Fact Sheet

Public Comment Start Date: March 15, 2006
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Technical Contact: Brian Nickel
206-553-6251
800-424-4372, ext. 6251 (within Alaska, Idaho, Oregon and Washington)
Nickel.Brian@epa.gov

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

City of Burley
Industrial Wastewater Treatment Plant

EPA Proposes To Reissue NPDES Permit
EPA proposes to reissue an NPDES permit to the facility referenced above. The draft permit places conditions on the discharge of pollutants from the industrial wastewater treatment plant to waters of the United States. In order to ensure protection of water quality and human health, the permit places limits on the types and amounts of pollutants that can be discharged from the facility.

This Fact Sheet includes:
- information on public comment, public hearing, and appeal procedures
- a listing of proposed effluent limitations and other conditions for the facility
- a map and description of the discharge location
- technical material supporting the conditions in the permit

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

Regional Administrator
Idaho Department of Environmental Quality
1363 Fillmore St.
Twin Falls, ID 83301

Public Comment
Persons wishing to comment on, or request a Public Hearing for the draft permit for this facility may do so in writing to the above address or by e-mail to "Nickel.Brian@epa.gov" 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's regional Director for the Office of Water will make a final decision regarding permit issuance. If no substantive comments are received, the tentative conditions in the draft permit will become final, and the permit will become effective upon issuance. If comments are received, EPA will address the comments and issue the permit. The permit will become effective no sooner than 30 days after the issuance date, unless an appeal is submitted to the Environmental Appeals Board within 30 days.

Documents are Available for Review
The draft NPDES permit and related documents can be reviewed or obtained by visiting or contacting EPA's Regional Office in Seattle between 8:30 a.m. and 4:00 p.m., Monday through Friday at the address below. The draft permits, fact sheet, and other information can also be found by visiting the Region 10 NPDES website at "http://epa.gov/r10earth/waterpermits.htm."

United States Environmental Protection Agency
Region 10
1200 Sixth Avenue, OW-130
Seattle, Washington 98101
(206) 553-6251 or
Toll Free 1-800-424-4372 (within Alaska, Idaho, Oregon and Washington)

The fact sheet and draft permits are also available at:

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

Idaho Department of Environmental Quality
1363 Fillmore St.
Twin Falls, ID 83301
(208) 736-2190

Burley Public Library
1300 Miller Avenue
Burley, ID 83318
(208) 878-7708

Acronyms

1Q10	1 day, 10 year low flow
7Q10	7 day, 10 year low flow
30B3	Biologically-based design flow intended to ensure an excursion frequency of less than once every three years, for a 30-day average flow.
AML	Average Monthly Limit
BOD_5	Biochemical oxygen demand, five-day
ºC	Degrees Celsius
CFR	Code of Federal Regulations
CV	Coefficient of Variation
CWA	Clean Water Act
DMR	Discharge Monitoring Report
DO	Dissolved oxygen
EFH	Essential Fish Habitat
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
IDEQ	Idaho Department of Environmental Quality
lbs/day	Pounds per day
LTA	Long Term Average
mg/L	Milligrams per liter
ml	milliliters
ML	Minimum Level
µg/L	Micrograms per liter
mgd	Million gallons per day
MDL	Maximum Daily Limit
N	Nitrogen
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
OW	Office of Water
O&M	Operations and maintenance
POTW	Publicly owned treatment works
QAP	Quality assurance plan

RP	Reasonable Potential
RPM	Reasonable Potential Multiplier
RWC	Receiving Water Concentration
s.u.	Standard Units
TMDL	Total Maximum Daily Load
TSD	Technical Support Document for Water Quality-based Toxics Control (EPA/505/2-90-001)
TSS	Total suspended solids
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
WLA	Wasteload allocation
WQBEL	Water quality-based effluent limit
WWTP	Wastewater treatment plant

I. Applicant

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

City of Burley, Idaho
Industrial Wastewater Treatment Plant
NPDES Permit # ID-000066-3

Physical Location:
Across the railroad tracks from the Burley Municipal Airport

Contact:
Mark Mitton, City Administrator

II. Facility Information

A. Facility Type and Background

The City of Burley, Idaho (City) owns the Burley-Heyburn Industrial Park, and owns and operates the associated industrial wastewater treatment plant (IWTP). The previous permit expired on May 1, 2005, but since EPA received a timely application for renewal from the City of Burley on October 29, 2004, the previous permit will be administratively extended as provided for in 40 CFR 122.6 until the permit can be reissued. The City submitted an updated renewal application on February 13, 2006.

The J.R. Simplot Company had operated the facility now known as the Burley-Heyburn Industrial Park as a frozen potato products manufacturing plant until 2003. Subsequently, the City acquired the facility and the permit was transferred to the City to reflect the change of ownership.

The City intends to lease manufacturing space at the industrial park. The City-owned and operated IWTP will treat liquid wastes from the tenants of the industrial park, and the treated wastewater will be discharged to the Snake River through Outfall 003. In addition to the discharge from Outfall 003, the permit authorizes seepage from the polishing ponds to groundwater that is hydrologically connected to the Snake River. In order to ensure that this seepage complies with secondary treatment requirements (40 CFR 133.102) and does not cause or contribute to water quality standards violations, the permit requires compliance with certain effluent limits at a point in the waste stream prior to discharge to the polishing ponds.

The application lists two additional point source outfalls besides outfall 003; these are numbered 001 and 002. The application lists the flow rate for outfalls 001 and 002 as zero. The previous permit did not authorize a discharge from outfalls 001 and 002. The draft permit retains this prohibition. However, the permit may be modified at some future date to authorize a discharge from these outfalls, pursuant to 40 CFR 122.62.

For NPDES permitting purposes, the Burley-Heyburn Industrial Park IWTP is considered a Publicly Owned Treatment Works (POTW). The term “Publicly Owned Treatment Works” is defined in 40 CFR 403.3(o) as follows:

> "The term *Publicly Owned Treatment Works* or *POTW* means a treatment works as defined by Section 212 of the (Clean Water) Act[1], which is owned by a State or municipality (as defined by Section 502(4) of the Act). This definition includes any devices and systems used in the storage, treatment, recycling and reclamation of municipal sewage or industrial wastes of a liquid nature. It also includes sewers, pipes and other conveyances only if they convey wastewater to a POTW Treatment Plant[2]. The term also means the municipality as defined in Section 502(4) of the Act, which has jurisdiction over the Indirect Dischargers to and the discharges from such a treatment works."

Because the Burley-Heyburn Industrial Park IWTP is owned by a municipality (the City of Burley, Idaho) and treats industrial wastes of a liquid nature, it fits the definition of a POTW in 40 CFR 403.3. It is therefore subject to the "secondary treatment" requirements of 40 CFR 133.102, and the industrial pretreatment requirements of 40 CFR 403. The industrial wastewater treatment plant will not treat domestic wastewater. Domestic wastewater from the Burley-Heyburn Industrial Park will be collected and treated by the City of Heyburn's sewer system.

B. Treatment Process

When all upgrades are complete, the unit operations in the IWTP treatment process will include primary clarification, anaerobic digestion, chemical phosphorus removal (Chrystalactor® process), secondary treatment aeration basin with bioselector zones for biological nutrient removal, secondary clarification, facultative "polishing" lagoons, and sludge dewatering. However, due to ongoing improvements and low influent flow and loading in the near term, only the anaerobic digestion, chemical phosphorus removal, facultative lagoon, and sludge dewatering unit operations will operate for about a year after initial start-up, and alum addition will be used for chemical phosphorus removal in lieu of the Chrystalactor® process (Forsgren Associates, 2005).

III. Receiving Water

A. Low Flow Conditions

The *Technical Support Document for Water Quality-Based Toxics Control* (hereafter referred to as the TSD) (EPA, 1991) and the Idaho Water Quality Standards (WQS) recommend the flow conditions for use in calculating water quality-based effluent limits

[1] The term "treatment works" means any devices and systems used in the storage, treatment, recycling and reclamation of municipal sewage or industrial wastes of a liquid nature to implement Section 201 of (the Clean Water) Act, or necessary to recycle or reuse water at the most economical cost over the estimated life of the works, including intercepting sewers, outfall sewers, sewage collection systems, pumping power, and other equipment, and their appurtances; extensions, improvements, remodeling, additions, and alterations thereof; elements essential to provide a reliable recycled supply such as standby treatment units and clear well facilities; and any works, including site acquisition of the land that will be an integral part of the treatment process (including land use for the storage of treated wastewater in land treatment systems prior to land application) or is used for ultimate disposal of residues resulting from such treatment.

[2] The term "POTW Treatment Plant" is defined in 40 CFR 403.3(p) as "that portion of the POTW which is designed to provide treatment (including recycling and reclamation) of municipal sewage and industrial waste."

(WQBELs) using steady-state modeling. The TSD and the Idaho Water Quality Standards state that WQBELs intended to protect aquatic life uses should be based on the lowest seven-day average flow rate expected to occur once every ten years (7Q10) for chronic criteria and the lowest one-day average flow rate expected to occur once every ten years (1Q10) for acute criteria. However, because the chronic criterion for ammonia is a 30-day average concentration not to be exceeded more than once every three years, EPA has used the 30B3 for the chronic ammonia criterion instead of the 7Q10. 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.

Because there are significant seasonal variations in the flow rate of the Snake River at the point of discharge, EPA has elected to calculate the 1Q10, 7Q10 and 30B3 on a seasonal basis. The seasonal low flows are as follows:

Table 1: Seasonal Low Flows in the Snake River (at USGS Station #13081500)

Season	1Q10 (CFS)	7Q10 (CFS)	30B3 (CFS)
November through April	279	344	428
May	1020	1340	1820
June through September	4200	4750	7330
October	2340	2720	4940

B. Water Quality Standards

Section 301(b)(1)(C) of the CWA requires the development of limitations in permits necessary to meet water quality standards. Federal regulations at 40 CFR 122.4(d) prohibit the issuance of an NPDES permit which does not 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 cold water biota, contact recreation, etc.) 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 uses of each water body. The anti-degradation policy represents a three tiered approach to maintain and protect various levels of water quality and uses.

The Idaho Water Quality Standards (WQS) state, in Section 100, that all waters of the State of Idaho are protected for the uses of industrial and agricultural water supply (100.03.b. and c.), wildlife habitats (100.04.) and aesthetics (100.05.). The WQS state, in Sections 252.02, 252.03, and 253 that these uses are to be protected by narrative criteria which appear in Section 200. These narrative criteria state that all surface waters of the State shall be free from hazardous materials; toxic substances; deleterious materials; radioactive materials; floating, suspended or submerged matter; excess nutrients; oxygen-demanding materials; and sediment in concentrations which would impair beneficial uses. The WQS also state, in Section 252.02, that the criteria from *Water Quality Criteria 1972*, also referred to as the "Blue Book" (EPA-R3-73-033) can be used to determine numeric criteria for the protection of the agricultural water supply use

At the point of discharge, the Snake River (also known as Milner Lake) is also designated for the following beneficial uses:

- warm water aquatic life habitat
- primary contact recreation

The Idaho WQS define warm water aquatic life as "water quality appropriate for the protection and maintenance of a viable aquatic life community for warm water species." The WQS define primary contact recreation as "water quality appropriate for prolonged and intimate contact by humans or for recreational activities when the ingestion of small quantities of water is likely to occur. Such activities include, but are not restricted to swimming, water skiing, or skin diving."

C. Water Quality Limited Segment

A water quality limited segment (WQLS) is any waterbody, or definable portion of a waterbody, where it is known that water quality does not meet applicable water quality standards, and/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 segment of the Snake River to which the Burley-Heyburn Industrial Park discharges (which is also known as Milner Lake) was on the 1998 303(d) list because it did not attain or was not expected to meet the state water quality standards for dissolved oxygen, nutrients, and sediment. There were two TMDLs written which addressed water quality problems on this reach of the Snake River: the *Middle Snake Watershed Management Plan* and the *Lake Walcott Subbasin Assessment and Total Maximum Daily Load* (TMDL).

Middle Snake River Watershed Management Plan

In 1997, IDEQ prepared and EPA approved a TMDL for total phosphorus in the Middle Snake River entitled the *Middle Snake River Watershed Management Plan.* This TMDL included a wasteload allocation of 457.6 lb/day of total phosphorus for the facility now known as the Burley-Heyburn Industrial Park. This wasteload allocation was used to calculate the total phosphorus effluent in the expired permit.

Lake Walcott TMDL

In June 2000, EPA approved the Lake Walcott TMDL, which, like the *Middle Snake River Watershed Management Plan,* was prepared by IDEQ and included wasteload allocations for total phosphorus. The wasteload allocation for the facility now known as the Burley industrial wastewater treatment plant is 359 lb/day for total phosphorus. The

permit contains an average monthly limit of 359 lb/day total phosphorus, consistent with the TMDL. Federal regulations at 40 CFR 122.45(d)(2) require that effluent limits for POTWs be expressed as average weekly limits and average monthly limits, unless impracticable. The average weekly limit was calculated using the same ratio of the average weekly limit to the average monthly limit as the "secondary treatment" limits for BOD_5 and TSS (1.5:1). Therefore, the average weekly limit is equal to 1.5 times the average monthly limit, or 539 lb/day.

IV. Effluent Limitations

A. Basis for Effluent Limitations

In general, the CWA requires that the effluent limits for a particular pollutant be the more stringent of either technology-based limits or water quality-based limits. Technology-based limits are set according to the level of treatment that is achievable using available technology. A water quality-based effluent limit is designed to ensure that the water quality standards of a waterbody are being met and 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.

B. Proposed Effluent Limitations

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

1. Removal Requirements for five-day biochemical oxygen demand (BOD_5) and total suspended solids (TSS): The monthly average effluent concentration must not exceed 15 percent of the monthly average influent concentration. Percent removal of BOD_5 and TSS must be reported on the Discharge Monitoring Reports (DMRs). For each parameter, the monthly average percent removal must be calculated from the arithmetic mean of the influent values and the arithmetic mean of the effluent values for that month. Influent and effluent samples must be taken over approximately the same time period.
2. The permittee must not discharge hazardous materials in concentrations found to be of public health significance or to impair beneficial uses of the receiving water.
3. The permittee must not discharge toxic pollutants in concentrations that impair beneficial uses of the receiving water.
4. The permittee must not discharge deleterious materials in concentrations that impair beneficial uses of the receiving water.
5. The permittee must not discharge floating, suspended, or submerged matter of any kind in concentrations causing nuisance or objectionable conditions or that may impair beneficial uses of the receiving water.

Table 2 (below) presents the proposed numeric average monthly, average weekly, and maximum daily effluent limits.

Table 2: Effluent Limits for Outfall 003				
Parameter	**Units**	**Average Monthly Limit**	**Average Weekly Limit**	**Maximum Daily Limit**
BOD_5	mg/L	30	45	—
	lb/day	600	901	—
TSS	mg/L	30	45	—
	lb/day	600	901	—
pH	s.u	6.0 to 9.0 at all times		
Total Phosphorus as P	lb/day	359	539	
Total Ammonia as N (November 1 – April 30)	lb/day	196	—	442
Temperature	°C	—	—	32
Oil and grease	Visual	No Visual Sheen		
Floating, Suspended or Submerged Matter	Visual	Narrative Limitation (see above)		

C. Basis for Deletion of Previous Effluent Limits

The previous permit issued to this facility contained effluent limits for ammonia for the month of October. The proposed permit deletes the ammonia limits for this month because a reasonable potential analysis has shown that the discharge does not have the reasonable potential to cause or contribute to water quality standards violations for ammonia during the month of October. Also, the maximum daily limits for total phosphorus (TP), total suspended solids (TSS) and BOD_5 have been deleted (the proposed permit has average monthly and average weekly limits for these pollutants). All other effluent limits in the reissued permit are at least as stringent as those in the previous permit.

Statutory Prohibitions on Backsliding

Section 402(o) of the Clean Water Act (CWA) prohibits "backsliding" in NPDES permits but provides limited exceptions to this prohibition. Section 402(o)(1) of the CWA states that a permit may not be reissued with less-stringent limits established based on Sections 301(b)(1)(C), 303(d) or 303(e) (i.e. water quality-based limits or limits established in accordance with State treatment standards) except in compliance with Section 303(d)(4). Section 402(o)(1) also prohibits backsliding on technology-based effluent limits established using best professional judgment (i.e. based on Section 402(a)(1)(B)). In this case, the effluent limits being revised are either water quality-based effluent limits (phosphorus, ammonia) or technology-based effluent limits based not on best professional judgment, but on effluent limit guidelines (BOD_5, TSS).

Section 303(d)(4) of the CWA states that, for water bodies where the water quality meets or exceeds the level necessary to support the water body's designated uses, WQBELs may be revised as long as the revision is consistent with the State's antidegradation policy. Additionally, Section 402(o)(2) contains exceptions to the general prohibition on backsliding in 402(o)(1). According to the *U.S. EPA NPDES Permit Writers' Manual* (EPA-833-B-96-003) the 402(o)(2) exceptions are applicable to WQBELs (except for 402(o)(2)(B)(ii) and 402(o)(2)(D)) and are independent of the requirements of 303(d)(4).

Therefore, WQBELs may be relaxed as long as either the 402(o)(2) exceptions or the requirements of 303(d)(4) are satisfied.

Even if the requirements of Sections 303(d)(4) or 402(o)(2) are satisfied, Section 402(o)(3) prohibits backsliding which would result in violations of water quality standards or effluent limit guidelines.

Basis for Deletion of Ammonia Limits in October

Because there have been material and substantial alterations to the facility, EPA re-evaluated the facility's reasonable potential to cause or contribute to water quality standards violations for ammonia. EPA determined that the facility no longer has the reasonable potential to cause or contribute to a water quality standards violation during the month of October, though reasonable potential does exist from November through May. Therefore, pursuant to Section 402(o)(2)(A) of the CWA, EPA has deleted the ammonia limits for this month.

Basis for Deletion of Maximum Daily Limits

The previous permit contained maximum daily limits for TP, TSS, and BOD_5. These limits were included in the permit because, at the time, the permitted facility was not a POTW. As such, EPA was required by 40 CFR 122.45(d)(1) to express the effluent limits as average monthly and maximum daily limits. Now that the facility is a POTW, EPA is required by 40 CFR 122.45(d)(2) to express the effluent limits as average monthly and average weekly limits, unless impracticable[3]. EPA considers this change in the facility's status a "material and substantial alteration" under Section 402(o)(2)(A) of the CWA.

The average monthly limits in the proposed permit are more stringent than those in the previous permit for all three of these pollutants, and the previous permit did not contain average weekly limits, therefore the average monthly and average weekly TP, TSS, and BOD_5 limits in the proposed permit are not subject to anti-backsliding requirements.

Clean Water Act Section 303(d)(4) and 402(o)(3) Requirements

Regarding the 303(d)(4) requirements, the segment of the Snake River to which the Burley IWTP discharges has not been listed on Idaho's "303(d) list" as not attaining, or not being expected to attain, water quality standards for ammonia. EPA believes that ammonia effluent limits during the month of October are not necessary to protect Idaho's federally approved water quality standards for the Snake River. While ammonia is a nutrient as well as a toxin, concerns about excess nutrients in this reach of the Snake River were addressed through two TMDLs for total phosphorus.

The segment of the Snake River to which the Burley IWTP discharges was listed on the 1998 "303(d) list" for nutrients. Despite the deletion of the maximum daily limit for total

[3] The effluent limits for ammonia continue to be expressed as average monthly and maximum daily limits because the ammonia limits are intended to protect against toxic effects on aquatic life. The TSD recommends that effluent limits for toxic pollutants be expressed as average monthly and maximum daily limits (even for POTWs), because a 7-day average could average out peak toxic concentrations and therefore the discharge's potential for causing acute toxic effects would be missed.

phosphorus, the effluent limits are consistent with the wasteload allocation for this facility in the Lake Walcott TMDL, which requires reductions in nutrient pollution throughout the watershed to the extent necessary to meet water quality standards in the Snake River. The effluent limits are therefore consistent with the requirements of Section 303(d)(4)(A) of the CWA.

The October ammonia limits and the TP, TSS and BOD_5 maximum daily limits are not necessary to ensure that water quality standards are met. The BOD_5 and TSS effluent limits are consistent with the "secondary treatment" requirements of 40 CFR 133.102, which are expressed as average monthly and average weekly limits. There are no effluent limit guidelines for ammonia or phosphorus discharges from POTWs. Therefore, the deletions of ammonia limits during October and the maximum daily limits for TP, TSS and BOD_5 are consistent with Section 402(o)(3) of the CWA.

EPA is requesting that IDEQ certify that ammonia limits during the month of October and maximum daily limits for TP, TSS and BOD_5 are not necessary to prevent violations of Idaho's water quality standards, under Section 401 of the CWA.

V. Monitoring Requirements

A. Basis for Effluent and Surface Water Monitoring

Section 308 of the CWA and federal regulation 40 CFR 122.44(i) require monitoring in permits to determine compliance with effluent limitations. Monitoring may also be required to gather effluent and surface water data to determine if additional effluent limitations are required and/or to monitor effluent impacts on receiving water quality. The permit also requires the pemittee to perform effluent monitoring required by the NPDES Form 2A application, so that these data will be available when the permittee applies for a renewal of its NPDES permit. The permittee is responsible for conducting the monitoring and for reporting results on Discharge Monitoring Reports (DMRs) to the U.S. Environmental Protection Agency (EPA).

B. Effluent Monitoring

Monitoring frequencies are based on the nature and effect of the pollutant, as well as a determination of the minimum sampling necessary to adequately monitor the facility's performance. Permittees have the option of taking more frequent samples than are required under the permit. These samples 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 are less than the effluent limits.

Table 3 presents the proposed effluent monitoring requirements for the Burley IWTP. If no discharge occurs during the reporting period, "no discharge" shall be reported on the DMR.

The definitions of the monitoring location codes are as follows:

- "1" means "effluent gross value." For pollutants monitored at this location, the permittee must sample at a point in the effluent waste stream at which all treatment processes are complete and prior to discharge through Outfall 003.

- "E" means "secondary or biological process complete." For pollutants monitored at this location, the permittee must sample at a point in the effluent waste stream upstream of the polishing ponds and downstream of all treatment processes that are located upstream of the polishing ponds in the treatment train.
- "G" means "raw sewage/influent." For pollutants monitored at this location, the permittee must sample the combined influent waste stream at a point upstream of any of the Burley IWTP treatment processes.
- "K" means "percent removal." For each parameter, the monthly average percent removal must be calculated from the arithmetic mean of the influent concentration and the arithmetic mean of the effluent concentration for that month. Influent and effluent samples must be taken over approximately the same time period. For TSS, the effluent values for use in calculating percent removal must be those sampled at monitoring location "1." For BOD_5, the effluent values for use in calculating percent removal must be those sampled at location "E."

The monitoring location code "E" is used because EPA and IDEQ believe that there is a potential for some pollutants to reach the Snake River through seepage from the polishing ponds. Therefore, the permittee must achieve compliance with the effluent limits for BOD_5, total phosphorus, and total ammonia effluent limitations prior to discharging effluent into the polishing ponds. The "point of compliance" for all other effluent limits will be immediately prior to discharge from Outfall 003.

Table 3: Effluent Monitoring Requirements

Parameter	Units	Monitoring Location Codes	Sample Frequency	Sample Type
Flow	mgd	1 and E	continuous	recording
BOD_5	mg/L	E and G	1/week	24-hour composite
	lbs/day			calculation[1]
	% Removal	K	1/month	calculation[2]
TSS	mg/L	1 and G	1/week	24-hour composite
	lbs/day			calculation[1]
	% Removal	K	1/month	calculation[2]
pH	standard units	1	5/week	grab
Total Phosphorus as P	mg/L	E and G	1/week	24-hour composite
	lb/day			calculation[1]
Total Ammonia as N (November 1 – April 30)	mg/L	E and G	2/week	24-hour composite
	lb/day			calculation[1]
Total Ammonia as N (May 1 – October 31)	mg/L	E and G	1/month	24-hour composite
Oil and Grease	Visual	1	1/month	Visual
Oil and Grease	mg/L	1	1/quarter[3]	grab
Floating, Suspended or Submerged Matter	Visual	1	1/month	Visual
Temperature	°C	1	5/week	grab
Alkalinity	mg/L as $CaCO_3$	1	1/quarter[3]	24-hour composite
Dissolved Oxygen	mg/L	1	1/quarter[3]	grab
E. Coli Bacteria	#/100 ml	1	5/month	grab
Hardness	mg/L as $CaCO_3$	1	1/quarter[3]	24-hour composite
Nitrate + Nitrite as N	mg/L	E	1/quarter[3]	24-hour composite

Table 3: Effluent Monitoring Requirements				
Parameter	**Units**	**Monitoring Location Codes**	**Sample Frequency**	**Sample Type**
Total Nitrate as N	mg/L	E	1/quarter[3]	24-hour composite
Total Kjeldahl Nitrogen	mg/L	E	1/quarter[3]	24-hour composite
Total Dissolved Solids	mg/L	1	1/quarter[3]	24-hour composite
Total Residual Chlorine	mg/L	1	3x/5 years	grab
Whole Effluent Toxicity	TU_c	1	4x/5 years	24-hour composite
NPDES Application Form 2A Expanded Effluent Testing	---	1	3x/5 years	---

Notes:
1 Loading is calculated by multiplying the concentration in mg/L by the average daily flow in mgd and a conversion factor of 8.34.
2 Percent removal is calculated using the following equation:
(average monthly influent concentration – effluent concentration) ÷ average monthly influent concentration.
3 Quarters are defined as January through March, April through June, July through September and October through December.

C. Surface Water Monitoring

Table 4 presents the proposed surface water monitoring requirements for the draft permit. Surface water monitoring results must be submitted with the next permit application.

Table 4: Surface Water Monitoring Requirements	
Parameter (units)	**Sample Frequency**
Upstream Monitoring	
Temperature (ºC)	4/year[1]
pH (s.u.)	4/year[1]
Total Ammonia as N (mg/L)	4/year[1]
Alkalinity (mg/L)	2/year[2]
Downstream Monitoring	
Temperature (ºC)	2/year[2]
pH (s.u.)	2/year[2]
Total Ammonia as N (mg/L)	2/year[2]

Notes:
1. At a minimum, sampling must occur once during the season of November 1st through April 30th once once during the month of May, once during the season of June 1 through September 30th, and once during the month of October.
2. At a minimum, sampling must occur once during the season of November 1st through April 30th and once during the season of May 1st through October 31st.

VI. Other Permit Conditions

A. Quality Assurance Plan

The federal regulation at 40 CFR 122.41(e) requires the permittee to develop procedures to ensure that the monitoring data submitted is accurate and to explain data anomalies if they occur. The City of Burley is required to develop 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 the permittee must follow for collecting, handling, storing and shipping samples, laboratory analysis, and data reporting.

B. Best Management Practices Plan

Federal regulations at 40 CFR 122.44(k) require the permittee to use Best Management Practices (BMP) in order to control or abate the discharge of pollutants whenever BMPs are reasonably necessary to carry out the purposes and intent of the CWA. The draft permit requires the permittee to develop and implement a BMP plan within 180 days of the effective date of the final permit. The draft permit contains certain BMP conditions which must be included in the BMP plan. The Plan must be kept on site and made available to EPA or IDEQ upon request.

C. Pretreatment

The Burley IWTP and the collection system associated with it is a publicly owned treatment works (POTW) as defined by 40 CFR 403.3(o). Because the POTW treatment plant is treating exclusively industrial waste, the pretreatment requirements of 40 CFR 403 apply to this facility. Indirect dischargers to the treatment plant must comply with the applicable requirements of 40 CFR 403, any categorical pretreatment standards promulgated by EPA, and any additional or more stringent requirements imposed by the City of Burley as part of its approved pretreatment program or sewer use ordinance (e.g. local limits).

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 regulations, they cannot be challenged in the context of an NPDES permit action. The standard regulatory language covers requirements such as monitoring, recording, and reporting requirements, compliance responsibilities, and other general requirements.

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 (USFWS) if their actions could beneficially or adversely affect any threatened or endangered species.

In letters dated May 24, 2005 and June 9, 2005, respectively, EPA contacted NOAA Fisheries and USFWS to inform the services of its intent to reissue NPDES permits to the City of Burley IWTP and McCain Foods, and to request lists of endangered or threatened species which occur in the vicinity of the discharges.

In a telephone conversation on November 9, 2005, Ed Murrell of the Idaho State Habitat Office of NOAA Fisheries stated that there are no endangered or threatened species under NOAA Fisheries' jurisdiction in the Snake River upstream of the Hells Canyon Dam, which is approximately 400 river miles downstream of these discharges. Therefore, EPA has determined that the discharges will have no effect on any such species.

In a letter from Jeffery L. Foss of USFWS to Brian Nickel of EPA, dated July 6, 2005, USFWS replied with a species list stating that the bald eagle, Utah valvata snail, and Snake River physa snail may occur in the vicinity of the discharges. However, in an e-mail message dated November 19, 2005, Alison Beck-Haas stated that Utah valvata snail occurs only upstream of the discharges. Ms. Beck-Haas stated that the Snake River Physa snail may occur upstream, as well as below the Lower Salmon Falls Dam (which is located at River Mile 573, approximately 75 river miles downstream of the discharges). USFWS and EPA believe that the discharges are well outside the range of the Utah valvata snail and Snake River physa snail. Therefore the discharges will have no effect on these species.

Ms. Beck-Haas also stated that the first known occurrence of listed snails downstream from the discharges is the Bliss Rapids snail at River Mile 614, about 35 river miles downstream of the discharges. EPA believes that this location is outside the extent of the effects of the permitted discharges. McCain Foods USA and the City of Burley (and, previously, J.R. Simplot) have performed water quality monitoring at several locations, including one half-mile above the Milner Dam, which is located 25 miles upstream of the first known occurrence of the Bliss Rapids Snail. The only violations of the Idaho water quality standards that have been observed at that location between November 2002 and August 2004 were for pH. The measured pH was above the maximum pH criterion in the Idaho water quality standards (9.0 standard units). However, the pH effluent limits (a range of 6.0 to 9.0 standard units) prevent the discharge from causing or contributing to this exceedance. Therefore, EPA has determined that the discharges will have no effect on the Bliss Rapids snail.

The bald eagle does occur in the vicinity of the discharges. However, USFWS has stated that the pathways for effects on bald eagles in this area are loss of perching or nesting habitat and loss of food resources (i.e. the availability and abundance of fish). In compliance with Section 301(b)(1)(C) of the Clean Water Act and 40 CFR 122.44(d), EPA has established effluent limits and other conditions in the permits for the Burley IWTP which are derived from and comply with Idaho's approved water quality standards. EPA and the State of Idaho have determined that these water quality standards are protective of the aquatic life uses of the receiving water. Therefore, the discharge, as authorized in the draft permit, will not result in a loss of food resources for bald eagles. The Burley IWTP is an existing facility, the continued operation of which will not result in a loss of perching or nesting habitat. Therefore, EPA has determined that the discharge from the Burley IWTP will have no effect on the bald eagle.

EPA will provide copies of the draft permit and Fact Sheet to USFWS at the beginning of the public comment period. EPA will consider any comments made by USFWS on the draft permit prior to issuance of a final permit.

B. Essential Fish Habitat

Essential fish habitat (EFH) is 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. EPA has determined that the discharge from the Burley-Heyburn Industrial Park will not affect any EFH species in the vicinity of the discharge, therefore consultation is not required for this action.

C. State/Tribal Certification

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

D. Permit Expiration

The permit will expire five years from the effective date.

VIII. References

EPA. 1973. *Water Quality Criteria 1972.* United States Environmental Protection Agency. EPA-R3-73-033.

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

Forsgren Associates. 2005. *Industrial Wastewater Treatment Plant, Burley, Idaho: Facilities Planning Report.* August, 2005. Project No. 02-04-0151.

IDAPA 58. 2004. *Water Quality Standards and Wastewater Treatment Requirements.* Idaho Department of Environmental Quality rules., Title 01, Chapter 02.

IDEQ. 1999. *Lake Walcott Subbasin Assessment and Total Maximum Daily Load, The*. Idaho Department of Health and Welfare, Division of Environmental Quality.

Appendix A: Facility Information

General Information

NPDES ID Number:	ID-000066-3
Physical Address:	999 East Railroad Avenue Burley, ID 83318 (Near Burley Municipal Airport)
Mailing Address:	320 Hiland Avenue Burley, ID 83318
Facility Background:	The Burley IWTP was acquired from the J.R. Simplot Company, after being de-commissioned in 2002 after nearly 60 years of operation. The City of Burley will retrofit the IWTP to treat industrial wastewater from cheese and ethanol producers occupying the Burley-Heyburn Industrial Park.

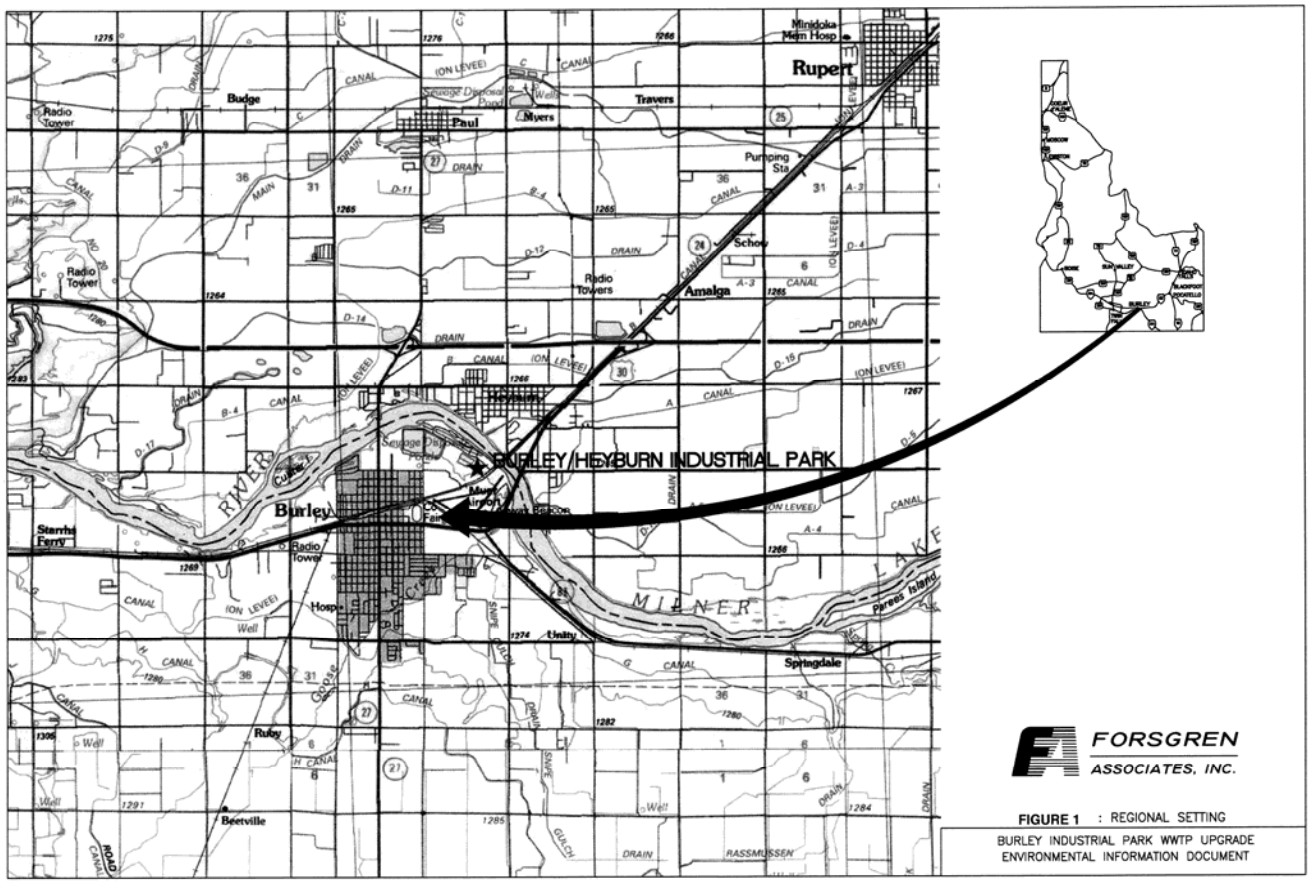
Facility Information

Type of Facility:	Publicly Owned Treatment Works (POTW) treating exclusively industrial wastewater.
Treatment Train (initial operation):	Anaerobic digestion, chemical phosphorus removal, facultative lagoon, sludge dewatering.
Treatment Train (full build-out):	Primary clarification, anaerobic digestion, chemical phosphorus removal (Chrystalactor® process), secondary treatment aeration basin with bioselector zones for biological nutrient removal, secondary clarification, facultative lagoons, UV disinfection, sludge dewatering
Flow:	Design flow is 2.4 mgd.
Outfall Location:	Outfall 003: latitude 42° 32' 02" N; longitude 113° 46' 09" W

Receiving Water Information

Receiving Water:	Snake River (Milner Pool)
Watershed:	Lake Walcott (HUC 17040209)
Beneficial Uses:	Warm water aquatic life Primary contact recreation Water supply for: • Agricultural • Industrial Wildlife Habitats Aesthetics

Appendix B: Facility Map



Appendix C: Basis for Effluent Limits

The following discussion explains in more detail the derivation of technology and water quality-based effluent limits. 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 limits.

A. Technology-Based Effluent Limits

Secondary Treatment Limits for BOD, TSS and pH

In sections 301(b)(1)(B) and 304(d)(1), the CWA established a performance level, referred to as "secondary treatment," which all POTWs were required to meet by July 1, 1977. EPA developed and promulgated "secondary treatment" regulations that 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 secondary treatment in terms of BOD_5, TSS, and pH. The secondary treatment effluent limits are listed in Table C-1.

Table C-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.

Special Considerations for Industrial Wastes

The regulations implementing the "secondary treatment" technology-based limits allow the above effluent limits to be adjusted upward to account for industrial wastes from industrial categories for which the technology-based effluent limits for BOD_5 and TSS that would apply if those industries were to discharge waste directly to Waters of the United States are less stringent than those in Table C-1 (40 CFR 133.103(b)).

At this time, it is expected that most of the flow and BOD_5 and TSS loading to the POTW will be from cheese processing operations. The indirect-discharging cheese processing facilities would be considered "New Sources" and would be subject to NSPS effluent limits if they were to discharge effluent directly to waters of the United States, therefore, the "New Source Performance Standards" (NSPS) effluent limit guidelines would be the applicable technology-based effluent limits. Application of these effluent limit guidelines (found in 40 CFR 405.65) would not result in less stringent limits than the secondary treatment effluent limits for POTWs. Therefore, EPA has not adjusted the secondary treatment effluent limits upward due to the fact that the POTW accepts industrial wastes.

Mass-Based Limits

The federal regulation at 40 CFR 122.45(f) requires that effluent limits be expressed in terms of mass, if possible. The regulation at 40 CFR 122.45(b) requires that effluent limitations for

POTWs be calculated based on the design flow of the facility. The mass based limits are expressed in pounds per day and are calculated as follows:

Mass based limit (lb/day) = concentration limit (mg/L) × design flow (mgd) × 8.34[1]

B. Water Quality-based Effluent Limits

Statutory Basis for Water Quality-based Effluent Limits

Section 301(b)(1)(C) of the CWA requires the development of limitations in permits necessary to meet water quality standards. Discharges to State or Tribal waters must also comply with limitations imposed by the State or Tribe as part of its certification of NPDES permits under section 401 of the CWA. Federal regulations at 40 CFR 122.4(d) prohibit the issuance of an NPDES permit that does not ensure compliance with the water quality standards of all affected States.

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

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

Reasonable Potential Analysis

When evaluating the effluent to determine if water quality-based effluent limits are needed, EPA projects the receiving water concentration (downstream of where the effluent enters the receiving water) for each pollutant of concern. EPA uses the concentration of the pollutant in the effluent and receiving water and, where appropriate, the dilution available from the receiving water, to project the receiving water concentration. If the projected concentration of the receiving water exceeds the numeric criterion (or the numeric interpretation of a narrative criterion) for a specific pollutant, then the discharge has the reasonable potential to cause or contribute to an exceedance of the applicable water quality standard, and a water quality-based effluent limit is required.

Sometimes it is appropriate to allow a small area of the receiving water to provide dilution of the effluent. These areas are called mixing zones. Mixing zone allowances increase the allowable mass or concentration of the pollutant to that can be discharged to the water body. Mixing zones can be used only when there is adequate receiving water flow volume and the receiving water meets the criteria necessary to protect the designated uses of the water body. Mixing zones must be authorized by the Idaho Department of Environmental Quality. The water quality-based effluent limits in this permit have been calculated using a mixing zone. If IDEQ does not grant a mixing zone, the water quality-based effluent limits will be recalculated such that the criteria are met before the effluent is discharged to the receiving water.

[1] 8.34 is a conversion factor with units (lb × L)/(mg × gallon x 10^6)

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 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 Effluent Limits

Total Phosphorus

The facility now known as the Burley IWTP was given a wasteload allocation (WLA) for total phosphorus in the Lake Walcott TMDL (IDEQ, 1999). The permit contains an average monthly limit of 359 lb/day total phosphorus, consistent with the WLA. Federal regulations at 40 CFR 122.45(d)(2) require that effluent limits for POTWs be expressed as average weekly limits and average monthly limits, unless impracticable. The average weekly limit was calculated using the same ratio of the average weekly limit to the average monthly limit as the "secondary treatment" limits for BOD_5 and TSS (1.5:1). Therefore, the average weekly limit is equal to 1.5 times the average monthly limit, which is 539 lb/day.

Ammonia

The Idaho water quality standards contain criteria for the protection of aquatic life from the toxic effects of ammonia. 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. Table C-2, below details the equations used to determine water quality criteria for ammonia, and the values of these equations at the 95^{th} percentile pH (for the entire year), which is 8.8 standard units, and the 95^{th} percentile seasonal temperature observed in the Snake River upstream from the discharge.

EPA has determined that the discharge has the reasonable potential to cause or contribute to water quality standards violations for ammonia during the period of November through April and has proposed effluent limits that are protective of the water quality criteria for ammonia for that season.

Table C-2: Water Quality Criteria for Ammonia		
Equations:	**Acute Criterion[1]**	**Chronic Criterion**
	$\frac{0.275}{1+10^{7.204-pH}}+\frac{39}{1+10^{pH-7.204}}$	$\left(\frac{0.0577}{1+10^{7.688-pH}}+\frac{2.487}{1+10^{pH-7.688}}\right)\times MIN\left(2.85,1.45\times10^{0.028\times(25-T)}\right)$
Seasonal Results (mg/L):		
November – April	1.23	0.661
May		0.586
June – September		0.395
October		0.624
1. No seasonal variation was assumed for pH, therefore, there is no seasonal variation in the acute criterion (which is a function of pH only).		

pH

EPA has determined that a discharge in compliance with the technology-based effluent limits for pH for POTWs will not cause or contribute to water quality standards violations for pH. Therefore, the permit does not contain water quality-based effluent limits for pH. See Appendix F for reasonable potential calculations for pH.

Temperature

EPA has retained the 32ºC maximum daily effluent temperature limitation from the previous permit, in compliance with the anti-backsliding requirements of Section 402(o) of the Clean Water Act. A reasonable potential analysis (Table D-2, Appendix D) has shown that a discharge in compliance with this effluent limit will not cause or contribute to water quality standards violations for temperature and will have a very small impact on the temperature of the receiving water after mixing.

Floating, Suspended and Submerged Matter

Section 200.05 of the Idaho Water Quality Standards requires that all waters of the State of Idaho be "free from floating, suspended, or submerged matter of any kind in concentrations causing nuisance or objectionable conditions or that may impair designated beneficial uses." The proposed permit contains a narrative effluent limit prohibiting the discharge of such floating, suspended or submerged matter from the Burley IWTP.

Hazardous Materials

Based on Section 200.01 of the WQS, the permit requires that the permittee not discharge hazardous materials in concentrations found to be of public health significance or to impair beneficial uses of the receiving water.

Toxic Pollutants

Based on Section 200.02 of the WQS, the permit requires that the permittee not discharge toxic pollutants in concentrations that impair beneficial uses of the receiving water.

Oil and Grease

Based on Sections 200.03 and 200.05 of the WQS, the permit requires that there be no visible sheen of oil and grease on the discharge from the Burley IWTP.

Deletrious Materials

Based on Section 200.03 of the WQS, the permit requires that the permittee not discharge deletrious materials in concentrations that impair beneficial uses of the receiving water.

Excess Nutrients

Based on Section 200.06 of the WQS, the permit requires that the permittee not discharge excess nutrients that can cause visible slime growths or other nuisance aquatic growths impairing beneficial uses.

D. References

IDAPA 58. 2004. *Water Quality Standards and Wastewater Treatment Requirements.* Idaho Department of Environmental Quality rules., Title 01, Chapter 02.

IDEQ. 1999. *Lake Walcott Subbasin Assessment and Total Maximum Daily Load, The*. Idaho Division of Environmental Quality.

Appendix D: Reasonable Potential Calculations

The following discussion describes the process EPA has used to determine if the discharge authorized in the draft permit has the reasonable potential to cause or contribute to a violation of Idaho's federally approved water quality standards. EPA uses the process described in the *Technical Support Document for Water Quality-based Toxics Control* (EPA/505/2-90-001) to determine reasonable potential.

To determine if there is "reasonable potential" to cause or contribute to an exceedance of water quality criteria for a given pollutant, EPA compares the maximum projected receiving water concentration to the criteria for that pollutant. If the projected receiving water concentration exceeds the criteria, there is reasonable potential, and a water quality-based effluent limit must be included in the permit. This section discusses how the maximum projected receiving water concentration is determined.

A. Mass Balance

For discharges to flowing water bodies, the maximum projected receiving water concentration is determined using the following mass balance equation:

$$C_dQ_d = C_eQ_e + C_uQ_u \qquad \text{(Equation D-1)}$$

where,

C_d = Receiving water concentration downstream of the effluent discharge (that is, the concentration at the edge of the mixing zone)
C_e = Maximum projected effluent concentration
C_u = 95th percentile measured receiving water upstream concentration
Q_d = Receiving water flow rate downstream of the effluent discharge = $Q_e + Q_u$
Q_e = Effluent flow rate
Q_u = Receiving water low flow rate upstream of the discharge (1Q10, 7Q10 or 30B3)

When the mass balance equation is solved for C_d, it becomes:

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

The above form of the equation is based on the assumption that the discharge is rapidly and completely mixed with the receiving stream. If the mixing zone is based on less than complete mixing with the receiving water, the equation becomes:

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

where MZ is the fraction of the receiving water flow available for dilution. Idaho's mixing zone policy states that the mixing zone is not to exceed 25% of the volume of the stream flow; therefore MZ is equal to 25% (.25).

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

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

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

$$D = \frac{Q_e + 0.25Q_u}{Q_e} \qquad \text{(Equation D-5)}$$

As discussed in Appendix B, for each season, there are three values for the dilution factor: one based on the 1Q10 flow rate in the receiving stream and used to determine reasonable potential and wasteload allocations for acute aquatic life criteria, one based on the 7Q10 flow rate and used to determine reasonable potential and wasteload allocations for chronic aquatic life criteria (except ammonia), and one based on the 30B3 flow rate and used to determine reasonable potential and effluent limits for the chronic ammonia criterion. The dilution factors are as follows:

Table D-1: Seasonal Dilution Factors in the Snake River
(based on low flows at USGS Station #13081500)

Season	Acute Dilution Factor (1Q10)	Chronic Dilution Factor (7Q10)	Chronic Ammonia Dilution Factor (30B3)
November through April	19.8	24.2	29.8
May	69.7	91.2	124
June through September	284	321	494
October	159	184	334

After simplification, Equation 2 becomes:

$$C_d = \frac{C_e - C_u}{D} + C_u \qquad \text{(Equation D-6)}$$

B. Maximum Projected Effluent Concentration

For temperature, EPA has used the effluent limits in the previous permit as the maximum projected effluent temperature. Because EPA determined that a discharge in compliance with the effluent limits in the previous permit would not have the reasonable potential to cause or contribute to water quality standards violations, the previous effluent limits were retained.

For ammonia, EPA has used the influent loading information from the facilities planning report for the retrofit of the IWTP (Forsgren Associates, 2005). EPA has made the conservative assumption that all of the ammonia discharged to the IWTP will be discharged to the Snake River (i.e. that the IWTP will not remove any of the influent ammonia). While the IWTP will likely remove some of the influent ammonia, it is customary to use a worst-case estimate of effluent loading or concentration when performing a reasonable potential analysis (in order to account for effluent variability). The updated NPDES permit application notes that the bulk volume fermenter (BVF), which will be the principal treatment unit in the near term, is an anaerobic treatment unit and is not expected to remove ammonia from the influent wastewater.

For nitrate and nitrite, EPA has used the maximum reported effluent concentrations for these pollutants from cheese processors (SIC code 2022) in the Permit Compliance System (PCS).

EPA has not performed a reasonable potential analysis for total phosphorus, because total phosphorus effluent limits are necessary for consistency with the Lake Walcott TMDL. EPA has deferred performing reasonable potential analyses for all other pollutants until effluent data for this specific facility can be obtained. The proposed permit requires effluent monitoring for a large number of pollutants, and EPA will use these data to determine if the discharge has the reasonable potential to cause or contribute to water quality standards violations for these pollutants. If the effluent data show that the discharge has the reasonable potential to cause or contribute to water quality standards violations for pollutants not subject to effluent limitations in this permit, EPA will include water quality-based effluent limits for those pollutants when this permit is reissued.

C. Maximum Projected Receiving Water Concentration

The discharge has reasonable potential to cause or contribute to an exceedance of water quality criteria if the maximum projected concentration of the pollutant at the edge of the mixing zone exceeds the criterion. The maximum projected receiving water concentration is calculated from Equation D-6:

$$C_d = \frac{C_e - C_u}{D} + C_u \qquad \text{(Equation D-6)}$$

In the case of ammonia, for the season from November through April for the acute criterion,

$$C_d = \frac{50 - 0.12}{19.8} + 0.12$$

C_d = 2.65 mg/L

And for the chronic criterion,

$$C_d = \frac{50 - 0.12}{29.8} + 0.12$$

C_d = 1.80 mg/L

In the case of ammonia, the projected receiving water concentrations (2.65 mg/L acute and 1.80 mg/L chronic) are greater than the criteria (an acute criterion of 1.23 mg/L and a chronic criterion of 0.661 mg/L), therefore a water quality-based effluent limit is required.

Table D-2, on the following page, summarizes the reasonable potential calculations for all pollutant parameters.

D. References

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

Forsgren Associates. 2005. *Industrial Wastewater Treatment Plant, Burley, Idaho: Facilities Planning Report.* August, 2005. Project No. 02-04-0151.

Table D-2: Reasonable Potential Calculations: Burley IWTP Outfall 003					
Common to All Parameters					
Confidence Level	0.99				
Z-Score of Confidence Level	2.33				
Dilution Factors	**Acute**	**Chronic**	**Ammonia**		
Nov-April	19.8	24.2	29.8		
May	69.7	91.2	124		
June - September	284	321	494		
October	159	184	334		
Common to All Seasons					
All Concentrations in mg/L unless otherwise noted					
Pollutant Parameter	**Ammonia**	**Nitrate**	**Nitrite**	**Nitrate + Nitrite**	**Temp. (ºC)**
Data Source	Indirect Discharger Estimates	Rep. Effluent Data	Rep. Effluent Data	Rep. Effluent Data	Current Effluent Limit
Maximum Projected Effluent Conc.	50	152	6.78	159	32
November thru April					
Maximum Ambient Concentration	0.12	0.00	0.00	0.76	11.0
Maximum Acute RWC	2.65	7.68	0.34	8.75	12.1
Maximum Chronic/Single Value RWC	1.80	6.3	0.3	7.3	11.9
Acute Aquatic Life Criterion	1.23	N/A	N/A	N/A	32
Chronic Aquatic Life Criterion	0.66	N/A	N/A	N/A	29
Most Stringent Single-Value Criterion	N/A	N/A	10	100	N/A
Reasonable Potential?	**YES**	**N/A**	**NO**	**NO**	**NO**
May					
Maximum Ambient Concentration	0.12	0.00	0.00	0.76	16.4
Maximum Acute RWC	0.84	2.18	0.10	3.03	16.6
Maximum Chronic/Single Value RWC	0.53	1.7	0.1	2.5	16.6
Acute Aquatic Life Criterion	1.23	N/A	N/A	N/A	32
Chronic Aquatic Life Criterion	0.59	N/A	N/A	N/A	29
Most Stringent Single-Value Criterion	N/A	N/A	10	100	N/A
Reasonable Potential?	**NO**	**N/A**	**NO**	**NO**	**NO**
June thru September					
Maximum Ambient Concentration	0.12	0.00	0.00	0.76	22.5
Maximum Acute RWC	0.30	0.54	0.02	1.32	22.5
Maximum Chronic/Single Value RWC	0.22	0.5	0.0	1.3	22.5
Acute Aquatic Life Criterion	1.23	N/A	N/A	N/A	32
Chronic Aquatic Life Criterion	0.40	N/A	N/A	N/A	29
Most Stringent Single-Value Criterion	N/A	N/A	10	100	N/A
Reasonable Potential?	**NO**	**N/A**	**NO**	**NO**	**NO**
October					
Maximum Ambient Concentration	0.12	0.00	0.00	0.76	15.4
Maximum Acute RWC	0.44	0.96	0.04	1.76	15.5
Maximum Chronic/Single Value RWC	0.22	0.5	0.0	1.3	15.5
Acute Aquatic Life Criterion	1.23	N/A	N/A	N/A	32
Chronic Aquatic Life Criterion	0.62	N/A	N/A	N/A	29
Most Stringent Single-Value Criterion	N/A	N/A	10	100	N/A
Reasonable Potential?	**NO**	**N/A**	**NO**	**NO**	**NO**

Appendix E: WQBEL Calculations – Aquatic Life Criteria

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

A. Calculate the Wasteload Allocations (WLAs)

Wasteload allocations (WLAs) are calculated using the same mass balance equations (Equations D-6 and D-7) used to calculate the concentration of the pollutant at the edge of the mixing zone in the reasonable potential analysis. To calculate the wasteload allocations, C_d is set equal to the acute or chronic criterion and the equation is solved for C_e. The calculated C_e is the acute or chronic WLA. Equation D-6 is rearranged to solve for the WLA, becoming:

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

In the case of ammonia, for the acute criterion, from November through April

$$WLA_a = 19.8 \times (1.232 - 0.12) + 0.12$$
$$\mathbf{WLA_a = 22.1\ mg/L}$$

For the chronic criterion,

$$WLA_c = 29.8 \times (0.661 - 0.12) + 0.12$$
$$\mathbf{WLA_c = 16.2\ mg/l}$$

The next step is to compute the "long term average" concentrations which will be protective of the WLAs. This is done using the following equations from EPA's *Technical Support Document for Water Quality-based Toxics Control* (TSD):

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

where,

$\sigma^2 = \ln(CV^2 + 1)$

$\sigma = \sqrt{\sigma^2}$

n = number of days in averaging period = 30

$\sigma_{30}^2 = \ln(CV^2/30 + 1)$

$\sigma = \sqrt{\sigma_{30}^2}$

z = 2.326 for 99th percentile probability basis

CV = (standard deviation) ÷ (mean) When there are fewer than 10 data points from which to calculate a standard deviation and mean, the TSD recommends making the assumption that the CV is equal to 0.6. In this case, there are no

ammonia effluent data available, therefore EPA has assumed the CV is equal to 0.6.

In the case of ammonia,

$\sigma^2 = \ln(0.6^2 + 1) = 0.307$
$\sigma = \sqrt{\sigma^2} = 0.555$
$\sigma_{30}^2 = \ln(0.6^2/30 + 1) = 0.0119$
$\sigma = \sqrt{\sigma_{30}^2} = 0.109$
$z = 2.326$ for 99th percentile probability basis

Therefore,

$LTA_a = 22.1 \text{ mg/L} \times \exp(0.5 \times 0.307 - 2.326 \times 0.555)$
LTA_a = 7.09 mg/L

$LTA_c = 16.2 \text{ mg/L} \times \exp(0.5 \times 0.0119 - 2.326 \times 0.109)$
LTA_c = 12.6 mg/L

The LTAs are compared and the more stringent is used to develop the daily maximum and monthly average permit limits, as shown below. For ammonia, the acute LTA is more stringent.

B. Derive the maximum daily and average monthly effluent limits

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

$MDL = LTA \times \exp(z_m\sigma - 0.5\sigma^2)$ (Equation E-4)
$AML = LTA \times \exp(z_a\sigma_n - 0.5\sigma_n^2)$ (Equation E-5)

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

$\sigma_n^2 = \ln(CV^2/n + 1)$
$\sigma = \sqrt{\sigma_8^2}$
$z_a = 1.645$ for 95th percentile probability basis
$z_m = 2.326$ for 99th percentile probability basis
n = number of sampling events required per month (equal to 8 because there are two samples required per week)

In the case of ammonia,

$MDL = 7.09 \text{ mg/L} \times \exp(2.326 \times 0.555 - 0.5 \times 0.307)$
MDL = 22.1 mg/L

$AML = 7.09 \text{ mg/L} \times \exp(1.645 \times 0.2098 - 0.5 \times 0.086)$
AML = 9.79 mg/L

These concentrations were converted to mass limits by multiplying by the design flow of the IWTP (2.4 mgd) and a conversion factor of 8.34.

Table E-1, below, details the effluent limit calculations for ammonia.

Table E-1: Effluent Limit Calculations for Ammonia

Statistical variables for permit limit calculation							
		AML Probability Basis	MDL Probability Basis	# of Samples per Month	Acute Dilution Factor	Chronic Dilution Factor	Chronic Ammonia Dilution Factor
PARAMETER	Season	dimensionless					
All	Nov-April	0.95	0.99	8	19.8	24.2	29.8

Waste Load Allocation (WLA) and Long Term Average (LTA) Calculations								
		WLA Acute	WLA Chronic	LTA Acute	LTA Chronic	LTA Coeff. Var. (CV)	LTA Prob'y Basis	Limiting LTA
PARAMETER	Season	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Ammonia	Nov-April	22.08	16.18	7.09	12.6	0.6	0.99	7.09

Effluent Limit Calculation Summary								
		Ambient Conc.	Water Quality Criterion Acute	Water Quality Criterion Chronic	Conc. Average Monthly Limit (AML)	Conc. Maximum Daily Limit (MDL)	**Mass Average Monthly Limit (AML)**	**Mass Max. Daily Limit (MDL)**
PARAMETER	Season	mg/L	mg/L	mg/L	mg/L	mg/L	**lb/day**	**lb/day**
Ammonia	Nov-April	0.12	1.232	0.661	9.79	22.1	**196**	**442**

Appendix F: Reasonable Potential Calculations for pH

The pH at the edge of the mixing zone is a function of effluent and ambient pH, temperature, and alkalinity. The critical alkalinity is the minimum for the ambient water and the maximum for the effluent. The pHs for the low pH critical condition are the minimum effluent pH limit and the 5th percentile ambient pH. The critical temperatures for the low pH critical condition are the 95th percentile ambient temperature and the 5th percentile effluent temperature.

Table F-1 shows that the discharge does not have the reasonable potential to cause or contribute to water quality standards violations for pH. EPA evaluated only the discharge's potential to cause or contribute to water quality standards violations for a low pH critical condition, because the upper bound of the technology-based pH limits is the same as the upper bound of the water quality criteria for pH (9.0 standard units). Therefore, a discharge in compliance with the technology-based limits for pH will not cause or contribute to an excursion above the upper bound of the water quality criteria for pH. EPA did not evaluate effluent pHs below 6.0 standard units, because this is the lower bound of the technology-based effluent limits for pH.

Table F-1: Reasonable Potential Calculations for pH

INPUT	**Nov-April**	**May**	**Jun-Sep**	**Oct**
1. DILUTION FACTOR AT MIXING ZONE BOUNDARY	24.2	91.2	321	184
2. UPSTREAM/BACKGROUND CHARACTERISTICS				
Temperature (deg C):	11.00	16.40	22.50	15.43
pH:	7.50	7.50	7.50	7.50
Alkalinity (mg CaCO3/L):	133.00	133.00	133.00	133.00
3. EFFLUENT CHARACTERISTICS				
Temperature (deg C):	32.0	32.0	32.0	32.0
pH:	6.00	6.00	6.00	6.00
Alkalinity (mg CaCO3/L):	240	240	240	240
OUTPUT				
1. IONIZATION CONSTANTS				
Upstream/Background pKa:	6.45	6.41	6.37	6.42
Effluent pKa:	6.32	6.32	6.32	6.32
2. IONIZATION FRACTIONS				
Upstream/Background Ionization Fraction:	0.92	0.93	0.93	0.92
Effluent Ionization Fraction:	0.33	0.33	0.33	0.33
3. TOTAL INORGANIC CARBON				
Upstream/Background Total Inorganic Carbon (mg CaCO3/L):	144.98	143.78	142.75	143.97
Effluent Total Inorganic Carbon (mg CaCO3/L):	736.01	736.01	736.01	736.01
4. CONDITIONS AT MIXING ZONE BOUNDARY				
Temperature (deg C):	11.87	16.57	22.53	15.52
Alkalinity (mg CaCO3/L):	137.43	134.17	133.33	133.58
Total Inorganic Carbon (mg CaCO3/L):	169.45	150.27	144.60	147.19
pKa:	6.45	6.41	6.37	6.42
pH at Mixing Zone Boundary:	**7.08**	**7.33**	**7.44**	**7.41**
Reasonable Potential?	**NO**	**NO**	**NO**	**NO**