Limits for Cadmium and Zinc

Performanced Based Limits				units	**Cadmium**		**Lead**		**Zinc**	
Using data 2004-2011			Average	ug/L	**0.76**		**6.86**		**313.82**	
			Minimum	ug/L	0.10		0.197		37	
			Maximum	ug/L	**7.28**		29.4		**2232**	
			Count	ug/L	84		83		84	
			Std Dev	ug/L	1.2		5.5		411.7	
			CV	ug/L	**1.595**		**0.801**		**1.312**	
			95th Percentile	ug/L	3.6		15.2		1175.0	
			5th Percentile	ug/L	0.1		1.0		46.3	
	samples per month n				1.0		1.0		1.0	
Method for Variance	σ	$\sigma 2=\ln(CV^2+1)$			1.125		0.704		1.001	
	Pn	=(1-confidence level)$^{1/n}$	99%		0.947		0.946		0.947	
	RP Multiplier	$=\exp(2.3262\sigma-0.5\sigma^2)/\exp(\text{invnorm}(P_N)\sigma-0.5\sigma^2)$	99%		2.23		1.66		2.04	
99% - 99%										
					ug/L	lb/d	ug/L	lb/d	ug/L	lb/d
maximum expected concentration, TSD page 57		MDL=MAX x RPA Multiplier			**16**	**0.074**	**49**	**0.22**	**4554**	**21**
Table 5-3 value	0.99		0.95		2.15		1.62		1.98	
		AML = MDL/Multiplier			**7.5**	**0.035**	**30**	**0.14**	**2303**	**11**

The current variance-based limits were based on data from August 2004 through October 2008. The more stringent 2009 variance-based limit for zinc will be retained as the interim performance-based limits.

Parameter		**2009 Variance**		**Performance-based**	
	Units	**Average Monthly**	**Maximum Daily**	**Average Monthly**	**Maximum Daily**
Cadmium	µg/L	**5.5**	**10.8**	**5.5**	**10.8**
	lb/day	**0.025**	**0.049**	**0.025**	**0.049**
Lead	µg/L	**none**	**none**	**30**	**49**
	lb/day	**none**	**none**	**0.14**	**0.22**
Zinc	µg/L	**1,610**	**3,682**	**1,610**	**3,682**
	lb/day	**7.4**	**17**	**7.4**	**17**

Appendix E: Variance

A variance is a temporary relaxation of water quality standards. Variances are granted by IDEQ to facilities for specified pollutants in their wastewater based upon a rationale as to why more time is needed to meet the prevailing criteria. The allowed reasons for a variance are the same as for beneficial use changes under a use attainablity analysis.

Variance documents are available on the IDEQ website at http://www.deq.idaho.gov/water-quality/surface-water/standards/variances.aspx.

Appendix F: Biological Evaluation

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. There are no ESA-listed species and critical habitat in the vicinity of the discharge. EPA determined that the reissuance of the NPDES permit to the Mullan WWTP for discharges of treated municipal wastewater to the South Fork Coeur d'Alene 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 are available on the USFWS website at http://www.fws.gov/endangered/

For Shoshone County, Idaho

Group	Name	Population	Status	Lead Office	Recovery Plan Name	Recovery Plan Action Status	Recovery Plan Stage
Fishes	Bull Trout (*Salvelinus confluentus*)	U.S.A., conterminous, lower 48 states	Threatened	Idaho Fish And Wildlife Office Office Name: Idaho Fish And Wildlife Office Address: 1387 SOUTH VINNELL WAY, SUITE 368 BOISE, ID83709 Phone Number: (208)378-5243	Draft Recovery Plan for the Jarbidge River Distinct Population Segment of Bull Trout	View Implementation Progress	Draft
Mammals	Canada Lynx (*Lynx canadensis*)	(Contiguous U.S. DPS)	Threatened	Montana Ecological Services Field Office Office Name: Montana Ecological Services Field Office Address: 585 Shepard Way HELENA, MT59601 Phone Number: (406)449-5225	Recovery Outline for the Contiguous United States Distinct Population Segment of Canada Lynx (Lynx canadensis)	Recovery efforts in progress, but no implementation information yet to display.	Outline

U.S Fish & Wildlife Service shows no designated critical habitat information in either Shoshone County http://criticalhabitat.fws.gov/crithab/. Critical habitat shown in yellow.

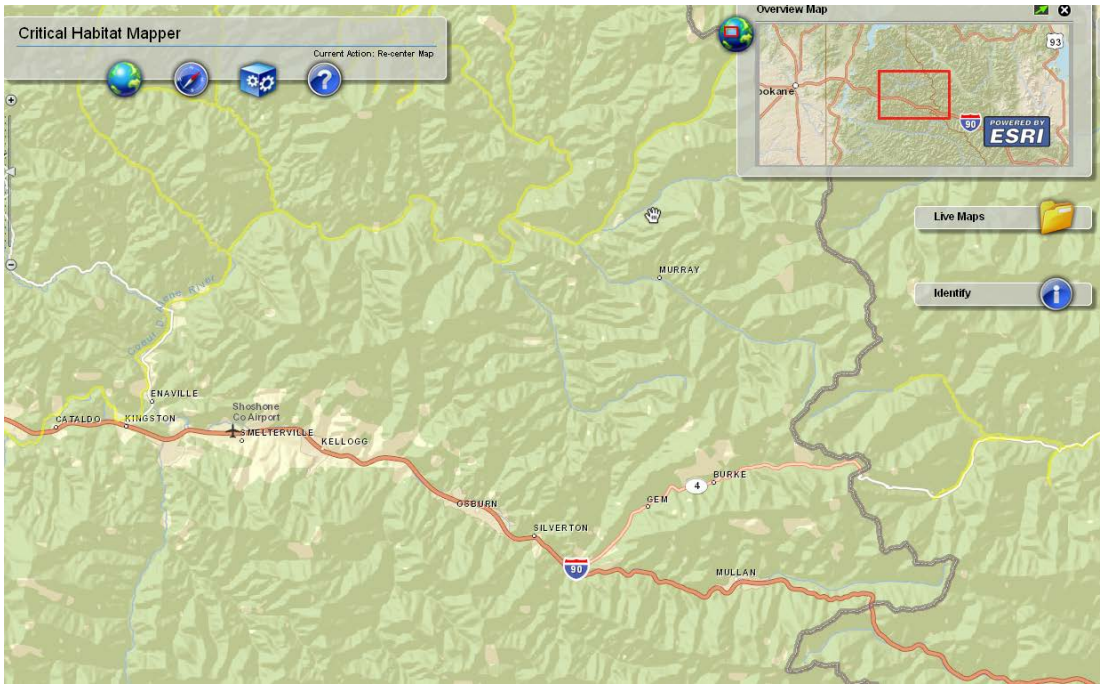


Figure 20. Critical Habitat

NOAA"s Essential Fish Habitat Mapper (http://sharpfin.nmfs.noaa.gov/website/EFH_Mapper/map.aspx) shows not essential fish habitat in the vicinity of the proposed action. EFH shown in yellow.

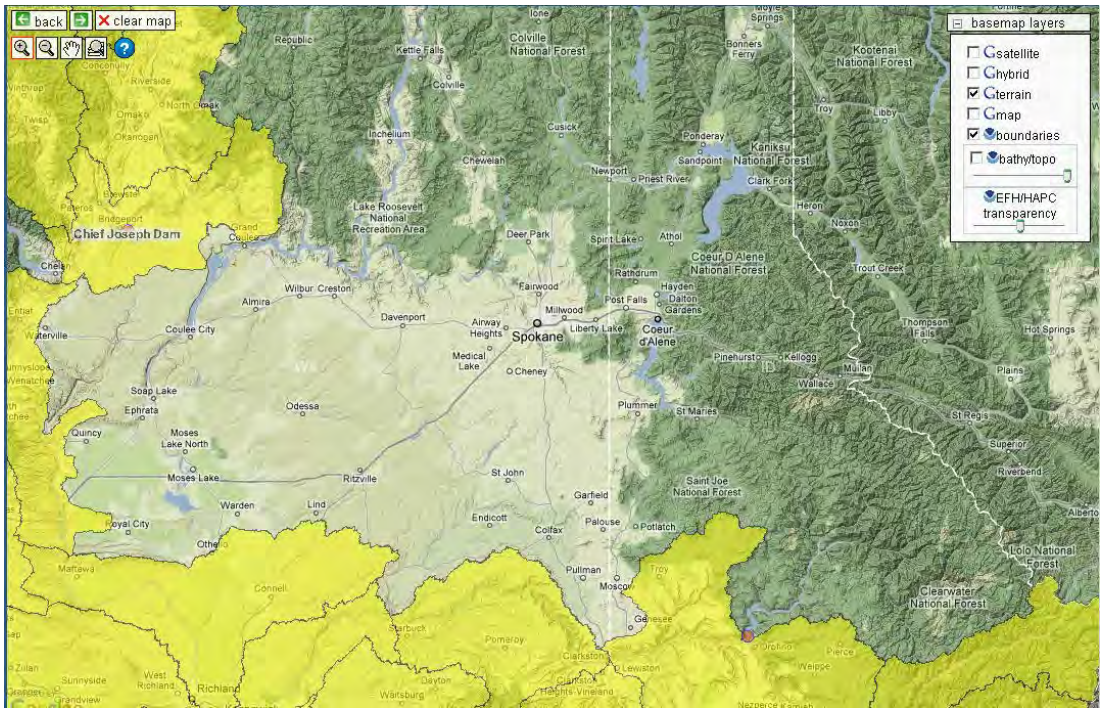


Figure 21. Essential Fish Habitat

Appendix G: Tribal Review or Consultation

The Coeur d'Alene Tribe reservation is located around the south end of Lake Coeur d'Alene. The South Fork Coeur d'Alene river joins the North Fork Coeur d'Alene River near Pinehurst to for the Coeur d'Alene River. The Coeur D'Alene River flows into Lake Coeur d'Alene just north of the reservation boundary as shown in the figure below. The EPA invite the tribe to review and/or consult on this permit because it the potential of the discharge to impact Lake Coeur d'Alene.

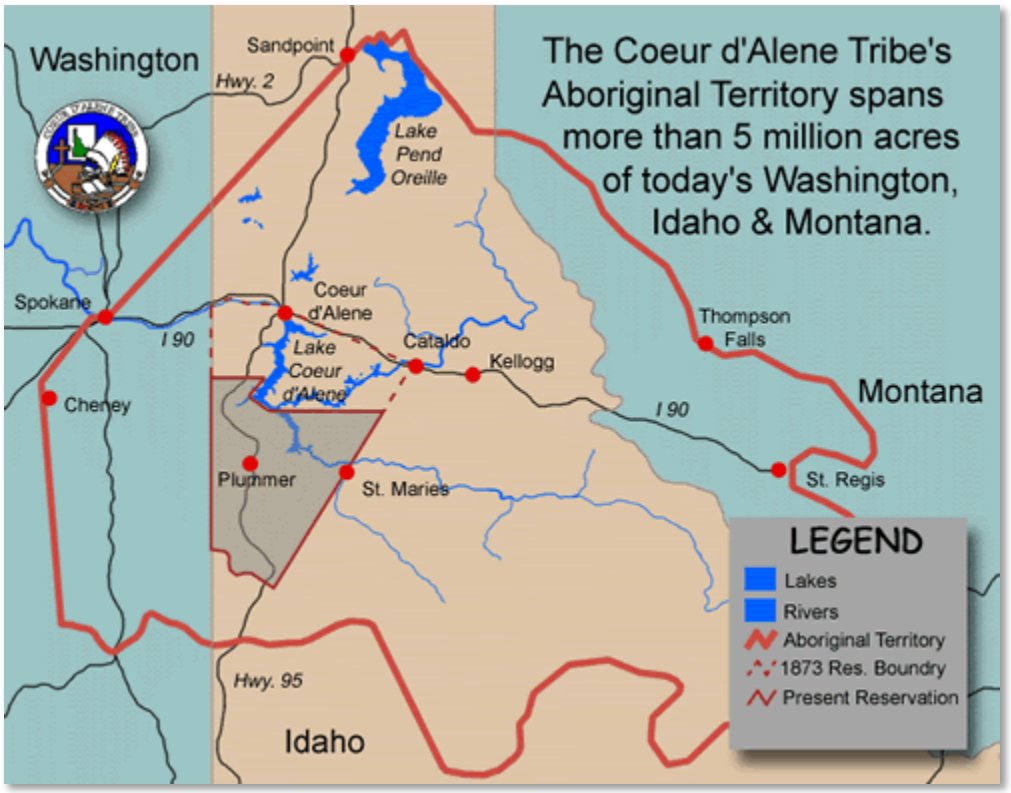


Figure 22. Coeur d'Alene Tribe Boundary[9]

The EPA did not receive comments from the Coeur d'Alene Tribe during their review of the preliminary draft permit.

[9] Source: Coeur d'Alene Tribe Webpage http://www.cdatribe-nsn.gov/

Appendix H: State Certification

The Idaho Department of Environmental Quality provided the draft §401 Water Quality Certification on December 28, 2012. The Idaho Department of Environmental Quality provided the final §401 Water Quality Certification on July 15, 2013.

Pursuant to the provisions of Section 401(a)(1) of the Federal Water Pollution Control Act (Clean Water Act), as amended; 33 U.S.C. Section 1341(a)(1); and Idaho Code §§ 39-101 et seq. and 39-3601 et seq., the Idaho Department of Environmental Quality (DEQ) has authority to review National Pollutant Discharge Elimination System (NPDES) permits and issue water quality certification decisions.

DEQ certified that if the permittee complies with the terms and conditions imposed by the permit along with the conditions set forth in this water quality certification, then there is reasonable assurance the discharge will comply with the applicable requirements of Sections 301, 302, 303, 306, and 307 of the Clean Water Act, the Idaho Water Quality Standards (WQS) (IDAPA 58.01.02), and other appropriate water quality requirements of state law.