



FACT SHEET

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

**City of Greenleaf
20523 N. Whittier Drive
Greenleaf, ID 83626**

NPDES Permit Number: ID-002830-4

Public Notice Start Date: July 6, 2012

Public Notice Expiration Date: August 6, 2012

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The EPA Proposes To Issue NPDES Permit

The EPA proposes to issue 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 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 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:

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 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.

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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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I. APPLICANT

This fact sheet provides information on the draft National Pollutant Discharge Elimination System (NPDES) permit for the following entity:

Facility Name: City of Greenleaf, Wastewater Treatment Plant

Mailing Address: 20523 N. Whittier Drive, Greenleaf, ID 83626

Facility Address: Purdham Road, Greenleaf, Idaho

Contact: Jack Harrison, (208) 861-1654

A. Facility Information

The City of Greenleaf (City) is currently installing a new community wide wastewater collection system and wastewater treatment plant. This will replace an existing sewer system that collects septic tank effluent from individual users and conveys the effluent to a community drain field for disposal. The existing system was constructed in the 1950s and is at the end of its useful life. The service population is estimated at 920 people.

The new facility will treat wastewater that is primarily from local residents and commercial establishments through a separate sanitary sewer system. There will be no significant industrial dischargers to the facility. The City intends to have the facility in operation by mid-summer 2012. The initial discharge will be to the reuse land application sites. No discharge to surface water will occur until a final NPDES permit is issued to the City.

The wastewater treatment system will consist of screening and an oxidation ditch with surface water discharged during the winter and initially land application during the summer. Treatment includes two deep bed upflow sand filters (tertiary filtration after secondary clarification). The sand filters are designed for particulate removal, but are also the same type of filters that are commonly used to target phosphorus reduction.

The treatment system will include two oxidation ditch basins each capable of treating 0.12 million gallons per day (mgd) for a design capacity of 0.24 mgd total. An oxidation ditch is a modified activated sludge biological treatment process that utilizes long solids retention times to remove biodegradable organics. Flow to the oxidation ditch is aerated and mixed with return sludge from a secondary clarifier. A typical process flow diagram for an activated sludge plant using an oxidation ditch is shown in Appendix A. The basins will be designed to biologically reduce biochemical oxygen demand, five-day (BOD5), and convert influent ammonia into nitrate (nitrification) in the aerobic zone. An anoxic zone will be provided in each basin to biologically degrade nitrate into nitrogen gas (denitrification). Secondary clarification is provided in two clarifiers to remove total suspended solids (TSS). Tertiary filtration will be installed to meet Class B reuse turbidity requirements for land application during the irrigation season. The filters will also provide partial removal of total phosphorus in discharges to the West End Drain.

Current plans by the City are to land apply during the summer. In the future, the City may treat wastewater using the plant equalization basin as an anaerobic zone to achieve biological phosphorus reduction for some biological nutrient reduction (BNR) and add coagulants and polymer into the influent of the secondary clarifiers to achieve a higher level of phosphorus reduction. Space is provided for the addition of future anaerobic zones if needed to increase biological phosphorus reduction. Space is also provided for the addition of future tertiary filters that would be operated in series with the initial filters to achieve low level total phosphorus concentrations of 0.07 mg/L.

The effluent is then disinfected with chlorine using 12.5 percent sodium hypochlorite and declorinated by rapid mixing with sodium thiosulfate prior to discharge.

The plant site is lower than other parts of the City allowing all flows to be conveyed to the plant by gravity.

Aerobically settled solids will be removed from the treatment system, dewatered and disposed of at a landfill.

The average inflow and infiltration for the new collection system is estimated to be 298 gallons per week according to the application.

B. Permit History

This will be the first NPDES permit for the discharge.

II. RECEIVING WATER

The treated effluent from the facility will be discharged to the West End Drain (see Appendix A). The West End Drain carries agricultural runoff, groundwater and stormwater drainage from lands east and south of the site, extending into the Nampa and Wilder Irrigation Districts (respectively). The West End Drain passes through the site and then discharges to the Riverside Canal. During the irrigation season, most of the West End Drain water is used within the irrigation district on agricultural cropland. From approximately mid-October to mid-April, the water in the Riverside Canal is diverted into the Dixie Slough (HUC ID1705014 SW 001_02), which discharges into the Boise River between Indian Creek to the mouth, (HUC 1705014 SW001_06). Initially, reclaimed water will be land applied in the summer critical period (May through September) and discharged to surface waters during the non-irrigation season. Outfall 001 is located at latitude 43° 40' 53" N and longitude 116° 49' 15" W. The distance to the Riverside Canal is approximately 1000 feet. The distance to the Boise River is approximately seven miles.

A. Low Flow Conditions

Flow data submitted with the application and supplementary information are used to estimate low flow conditions. This data is limited. The permit requires additional receiving water monitoring to improve the accuracy of the reasonable potential determination and the effluent limitation calculations.

B. Water Quality Standards

Overview

Section 301(b)(1)(C) of the Clean Water Act (CWA) requires the development of limitations in permits necessary to meet water quality standards. 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 that each water body is expected to achieve, such as drinking water supply, contact recreation, and aquatic life. The numeric and narrative water quality criteria are the criteria deemed necessary 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

The West End Drain does not have specific use designations in the Idaho Water Quality Standards (IDAPA 58.01.02.110 through 160). The Water Quality Standards state that such "undesignated waterways" are to be protected for the uses of cold water aquatic life and primary contact recreation (IDAPA 58.01.02.101.01).

Also, pursuant to CWA Section 101(a)(2) all waters must be assigned a designation consistent with the fishable and swimmable goal of the CWA unless that use is removed as a result of a use attainability analysis. A use attainability analysis has not been performed for the West End Drain or the Riverside Canal. Therefore, in accordance with IDAPA 58.01.02.101.01, as an undesignated surface water, the beneficial uses are cold water aquatic life and primary contact recreation.

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

Surface Water Quality Criteria

The criteria are found in the following sections of the Idaho Water Quality Standards:

- The narrative criteria applicable to all surface waters of the State are found at IDAPA 58.01.02.200 (General Surface Water Quality Criteria).
- The numeric criteria for toxic substances for the protection of aquatic life and primary contact recreation are found at IDAPA 58.01.02.210 (Numeric Criteria for Toxic Substances for Waters Designated for Aquatic Life, Recreation, or Domestic Water Supply Use).
- Additional numeric criteria necessary for the protection of aquatic life can be found at IDAPA 58.01.02.250 (Surface Water Quality Criteria for Aquatic Life Use Designations).
- Numeric criteria necessary for the protection of recreation uses can be found at IDAPA 58.01.02.251 (Surface Water Quality Criteria for Recreation Use Designations).

- Water quality criteria for agricultural water supply can be found in the EPA's *Water Quality Criteria 1972*, also referred to as the "Blue Book" (EPA R3-73-033) (See IDAPA 58.01.02.252.02)

The numeric and narrative water quality criteria applicable to the West End Drain at the point of discharge are provided in Appendix B of this fact sheet.

Antidegradation

The IDEQ has completed an antidegradation review which is included in the draft 401 certification for this permit. See Appendix C for the State's draft 401 water quality certification. Comments on the 401 certification including the antidegradation review can be submitted to the IDEQ as set forth above (see State Certification).

C. Water Quality Limited Segment and TMDL

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 CWA, States must identify waters not achieving water quality standards in spite of application of technology-based controls in NPDES permits for point sources. Such waterbodies are known as 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 CWA 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 Boise River into which Dixie Slough discharges was identified on the State of Idaho 303(d) list because it did not attain the state water quality standards for fecal coliform, sediment, temperature and total phosphorus.

In January of 2000, the EPA approved the *Lower Boise River TMDL* (IDEQ, 1998, 1999) (TMDL), which included load (for nonpoint sources) and wasteload (for point sources) allocations for sediment and bacteria. In January 2008 the EPA approved the *Sediment and Bacteria Allocations Addendum to the Lower Boise River TMDL (2008 Addendum)*. The addendum states "New discharging facilities will be considered in compliance with the bacteria TMDL WLA so long as the discharge meets Idaho Water Quality Standards for *E. coli* and which is 126 colonies per 100 ml." (IDEQ, April 2008). Reserve capacity remaining for TSS in the Boise River is 3.098 tons per day for additional new dischargers or existing dischargers that may expand. The *2008 Addendum* describes how IDEQ will allocate the reserve. "When a new or existing facility receives a draft NPDES permit from the EPA, the facility may contact DEQ and request an allocation based on new or expanded flows. If there is sufficient reserve available, DEQ shall amend Table 15 to reflect the new or changed allocations taken from the reserve." On June 12, 2012 Idaho revised Table 15 in the *2008 Addendum* to include an allocation for the City. The technology based limit of 60 pounds per

day TSS discharged from Greenleaf leaves 3.068 tons per day remaining reserve capacity. This effluent limit in the draft permit is consistent with the allocation in the revised TMDL, in compliance with 40 CFR 122.44(d)(1)(vii)(B). The State of Idaho's 2008 Integrated Report Section 5 (section 303(d) lists the Boise River, from Diversion Dam to the mouth, as impaired for temperature and flow. Additionally, the Boise River from Indian Creek to the mouth is listed as impaired for nutrients (see Idaho Department of Environmental Quality August, 2011 Integrated Report and the EPA's October 13, 2009 letter to Barry Burnell, IDEQ which added nutrients to Idaho's 303(d) listing for the Boise River from Indian Creek to the mouth of the Boise River).

D. Restrictions on Permitting New Dischargers

The Greenleaf WWTP is a new discharger as that term is defined in 40 CFR 122.2, and 40 CFR 122.4(i) places restrictions on the issuance of NPDES permits to new sources or new dischargers. Specifically, it states that:

...no NPDES permit may be issued to a new source or a new discharger if the discharge from its construction or operation will cause or contribute to the violation of water quality standards.

The EPA has determined that the proposed discharge has the reasonable potential to cause or contribute to violations of water quality standards for ammonia, phosphorus and pH. However, the draft permit proposes water quality-based effluent limits for all of these pollutants, which will ensure that the level of water quality to be achieved by these effluent limits is derived from and complies with applicable water quality standards. Therefore, this permit complies with 40 CFR 122.4(i).

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 effluent limits. Technology-based effluent 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 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 1 below presents the proposed effluent limitations.

Table 1: Proposed Effluent Limitations - Outfall 1					
Parameters	Average Monthly Limit	Average Weekly Limit	Minimum Percent Removal¹	Maximum Daily Limit	Instantaneous Maximum
BOD ₅	30 mg/L	45 mg/L	85%	--	--
	60 lbs/day	90 lbs/day		--	--
TSS	30 mg/L	45 mg/L	85%	--	--
	60 lbs/day	90 lbs/day		--	--
Total Phosphorus as P (May 1-September 30)	70 µg/L	105 µg/L	--	--	--
	0.14 lbs/day	0.21 lbs/day	--	--	--
<i>E. coli</i> Bacteria	126 colonies /100 mL ²	--	--	406 colonies /100mL ³	--
pH	6.5-9.0 standard units				--
Total Residual Chlorine	16 µg/L	--	--	31 µg/L ³	--
	0.032 lbs/day	--	--	0.062 lbs/day	--

1. Percent removal is calculated using the following equation: $((\text{influent} - \text{effluent}) / \text{influent}) \times 100$, this limit applies to the average monthly values.
2. The monthly average for *E. coli* is the geometric mean based on at least five samples taken every three to seven days during the month.
3. This is an instantaneous limit, applicable to each grab sample without averaging.

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, Total Phosphorus, *E. coli*, Flow, pH and Total Residual Chlorine

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

Total Phosphorus During Winter

Total phosphorus monitoring is required in the winter season to further characterize the discharges.

Nitrate-Nitrite as N

The Blue Book standard for nitrate-nitrite nitrogen in drinking water for livestock and poultry is 100 ppm. Greenleaf has no reasonable potential to violate the water quality standard for nitrate-nitrite nitrogen. To improve the accuracy of the reasonable potential calculations effluent and ambient monitoring is required.

Nitrite as N

The Blue Book standard for nitrite nitrogen in drinking water for livestock and poultry is 10 ppm. Greenleaf has no reasonable potential to violate the water quality standard for nitrite nitrogen. To improve the accuracy of the reasonable potential calculations effluent and ambient monitoring is required.

Ammonia

Based on limited data Greenleaf does not have a reasonable potential to violate the water quality standard for ammonia. To improve the accuracy of the reasonable potential calculations effluent and ambient monitoring is required with a frequency of once per week. Ammonia is a parameter commonly monitored for POTWs to determine performance and monitoring will also determine impacts to the West End Drain.

Temperature

To characterize the discharges for temperature continuous effluent temperature monitoring is required. In addition, the IDEQ draft certification requires monitoring, submittal and approval of a temperature monitoring plan prior to discharge to the West End Drain.

Reuse Equalization Pond Monitoring

Current plans by the City are to land apply during the summer. In the future, the City may treat wastewater to meet the total phosphorus effluent limitation of 0.07 mg/L. To aid in assuring the attainment of water quality standards for phosphorus during the May 1 – September 30 period when effluent limitations apply, monitoring near the outfall is required in the Reuse Equalization Pond three days prior to the discharge. Two day turnaround times are available from a laboratory in Boise for the analysis of TP. If the phosphorus concentration in the pond near the outfall exceeds the effluent limitations Greenleaf will have little chance to comply with the 0.07 mg/L TP effluent limitation. If subsequent samples fall below 0.07 mg/L discharges are allowed.

Application Form 2A Monitoring

The City of Greenleaf 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 must be used for averaging if they are conducted using the EPA approved test methods (generally found in 40 CFR 136) or as specified in the permit.

Table 2 presents the effluent monitoring requirements for the permittee in the draft permit.

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, Outfalls 001				
Parameter	Unit	Sample Location	Sample Frequency	Sample Type
Flow	mgd	Effluent	Continuous	Recording
BOD ₅	mg/L	Influent and Effluent ¹	1/week	24-hour composite
	lbs/day	Effluent	1/week	Calculation
	% Removal	---	---	Calculation
TSS	mg/L	Influent and Effluent ¹	1/week	24-hour composite
	lbs/day	Effluent	1/week	Calculation
	% Removal	---	---	Calculation
pH	standard units	Effluent	5/week	Grab
<i>E.coli</i> Bacteria	colonies/100 ml	Effluent	5/month	Grab
Total Residual Chlorine	µg/L	Effluent	1/week	Grab
	lbs/day			Calculation
Total Ammonia Nitrogen	mg/L	Effluent	1/week	24-hour composite
Nitrate-Nitrite as N	mg/L	Effluent	1/month	24-hour composite
Nitrite as N	mg/L	Effluent	1/month	24-hour composite
Temperature	°C	Effluent	Continuous	Recording
Total Phosphorus as P	mg/L	Effluent	1/week	24-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 2

1. Influent and effluent composite samples shall be collected during the same 24-hour period.

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

C. Surface Water Monitoring Requirements

Receiving water monitoring is required in the West End Drain to improve the accuracy of the reasonable potential calculations for total ammonia, nitrate-nitrite, nitrite and chlorine and to determine reasonable potential for temperature in the next permit cycle. To measure impacts to receiving water, continuous temperature monitoring is also required in the Dixie Slough. Also, pursuant to Section 401(d) of the CWA, EPA has required Greenleaf to comply with the conditions set forth in the State of Idaho’s 401 Certification, which includes a requirement for continuous effluent and ambient monitoring for temperature in Dixie Slough and the West End Drain and submittal and approval of a temperature monitoring plan prior to discharge to the West End Drain. Total phosphorus monitoring is required to characterize the receiving water for phosphorus. Table 3 presents the receiving water monitoring requirements. Monitoring frequency is monthly for five years.

Table 3:Receiving Water Monitoring Requirements			
Parameter	Method	Units	ML
Flow	Estimate	mgd	---
Total Ammonia as N	Grab	mg/L	0.10
Total Phosphorus	Grab	mg/L	0.10
Nitrate-Nitrite as N	Grab	mg/L	0.10
Nitrite as N	Grab	mg/L	0.10
Temperature ⁽¹⁾	Continuous	°C	0.1
pH	grab	standard units	0.1
⁽¹⁾ Temperature monitoring required for both the West End Drain and the Dixie Slough.			

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.

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(1)(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(1)(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. Electronic Submission of Discharge Monitoring Reports

The draft permit includes 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 and IDEQ.

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

E. 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) and the U.S. Fish and Wildlife Service (FWS) if their actions could adversely affect any threatened or endangered 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's WWTP is located more than 160 miles upstream from the 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.

There are no listed species in Canyon County, the point of discharge for Greenleaf, based on the FWS website. Therefore, the EPA concludes discharges from the facility 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. EFH is not listed for Canyon County by FWS. Therefore, the EPA concludes discharges from the facility will have no effect 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
°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

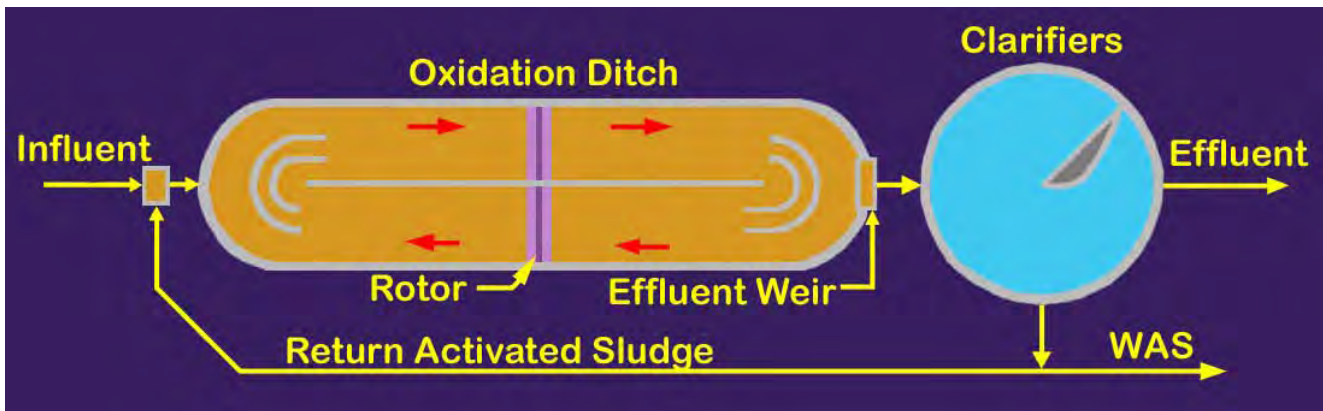
IX. REFERENCES

1. 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.
2. U.S. EPA, 1973. *Water Quality Criteria 1972* (EPA R3-73-033).
3. EPA. 1991. Technical Support Document for Water Quality-based Toxics Control. US

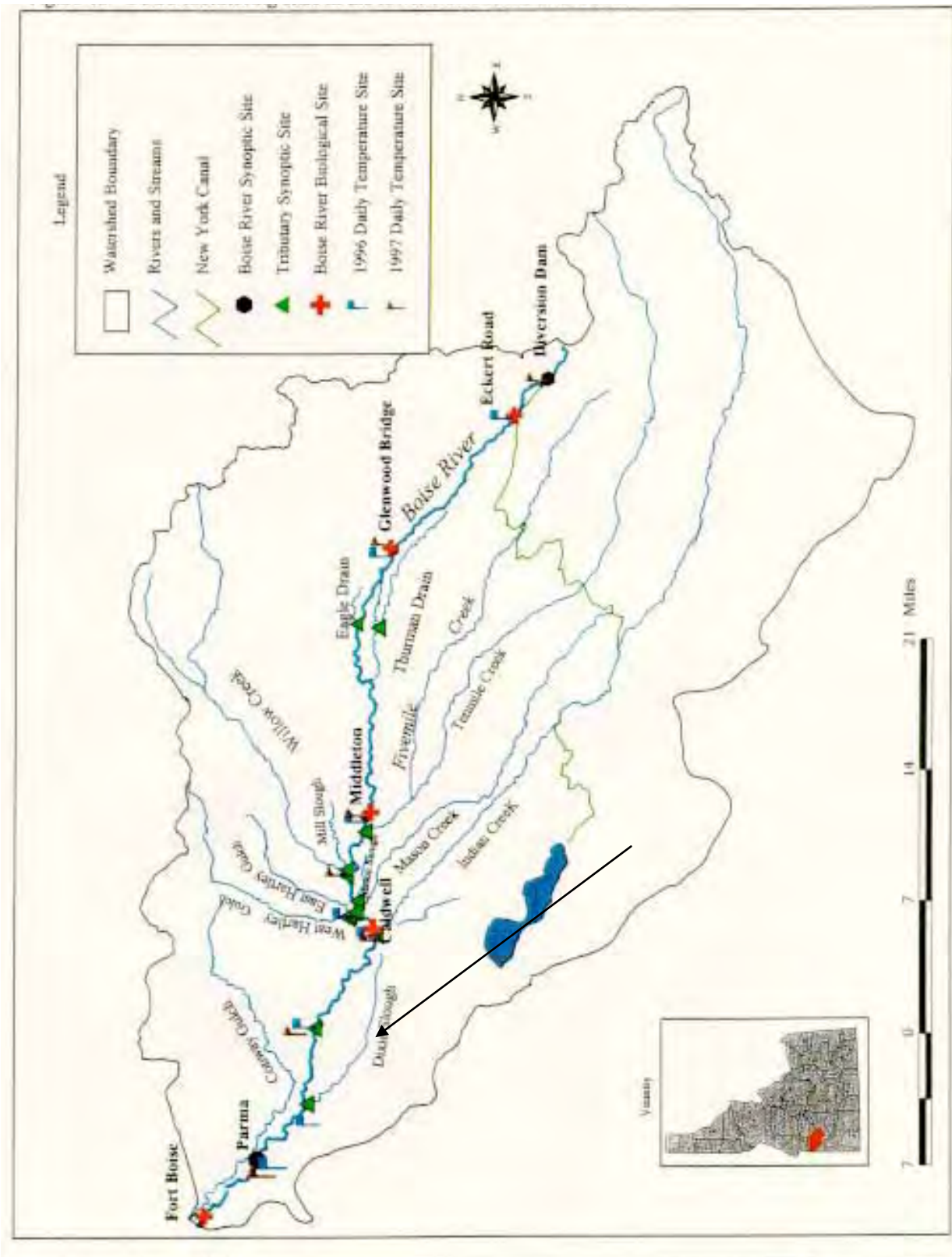
Environmental Protection Agency, Office of Water, EPA/505/2-90-001.

4. EPA, 2010. U.S. EPA NPDES Permit Writer's Manual, US Environmental Protection Agency, Office of Wastewater Management, EPA-833-K-10-001.

Appendix A – Process Flow Diagram and Discharge to the West End Drain







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 POTWs and identify the minimum level of effluent quality attainable by application of secondary treatment in terms of BOD₅, TSS and pH. The limits in the proposed permit, are the TSS limits in 40CFR 133.102(a) for BOD₅ and (b) for TSS Secondary Treatment shown in Table B-1.

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:

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

Chlorine

The Greenleaf facility intends to dechlorinate. Attachment B of the application, *Greenleaf Reuse Permit Application*, November 19, 2010, estimates residual chlorine dischargers at less than 0.016 mg/L. Attachment C of the *Greenleaf Reuse Permit Application* states, “Some of the likely

effluent limits as established in the Kuna discharge permit include...residual chlorine, which are easily met with the oxidation ditch system.” The Kuna permit established an average monthly limit of 0.016 mg/L and a maximum daily limit of 0.031 mg/L. The EPA agrees these limits are achievable with dechlorination at Greenleaf.

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:

$$\text{Monthly Average Limit} = 0.016 \text{ mg/L} \times 0.24 \text{ mgd} \times 8.34 = 0.032 \text{ lbs/day}$$

$$\text{Weekly Average Limit} = 0.031 \text{ mg/L} \times 0.24 \text{ mgd} \times 8.34 = 0.062 \text{ lbs/day}$$

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.

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

The 95th percentile of pH and temperature data for the receiving water were used to derive the acute and chronic criteria based on 69 measurements for temperature and 55 measurements of pH.

95 th Percentile Ambient pH	8.4
95 th Percentile Ambient Temperature °C	22.5

Data was not available for pH and temperature in the West End Drain. Data from the United States Geologic Survey in Dixie Creek was used to represent background pH and temperature in the West End Drain because this is the closest waterbody to the West End Drain for which data was available. Limited ambient ammonia monitoring data is available in the West End Drain. Therefore, the highest ambient ammonia concentration measured upstream of the discharge in the West End Drain was 0.08 mg/L was used in the calculations.

The ammonia acute standard is 2.59 mg/L and the chronic standard is 0.771 mg/L.

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. Information provided in the Greenleaf application indicates a critical low flow in the West End Drain of approximately 50 cubic feet per second during the non irrigation season (October 1 to March 31). Since ambient or background concentration of ammonia are less than the acute and chronic criterion, a mixing zone was incorporated into the reasonable potential calculations for ammonia.

There is a reasonable potential to exceed water quality criteria if the maximum projected concentration of the pollutant at the edge of the mixing zone exceeds the criterion. The maximum projected concentration is calculated from the following mass balance equation:

The dilution ratio in the West End Canal is:

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

D = Dilution Ratio

Q_e = Effluent flow rate (set equal to the design flow of the WWTP)

Q_u = Receiving water critical flow rate upstream of the discharge

Based on data submitted by Greenleaf with the application

MZ = is the fraction of the receiving water flow available for dilution = 0.25

Q_e = maximum effluent flow = 0.24 mgd

Q_u = upstream chronic and acute critical low flow = 50 CFS = 32.3 mgd

$$\text{Chronic and acute dilution ratio} = \frac{0.24 + 32.3(0.25)}{0.24} = 34.6$$

Greenleaf does not have a reasonable potential to violate the water quality standard for ammonia nitrogen. (See Reasonable Potential Calculation).

Nitrate-Nitrite Nitrogen

The Blue Book standard for nitrate-nitrite nitrogen in drinking water for livestock and poultry is a chronic nitrate-nitrite level of 100 ppm. The effluent concentration for total nitrogen as submitted on the application is 20 mg/L. This represents a worst case nitrate-nitrite nitrogen concentration since it includes all nitrogen.

The dilution ratio in the West End Canal is:

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

D = Dilution Ratio

Q_e = Effluent flow rate (set equal to the design flow of the WWTP)

Q_u = Receiving water critical flow rate upstream of the discharge

Based on data submitted by Greenleaf with the application

MZ = is the fraction of the receiving water flow available for dilution = 0.25

Q_e = maximum effluent flow = 0.24 mgd

Q_u = upstream chronic and acute critical low flow = 50 CFS = 32.3 mgd

$$\text{Chronic and acute dilution ratio} = \frac{0.24 + 32.3(0.25)}{0.24} = 34.6$$

Greenleaf does not have a reasonable potential to violate the water quality standard for nitrate-nitrite nitrogen. (See Reasonable Potential Calculation)

Nitrite Nitrogen (NO₂)

Municipal wastewater effluents generally contain less than 1 mg/L of nitrite nitrogen. (Wastewater Engineering, Treatment, Disposal, Reuse; Metcalf and Eddy, Inc., 1979)

Greenleaf does not have a reasonable potential to violate the water quality standard for nitrite nitrogen.

Total Phosphorus

The segment of the Boise River between Indian Creek and the mouth is listed on the 2010 303(d)/305(b) integrated report as being impaired for nutrients. The elevated phosphorous concentration in the Boise River is contributing to the impairment of the Snake River, and the *Snake River Hells Canyon TMDL* (Idaho DEQ and Oregon DEQ 2003, 2004) calls for a reduction in phosphorous loading to the Snake River from the Boise River and other tributaries during a critical season (May 1st through September 30th). The Snake River Hells Canyon TMDL requires the Boise River to achieve a load allocation of less than or equal to 70 µg/L.

The EPA has used this 70 µg/L load allocation to interpret Idaho's narrative criterion for nutrients. The narrative criterion for nutrients, which is in Section IDAPA 58.01.02.200.06 of the Idaho WQS, reads as follows: "Surface waters of the state shall be free from excess nutrients that can cause visible slime growths or other nuisance aquatic growths impairing designated beneficial uses." While the 70 ppb interpretation of the narrative criterion applies to the Boise River at the mouth as opposed to the West End drain at the point of discharge, the current concentrations of total phosphorus in the Boise River, West End Drain and the Riverside Canal are greater than 70 µg/L. Therefore, neither the West End Drain, Riverside Canal nor the Boise River can provide dilution of the effluent phosphorus. Any discharge of phosphorus from the City of Greenleaf wastewater treatment plant at a concentration greater than 70 µg/L will contribute to an excursion above the 70 µg/L total phosphorus load allocation at the mouth of the Boise River. Therefore, the proposed permit requires the City to meet the 70 µg/L target total phosphorus concentration consistent with the EPA-approved Snake River Hells Canyon TMDL at the end-of-pipe from May 1 through September 30.

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 applicable from May 1 through September 30 are calculated as follows:

$$70 \mu\text{g/L} \times 1\text{mg}/1000 \mu\text{g/L} \times 0.24 \text{ gpm} \times 8.34 = 0.14 \text{ lbs/day}$$

In addition, the EPA recognizes that winter discharges of phosphorus may under certain conditions impact downstream reservoirs. The IDEQ intends to submit to EPA a draft nutrient TMDL for the lower Boise by spring 2014. The IDEQ plans to collect data to enable them to evaluate the nutrient loading to the river during multiple seasons, including winter and summer. The EPA expects the TMDL to evaluate the need for year-round nutrient limits and to establish wasteload allocations for point sources and load allocations for non-point sources to meet water quality standards. The EPA intends to incorporate the wasteload allocations for nutrients in the next permit.

At this stage, it is not possible to evaluate the need for winter limits. EPA recognizes the technical challenge involved in trying to establish winter limits for one point source in a complex watershed in the absence of a comprehensive watershed analysis and evaluation of all contributing sources.

Further, the EPA recognizes the improvements that installation of a new community wide wastewater collection system and wastewater treatment plant and removal of individual septic systems will make at this time to the overall water quality. As documented in a 2006 Consent Order from the IDEQ, the community drain field has failed and Greenleaf cannot continue to use the existing system. The new plant provides the benefit of reducing pollutant discharges to groundwater. Also, once a new land application site is permitted reclaimed water will be available as an irrigation source.

Chlorine

At the technology based effluent limitation of 0.031 mg/L (31 µg/L), discharges of total residual chlorine do not have a reasonable potential to violate the water quality standard for chlorine. See the Reasonable Potential Calculation table on page 30.

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.

TSS

The form of the waste load allocations in the *Lower Boise River TMDL* is a mass limit based on existing flows and currently permitted TSS concentrations. To account for growth, a reserve of

TSS load is included, based on twenty year build out scenarios for each facility. The reserve for growth for treatment plants is the sum of the expected suspended solids loads that occur in a twenty year build out scenario, relative to the wasteload allocations. Thus, the size of the reserve represents the difference between current design flows and the flows expected after 20 years of population growth in the Treasure Valley. The reserve, when used by the treatment plants, will ensure the attainment of the TSS targets established in the TMDL. The mass balance analysis described below reduces the remaining reserve for growth to account for Greenleaf discharges and maintains a margin of safety with respect to the 50 mg/l, 60 day duration criterion.

Greenleaf was not given a wasteload allocation for sediment, however there is 3.098 tons per day reserve capacity remaining set aside for point sources in the TMDL. The *2008 Addendum* for sediment gave the Avimor Development and the City of Kuna allocations for total suspended solids based on their projected design flow of 0.67 MGD (168 lbs/day monthly average) and 3.5 MGD (876 lbs /day monthly average) respectively. This allocation was taken from the reserve for growth of 3.62 tons/day in Table 15. The remaining reserve for growth was 3.098 tons/day. The *2008 Addendum* states: “The total reserve is 3.62 tons of total suspended solids. The reserve is available for any new point source discharger or for existing facilities that need an additional allocation to account for growth. Until the reserve is gone, DEQ shall allocate the remaining reserve on a first come first served basis. When a new or existing facility receives a draft NPDES permit from the EPA, the facility may contact DEQ and request an allocation based on new or expanded flows. If there is sufficient reserve available DEQ shall amend Table 15 to reflect the new or changed allocations taken from the reserve.” The technology-based average monthly limit for TSS from the Greenleaf facility is 30 mg/L, which, at the 0.24 mgd design flow rate, is 60 lb/day or 0.030 tons per day. Following procedures in the TSD the average weekly limit is equal to 1.5 times this amount, or 90 lb/day. The average monthly mass limit represents 0.97% of the reserve wasteload allocation remaining. The remaining reserve is 3.068 tons per year. Table 15 of the *2008 Addendum* was revised on June 12, 2012 to account for this remaining reserve and to provide the City allocations equivalent to the 60 lbs/day monthly average and 90 lbs/day weekly average TSS effluent limitations.

The in-stream sediment concentrations that the *Lower Boise River TMDL* is intended to achieve are 50 mg/L as a 60-day average and 80 mg/L as a 14-day average. The TMDL analysis concluded that Idaho’s narrative criteria for sediment would be attained if these concentrations and averaging periods were achieved in the Boise River. The concentration limits in the draft permit will limit the Greenleaf facility to significantly lower TSS concentrations than these (30 mg/L monthly average and 45 mg/L weekly average) at the end-of-pipe. Therefore, the TSS effluent limits in the draft permit comply with water quality standards for sediment in the Boise River.

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).

Escherichia coli (E. coli) Bacteria

The 2008 *Addendum* included wasteload allocations for bacteria. At the time the TMDL was written, Idaho's contact recreation criteria were based on fecal coliform concentrations, but the switch to the current *Escherichia Coli (E. coli)* criteria was under consideration. The TMDL states that, if the *E. coli* criteria were to be approved, as they now have been, that "compliance with the load allocations in this TMDL could be demonstrated using *E. Coli* samples, rather than fecal coliform," and that "If *E. coli* are used as the new Idaho criteria for contact recreation when the permits are re-issued, the new *E. coli* criteria should be incorporated into the permits in place of fecal coliform requirements." (Page 75). The 2008 *Addendum* states "New discharging facilities will be considered in compliance with the bacteria TMDL WLA so long as the discharge meets Idaho Water Quality Standards for *E. coli* and which is 126 colonies per 100 ml." (IDEQ, April 2008).

Therefore, the EPA has included effluent limitations for *E. coli* in the permit for the City of Greenleaf. The EPA believes that the effluent limits are consistent with the *Lower Boise River TMDL* because they apply approved bacteria criteria at the "end-of-pipe," consistent with the TMDL load and wasteload allocations. The fact that water quality criteria are applied at the end-of-pipe ensures that the effluent limits in the final permit are derived from and comply with water quality standards.

Waters of the State of Idaho 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 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, 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.

Reasonable Potential Calculation

Parameter	Ambient Concentration	State Water Quality Standard		Max concentration at edge of...		LIMIT REQ'D?	Effluent percentile value	Pn	Max effluent conc. measured	Coeff Variation	s	# of samples	Multiplier	Acute Dil'n Factor	Chronic Dil'n Factor
		Acute	Chronic	Acute Mixing Zone	Chronic Mixing Zone										
	mg/L	mg/L	mg/L	mg/L	mg/L				mg/L	CV		n			
Ammonia	0.080	2.59	0.771	0.510	0.510	NO	0.99	0.10	2.0	0.60	0.55	2	7.47	34.6	34.6
Nitrate + Nitrite	4.4	N/A	100	N/A	85.9	NO	0.99	0.10	20	0.60	0.55	2	7.47	34.6	34.6
Nitrite	0.10	N/A	10	N/A	0.313	NO	0.99	0.10	1.0	0.60	0.55	2	7.47	34.6	34.6
Chlorine	0.00	0.019	0.011	0.00669	0.00669	NO	0.99	0.10	0.031	0.60	0.55	2	7.47	34.6	34.6

Appendix C – IDEQ Draft 401 Certification



Idaho Department of Environmental Quality Draft §401 Water Quality Certification

May 2, 2012

NPDES Permit Number(s): ID-002830-4, City of Greenleaf

Receiving Water Body: West End Drain

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.

Based upon its review of the above-referenced permit and associated fact sheet, DEQ certifies 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.

This certification does not constitute authorization of the permitted activities by any other state or federal agency or private person or entity. This certification does not excuse the permit holder from the obligation to obtain any other necessary approvals, authorizations, or permits, including without limitation, the approval from the owner of a private water conveyance system, if one is required, to use the system in connection with the permitted activities.

Antidegradation Review

The WQS contain an antidegradation policy providing three levels of protection to water bodies in Idaho (IDAPA 58.01.02.051).

- Tier 1 Protection. The first level of protection applies to all water bodies subject to Clean Water Act jurisdiction and ensures that existing uses of a water body and the level of water quality necessary to protect those existing uses will be maintained and protected (IDAPA 58.01.02.051.01; 58.01.02.052.01). Additionally, a Tier 1 review is performed for all new or reissued permits or licenses (IDAPA 58.01.02.052.05).
- Tier 2 Protection. The second level of protection applies to those water bodies considered high quality and ensures that no lowering of water quality will be allowed unless deemed necessary to accommodate important economic or social development (IDAPA 58.01.02.051.02; 58.01.02.052.06).

- Tier 3 Protection. The third level of protection applies to water bodies that have been designated outstanding resource waters and requires that activities not cause a lowering of water quality (IDAPA 58.01.02.051.03; 58.01.02.052.07).

DEQ is employing a water body by water body approach to implementing Idaho's antidegradation policy. This approach means that any water body fully supporting its beneficial uses will be considered high quality (IDAPA 58.01.02.052.05). Any water body not fully supporting its beneficial uses will be provided Tier 1 protection for that use, unless specific circumstances warranting Tier 2 protection are met (IDAPA 58.01.02.052.c). The most recent federally approved Integrated Report and supporting data are used to determine support status and the tier of protection (IDAPA 58.01.02.052.05).

Pollutants of Concern

The City of Greenleaf discharges the following pollutants of concern: biological oxygen demand (BOD), total suspended solids (TSS), E. coli bacteria, pH, chlorine, total phosphorus (TP), ammonia, nitrate, nitrite and temperature (heat). Effluent limits have been developed for biological oxygen demand (BOD), total suspended solids (TSS), E. coli bacteria, pH, chlorine and total phosphorus (TP). No effluent limits are proposed for ammonia, nitrate, nitrite or temperature (heat).

Receiving Water Body Level of Protection

The City of Greenleaf discharges to the West End Drain. The West End drain is a man-made water body which carries agricultural runoff, groundwater, and stormwater drainage from the lands east and south of the wastewater treatment facility. Man-made water bodies for which uses are not designated in IDAPA 58.01.02, sections 110-160, are to be protected for the uses for which they were developed, in this case agricultural water supply (IDAPA 58.01.02.101.02).

Because no aquatic life or recreational uses are designated for the West End Drain, DEQ will provide Tier 1 protection only for the West End Drain (IDAPA 58.01.02.051.02).

Protection and Maintenance of Existing Uses (Tier 1 Protection)

As noted above, a Tier 1 review is performed for all new or reissued permits or licenses, applies to all waters subject to the jurisdiction of the Clean Water Act, and requires demonstration that existing uses and the level of water quality necessary to protect existing uses shall be maintained and protected. In order to protect and maintain designated and existing beneficial uses, a permitted discharge must comply with narrative and numeric criteria of the Idaho WQS, as well as other provisions of the WQS such as Section 055, which addresses water quality limited waters. The effluent limitations and associated requirements in the permit are set at levels that meet the numeric and narrative criteria in the WQS, and therefore, are set at levels that ensure protection of beneficial uses.

Water bodies not supporting existing or designated beneficial uses must be identified as water quality limited, and a total maximum daily load (TMDL) must be prepared for those pollutants causing impairment. A central purpose of TMDLs is to establish wasteload allocations for point source discharges, which are set at levels designed to help restore the water body to a condition

that supports existing and designated beneficial uses. Discharge permits must contain limitations that are consistent with wasteload allocations in the approved TMDL.

In the absence of a TMDL and depending upon the priority status for development of a TMDL, the WQS require that either there be no further impairment of the designated or existing beneficial uses or that the total load of the impairing pollutant remains constant or decreases (IDAPA 58.01.02.055.04 and 58.01.02.055.05). The West End Drain discharges to Riverside Canal. During the irrigation the water is used within the irrigation district. From approximately mid-October to mid-April, the water in Riverside Canal is diverted into Dixie Slough (AU 17050114SW001_02) which flows into the Boise River (AU 17050114SW001_06). The Boise River (AU 17050114SW001_06) is impaired for temperature and nutrients (total phosphorus) and its 1st and 2nd order tributaries (AU 17050114SW001_02) are impaired for temperature. There is no existing TMDL for these pollutants, therefore the discharge permit limits must comply with these provisions of Idaho WQS.

The EPA-approved *Lower Boise River TMDL* (1999) establishes wasteload allocations for sediment and bacteria for the Lower Boise River and select tributaries. These wasteload allocations are designed to ensure that the Boise River will achieve water quality necessary to support its existing and designated aquatic life beneficial uses and comply with applicable numeric and narrative criteria. The effluent limitations and associated requirements contained in the City of Greenleaf permit are set at levels that comply with these wasteload allocations.

In sum, the effluent limitations and associated requirements contained in the City of Greenleaf permit are set at levels that ensure compliance with the narrative and numeric criteria in the WQS and the wasteload allocations established in the *Lower Boise River TMDL*. Therefore, DEQ has determined the permit will protect and maintain existing and designated beneficial uses in the West End Drain.

Conditions Necessary to Ensure Compliance with Water Quality Standards or Other Appropriate Water Quality Requirements of State Law

Compliance with IDAPA 58.01.02.055.04 for Nutrient (Total Phosphorus) Impairment

IDAPA 58.01.02.055.04 provides that until a TMDL or equivalent process is completed, new or increased discharges of pollutants to a high priority impaired water body may be allowed only if the total load of the pollutant remains constant or decreases within the watershed. Once the TMDL or equivalent process is completed, the discharge must be consistent with the approved document. The *Snake River Hells Canyon (SR-HC) TMDL* (DEQ 2003) established a load allocation for the Boise River based upon a total phosphorus concentration of 0.07 mg/L at the mouth of the Boise River. The Lower Boise Watershed Council and DEQ (2008) developed the *Lower Boise Implementation Plan Total Phosphorus* (Implementation Plan), which implements the SR-HC TMDL for the Lower Boise watershed and assigns wasteload allocations to the point sources and load allocations to non-point sources in order to meet the target for total phosphorus set in the SR-HC TMDL. Since the SR-HC TMDL has been approved and implemented in the

Lower Boise watershed through the Implementation Plan, Greenleaf's new discharge must be consistent with the SR-HC TMDL and the Implementation Plan.

The NPDES permit allows the City of Greenleaf to discharge a monthly average of 0.14 lb/day additional phosphorus to West End Drain, and ultimately the Boise River. The Implementation Plan established a reserve for growth load, part of which will be allocated to the City of Greenleaf Wastewater Treatment Plant. DEQ authorizes 0.14 lb/day (0.06 Kg/day), as a monthly average, to be allocated from the reserve for growth to the City of Greenleaf for the May 1 through September period. This represents 1.3 percent of the reserve allocation after 50% reuse for Years 10-15 of the Implementation Plan.

Compliance with IDAPA 58.01.02.055.04 Temperature Impairment

IDAPA 58.01.02.055.04 provides that until a TMDL or equivalent process is completed, new or increased discharges of pollutants to a high priority impaired water body may be allowed only if the total load of the pollutant remains constant or decreases within the watershed. Once the TMDL or equivalent process is completed, the discharge must be consistent with the approved document. The Lower Boise River (AU 17050114SW001_06) and first and second order tributaries, including the Dixie Slough (AU 17050114SW001_02) are impaired by excess water temperature (heat) during the critical time period for cold water aquatic life (June 21-September 21). There is no TMDL for temperature developed for this AU, and the Lower Boise River AU is a high priority water for TMDL development. Therefore, there must be no net increase of temperature in the watershed as a result of the City of Greenleaf discharge.

In order to determine compliance with the no net increase requirement, DEQ must look at temperature impacts to the Dixie Slough and the Lower Boise River, which are the impaired waters. In addition, IDAPA 58.01.02.055.04 requires the load of causative pollutants be kept constant. DEQ determines compliance with the no net increase requirement by looking at whether the Greenleaf discharge will increase temperatures in the Dixie Slough and the Lower Boise River.

DEQ has very little temperature data relevant to determining the impact of the Greenleaf discharge. For example, DEQ has no direct data regarding the temperature of the Greenleaf effluent. DEQ has very limited data regarding the temperature of the West End Drain, and no temperature data regarding the Riverside Canal, into which the West End Drain discharges during the irrigation season. DEQ also has inadequate flow data regarding the relevant waters. For all these reasons, at the present time, DEQ does not have sufficient data to determine whether the Greenleaf discharge will increase temperatures in the impaired waters. However, using the limited data DEQ has, and making assumptions regarding the temperature of the effluent and the temperature of the receiving waters, DEQ does not believe the Greenleaf discharge will increase temperatures in the Dixie Slough or the Lower Boise River. The treated effluent from the City of Greenleaf Wastewater Treatment Plant discharges to West End Drain. Preliminary temperature and flow data collected in 2011 were used to determine whether treated effluent discharge would result in a net increase in water temperature in West End Drain. Irrigation season average flow in West End Drain was estimated at 71.35 MGD (110 cfs) and the design flow of the facility is 0.24 MGD. Modeling results show that the temperature of West End Drain would not measurably increase with effluent temperatures as high as 30 degrees Centigrade. In addition, during the irrigation season, the West End Drain discharges to the

Riverside Canal and water is reused in the irrigation system with little or no potential for discharge to reach Dixie Slough or the Boise River.

To improve the accuracy of the analysis regarding the temperature impacts of the discharge, and in order to determine compliance with WQS and other appropriate requirements of state law, DEQ requires as a condition in the permit the city shall commit to continuous monitoring of temperature of treated effluent, the West End Drain and Dixie Slough. This monitoring will assist in determining whether temperature effluent limits are required in future permits. Prior to discharge to the West End Drain, the City of Greenleaf will need to develop and obtain DEQ approval of a plan that depicts how Greenleaf's discharge and the receiving water bodies will be monitored to ensure consistency with IDAPA 58.01.02.055.04. Greenleaf may include in the plan measures to offset the amount of heat load that is in excess of the WQS and the stream temperature in Dixie Slough. No discharge in the raises the instream temperature of Dixie Slough may occur until DEQ has approved of the plan and any necessary temperature offsets.

At a minimum, the plan shall (1) describe a temperature monitoring plan for the effluent and receiving water bodies, (2) describe the measures the City will implement to ensure that the discharge from the Greenleaf facility is consistent with the Dixie Slough instream water temperature, including without limitation, any measures the City will implement to ensure that the addition of heat load that is in excess will be offset, (3) include a schedule for the implementation of the monitoring plan and any necessary offset measure(s), and (4) identify remediation steps that will be taken if the City identifies that their discharge is exceeding temperature requirements for the Dixie Slough. Once approved by DEQ, the plan shall be implemented according to the schedule in the approved plan. In addition, the City of Greenleaf must send the plan along with documentation of DEQ's approval of the plan to EPA.

Mixing Zones

Pursuant to IDAPA 58.01.02.060, DEQ authorizes a mixing zone that utilizes 100% of the flows of the West End Drain and Riverside Canal and up to 25% of the critical flow volumes of the Dixie Slough for chlorine.

Other Conditions

This certification is conditioned upon the requirement that any material modification of the permit or the permitted activities—including without limitation, any modifications of the permit to reflect new or modified TMDLs, wasteload allocations, site-specific criteria, variances, or other new information—shall first be provided to DEQ for review to determine compliance with Idaho WQS and to provide additional certification pursuant to Section 401.

Right to Appeal Final Certification

The final Section 401 Water Quality Certification may be appealed by submitting a petition to initiate a contested case, pursuant to Idaho Code § 39-107(5) and the "Rules of Administrative Procedure before the Board of Environmental Quality" (IDAPA 58.01.23), within 35 days of the date of the final certification.

Questions regarding the actions taken in this certification should be directed to Lauri Monnot, DEQ Boise Regional Office, (208) 373-0461, Lauri.Monnot@deq.idaho.gov.

DRAFT

Pete Wagner

Regional Administrator

Boise Regional Office