FACT SHEET

The United States Environmental Protection Agency (EPA)
Proposes To Reissue
A National Pollutant Discharge Elimination System (NPDES) Permit to:

Clarkia Water and Sewer District
P.O. Box 1096
Clarkia, Idaho 83812

NPDES Permit Number: ID-002507-1

Public Notice Start Date: September 7, 2011
Public Notice Expiration Date: October 7, 2011

Technical Contact: John Drabek, 206-553-8257, drabek.john@epa.gov
1-800-424-4372 ext. 3-8257 (within Region 10)
drabek.john@epa.gov

EPA Proposes To Reissue NPDES Permit

The EPA proposes to reissue the NPDES permit to 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 place limits on the types and amounts of pollutants that can be discharged from each facility.

This Fact Sheet includes:

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

State Certification for Facilities that Discharge to State Waters

The EPA will request 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:

DEQ Coeur d'Alene Regional Office
2110 Ironwood Parkway
Coeur d'Alene, ID 83814
ph: (208) 769-1422
fx: (208) 769-1404

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 Region 10's Director for the Office of Water and Watersheds will make a final decision regarding permit reissuance. 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 comments are received, the EPA will address the comments and issue the permit. In such a case, the permit will become effective at least 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 permit and fact sheet are posted on the Region 10 website at http://yosemite.epa.gov/r10/WATER.NSF/NPDES+Permits/DraftPermitsID Copies may also be requested by writing to the EPA at the Seattle address below, by e-mailing washington.audrey@epa.gov, or by calling Audrey Washington at 206-553-0523 or (800) 424-4372 ext 0523 (within Alaska, Idaho, Oregon, & Washington). Copies may also be inspected and copied at the offices below between 8:30 a.m. and 4:00 P.M., Monday through Friday, except federal holidays. In Seattle, visitors report to the 12th floor Public Information Center.

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

EPA Idaho Operations Office
1435 North Orchard Street
Boise, Idaho 83706
(208) 378-5746

Idaho Department of Environmental Quality
Coeur d'Alene Regional Office
2110 Ironwood Parkway
Coeur d'Alene, ID 83814
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For technical questions regarding the permit or fact sheet, contact John Drabek at the phone number or e-mail address at the top of this fact sheet. Those with impaired hearing or speech may contact a TDD operator at 1-800-833-6384 and ask to be connected to the appropriate phone number. Persons with disabilities may request additional services by contacting John Drabek.

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APPLICANT

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

Facility Name:	Clarkia Water and Sewer District
Mailing Address:	P.O. Box 1096, Clarkia, Idaho 83812
Facility Address:	211 Landing Road Clarkia, Idaho 83812
Contact:	Robert Kruger, (208) 245-4046

I. FACILITY INFORMATION

A. Facility Description

The Clarkia Water and Sewer District (Clarkia) owns, operates and has maintenance responsibility for a facility that treats domestic sewage and commercial wastewater discharge. Influent to the facility is primarily from local residents and commercial establishments through a separate sanitary sewer system. There are no significant industrial dischargers to the treatment system. The effluent from individual septic tanks is sent to the treatment plant. Treatment includes sand filtration and disinfection by chlorination.

The current service population is estimated to be 75 people. The wastewater treatment plant (WWTP) has a design flow rate of 0.018 mgd on an average daily basis

Permit History

The facility's previous permit became effective on November 24, 2003. A complete application for permit reissuance was submitted to the EPA on September 15, 2008. Since the permit was not reissued before the expiration date of November 24, 2008, the permit was administratively extended under 40 CFR 122.6.

B. Compliance History

A review of the DMRs from January, 2006 to December 2010 found the following violations:

pH

During 2006, multiple violations of the instantaneous minimum limit of 6.5, with discharges ranging from 6.1 to 6.3.

E. coli

Violations of the instantaneous *E. coli* limit of 406 with a discharge of 2400 #/100ml in July, 2007, and a discharge of 500 #/100ml in June 2009.

Chlorine

A violation of the monthly average chlorine limit of 0.5 mg/L, with a discharges of 0.56 mg/L in July 2006.

Violations of the monthly average chlorine load limit of 0.08 lb/day, with a discharge of 0.09 lb/day in January 2006, a discharge of 0.1 lb/day in March 2006, and a discharge of 0.09 lb/day in November 2006.

II. RECEIVING WATER

The treated effluent from the Clarkia Water and Sewer District's wastewater treatment facility is discharged continuously to the St. Maries River , which is identified in the Idaho *Water Quality Standards and Wastewater Treatment Requirements* at IDAPA 58.01.02.110.13. The discharge is in the St. Joe Subbasin, HUC 17010304, (P-15, confluence of West Fork and Middle Fork St. Maries Rivers to Carpenter Creek). The St. Maries River has designated beneficial use classifications of cold water biota, special resource, domestic, industrial and agricultural water supply and primary contact recreation. The outfall is located at latitude 47° 0' 16" N and longitude 116° 15' 28" W.

A. Water Quality Standards

Section 301(b)(1)(C) of the CWA requires the development of limitations in permits necessary to meet water quality standards by July 1, 1977. Federal regulations at 40 CFR 122.4(d) require that the conditions in NPDES permits ensure compliance with the water quality standards of all affected States. A State's water quality standards are composed of use classifications, numeric and/or narrative water quality criteria, and an anti-degradation policy. The use classification system designates the beneficial uses (such as drinking water supply, contact recreation, and aquatic life) that each water body is expected to achieve. The numeric and/or narrative water quality criteria are the criteria deemed necessary by the State to support the beneficial use classification of each water body.

B. Water Quality Limited Segment and TMDL

A water quality limited segment (WQLS) is any waterbody, or definable portion of a waterbody, where it is known that water quality does not meet applicable water quality standards or is not expected to meet applicable water quality standards. In accordance with section 303(d) of the Clean Water Act, States must identify waters not achieving water quality standards in spite of application of technology-based controls in National Pollutant Discharge Elimination System (NPDES) permits for point sources. Such waterbodies are known as water quality limited segments (WQLSs), and the list of such waterbodies is called the "303(d) list." Once a water body is identified as a WQLS, the States are required under the Clean Water Act to develop a total maximum daily load (TMDL).

A TMDL is a determination of the mass or concentration of a pollutant from point, nonpoint, and natural background sources that may be discharged to a water body without causing the water body to exceed the water quality criterion for that pollutant (including a margin of safety). The TMDL documents the amount of a pollutant a water body can assimilate without violating a state's water quality standards and allocates that load to known point sources and nonpoint sources.

The segment of the St. Maries River to which the Clarkia Water and Sewer District discharges was identified on the State of Idaho 303(d) list because it did not attain the state water quality standards for sediment and temperature.

The State of Idaho developed the *St. Maries River Subbasin Assessment and Total Maximum Daily Loads* (TMDL) **(**IDEQ), July, 2003 (SMR TMDL) which was approved by the EPA in August, 2003. The TMDL addressed pollutant listings for the St. Maries River. The TMDL established allocations for temperature and sediments, also called total suspended solids (TSS). For the Clarkia Water and Sewer District WWTP, the TMDL established a wasteload allocation for sediment at the limits for TSS in the current permit; and a wasteload allocation for temperature at 35°C, a limit that the Clarkia WWTP was not expected to exceed.

TSS

Allocations for TSS are in of the St. Maries River TMDL Table 25 *Wasteload Allocation to the Permitted Point Discharges of the St. Maries River - St. Maries River Subbasin Assessments* on page 67.

"Sediment contribution from point sources is 0.10% of that estimated for the watershed. Since the contribution from point sources is negligible, the wasteload is set at current permit limits ."

The current permit has an average monthly limit of 30 mg/L and 5 lbs/day. Therefore, the WLA for the Clarkia Water and Sewer District WWTP is 30 mg/L and 5 lbs/day.

Temperature

Allocations for temperature and flow are in Section 5.2.4 of the SMR TMDL. The temperature allocation for the Clarkia Water and Sewer District WWTP is a daily maximum effluent temperature of 35°C. Based on data from a similar WWTP, the Clarkia facility is reasonably expected to meet this standard. This is also the maximum daily temperature limit in the current permit.

III. EFFLUENT LIMITATIONS

A. Basis for Permit Effluent Limits

In general, the CWA requires that the limits for a particular pollutant be the more stringent of either technology-based effluent 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 of a waterbody are being met and they may be more stringent than technology-based effluent limits. The basis for the proposed effluent limits in the draft permit are provided in Appendix B of this document.

B. Proposed Effluent Limitations

The existing permit includes the following effluent limits and monitoring requirements:

Table 1: Effluent Limitations and Monitoring Requirements from the Previous Permit - Outfall 1

Parameter	Units	Monthly Avg.	Daily Max	Instantaneous Maximum Limit	Sample Frequency	Sample Type
Flow	MGD	--	--	--	Continuous	Recording
Biochemical Oxygen Demand (BOD_5)	mg/l	30	45	--	1/month	Grab
	lbs/day	5	7	--		
Total Suspended Solids (TSS)	mg/l	30	45	--	1/month	Grab
	lbs/day	5	7	--		
Temperature	°C	--	35	--	1/week	Grab
Total Ammonia	mg/l	--	--	--	1/month	Grab
E. coli Bacteria	colonies/100 ml	126	--	406	5/month	Grab
Total Residual Chlorine	mg/L	0.5	0.75		1/week	Grab
	lbs/day	0.08	0.11			
pH	su.	6.5 – 9.0			1/week	Grab

The following summarizes the proposed effluent limitations that are in the draft permit:

1. There must be no discharge of any floating solids, visible foam in other than trace amounts, or oily wastes that produce a sheen on the surface of the receiving water.
2. Table 2 below presents the proposed effluent limitations.

Table 2
Effluent Limitations

Parameters	Average Monthly Limit	Average Weekly Limit	Minimum Daily Limit	Instantaneous Maximum Limit
BOD_5	30 mg/L	45 mg/L	--	--
	5 lbs/day[1]	7 lbs/day[1]		--
TSS	30 mg/L	45 mg/L	--	--
	5 lbs/day[1]	7 lbs/day[1]		--
E. coli Bacteria	126 colonies /100mL[2]	--	--	406 colonies /100mL
Temperature	--	--	35°C	--

Table 2
Effluent Limitations

Parameters	Average Monthly Limit	Average Weekly Limit	Minimum Daily Limit	Instantaneous Maximum Limit
Total Residual Chlorine	0.5 mg/L	0.75 mg/L	--	--
	0.08 lbs/day	0.11 lbs/day	--	--
pH	6.5 – 9.0 standard units			

1. Loading limits are calculated by multiplying the concentration in mg/L by the design flow of 0.5 mgd and a conversion factor of 8.34 lbs/gallon.
2. The monthly average for *E. coli* is the geometric mean of all samples taken based on a minimum of five samples taken every 3-5 days during a calendar month.

IV. MONITORING REQUIREMENTS

A. Basis for Effluent and Surface Water Monitoring Requirements

Section 308 of the CWA and federal regulation 40 CFR 122.44(i) require monitoring in permits to determine compliance with effluent limitations. Monitoring is also required to characterize the effluent to determine if additional effluent limitations are required and to monitor effluent impacts on receiving water quality.

B. Effluent Monitoring Requirements

Parameters

BOD_5, TSS, *E. coli*, Temperature, Flow, pH and Total Residual Chlorine

The permit requires monitoring BOD_5, TSS, *E. coli*, flow, temperature, pH and total residual chlorine to determine compliance with the effluent limits. Temperature monitoring is increased from once per week to continuous.

Ammonia

Monthly monitoring for ammonia is again required however it is expanded from a duration of one year in the existing permit to the life of the new permit. Ammonia is a parameter commonly monitored by POTWs to determine performance and will determine impacts to the St. Maries River. The WWTP effluent does not have a reasonable potential to violate the water quality standards of the Snake River and a limit is not required.

Application Form 2A Monitoring

The Clarkia Water and Sewer District is a minor NPDES facility (i.e.,<1 MGD design flow). Monitoring for reapplication is required refer to NPDES Application Form 2A Effluent Testing Data. When the application is submitted, at a minimum, effluent testing data must be based on at least three pollutant scans and must be no more than four and one-half years old.

Frequency

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 can be used for averaging if they are conducted using the EPA approved test methods (generally found in 40 CFR 136) and if the Method Detection Limits (MDLs) are less than the effluent limits.

Table 3 presents the effluent monitoring requirements for the permittee in the draft permit. Each of the effluent monitoring requirements from the previous permit was evaluated to determine whether the requirements should be continued, updated or eliminated.

The sampling location must be after the last treatment unit and prior to discharge to the receiving water. If no discharge occurs during the reporting period, "no discharge" shall be reported on the DMR.

Table 3
Effluent Monitoring Requirements

Parameter	Unit	Sample Location	Sample Frequency	Sample Type
Flow	mgd	Effluent	1/week	Measured
BOD_5	mg/L	Effluent	1/month	Grab
	lbs/day	Effluent	1/month	Calculation
TSS	mg/L	Effluent	1/month	Grab
	lbs/day	Effluent	1/month	Calculation
pH	standard units	Effluent	1/week	Grab
E.coli Bacteria	colonies/100 ml	Effluent	5/month	Grab
Total Residual Chlorine	mg/L	Effluent	1/week	Grab
	lbs/day			
Total Ammonia Nitrogen	mg/L	Effluent	1/month	Grab
Temperature	°F	Effluent	5/week	Continuous
NPDES Application Form 2A Effluent Testing Data	mg/L	Effluent	1 each in 2nd, 3rd, & 4th years of the permit	See footnote 1

1. For Effluent Testing Data, in accordance with instructions in NPDES Application Form 2A, Part B.6.

V. SLUDGE (BIOSOLIDS) REQUIREMENTS

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

In the absence 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. Since the 40 CFR Part 503 regulations are self-implementing, the permittees must comply with them whether or not a permit has been issued.

The proposed permit requires the permittee to submit a biosolids permit application (NPDES Form 2S) before sewage sludge is removed from the lagoon. The application is required by 40 CFR 122.21(a)(i), 122.21(a)(ii)(H), and 122.21(c)(2). The regulations require 180 days so the EPA has time to evaluate the information, ask for additional information and prepare the permit.

VI. OTHER PERMIT CONDITIONS

A. Quality Assurance Plan Implementation

The federal regulation at 40 CFR 122.41(e) requires the permittee to develop procedures to ensure that the monitoring data submitted to the EPA are accurate and to explain data anomalies if they occur. The permittee is required to develop or update and implement a Quality Assurance Plan within 90 days of the effective date of the final permit. The Quality Assurance Plan shall consist of standard operating procedures that the permittee must follow for collecting, handling, storing and shipping samples, laboratory analysis and data reporting. The plan shall be retained on site and be made available to the EPA and IDEQ upon request.

B. Operation and Maintenance Plan Implementation

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 its facility within 180 days of the effective date of the final permit. The plan shall be retained on site and made available to the EPA and IDEQ upon request.

C. Sanitary Sewer Overflows and Proper Operation and Maintenance

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

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

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

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

Third Party Notice – The permit requires that the permittee establish a process to notify specified third parties of SSOs that may endanger health due to likelihood of human exposure or of unanticipated bypasses and upsets that exceed 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, 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, 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 Guide for Evaluating Capacity, Management, Operation, and Maintenance (CMOM) Programs at Sanitary Sewer Collection Systems (EPA 305-B-05-002). This guide identifies some of the criteria used by the EPA inspectors to evaluate a collection system's management, operation and maintenance program activities. Owners/operators can review their own systems against the checklist (Chapter 3) to reduce the occurrence of sewer overflows and improve or maintain compliance.

D. Additional Permit Provisions

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

VII. OTHER LEGAL REQUIREMENTS

A. Endangered Species Act

The Endangered Species Act requires federal agencies to consult with National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries) and the U.S. Fish and Wildlife Service (FWS) if their actions could adversely affect any threatened or endangered species. The EPA has determined that there are no listed species in the vicinity of the discharge; therefore, the issuance of this proposed permit will have no effect on listed species.

The NOAA Fisheries does not list any endangered or threatened species in the St. Maries River under NOAA's jurisdiction. Therefore, the reissuance of this permit will have no effect on any listed threatened or endangered species under NOAA's jurisdiction.

Bull trout are listed for Shoshone County by FWS.

Based on the following considerations, the EPA again concludes as it did for the existing permit that this permit has no effect on endangered or threatened species under the jurisdiction of the U.S. Fish and Wildlife Service.

1. This permit requires compliance with the State of Idaho Surface Water Quality Standards that protect aquatic organisms including threaten and endangered species
2. High dilution ratios of 261 to 1 acute and 300 to 1 chronic in the St. Maries River receiving water.
3. The low discharge flow rate of 0.018 mgd.
4. Chlorination to disinfect and the requirement to meet effluent limitations for total residual chlorine.

Therefore, the EPA concludes discharges from Clarkia will have no effect on any listed species under the jurisdiction of either NOAA or FWS.

B. Essential Fish Habitat

Essential fish habitat (EFH) includes the waters and substrate (sediments, etc.) necessary for fish to spawn, breed, feed, or grow to maturity. The Magnuson-Stevens Fishery Conservation and Management Act (January 21, 1999) requires the EPA to consult with NOAA Fisheries when a proposed discharge has the potential to adversely affect (reduce quality and/or quantity of) EFH. The EFH regulations define an adverse effect as any impact which reduces quality or quantity of EFH and may include direct (e.g. contamination or physical disruption), indirect (e.g. loss of prey, reduction in species' fecundity), site specific, or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

The area of the discharge is not designated critical habitat for Bull Trout as stated in 50 CFR Part 17 Endangered and Threatened Wildlife and Plants; Revised Designation of Critical Habitat for Bull Trout in the Coterminous United States; Final Rule, October 18, 2010. The EPA determines that issuance of this permit has no affect on EFH.

C. State Certification

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

D. Permit Expiration

The permit will expire five years from the effective date of the permit.

VIII. DEFINITIONS AND ACRONYMS

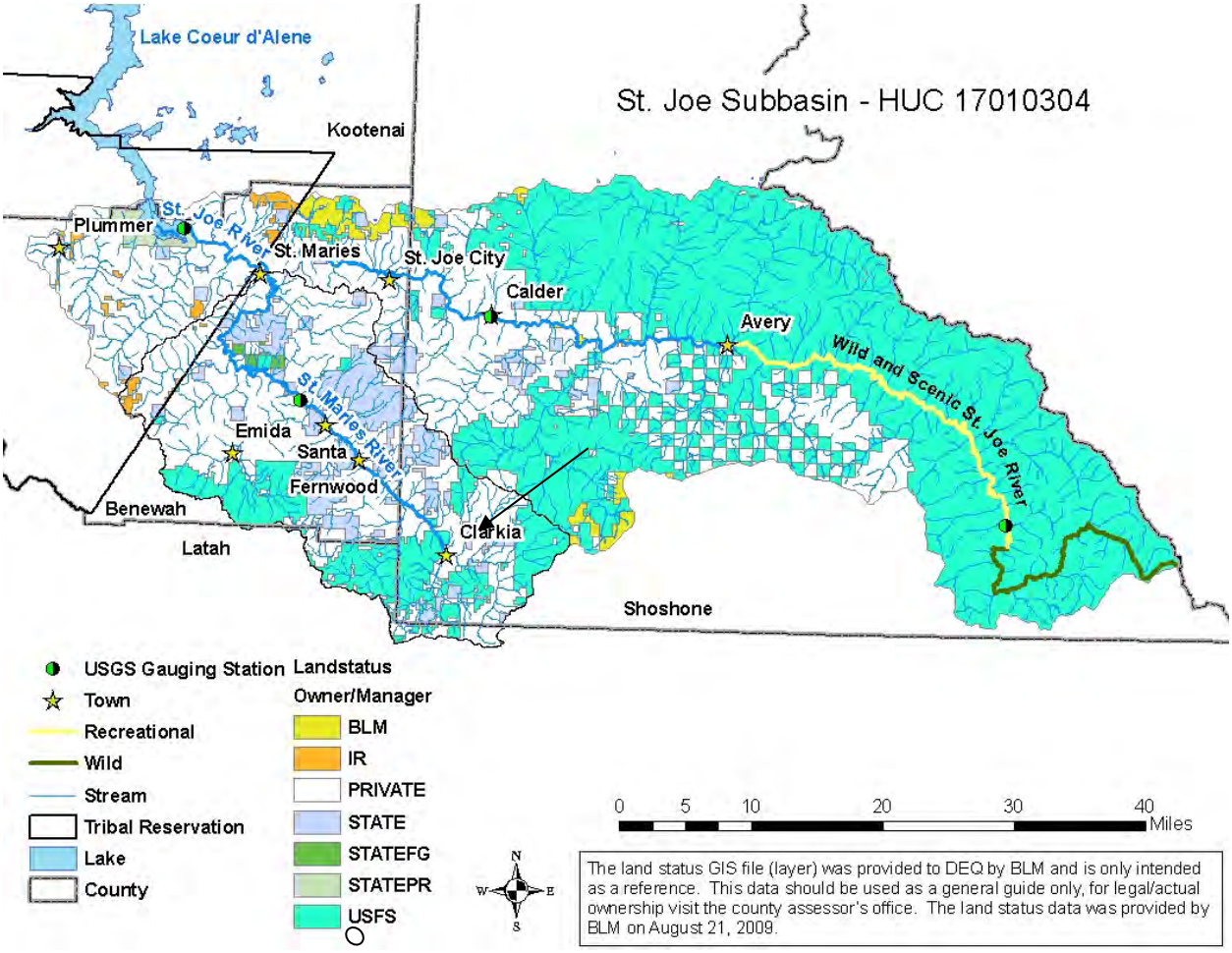
1Q10	1 day, 10 year low flow
7Q10	7 day, 10 year low flow
AML	Average Monthly Limit
BOD_5	Biochemical oxygen demand, five-day
ºC	Degrees Celsius
cfs	Cubic feet per second
CFR	Code of Federal Regulations
CV	Coefficient of Variation
CWA	Clean Water Act
DMR	Discharge Monitoring Report
DO	Dissolved oxygen
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
lbs/day	Pounds per day
LTA	Long Term Average
mg/L	Milligrams per liter
ml	milliliters
µg/L	Micrograms per liter
mgd	Million gallons per day
MDL	Maximum Daily Limit or Method Detection Limit (depending on the context)
NOAA	National Oceanographic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
OWW	Office of Water and Watersheds
O&M	Operations and maintenance
POTW	Publicly owned treatment works
QAP	Quality assurance plan
RP	Reasonable Potential
RPM	Reasonable Potential Multiplier
s.u.	Standard Units
TMDL	Total Maximum Daily Load
TRE	Toxicity Reduction Evaluation
TSD	Technical Support Document (EPA, 1991)
TSS	Total suspended solids

USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
UV	Ultraviolet radiation
WLA	Wasteload allocation
WQBEL	Water quality-based effluent limit
WWTP	Wastewater treatment plant

IX. REFERENCES

1. Clarkia Water and Sewer District,, ID, NPDES permit, effective November 24, 2003 to November 24, 2008.
2. Idaho Administrative Procedures Act (IDAPA), 2006. Section 58, Water Quality Standards and Wastewater Treatment Requirements. Idaho Department of Environmental Quality Rules, Title 01, Chapter 02.
3. U.S. EPA, 1973. *Water Quality Criteria 1972* (EPA R3-73-033).
4. EPA. 1991. Technical Support Document for Water Quality-based Toxics Control. US Environmental Protection Agency, Office of Water, EPA/505/2-90-001.
5. EPA, September, 2010. U.S. EPA NPDES Permit Writer's Manual, US Environmental Protection Agency, Office of Water, EPA-833-B-96-003.

Appendix A – Location Map



Appendix B – Basis for Effluent Limitations

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

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. The 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 limits established in the proposed reissued permit are the TSS limits in 40 CFR 133.102(a) for BOD_5 and (b) for TSS Secondary Treatment shown in Table B-1. Treatment includes sand filtration and disinfection by chlorination.

In accordance with 40CFR133.103(d), for treatment works that receive less concentrated wastes from separate sewer systems, the EPA is authorized to substitute either a lower percent removal requirement or a mass loading limit for the percent removal requirement provided that all of the following conditions are met.

• The facility can consistently meet its permit effluent concentration limits but cannot meet its percent removal limits because of less concentrated influent water
• The facility would have been required to meet significantly more stringent limitations than would otherwise be required by the concentration-based standards and
• The less concentrated effluent is not the result of excessive inflow/infiltration (I/I).

Because the influent to the treatment plant is effluent from individual septic tanks, most of the BOD_5 and TSS reduction in the wastestream occurs prior to reaching the treatment plant and the influent is less concentrated. The influent is trucked in to the headworks and there is no inflow and infiltration from a sewer system. Monitoring data over the past five years show that the facility met its BOD_5 and TSS effluent limits, for concentration and mass loading, with no exceptions. Therefore, the current permit does not contain percent removal requirements for BOD_5 and TSS.

Table B-1: Secondary Treatment Effluent Limits (40 CFR 133.102)			
Parameter	**Average Monthly Limit**	**Average Weekly Limit**	**Range**
BOD_5	30 mg/L	45 mg/L	---
TSS	30 mg/L	45 mg/L	---
pH	---	---	6.0 - 9.0 s.u.

Mass-based Limits

The federal regulations at 40 CFR 122.45(b) and (f) require that POTW limitations to be expressed as mass-based limits using the design flow of the facility. The mass-based limits, expressed in lbs/day, are calculated as follows based on the design flow:

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

Chlorine

Chlorine is often used to disinfect municipal wastewater existing to discharge. The Water Pollution Control Federation's *Chlorination of Wastewater* (1976) states that a properly designed and maintained wastewater treatment facility can achieve adequate disinfection if a 0.5 mg/L chlorine residual is maintained after 15 minutes of contact time. A treatment plant that provides adequate chlorination contact time can meet the 0.5 mg/L limit on a monthly average basis. The average weekly limit is expressed as 1.5 times the average monthly limit or in this case 0.75 mg/L. The technology based limits for total residual chlorine are 0.5 mg/L average monthly and 0.75 mg/l average weekly.

Finally, since the federal regulation at 40 CFR 122.45 (f) requires limitations to be expressed as mass based limits using the design flow of the facility, mass based limits are calculated as follows:

Monthly average = 0.5 mg/L x 0.018 mgd x 8.34 = 0.08 lbs/day

Weekly average = 0.75 mg/L x 0.018 mgd x 8.34 = 0.11 lbs/day

B. Water Quality-Based Effluent Limits

Statutory Basis for Water Quality-Based Limits

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.

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/tribal water quality standard, including state/tribal narrative criteria for water quality.

The regulations require that this evaluation be made using procedures which account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant in the effluent, species sensitivity (for toxicity), and where appropriate, dilution in the receiving water. The limits must be stringent enough to ensure that water quality standards are met and must be consistent with any available wasteload allocation.

Reasonable Potential Analysis

When evaluating the effluent to determine if water quality-based effluent limits based on chemical specific numeric criteria are needed, a projection of the receiving water concentration downstream of where the effluent enters the receiving water for each pollutant of concern is made. The chemical-specific concentration of the effluent and receiving water and, if appropriate, the dilution available from the receiving water are factors used to project the receiving water concentration. If the projected concentration of the receiving water exceeds the numeric criterion for a limited parameter, then there is a reasonable potential that the discharge may cause or contribute to an excursion above the applicable water quality standard, and a water quality-based effluent limit is required.

Sometimes it is appropriate to allow a small volume of receiving water to provide dilution of the effluent; these volumes are called mixing zones. Mixing zone allowances will increase the allowable mass loadings of the pollutant to the water body and decrease treatment requirements. Mixing zones can be used only when there is adequate receiving water flow volume and the concentration of the pollutant of concern in the receiving water is below the numeric criterion necessary to protect the designated uses of the water body. Mixing zones must be authorized by the State. The State of Idaho authorized a mixing zone of 25 percent of the receiving water resulting in an acute dilution ratio of 261 to 1 and a chronic dilution ratio of 300 to 1 (see calculations below).

The chronic ammonia criterion is expressed as a 30-day average not to be exceeded more than once every three years. The 30B3 is a biologically-based design flow intended to ensure an excursion frequency of once every three years for a 30-day average flow rate. The averaging period (30 days) and the excursion frequency (3 years) are consistent with the chronic ammonia criterion. This results in a dilution ratio of 341.

Low flow data were obtained from Station 12414900 St Maries River near Santa, ID, the only USGS monitoring station with current data on the St. Maries River.

$$D = \frac{Q_e + Q_u(MZ)}{Q_e}$$

D = Dilution Ratio

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)

MZ = is the fraction of the receiving water flow available for dilution.

Qe = maximum effluent flow = 0.018 mgd

Q_u = 1Q10 = upstream acute critical low flow = 29 CFS = 18.7 mgd

$$\text{Acute dilution ratio} = \frac{0.018 + 18.7(0.25)}{0.018} = 261$$

Q_u = 7Q10 = upstream chronic critical low flow = 33 CFS = 21.3 mgd

$$\text{Chronic dilution ratio} = \frac{0.018 + 21.3(0.25)}{0.018} = 297$$

Q_u = 30B3 = ammonia upstream chronic critical low flow = 38 CFS = 24.5 mgd

$$\text{Ammonia Chronic dilution ratio} = \frac{0.018 + 24.5(0.25)}{0.018} = 341$$

Procedure for Deriving Water Quality-based Effluent Limits

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

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

C. Facility-Specific Water Quality-based Limits

Once the WLA has been developed, the EPA applies the statistical permit limit derivation approach described in Chapter 5 of the TSD to obtain daily maximum and monthly average permit limits. This approach takes into account effluent variability (using the CV), sampling frequency and the difference in time frames between the monthly average and daily maximum limits.

The daily maximum limit is based on the CV of the data and the probability basis, while the monthly average limit is dependent on these two variables and the monitoring frequency. As recommended in the TSD, the EPA used a probability basis of 95 percent for monthly average limit calculation and 99 percent for the daily maximum limit calculation.

Floating, Suspended or Submerged Matter/Oil and Grease

The Idaho Water Quality Standards (IDAPA 58.01.02.200.05) require surface waters of the State to be free from floating, suspended or submerged matter of any kind in concentrations causing nuisance or objectionable conditions that may impair designated beneficial uses. A narrative condition is proposed for the draft permit that states there must be no discharge of floating solids or visible foam or oil and grease other than trace amounts.

Total Suspended Solids (TSS)

The Idaho water quality standards state that TSS shall not exceed quantities that impair designated beneficial uses. The *St. Maries River - Subbasin Assessment and Total Maximum Daily Loads (TMDL)* **(**IDEQ) July, 2003 interpreted this water quality standard and established a TSS average monthly allocation of 30 mg/L, see discussion above.

In translating the wasteload allocation into permit limits, the EPA followed procedures in the TSD.

The NPDES regulations at 40 CFR 122.45(d) require that permit limits for publicly owned treatment works (POTWs) be expressed as average monthly limits (AMLs) and average weekly limits (AWLs), unless impracticable.

The AWL is calculated by multiplying the AML by the following relationship.

$$AWL = AML \times 1.5$$

$$AWL = 30 \text{ mg/L} \times 1.5 = 45 \text{ mg/L}$$

These water quality based loading limits are compared with the technology based effluent limits in Table B-2, below.

Table B-2
Comparison of Technology-based and Water Quality-based Limits for TSS

	Average Monthly Limit	Average Weekly Limit
Technology-based	30 mg/L	45 mg/L
Water quality-based	30 mg/L	45 Mg/L
Most stringent	30 mg/L	45 mg/L

The water quality based limits and technology based limits are identical, and mass limits are selected and applied in the draft permit. A review of the monitoring reports over the last five years found that Clarkia Water and Sewer District consistently met the proposed 30 mg/L monthly TSS limit years and the proposed 45 mg/L weekly TSS limit. Because all POTWs were required to meet the secondary treatment regulations by July 1, 1977 the NPDES regulations do not allow compliance schedules for technology-based effluent limits such as TSS. Therefore, the technology-based effluent limits for TSS apply when the permit becomes effective.

pH

The Idaho Water Quality Standards (IDAPA 58.01.02.250.01.a) require surface waters of the State to have a pH value within the range of 6.5 - 9.5 standard units. It is anticipated that a mixing zones will not be authorized for the water quality-based criterion for pH. Therefore, this criterion must be met when the effluent is discharged to the receiving water. The technology-based effluent limits for pH are 6.0 - 9.0 standard units. To ensure that both water quality-based requirements and technology-based requirements are met, the draft permit incorporates the more stringent lower limit of the water quality standards (6.5 standard units) and the more stringent upper limit of the technology-based limits (9.0 standard units).

Chlorine

Idaho water quality standards at IDAPA 58.01.02.210.01 establish a chlorine chronic aquatic life criterion of 11 μg/L and an acute aquatic life criterion 19 μg/L in the St. Maries River. Clarkia Water and Sewer District does not have a reasonable potential to violate the water quality standards for chlorine in the St. Maries River. Therefore water quality based effluent limits for chlorine are not required. However, the EPA will continue to include technology based limits of 0.5 mg/l average monthly and 0.75 mg/l weekly derived for the existing permit.

Ammonia, Total (as Nitrogen)

The Idaho water quality standards contain criteria for the protection of aquatic life from the toxic effects of ammonia (IDAPA 58.01.02.250.01.d.). The water quality standards apply the criteria for early life stages to water bodies (IDAPA 58.01.02.250.01.d.(3)). The criteria are dependent on pH and temperature, because the fraction of ammonia present as the toxic, un-ionized form increases with increasing pH and temperature. Therefore, the criteria become more stringent as pH and temperature increase. Fresh water ammonia criteria are calculated according to the equations in Table B-3.

Table B-3 Water Quality Criteria for Ammonia

Acute Criterion	Chronic Criterion
$\frac{0.275}{1+10^{7.204-pH}}+\frac{39}{1+10^{pH-7.204}}$	$\left(\frac{0.0577}{1+10^{7.688-pH}}+\frac{2.487}{1+10^{pH-7.688}}\right)\times MIN\left(2.85,1.45\times10^{0.028\times(25-T)}\right)$

Ambient ammonia, temperature and pH data are from the surface water monitoring required during the last permit cycle. The 95th percentile of pH and temperature data are used to derive the acute and chronic criteria.

95th Percentile Ambient pH	7.46
95th Percentile Ambient Temperature °C	15.3
Highest Background Ammonia mg/L	0.418
Highest Discharge Ammonia mg/L	4.03
Coefficient of Variation	1.69

The coefficient of variation (CV) of the data and the highest observed effluent value are based on effluent data collected from January, 2006 through December, 2006. Receiving water data was collected from April, 2004 to August, 2010.

The ammonia acute standard is 14.1 mg/L and the chronic standard is 4.28 mg/L.

The reasonable potential analysis shows that there is no reasonable potential for the facility's discharge to cause or contribute to an exceedance of the acute or chronic criterion, therefore, effluent limits for ammonia are not required. Ammonia is a parameter commonly monitored for POTWs to determine performance. Monitoring will again be required. Receiving water monitoring is not required.

Temperature

As discussed above, the permit established a temperature effluent limit of 35 degrees pursuant to the SMR TMDL."

Escherichia coli (E. coli) Bacteria

The St Maries River at the point of discharge is designated for primary contact recreation. 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 as a geometric mean based on a minimum of five samples taken every three to seven days over a thirty day period (IDAPA 58.01.02.251.01.a). The permit contains a monthly geometric mean effluent limit for *E. coli* of 126 organisms per 100 ml and a monitoring schedule to determine compliance.

The Idaho water quality rules also state that for primary contact recreation a single water sample that exceeds 406 organisms/100 ml indicates a likely exceedance of the geometric mean criterion, although it is not, in and of itself, a violation of water quality standards. (IDAPA § 58.01.02.251.01.b.ii).

The goal of a water quality-based effluent limit is to ensure a low probability that water quality standards will be exceeded in the receiving water as a result of a discharge, while considering the variability of the pollutant in the effluent (EPA, 1991). Because a single sample value exceeding 406 organisms/100 ml may indicate an exceedance of the geometric mean criterion, the EPA has included an instantaneous (single grab sample) maximum effluent limit for *E. coli* of 406 organisms/ 100 ml, in addition to a monthly geometric mean limit of 126 organisms/100 ml, which directly implements the water quality criterion for *E. coli*. This will ensure that the discharge will have a low probability of exceeding the geometric mean criterion for *E. coli* and provide warning of and opportunity to avoid possible non-compliance with the geometric mean criterion.

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 antidegradation analysis is conducted as part of the State's 401 certification.

REASONABLE POTENTIAL FOR AQUATIC LIFE

		State Water Quality Standard		Max concentration at edge of...										
	Ambient Conc.	Acute	Chronic	Acute Mixing Zone	Chronic Mixing Zone	**LIMIT REQ'D?**	Effluent percentile value		Max effluent conc. measure	Coeff Variation	# of samples	Multiplier	Acute Dil'n Factor	Chronic Dil'n Factor
Parameter	*mg/L*	*mg/L*	mg/L	*mg/L*	*mg/L*			*Pn*	*mg/L*	*CV*	*n*			
Total Ammonia Nitrogen	0.418	14.1	4.28	0.550	0.519	**NO**	0.99	0.681	4.03	1.69	12	8.63	261	341
Total Residual Chlorine	0.0	0.019	0.011	0.003	0.002	**NO**	0.99	0.600	0.60	0.37	120	1.22	261	300