



FACT SHEET

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

**The City of Glens Ferry
901 South Martell Drive Highway
Glens Ferry, Idaho 83623**

NPDES Permit Number: ID-002200-4

Public Notice Start Date: September 14, 2011

Public Notice Expiration Date: October 14, 2011

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

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

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. EPA has received a draft certification from IDEQ. Comments regarding the certification should be directed to:

IDEQ Boise Regional Office
1445 N. Orchard
Boise, ID 83706
ph: (208) 373-0550
fx: (208) 373-0287

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

After the Public Notice expires and all comments have been considered, 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, 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 pursuant to 40 CFR 124.19.

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 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.

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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: City of Glenns Ferry, Wastewater Treatment Plant
Mailing Address: P.O. Box 910, Glenns Ferry, Idaho 83623
Facility Address: 901 South Martell Drive, Glenns Ferry, Idaho 83623
Contact: Jeff Cook, Public Works Director, (208) 366-7418

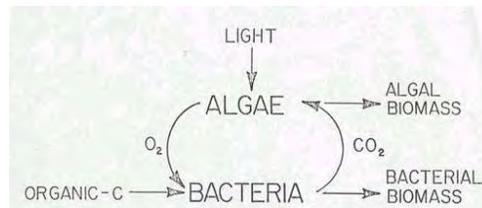
I. FACILITY INFORMATION

A. Facility Description

The City of Glenns Ferry (Glenns Ferry) owns, operates and has maintenance responsibility for a wastewater treatment plant (facility) that treats domestic sewage and commercial wastewater discharge. The facility receives wastewater primarily from local residents and commercial establishments through a separate sanitary sewer system. Diamond Laundry, a clothes-washing facility, is the only active industrial discharger to the system and discharges in the range of 9,300 gallons per day to the treatment system.

The Glenns Ferry wastewater treatment plant provides treatment using waste stabilization ponds operated as a “solids recycling/aerated lagoon” (SR/AL). This is a four-cell lagoon.

These lagoons allow settleable solids introduced by the wastewater to settle to the bottom to form a sludge layer that decomposes anaerobically. If oxygen is present in the water column, the biodegradable organic materials that do not settle are degraded aerobically. The term facultative describes the aerobic-anaerobic nature of the lagoon - an anaerobic bottom region covered by an aerobic top layer. The depth of the latter is in a state of constant fluctuation as the result of changing meteorological conditions. The dominant organisms in the system are algae and bacteria which function in a mutually beneficial relationship. The oxygen needed for aerobic treatment in facultative lagoons is supplied primarily by algae, the cultivation of which is a major factor in the lagoon design.



Wastewater flow through the four lagoon cells ends at rapid infiltration basins prior to discharge to the Snake River. Disinfection is by ultraviolet radiation and this facility does not use chlorination.

Under the previous permit, Glenns Ferry achieved overall Biochemical Oxygen Demand (BOD) removal of 85 percent with three exceptions and 85 percent Total Suspended Solids

(TSS) removal with six exceptions.

The current service population is estimated to be 1,600 people. The wastewater treatment plant (WWTP) has a design flow rate of 0.50 mgd.

To address inflow and infiltration, the City of Glenns Ferry replaces sewer collection lines whenever funds become available.

Permit History

The facility's previous permit became effective on November 24, 2003. A complete application for permit reissuance was submitted to EPA on November 21, 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 October 2005 to September 2010 found the following:

BOD, 5-day, percent removal

Violations of the monthly limit of 85% minimum removal, at 80% in November 2009 and 84.6% in April and May 2010.

Total Suspended Solids

Violations of the monthly average limit of 30 mg/L, at 50 in May 2009, 49 in September 2009, and 33 in December 2009.

Violations of the weekly average limit of 45 mg/L, at 50 in May 2009 and 49 in September 2009.

Total Suspended solids, percent removal

Violations of the monthly limit of 85% minimum removal, at 58% in October 2008, 81% in May 2009, 61% in September 2009, 33% in November 2009, and 84.4% in April and June 2010.

E. coli

One violation of the monthly geometric mean limit of 126 colonies/100 ml, at 189 in February 2010.

II. RECEIVING WATER

The treated effluent from the City of Glenn Ferry's wastewater treatment facility is discharged continuously to the Snake River at river mile 540, which is within the Southwest Idaho Basin, C.J. Reservoir subbasin of Idaho's *Water Quality Standards and Wastewater Treatment Requirements* (IDAPA 58.01.02.140.01.). The discharge is in the Snake River, HUC 7050101, C.J. Strike Reservoir, Clover Creek to Browns Creek, and the standards protect the following beneficial use classifications: cold water biota, primary contact recreation, and special resource water aesthetics and domestic, agricultural, and industrial water supply. The outfall is located at latitude 42° 56' 38" N and longitude 115° 18' 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

A water quality limited segment (WQLS) is any 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 Snake River to which the City of Glenns Ferry discharges was identified on the State of Idaho 303(d) list because it did not attain the state water quality standards for sediment and phosphorus. The State of Idaho developed the *King Hill - C.J. Strike Reservoir Subbasin Assessment and Total Maximum Daily Load*, March 2006 (TMDL) that was approved by EPA in June, 2006. That TMDL established waste load allocations (WLA) for sediment and total phosphorus. The effluent limits for sediment also called total suspended solids, and total phosphorus proposed in this permit are consistent with the allocations identified in the TMDL and therefore are consistent with the requirements of 40 CFR 122.44 (d)(vii)(B).

Total Phosphorus (TP)

The primary nutrient impairing beneficial uses in the river is phosphorus, and a total phosphorus target of 0.075 mg/L was established for the Snake River between King Hill and C.J. Strike Reservoir. Even though Glenns Ferry does not increase TP levels in the river significantly, the TMDL developed phosphorus wasteload allocations for the facility. The wasteload allocation for the WWTP is based on the plant's current design capacity and is 11.6 kilograms per day (kg/day) (25.6 lb/day) total phosphorus.

Total Suspended Solids (TSS)

As with nutrients, sediment loading to the Snake River is primarily from the upstream segment of the Snake according to the TMDL. The TMDL goes on to state that the Snake River between King Hill and C.J. Strike Reservoir does not currently exceed the surrogate water column targets. Even with the lack of exceedances, a sediment TMDL was established for this segment of the Snake River. The intent of the TMDL is to help address a sediment bedload problem in the Snake River, which contributes to excessive aquatic plant growth.

The TMDL found “The Glenns Ferry WWTP wasteload allocation is based on the plants current NPDES permit limit for total suspended solids. The relative mass of sediment contributed by the WWTP is quite small. The plant already removes much of the influent suspended solids as part of the treatment process; further treatment at this time would result in high costs with little tangible benefit to the river. However, the plant must continue to meet the minimum percent removal requirement in its permit.” The Glenns Ferry WWTP wasteload allocation is based on the plant’s current NPDES permit limit for total suspended solids. The permit contained a TSS monthly average of 125 lb/day and a TSS weekly average of 188 lb/day. These effluent limits are the WLAs for the facility.

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 in Draft Permit

The following summarizes the 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 1 below presents the effluent limitations.

Table 1 Effluent Limitations				
Parameter	Average Monthly Limit	Average Weekly Limit	Minimum Percent Removal¹	Instantaneous Maximum Limit
Flow	--	--	--	--
BOD ₅	30 mg/L	45 mg/L	85%	--
	125 lbs/day ²	188 lbs/day ²		--
TSS	30 mg/L	45 mg/L	85%	--
	125 lbs/day ²	188 lbs/day ²		--
<i>E. coli</i> Bacteria	126 colonies /100mL ³	--	--	406 colonies /100mL
Total Phosphorus	25.6 lbs/day	38.4 lbs/day	--	--
pH	6.5 – 9.0 standard units			

1. Percent removal is calculated using the following equation: ((influent - effluent) / influent) x 100, this limit applies to the average monthly values.
2. Loading limits are calculated by multiplying the concentration in mg/L by the design flow of 0.50 mgd and a conversion factor of 8.34 lbs/gallon.
3. The monthly average for *E. coli* is the geometric mean of all samples taken during the 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

BOD₅, TSS, *E. coli*, Total Phosphorus, pH and Flow

The permit requires monitoring BOD₅, TSS, flow, *E. coli*, total phosphorus, and pH to determine compliance with the effluent limits. The permit also requires monitoring of the influent for BOD₅ and TSS to calculate monthly removal rates.

Ammonia

Monitoring for ammonia is again required however, it is expanded from a term of one year in the existing permit to the term of the new permit. Ammonia is a parameter

commonly monitored for POTWs to determine performance and will determine impacts to the Snake River. It 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 City of Glenns Ferry WWTP is a minor NPDES facility (i.e., <1 MGD design flow). Monitoring for reapplication is required over a three year period as required in NPDES Application Form 2A Effluent Testing Data.

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 EPA approved test methods (generally found in 40 CFR §136) and if the Method Detection Limits (MDLs) are less than the effluent limits.

Table 2 presents the effluent monitoring requirements for the permittee in the draft permit. Each of the effluent monitoring requirements from the previous permit were 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 2 Effluent Monitoring Requirements				
Parameter	Unit	Sample Location	Sample Frequency	Sample Type
Flow	mgd	Effluent	Continuous	Recording
BOD ₅	mg/L	Influent and Effluent ⁴	1/month	8-hour composite
	lbs/day	Effluent	1/month	Calculation
	% Removal	---	---	Calculation
TSS	mg/L	Influent and Effluent ⁴	1/month	8-hour composite
	lbs/day	Effluent	1/month	Calculation
	% Removal	---	---	Calculation
pH	standard units	Effluent	1/week	Grab
<i>E.coli</i> Bacteria	colonies/100 ml	Effluent	5/month	Grab
Total Ammonia, as Nitrogen	mg/L	Effluent	1/month	8-hour composite

Table 2 Effluent Monitoring Requirements				
Parameter	Unit	Sample Location	Sample Frequency	Sample Type
Total Phosphorus, as P	lbs/day	Effluent	1/month	8-hour composite
NPDES Application Form 2A Effluent Testing Data	mg/L	Effluent	1 each in 2 nd , 3 rd , & 4 th years of the permit	See footnote 5

4. Influent and effluent composite samples shall be collected during the same 8-hour period.
5. For Effluent Testing Data, in accordance with instructions in NPDES Application Form 2A, Part B.6.

V. SLUDGE (BIOSOLIDS) REQUIREMENTS

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

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 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 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 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 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 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 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. 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.

In an e-mail dated January 21, 2009, NOAA Fisheries stated that there are no threatened or endangered species under NOAA's jurisdiction in the Snake River drainage upstream of the Hells Canyon Dam, which is located at river mile 247.5. The City of Glenns Ferry is located on the Snake River approximately 540 upstream from Hell's Canyon Dam and the nearest ESA-listed threatened or endangered species 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.

The U.S. Fish and Wildlife Service identified the Bull Trout as threatened in the area of the outfall.

Based on the following considerations, 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. A high acute dilution ratio(1,836:1) and high chronic dilution ratio (2,046:1) in the Snake River receiving water.
3. Since the facility is using ultraviolet light disinfection instead of chlorination, residual chlorine is not discharged; therefore, the toxic risk to any species is

greatly reduced. Chlorine can have toxic effects on listed species mortality, reproduction, development and growth response.

B. Essential Fish Habitat

Essential fish habitat (EFH) includes the waters and substrate (sediments, etc.) necessary for fish to spawn, breed, feed, or grow to maturity. The Magnuson-Stevens Fishery Conservation and Management Act (January 21, 1999) requires EPA to consult with NOAA Fisheries when a proposed discharge has the potential to adversely affect (reduce quality and/or quantity of) EFH. The EFH regulations define an adverse effect as any impact which reduces quality 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 pursuant to 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. EPA concludes that issuance of this permit has no effect on EFH.

C. State Certification

Section 401 of the CWA requires 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

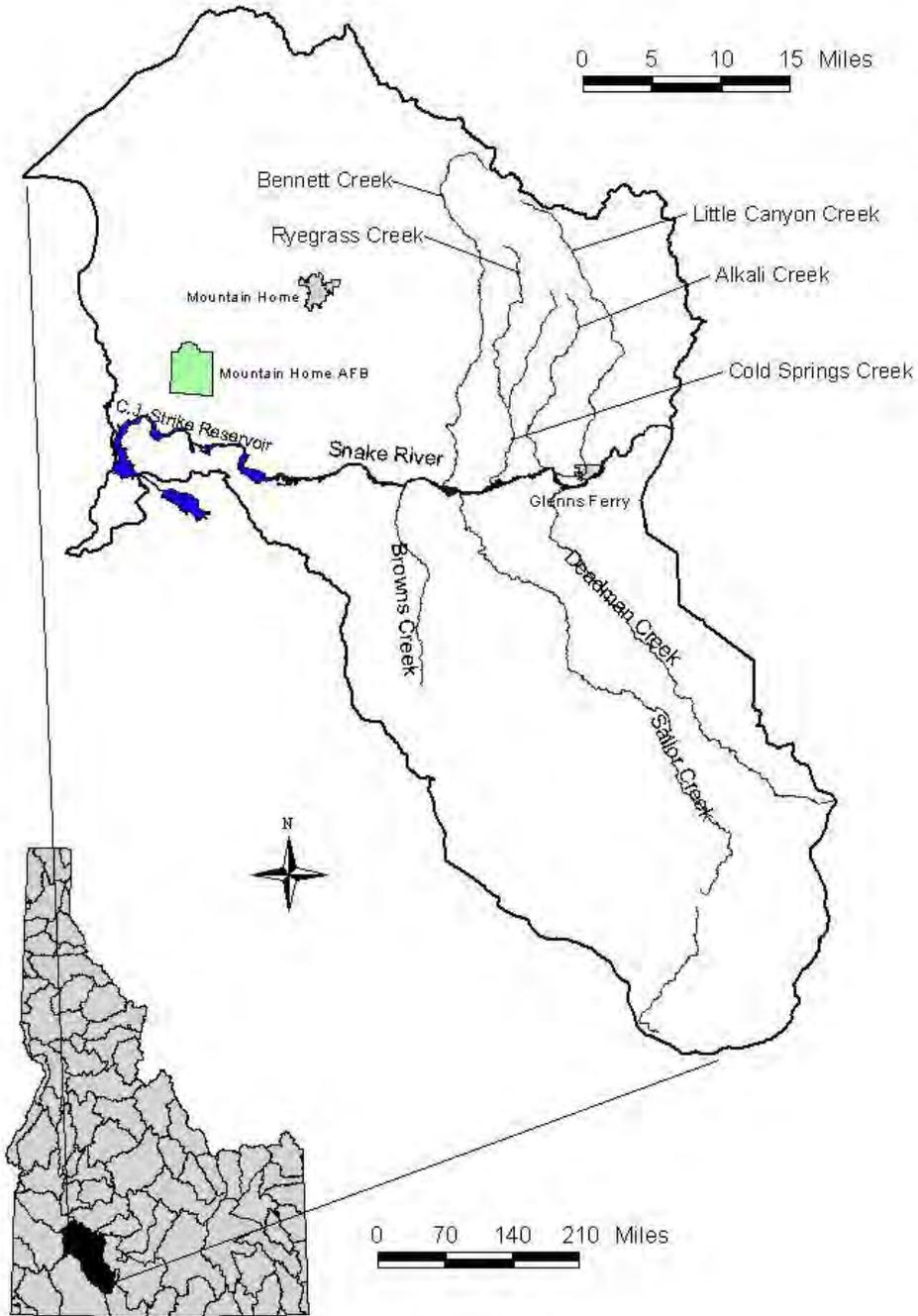
1Q10	1 day, 10 year low flow
7Q10	7 day, 10 year low flow
AML	Average Monthly Limit
BOD ₅	Biochemical oxygen demand, five-day
°C	Degrees Celsius
cfs	Cubic feet per second
CFR	Code of Federal Regulations
CV	Coefficient of Variation
CWA	Clean Water Act
DMR	Discharge Monitoring Report
DO	Dissolved oxygen
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. City of Glenns Ferry, 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, 1996. U.S. EPA NPDES Permit Writer's Manual, US Environmental Protection Agency, Office of Water, EPA-833-B-96-003.
6. Idaho Department of Environmental Quality, *King Hill - C.J. Strike Reservoir Subbasin Assessment and Total Maximum Daily Load; Revised Final*, March 2006; Approved by U.S. EPA June 2006

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. 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 BOD₅, TSS and pH.

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	---
Removal Rates for BOD ₅ and TSS	85% (minimum)	---	---
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:

$$\text{Mass-based limit (lbs/day)} = \text{concentration limit (mg/L)} \times \text{design flow (mgd)} \times 8.34$$

For example for BOD₅:

$$\text{Mass-based limit (lbs/day)} = 30 \text{ mg/L} \times 0.50 \text{ mgd} \times 8.34 = 125 \text{ lbs per day.}$$

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 1800 for acute ammonia.

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 2000.

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

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 or 30B3)

Based on USGS Station 13154500, Snake River at King Hill ID.

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

Q_e = maximum effluent flow = 0.50 mgd

Q_u = 1Q10 = upstream acute critical low flow = 5680 CFS = 3669 mgd

$$\text{Acute dilution ratio} = \frac{0.50 + 3669(0.25)}{0.50} = 1836$$

Q_u = 30B3 = ammonia upstream chronic critical low flow = 6330 CFS = 4089 mgd

$$\text{Ammonia Chronic dilution ratio} = \frac{0.50 + 4089(0.25)}{0.50} = 2046$$

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, 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.

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.

Sediments (TSS)

Allocations for TSS are based on the plants current NPDES permit limit for total suspended solids. The allocation is a TSS monthly average of 125 lb/day and a TSS weekly average of 188 lb/day.

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 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).

Total Phosphorus

As noted above, the Subbasin Assessment assigned a wasteload allocation to the Glenns Ferry WWTP of weekly limit of 11.6 kg (25.6 lb) per day total phosphorus. Using procedures from the TSD the weekly average is:

$$25.6 \times 1.5 = 38.4 \text{ lbs/day}$$

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-2.

Table B-2 Water Quality Criteria for Ammonia	
Acute Criterion	Chronic Criterion
$\frac{0.275}{1 + 10^{7.204 - \text{pH}}} + \frac{39}{1 + 10^{\text{pH} - 7.204}}$	$\left(\frac{0.0577}{1 + 10^{7.688 - \text{pH}}} + \frac{2.487}{1 + 10^{\text{pH} - 7.688}} \right) \times \text{MIN} \left(2.85, 1.45 \times 10^{0.028 \times (25 - T)} \right)$

Ambient temperature data were obtained from the closest upstream USGS monitoring station, 13154500, Snake River at King Hill ID. Data for ambient ammonia and pH were taken from the permit issued in November 2009 for the City of Twin Falls, a WWTP on the Snake River upstream of Glenns Ferry. The highest ambient pH for that facility was 8.6, and the highest ambient ammonia concentration was 0.068 mg/l. The 95th percentile of pH and temperature data are used to derive the acute and chronic criteria.

95 th Percentile Ambient pH	8.6
95 th Percentile Ambient Temperature °C	20
Highest Background Ammonia mg/L	0.068
Highest Discharge Ammonia mg/L	6.25
Coefficient of Variation	0.83

The ammonia acute standard is 1.77 mg/L and the chronic standard is 0.646 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 criteria, therefore, effluent limits are not required. The current consolidated Fact Sheet for Glenns Ferry and other small facilities reported no ammonia data to allow a reasonable potential analysis. Therefore, the current permit required monitoring for ammonia during one year of the permit. Ammonia is a parameter commonly monitored for POTWs to determine performance. Monitoring will again be required. This will also determine impacts to the Snake River.

Escherichia coli (E. coli) Bacteria

The Snake 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 draft compliance monitoring schedule contains a monthly geometric mean effluent limit for *E. coli* of 126 organisms per 100 ml.

The Idaho Water Quality Standards 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, 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.	Chronic	Acute	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
Parameter	<i>mg/L</i>	<i>mg/L</i>	<i>mg/L</i>	<i>mg/L</i>	<i>mg/L</i>			<i>Pn</i>	<i>mg/L</i>	<i>CV</i>	<i>n</i>			
Total Ammonia Nitrogen	0.068	0.646	1.77	0.076	0.075	NO	0.99	0.681	6.25	0.83	12	2.34	1836	2046