Fact Sheet

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

Bennett Lumber Products, Inc.

EPA Proposes To Reissue an NPDES Permit
EPA proposes to reissue the NPDES permit for the facility referenced above. The draft permit places conditions on the discharge of pollutants from the facility 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

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

Idaho Department of Environmental Quality
Lewiston Regional Office
1118 "F" Street
Lewiston, ID 83501

Public Comment
Persons wishing to comment on, or request a Public Hearing for the draft permit for this facility may do so in writing by the expiration date of the Public Comment period. A request for a Public Hearing must state the nature of the issues to be raised as well as the requester's name, address and telephone number. All comments and requests for Public Hearings must be in writing and should be submitted to EPA as described in the Public Comments Section of the attached Public Notice.

After the Public Notice expires, and all comments have been considered, EPA's regional Director for the Office of Water and Watersheds will make a final decision regarding permit issuance. If no substantive comments are received, the tentative conditions in the draft permit will become final, and the permit will become effective upon issuance. If substantive comments are received, EPA will address the comments and issue the permit. The permit will become effective no less than 30 days after the issuance date, unless an appeal is submitted to the Environmental Appeals Board within 30 days.

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

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

The fact sheet and draft permits are also available at:

Potlatch Public Library
1010 Onaway Road
Potlatch, ID 83855

Idaho Department of Environmental Quality
Lewiston Regional Office
1118 "F" Street
Lewiston, ID 83501

US Environmental Protection Agency
Idaho Operations Office
1435 North Orchard
Boise, ID 83706

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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.
BE	Biological Evaluation
BOD_5	Biochemical oxygen demand, five-day
BMP	Best Management Practices
^oC	Degrees Celsius
CFR	Code of Federal Regulations
CFS	Cubic Feet per Second
COD	Chemical Oxygen Demand
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
gpd	Gallons per day
IDEQ	Idaho Department of Environmental Quality
lbs/day	Pounds per day
mg/L	Milligrams per liter
ml	milliliters
ML	Minimum Level
mgd	Million gallons per day
MDL	Maximum Daily Limit or Method Detection Limit
N	Nitrogen
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
OWW	Office of Water and Watersheds
PCS	Permit Compliance System
QAP	Quality assurance plan
RP	Reasonable Potential
RPM	Reasonable Potential Multiplier
RWC	Receiving Water Concentration
SS	Suspended Solids
s.u.	Standard Units
SWPPP	Stormwater Pollution Prevention Plan
TMDL	Total Maximum Daily Load
TRC	Total Residual Chlorine
TSD	Technical Support Document for Water Quality-based Toxics Control (EPA/505/2-90-001)
TSS	Total suspended solids
USGS	United States Geological Survey
WQBEL	Water quality-based effluent limit
WQS	Water Quality Standards

I. Applicant

A. General Information

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

Bennett Lumber Products Inc.
NPDES Permit # ID-002053-2

Physical Address:
3759 Highway 6
Princeton, ID 83857

Mailing Address:
P.O. Box 49
Princeton, ID 83857

Contact:
Jeff Abbott

II. Facility Information

A. Facility Background

Bennett Lumber Products, Inc. owns and operates a sawmill near Princeton, Idaho. Bennett Lumber Products was incorporated in September of 1961. The sawmill existed at the site even before that date, when it was operated by the Boone Lumber Company. The wastewater discharges that the proposed permit would authorize consist of stormwater, boiler blowdown, kiln condensate, clarifier tank overflow, and wastewater associated with drinking water filtration. The facility is currently operating under an NPDES permit which became effective on March 27, 1974 and expired on March 26, 1979. The permit was modified in 1975. EPA received a timely and complete application for renewal of this NPDES permit on August 7, 1978. The permit has been administratively extended under 40 CFR 122.6 and Title 5 United States Code 558(c) since the expiration date. EPA received updated applications in 1992 and 1994. EPA requested and received updated flow diagrams in 2006.

The facility also submitted a notice of intent for coverage under the Multi-Sector General Permit (MSGP) for Industrial Storm Water Discharges (NOI number IDR05A369). Bennett Lumber Products has indicated that an individual NPDES permit covering all discharges from the facility would be preferable. Even though some discharges from the facility are now covered under the multi-sector general permit, others cannot be covered by that permit and must be covered under a reissuance of the individual NPDES permit issued to the facility in 1974. If Bennett Lumber Products obtains coverage under the reissued MSGP prior to issuance of this individual permit, the final individual NPDES permit will be authorize only non-stormwater discharges.

B. Description of Outfalls

The following is a description of the mill's four outfalls. For a map of the facility and a flow diagram, see Appendix A.

Outfall 001

The water discharged from outfall 001 contains stormwater, boiler blowdown, clarifier tank overflow, and kiln condensate. Treatment consists of ponds where the water is allowed to cool and where solids can settle out before discharge to the Palouse River.

Some of the water discharged through outfall 001 reaches the outfall via an outfall numbered "004" on the 1994 permit application. The flows from that outfall include stormwater and kiln condensate. Outfall 004 is not a point source discharge to waters of the United States, so this outfall is not named in the draft permit. However, discharges from the pipe listed as outfall 004 on the 1994 application do reach waters of the United States via the ditch, the setting pond and outfall 001. The proposed permit would authorize discharges from Outfall 001, including the contributions from outfall 004. Discharge from outfall 001 generally occurs from November through April.

Outfall 002

The water discharged from outfall 002 contains stormwater and wastewater from the mill's drinking water system. Treatment consists of a pond where solids can settle out before discharge to the Palouse River. This discharge generally occurs from November through April. During the balance of the year, water that would otherwise be discharged to the Palouse River is recycled and used for log deck sprinkling. The previous permit did not authorize discharges of log deck sprinkling runoff. Therefore, the proposed permit would not authorize discharges from outfall 002 when log deck sprinkling is occurring. However, it would authorize a discharge from outfall 002 when such sprinkling is not occurring, because disharges from outfall 002 would not contain log sprinkling runoff.

Outfalls 003 and 005

These outfalls are discharges of stormwater runoff. However, Outfall 003 is subject to additional conditions because it receives stormwater from areas where fuel and oil is stored.

III. Receiving Water

This facility discharges to the Palouse River in Latah County, Idaho. The facility is located immediately southwest of the intersection of State Highway 6 and O' Reilly Road, and the outfalls are located downstream of the O' Reilly Road bridge.

A. Low Flow Conditions

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

(WQBELs) using steady-state modeling. The TSD and the WQS state that WQBELs intended to protect aquatic life uses should be based on the lowest seven-day average flow rate expected to occur once every ten years (7Q10) for chronic criteria (except for ammonia) and the lowest one-day average flow rate expected to occur once every ten years (1Q10) for acute criteria. 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. The 1Q10, 7Q10, and 30B3 flow rates are listed, by season, in Table 1, below.

Table 1: Low Flows in the Palouse River

Season	1Q10 (CFS)	7Q10 (CFS)	30B3 (CFS)
November through April	4.91	7.69	11.3
May through October	1.70	2.11	3.67
Full Year	1.53	2.30	3.51

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) require that the conditions in NPDES permits ensure compliance with the water quality standards of all affected States. A State's water quality standards are composed of use classifications, numeric and/or narrative water quality criteria, and an anti-degradation policy. The use classification system designates the beneficial uses (such as drinking water supply, contact recreation, and aquatic life) that each water body is expected to achieve. The numeric and/or narrative water quality criteria are the criteria deemed necessary by the State to support the beneficial use classification of each water body. The anti-degradation policy represents a three-tiered approach to maintain and protect various levels of water quality and uses.

At the point of discharge, the Palouse River is designated for cold water aquatic life habitat and secondary contact recreation. In addition, 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.

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 applicable to a waterbody are being met and may be more stringent than technology-based effluent limits. The basis for the effluent limits proposed in the draft permit is provided in Appendix C.

B. Proposed Effluent Limitations

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

1. The permittee must not discharge process wastewater pollutants to waters of the United States from any outfall. The term "process wastewater" does not include non-contact cooling water, material storage yard runoff, boiler blowdown, kiln condensate, wastewater resulting from drinking water filtration, fire control water, or any other water that does not fit the definition of "process wastewater" in 40 CFR 122.2.
2. The permittee must not discharge pollutants from the fire protection pond to waters of the United States.
3. The permittee must not discharge pollutants from outfall 002 to waters of the United States on any calendar day when log deck sprinkling occurs.
4. The permittee must not discharge, from any outfall, floating, suspended, or submerged matter of any kind in amounts causing nuisance or objectionable conditions or that may impair designated beneficial uses of the Palouse River.
5. The permittee must not discharge any debris that will not pass through a 1-inch round opening from outfalls 001 or 002.

Table 2 (below) presents the proposed effluent limits.

Table 2: Proposed Effluent Limits

Parameter	Units	Average Monthly Limit	Maximum Daily Limit
Outfall 001			
Flow	gpd	—	64,500
Temperature	ºC	—	27
TSS	lb/day	—	39
pH (November – April)	s.u.	6.0 to 9.0	
pH (May – October)	s.u.	6.1 to 9.0	
Debris, Floating	visual	Narrative Limitation	
Oil and Grease	visual	No Visible Sheen	
Outfall 002			
pH	s.u.	6.0 to 9.0	

Table 2: Proposed Effluent Limits			
Parameter	**Units**	**Average Monthly Limit**	**Maximum Daily Limit**
Floating Suspended or Submerged Matter	visual	Narrative Limitation	
Debris, Floating	visual	Narrative Limitation	
Outfall 003			
Floating Suspended or Submerged Matter	visual	Narrative Limitation	
Oil and Grease	visual	No Visible Sheen	
Outfall 005			
Floating Suspended or Submerged Matter	visual	Narrative Limitation	

V. Monitoring Requirements

A. Basis for Effluent 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. In this case, the discharges are minor and EPA does not believe that receiving water monitoring is necessary.

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 minimum levels (MLs) are less than the effluent limits.

Because all four oufalls contain stormwater, EPA has required effluent monitoring of all outfalls for chemical oxygen demand (COD) or five-day biochemical oxygen demand (BOD_5) total suspended solids (TSS), and zinc, for consistency with the most recent final storm water multi-sector general permit (MSGP). Effluent monitoring for hardness is required because the water quality criteria for zinc vary with hardness. Monitoring for pH and floating solids or visible foam is necessary to determine compliance with effluent limits for those pollutants. Additional effluent monitoring is required for outfalls 001, 002, and 003 because of non-stormwater contributions to outfalls 001 and 002, and because outfall 003 receives stormwater from areas where fuel and oil are stored.

Table 3, below, presents the proposed effluent monitoring requirements for the Bennett Lumber Products sawmill. The sampling location must be after the last treatment unit and prior to discharge to the receiving water. If no discharge occurs from any outfall during a calendar month, "no discharge" shall be reported on the DMR.

Table 3: Effluent Monitoring Requirements			
Parameter	**Units**	**Sample Frequency**	**Sample Type**
Outfall 001			
Flow	gpd	monthly when discharging	measure
Temperature	°C	monthly when discharging	grab
TSS	mg/L	monthly when discharging	grab
	lb/day		calculation
Turbidity	NTU	2/year	grab
5-day biochemical oxygen demand (BOD_5)	mg/L	2/year	grab
pH	standard units	monthly when discharging	grab
Zinc	µg/L	2/year	grab
Total Ammonia as N	mg/L	2/year	grab
Hardness	mg/L as $CaCO_3$	2/year	grab
Alkalinity	mg/L as $CaCO_3$	2/year	grab
Oil and Grease	visual	weekly when discharging	visual
Oil and Grease	mg/L	2/year	grab
Floating Solids or Visible Foam	visual	weekly when discharging	visual
Debris, Floating	visual	weekly when discharging	visual
Outfall 002			
Flow	gpd	monthly when discharging	measure
TSS	mg/L	monthly when discharging	grab
COD	mg/L	monthly when discharging	grab
pH	standard units	monthly when discharging	grab
Zinc	µg/L	2/year	grab
Hardness	mg/L as $CaCO_3$	2/year	grab
Total Residual Chlorine	µg/L	2/year	grab
Floating Solids or Visible Foam	visual	weekly when discharging	visual
Debris, Floating	visual	weekly when discharging	visual
Outfall 003			
Flow	gpd	once per rain event	estimate
TSS	mg/L	2/year	grab
COD	mg/L	2/year	grab
pH	standard units	once per rain event	grab
Zinc	µg/L	2/year	grab
Hardness	mg/L as $CaCO_3$	2/year	grab
Floating Solids or Visible Foam	visual	once per rain event	visual
Oil and Grease	visual	once per rain event	visual
Oil and Grease	mg/L	2/year	grab
Outfall 005			
Flow	gpd	once per rain event	estimate
TSS	mg/L	2/year	grab
COD	mg/L	2/year	grab
pH	standard units	once per rain event	grab
Zinc	µg/L	2/year	grab
Hardness	mg/L as $CaCO_3$	2/year	grab
Floating Solids or Visible Foam	visual	once per rain event	visual

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. Bennett Lumber Products is required to update the Quality Assurance Plan for the sawmill within 180 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

The federal regulation 40 CFR 122.44(k) authorizes EPA to include best management practices (BMP) requirements in permits to control or abate the discharge of pollutants when they are authorized by Section 402(p) of the Clean Water Act for the control of stormwater or when they are reasonably necessary to carry out the purposes and intent of the clean water act.

Many of the BMP requirements of this permit are similar to the requirements for storm water pollution prevention plans (SWPPP) in the most recent final Storm Water Multi-Sector General Permit (MSGP) for industrial activities. SWPPP requirements from the MSGP which are not relevant to the Bennett Lumber Products mill have not been included in the draft permit.

In addition, the permittee must implement best management practices to control or abate the discharge of non-stormwater pollutants. Bennett Lumber Products is required to develop and implement the best management practices plan within 180 days of the effective date of the final permit. The permittee may update existing best management practices plans and stormwater pollution prevention plans for compliance with the permit.

C. Standard Permit Provisions

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

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.

EPA has determined that the reissuance of an NPDES permit to the Bennett Lumber Products facility will have no effect on any threatened or endangered species, therefore consultation is not required for this action. EPA will provide USFWS with a copy of the draft permit and fact sheet during the public comment period and will consider any comments on the draft permit prior to issuance.

B. Essential Fish Habitat

Essential fish habitat (EFH) includes the waters and substrate (sediments, etc.) necessary for fish to spawn, breed, feed, or grow to maturity. The Magnuson-Stevens Fishery Conservation and Management Act (January 21, 1999) requires EPA to consult with NOAA Fisheries when a proposed discharge has the potential to adversely affect (reduce quality and/or quantity of) EFH. The EFH regulations define an adverse effect as any impact which reduces quality and/or quantity of EFH and may include direct (e.g. contamination or physical disruption), indirect (e.g. loss of prey, reduction in species' fecundity), site specific, or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions. EPA has determined that the reissuance of this permit will not have any effect on EFH.

C. State Certification

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

D. Permit Expiration

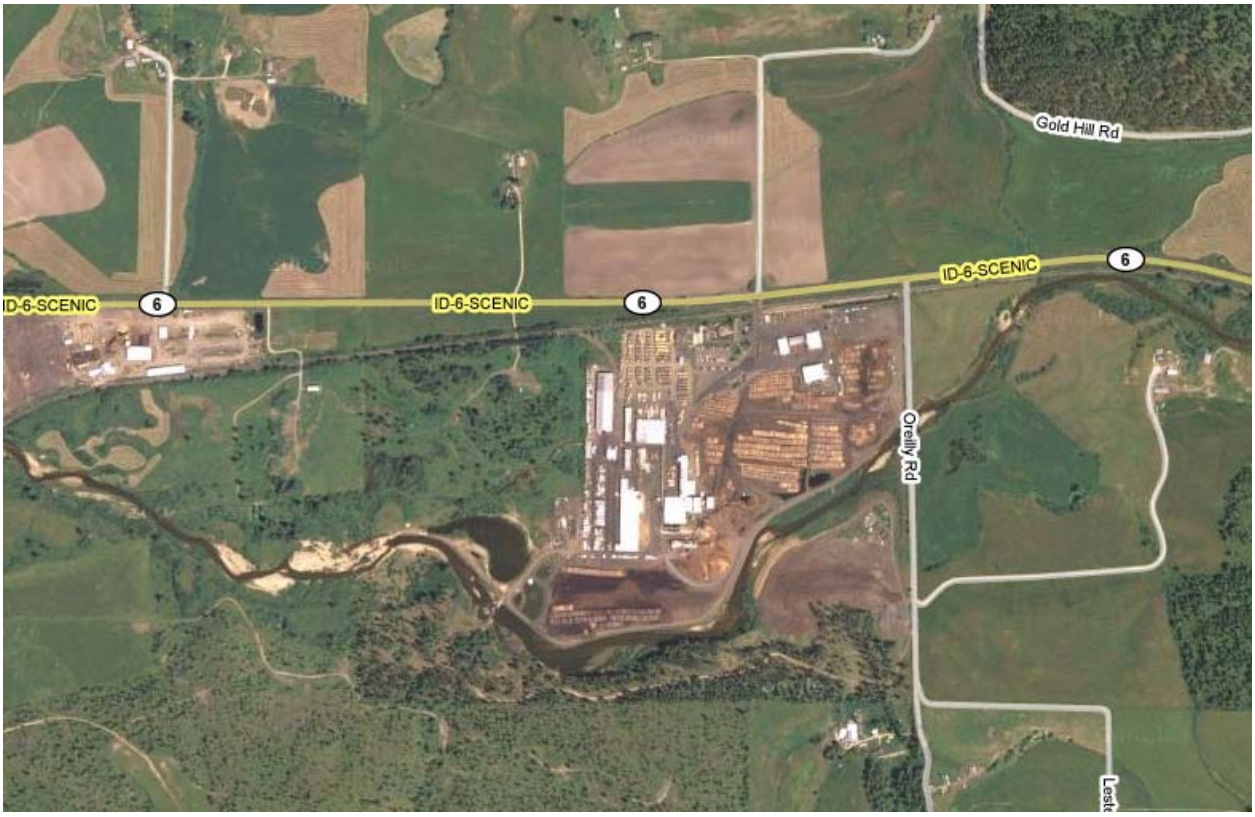
The permit will expire five years from the effective date.

VIII. References

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

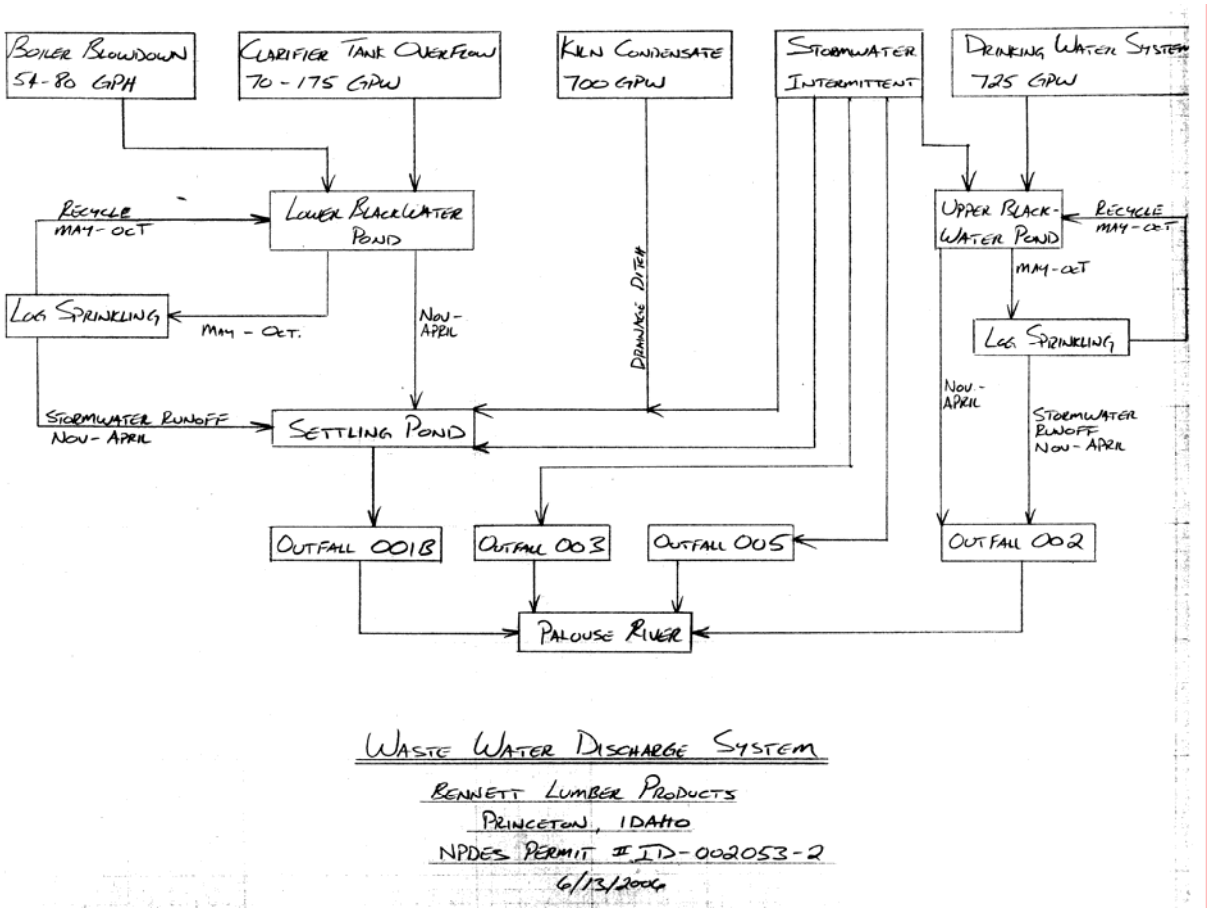
Appendix A: Facility Map and Flow Diagram

Figure A-1: Location map and aerial photo



Map source: Google Maps. © 2006 Google. Imagery © 2006 DigitalGlobe. Map Data © 2006 NAVTEQ.

Figure A-2: Flow Diagram



Appendix B: Basis for Effluent Limits

The following discussion explains in more detail the statutory and regulatory basis for the technology and water quality-based effluent limits in the draft permit. Part A discusses technology-based effluent limits, Part B discusses water quality-based effluent limits in general, and Part C discusses facility specific water quality-based effluent limits.

A. Technology-Based Effluent Limits

Limits based on Effluent Limit Guidelines

In 1981, EPA promulgated effluent limit guidelines for the timber products industry in 40 CFR Part 429. The effluent limit guidelines for sawmills and planing mills appear in 40 CFR Part 429, Subpart K. These effluent limit guidelines prohibit discharges of process wastewater to waters of the United States. Discharges of non-contact cooling water, material storage yard runoff, boiler blowdown, and fire control water are excluded from the definition of "process wastewater" in 40 CFR 429.11(c). Therefore, the effluent limit guidelines do not prohibit the discharge of such waters, or other discharges that are not "process wastewater" as defined in 40 CFR 122.2. Consistent with the effluent limit guidelines, the proposed permit prohibits discharges of process wastewater.

The facility is also subject to effluent limit guidelines promulgated for wet storage of logs, which appear in 40 CFR Part 429, Subpart I. These effluent limit guidelines require that the pH of wastewater from wet storage of logs be no less than 6.0 and no greater than 9.0 standard units. The effluent limit guidelines also prohibit the discharge of "debris," which is defined as "woody material such as bark, twigs, branches, heartwood or sapwood that will not pass through a 1-inch diameter round opening and is present in the discharge from a wet storage facility." Based on the map of the mill site showing the location of storm drains and on the flow diagram provided by the facility, EPA believes these effluent limit guidelines are applicable to outfalls 001 and 002.

Limits based on Best Professional Judgment

Previous Permit Limits

Effluent limits in the previous permit were based on the permit writer's best professional judgment (BPJ). This type of effluent limit is authorized by Section 402(a)(1)(B) of the Act. Section 402(o) of the Act generally does not allow such limits to be relaxed, with limited exceptions.

The previous permit prohibited discharges from the fire protection pond and of log deck sprinkling runoff. These prohibitions were based on the permit writer's best professional judgment. While the federal effluent limit guidelines, which were promulgated after the previous permit was issued, would not prohibit discharges from the fire protection pond, Secton 402(o) of the Act does not allow effluent limits based on the permit writer's best professional judgment to be relaxed solely because of the promulgation of less-stringent effluent limit guidelines. Therefore, the proposed permit retains the previous permit's prohibition on discharges from the fire protection pond.

Since the previous permit was issued in 1974, there have been changes to the facility. The permittee has installed a drinking water filtration system and has combined the outfalls previously numbered 001A and 001B into one, with the new outfall 001 being at the same location as the former 001B. Also, discharges of air compressor and edger saw cooling water are no longer discharged through outfall 001. Wastewater from a drinking water system, including water from filter backwash and from the floor drains in the filter house, is discharged through Outfall 002 via the upper log deck sprinkling recycle pond. The upper black water pond also receives stormwater during wet weather events.

Regarding outfall 002, the previous permit addressed neither stormwater nor the drinking water filtration wastewater. The proposed permit, however, does authorize and place conditions on the discharge of these types of wastewater. In order to retain the prohibition on discharges of log deck sprinkling water from outfall 002, the proposed permit authorizes discharges from outfall 002 only on calendar days when log deck sprinkling does not occur. The sources of such discharges will not be log deck sprinkling runoff, but stormwater runoff and wastewater from the drinking water system. The proposed permit thereby retains the previous permit's prohibition on discharges of log deck sprinkling water (in compliance with Section 402(o) of the Act) but allows discharges of stormwater and wastewater from the drinking water system.

Outfall 001 contains discharges of stormwater and kiln condensate that do not pass through the lower black water pond (also called the lower log water recycling pond), making it impossible to prohibit log deck sprinkling discharges from outfall 001 simply by using the same restriction on discharge timing as used for outfall 002. In order to maintain the prohibition on discharges of log sprinkling runoff, the proposed permit includes a BMP condition requiring that the log deck sprinkling system be operated as a closed system.

Flow

The previous permit had flow limits for outfalls 001A and 001B. Outfalls 001A and 001B have been combined, therefore, under the anti-backsliding provisions of Section 402(o) of the Clean Water Act, EPA has established a new flow limit for the combined outfall equal to the sum of the previous permit's flow limits for outfalls 001A and 001B.

TSS

The previous permit had technology-based effluent limits for TSS for outfall 001A. Because outfalls 001A and 001B have been combined, the previous permit's effluent limits for outfall 001A are irrelevant. EPA has calculated new technology-based effluent limits for TSS based on the available data. Whereas the previous permit expressed these limits in terms of concentration and mass, the proposed permit expresses the limits in terms of mass only. The mass limits are less stringent than those in the previous permit for outfall 001A. This backsliding is allowed under the "material and substantial alterations" and "new information" exceptions to the anti-backsliding provisions of the Act (Sections 402(o)(2)(A) and 402(o)(2)(B)(i)). The mass limit is the mass of TSS that would be discharged at the highest reported flow rate (43,200 gallons per day), with a maximum daily TSS concentration of 107 mg/L. Using the procedures in Section 5.4 of the *Technical Support Document for Water Quality-based Toxics Control* for calculating a maximum daily limit from a long term average discharge, EPA has determined that the permittee can achieve this concentration in the discharge with high confidence. Table C-1, below, details the calculation of the technology-based limit for TSS.

Table C-1: Technology-Based Limit for TSS – Outfall 001				
Max Wastewater Flow (mgd)	0.0432			
Statistical variables for permit limit calculation				
	MDL Prob'y Basis	# of Samples per Month		
PARAMETER	*decimal*	*n*		
TSS	0.99	1		
Long Term Average (LTA) and Effluent Limit Calculations				
	Long Term Average	LTA Coeff. Var. (CV)	Maximum Daily Limit (MDL)	**Maximum Daily Limit (MDL)**
PARAMETER	*mg/L*	*decimal*	*mg/L*	***lb/day***
TSS	30	0.7	107	**39**

pH

The previous permit had technology-based effluent limits for pH for outfalls 001A and 001B equal to a range of 6.0 to 9.0 standard units. EPA has retained these technology-based effluent limits for the combined outfall. Further, these pH effluent limits are identical to the promulgated technology-based effluent limits for discharges of log sprinkling runoff, which are also applicable to outfall 001.

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 mass based limits are expressed in pounds per day and are calculated as follows:

$$\text{Mass based limit (lb/day)} = \text{concentration limit (mg/L)} \times \text{flow rate (mgd)} \times 8.34^{1}$$

B. Water Quality-based Effluent Limits

Statutory and Regulatory Basis

Section 301(b)(1)(C) of the CWA requires the development of limitations in permits necessary to meet water quality standards by July 1, 1977. Discharges to State or Tribal waters must also comply with limitations imposed by the State or Tribe as part of its certification of NPDES permits under section 401 of the CWA. Federal regulations at 40 CFR 122.4(d) prohibit the issuance of an NPDES permit that does not ensure compliance with the water quality standards of all affected States. The NPDES regulation (40 CFR 122.44(d)(1)) implementing Section 301(b)(1)(C) of the CWA requires that permits include limits for all pollutants or parameters which are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State or Tribal water quality standard, including narrative criteria for water quality.

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

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

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 based on numeric criteria, 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, if appropriate, the dilution available from the receiving water, to project the receiving water concentration. If the projected concentration of the pollutant in the receiving water exceeds the numeric criterion for that specific chemical, then the discharge has the reasonable potential to cause or contribute to an excursion above the applicable water quality standard, and a water quality-based effluent limit is required.

Mixing Zones

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 will increase the mass loadings of the pollutant to the water body and will decrease treatment requirements. Mixing zones can be used only when there is adequate receiving water flow volume and when 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.

C. Facility-Specific Water Quality-based Effluent Limits

The proposed permit contains water quality-based effluent limits for oil and grease, floating, suspended or submerged matter, and pH. EPA performed reasonable potential analyses on discharges of ammonia from outfall 001 and chlorine from outfall 002 and determined that the discharges do not have the reasonable potential to cause or contribute to excursions above water quality standards for these pollutants. Therefore the permit does not contain water quality-based effluent effluent limits for these pollutants.

Oil and Grease

The discharge from Outfall 001 contains stormwater runoff from parking areas, an area near a 1,500 gallon jet fuel tank, and from storm drains adjacent to gasoline pumps. The discharge from Outfall 003 contains stormwater runoff from storm drains adjacent to four diesel fuel tanks with a total capacity of 43,000 gallons, a bulk oil storage tank of unknown capacity, and a bulk waste oil tank with a capacity of 6,000 gallons.

The State of Idaho does not have specific water quality criteria for oil and grease, but EPA has interpreted Idaho's narrative criterion for hazardous materials to include oil and grease. EPA's recommended water quality criterion for oil and grease is a narrative criterion stating that surface waters shall be virtually free from floating non-petroleum oils of vegetable or animal origin as well as petroleum-derived oils.

Because of the proximity of the storm drains contributing to the discharges from outfalls 001 and 003 to areas where petroleum products are stored, dispensed, and leaked from parked vehicles, EPA believes that the discharges from these outfalls have the reasonable potential to cause or

contribute to excursions above Idaho's narrative water quality criteria for hazardous materials. Therefore, the proposed permit contains a water quality-based effluent limit of "no visible sheen" of oil and grease for these outfalls, consistent with the EPA recommended criterion for oil and grease.

Floating, Suspended or Submerged Matter

EPA believes that the discharges from all outfalls have the reasonable potential to cause or contribute to excursions above Idaho's water quality standards for floating, suspended or submerged matter. Therefore, the proposed permit contains a narrative water quality based limit, applicable to all outfalls, prohibiting the discharge of floating, suspended or submerged matter in amounts that will impair designated beneficial uses.

pH

EPA has determined that the discharge from outfall 001 has the reasonable potential to cause or contribute to water quality standards nonattainment for pH between May and October. Therefore, the permit contains a water quality-based effluent limit for pH for outfall 001 for this season. Flows from other outfalls are expected to me significantly smaller than that from outfall 001, therefore, the permit does not include water quality-based effluent limits for pH for any other outfalls. However, as mentioned above, all outfalls include technology-based pH effluent limits of 6.0 to 9.0 standard units.

Appendix C: Reasonable Potential Calculations

The following 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 an excursion above Idaho's federally approved water quality standards. EPA uses the process described in the *Technical Support Document for Water Quality-based Toxics Control* (EPA, 1991) to determine reasonable potential.

To determine if there is reasonable potential for the discharge to cause or contribute to an excursion above 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:

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

where,

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

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

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

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:

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

Where MZ is the fraction of the receiving water flow available for dilution. The State's mixing zone rules (IDAPA 58.01.02.060.01.e.iv.) state that the mixing zone is not to exceed 25% of the volume of the stream flow, therefore, MZ is equal to 25% or 0.25.

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

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

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

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

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 to determine reasonable potential and wasteload allocations chronic aquatic life criteria (except for ammonia) and conventional pollutants, and one based on the 30B3 flow rate to determine reasonable potential and wasteload allocations for the chronic ammonia criterion. All dilution factors are calculated with the effluent flow rate set equal to the design flow of 4.9 mgd. The dilution factors are listed in Table C-1, below.

Table C-1: Dilution Factors

Outfall	Acute Dilution Factor	Chronic Dilution Factor	Chronic Ammonia Criterion Dilution Factor
001 Nov - April	19.4	29.8	43.3
001 May - October	16.3	19.9	33.9
002[1]	342	514	N/A[2]

Notes:
1. The pollutant of concern for the reasonable potential analysis for outfall 002 is chlorine. The only waste stream contributing to the discharge from outfall 002 which is expected to contain chlorine in significant quantities is that from the drinking water filtration system. Therefore, the dilution factors in the table are based only on the effluent flow rate from the drinking water system, which is 725 gallons per week.
2. The discharge from outfall 002 is not expected to contain ammonia in significant quantities; therefore a chronic ammonia dilution factor was not calculated.

After the dilution factor simplification, Equation C-2 becomes:

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

B. Maximum Projected Effluent Concentration

To calculate the maximum projected effluent concentration, EPA has used the procedure described in section 3.3 of the TSD, "Determining the Need for Permit Limits with Effluent Monitoring Data." In this procedure, the 99th percentile of the effluent data is the maximum projected effluent concentration in the mass balance equation.

For chlorine in outfall 002, EPA has used the estimated effluent concentration as listed on the 1992 permit application, which is 5 mg/L (5,000 µg/L).

For ammonia in outfall 001, EPA has used the effluent data submitted with the 1994 permit application. There is only one ammonia data point available, so the 99th percentile of the ammonia discharges is estimated by multiplying the maximum reported effluent concentration by a "reasonable potential multiplier" (RPM). The RPM is the ratio of the 99th percentile concentration to the maximum reported effluent concentration. The RPM is calculated from the coefficient of variation (CV) of the data and the number of data points. The CV is defined as the ratio of the standard deviation of the data set to the mean, but when fewer than 10 data points are available, the TSD recommends making the assumption that the CV is equal to 0.6.

Once the CV and the number of samples are known, the reasonable potential multiplier can be obtained from Table 3-1 of the TSD (Page 54). The reasonable potential multiplier for a single effluent sample, an assumed CV of 0.6, and at the 99% confidence level and 99th percentile probability basis is 13.2. For ammonia, the maximum projected effluent concentration is

$$13.2 \times 1.29 \text{ mg/L} = 17.0 \text{ mg/L} \qquad \text{(Equation C-7)}$$

C. Maximum Projected Receiving Water Concentration

The discharge has reasonable potential to cause or contribute to an excursion above water quality criteria if the maximum projected concentration of the pollutant at the edge of the mixing zone exceeds the most stringent criterion for that pollutant. The maximum projected receiving water concentration is calculated from Equation C-6:

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

For ammonia in outfall 001, for the season of May thorough October, the acute receiving water concentration is, in milligrams per liter:

$$C_d = \left[\frac{17.0 - 0.02}{16.3}\right] + 0.02 = 1.1$$

For ammonia in outfall 001, for the season of May thorough October, the chronic receiving water concentration is, in milligrams per liter:

$$C_d = \left[\frac{17.0 - 0.02}{19.9}\right] + 0.02 = 0.87$$

The acute and chronic water quality criteria are 5.62 and 1.65 mg/L, respectively. Because the maximum projected receiving water concentrations are less than the criteria, the discharge does not have the reasonable potential to cause or contribute to excursions above water quality standards for ammonia. Therefore, a water quality-based effluent limit is not required.

Tables C-2 and C-3, below, summarize the reasonable potential calculations for chlorine and ammonia.

Reasonable Potential Calculations - Bennett Lumber Products – Outfall 001

Season	Acute DF	Chronic DF	Ammonia DF
Nov - April	19.4	29.8	43.3
May - October	16.3	19.9	33.9

Maximum Projected Effluent Concentration Calculations

	Ammonia OF 001 (mg/L)	Temperature (*C)
Data Source	Effluent	Prev. Lim
Maximum Reported Effluent Conc.	1.3	
Number of samples (n)	1	
Coefficient of Variation (CV, assume 0.6 if n<10)	0.60	
Reasonable Potential Multiplier (RPM)	13.2	

Reasonable Potential Calculations - Bennett Lumber Products – Outfall 001			
Season	Acute DF	Chronic DF	Ammonia DF
Nov - April	19.4	29.8	43.3
May - October	16.3	19.9	33.9
Maximum Projected Effluent Concentration Calculations			
	Ammonia OF 001 (mg/L)	Temperature (*C)	
Maximum Projected Effluent Conc.	**17.0**	**27**	
Maximum Projected Receiving Water Concentration			
November - April			
Ambient Concentration	0.02	6.8	
Maximum Acute RWC	0.90	7.8	
Maximum Chronic/Single Value RWC	0.41	7.3	
Acute Aquatic Life Criterion	5.62	22.0	
Chronic Aquatic Life Criterion	2.43	19.0	
Most Stringent Single-Value Criterion	N/A	N/A	
Reasonable Potential?	**NO**	**NO**	
May - October			
Ambient Concentration	0.02	17.5	
Maximum Acute RWC	1.07	18.1	
Maximum Chronic/Single Value RWC	0.52	17.8	
Acute Aquatic Life Criterion	5.62	22.0	
Chronic Aquatic Life Criterion	1.65	19.0	
Most Stringent Single-Value Criterion	N/A	N/A	
Reasonable Potential?	**NO**	**NO**	

Reasonable Potential Calculations – Bennett Lumber Products – Outfall 002		
Season	Acute DF	Chronic DF
Full year	342	514
Chlorine		
Data Source		App
Maximum Projected Effluent Conc.		5000
Ambient Concentration		0
Maximum Acute RWC		14.62
Maximum Chronic/Single Value RWC		9.73
Acute Aquatic Life Criterion		19
Chronic Aquatic Life Criterion		11
Most Stringent Single-Value Criterion		N/A
Reasonable Potential?		**NO**

Appendix D: Reasonable Potential and Effluent Limit Calculations for pH

The following tables demonstrate how appropriate effluent limitations were determined 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 critical pHs for the lower pH limit are the minimum effluent pH limit and the 5th percentile ambient pH. The critical temperatures are the maximum ambient temperature and the 5th percentile effluent temperature for the low pH critical conditions. Once the ambient pH, temperature and alkalinity and effluent temperature and alkalinity were input into the spreadsheet, EPA adjusted the effluent pH in 0.1 standard unit intervals until the pH at the edge of the mixing zone was between 6.5 and 9.0 standard units, as required by the water quality standards. EPA did not evaluate effluent pHs above 9.0 standard units or below 6.0 standard units, because this is the range of the technology-based effluent limits for pH.

Table D-1: Reasonable Potential and Effluent Limit Calculations for pH

	Outfall 001 Nov - April	Outfall 001 May - Oct
Dilution Factor at Mixing Zone Boundary	29.8	19.9
1. UPSTREAM/BACKGROUND CHARACTERISTICS		
Temperature (deg C):	6.80	18.8
pH:	7.30	7.30
Alkalinity (mg CaCO3/L):	2.00	2.00
2. EFFLUENT CHARACTERISTICS		
Temperature (deg C):	17.00	17.00
pH:	**6.00**	**6.10**
Alkalinity (mg CaCO3/L):	22.00	22.00
OUTPUT		
1. IONIZATION CONSTANTS		
Upstream/Background pKa:	6.50	6.39
Effluent pKa:	6.40	6.40
2. IONIZATION FRACTIONS		
Upstream/Background Ionization Fraction:	0.86	0.89
Effluent Ionization Fraction:	0.28	0.33
3. TOTAL INORGANIC CARBON		
Upstream/Background Total Inorganic Carbon (mg CaCO3/L):	2.31	2.25
Effluent Total Inorganic Carbon (mg CaCO3/L):	77.78	66.31
4. CONDITIONS AT MIXING ZONE BOUNDARY		
Temperature (deg C):	7.14	18.71
Alkalinity (mg CaCO3/L):	2.67	3.01
Total Inorganic Carbon (mg CaCO3/L):	4.85	5.47
pKa:	6.49	6.39
pH at Mixing Zone Boundary:	**6.6**	**6.5**

Appendix E: Endangered Species Act

A. Introduction

The U.S. Environmental Protection Agency (EPA) has evaluated the potential impacts to federally listed endangered or threatened species that could result from the reissuance of the National Pollutant Discharge Elimination System (NPDES) permit to the Benner Lumber Products sawmill in Princeton, Idaho. The receiving water is the Palouse River, a tributary to the Snake River. The designated uses of the receiving water are cold water aquatic life and secondary contact recreation. The Palouse River is not listed on the State's 303(d) list of impaired water bodies.

Under the consultation process in Section 7 of the Endangered Species Act, federal agencies are required to prepare a BE to identify any potential impacts on endangered or threatened species resulting from federal permitting activities, and to consult with the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) if potential impacts are identified. In this case, EPA has determined that the discharges that the proposed permit would authorize will have no effect on any listed endangered or threatened species, therefore consultation is not required. EPA's rationale for the "no effect" determination is as follows.

Description of the Study Area

The Bennett Lumber Products sawmill is located within Latah County at an elevation of approximately 2,600 feet. The annual precipitation rate is approximately 24 inches, including 38 inches of snow (IDOC 2003a). Bennett Lumber Products, the Potlatch School District, Washington State University and the University of Idaho are the largest employers in the area (IDOC 2003a). Federal lands account for more than 53 percent of land ownership in Latah County while 30 percent of the county's lands are privately owned. Over 90 percent of the land in Latah County is considered forested with an additional 5 percent rangeland. Agricultural lands account for less than 3 percent (IDOC 2003b).

Description of the Facility

Bennett Lumber Products, Inc. owns and operates a sawmill near Princeton, Idaho. Bennett Lumber Products was incorporated in September of 1961. The sawmill existed at the site even before that date, when it was operated by the Boone Lumber Company. The wastewater discharges that the proposed permit would authorize consist of stormwater, boiler blowdown, kiln condensate, clarifier tank overflow, and wastewater associated with drinking water filtration.

Description of Permit Limits

The limits in the draft permit for the Bennett Lumber Products facility are technology-based for discharges of total suspended solids (TSS), pH, and temperature, and water quality-based for oil and grease and floating, suspended or submerged matter.

Threatened/Endangered Species Relevant to Permit

According to USFWS, the following species are listed as endangered, threatened, proposed and/or candidates for Latah County.

Listed Endangered:

- Gray Wolf (Canis lupus)

Listed Threatened:

- Canada lynx
- Bull trout
- Steelhead
- Spalding's catchfly
- Water Howellia

Methods for Determinations

EPA's approach to preparing this BE has been to initially document the occurrence of each listed species in the Subbasin. The focus has been on fish, because facility discharges are not considered potential threats to listed bird, mammal or plant species.

Summary of Determinations

Issuance of the NPDES permit will have no effect on any listed species.

B. Potential Impacts from the Discharges on Listed Species

Six threatened or endangered species could potentially occur within Latah County. None of the threats to the federally protected bird, mammal or plant species, or management actions identified by the USFWS are associated with the issuance of the NPDES permit for the Bennett Lumber Products sawmill. The following sections present general and chemical specific impacts to the listed aquatic species.

General Discussion

Steelhead and bull trout could potentially be found in Palouse River, which is the receiving water for the NPDES permittee addressed by this BE. The NOAA Fisheries assessment of impacts to steelhead in the Columbia River basin largely focuses on impacts from major dam operations. Other sources of effects include hatcheries and habitat effects from large-scale land disturbance. Impacts from wastewater discharges are not identified. Almost all of the recovery actions relate to addressing these activities in terms of reducing fine sediment delivery from land disturbance, removing fish barriers, and better management of dam operations (flow and temperature). The USFWS 2002 Bull Trout Recovery Plan for the Snake River Recovery Unit notes that the Palouse River and its tributaries do not currently support a bull trout population and does not target the Palouse River for recovery efforts.

C. Chemical-Specific Effects

The following subsections describe the characteristics of the permitted discharge from the Bennett Lumber Products mill and their potential effects on listed species. Overall, the Palouse River in the vicinity of the discharge is not listed as water quality impaired for any parameters. Since issuance of the permit will not change the current discharges, it is generally unlikely to cause degradation in water quality and associated impacts on listed species.

Suspended Solids (TSS)

The Idaho Water Quality Standards (IDAPA 58.01.02.200.08) provides a narrative water quality standard for sediment. Sediment shall not exceed quantities specified in Section 250, or in the absence of specific sediment criteria, quantities that impair designated beneficial uses. Other sources provide appropriate numeric limits and targets for suspended sediment. Suggested limits for suspended sediment have been developed by the European Inland Fisheries Advisory Commission and the National Academy of Sciences, and have been adopted by the State of Idaho in previous TMDLs. A limit of 25 mg/L of suspended sediment provides a high level of protection of aquatic organisms; 80 mg/L moderate protection; 400 mg/L low protection; and over 400 mg/L very low protection (USDA FS 1990b, Thurston et al. 1979).

Suspended solids from the discharge are highly unlikely to pose any risk or harm to aquatic life, including threatened or endangered salmonids in the region, for several reasons:

The flow diagram submitted by the facility indicates that effluent flows from outfall 001 will be higher from November through April, because during the balance of the year, the log sprinkling system recycles water from boiler blowdown and clarifier tank overflow. A review of effluent data submitted by the facility shows that the maximum effluent flow for outfall 001 reported for the season of November through April is 43,200 gallons per day, whereas as for May though October, the maximum flow is only 18,000 gallons per day. The 7Q10 river flow for November through April is 7.69 CFS; the 7Q10 for May through October is 2.11 CFS. Therefore, the seasonal effluent dilution ratios (receiving water flow : effluent flow) are 116:1 from November through April and 77:1 from May through October. These dilution factors incorporate all of the receiving stream flow. For the purposes of determining if the discharge had the reasonable potential to cause or contribute to excursions above water quality standards, EPA used only 25% of the receiving water flow, in compliance with the Idaho Water Quality Standards.

These conservative calculations assume that the effluent flow rate could be high when the river flow is at a 1-in-10 year low flow rate. The discharge from outfall 001 includes stormwater runoff, which is unlikely to occur at times of extreme low river flows, because both the river flow and the effluent flows will increase in response to wet-weather events.

The maximum daily effluent limit for TSS is 53 lb/day and the average discharge of TSS has been approximately 3 lb/day. The amount of receiving stream flow will instantaneously dilute and disperse any suspended solids resulting in a low concentration at any point in the stream. This concentration of TSS will be indistinguishable from natural background concentrations and harmless to aquatic life. Therefore the discharge of TSS will not affect listed species.

Chlorine

Chlorine has been shown to cause avoidance responses in fish (Heath 1995). In freshwater, residual chlorine is composed of both free chlorine (made up of hypochlorous acid and hypochlorite ions) and combined chlorine (primarily made up of monochloramine). Free chlorine is more toxic than the combined form, and fish avoid it at lower concentrations (Cherry et al., 1979). Both marine and freshwater fish species have been shown to avoid chlorine at concentrations well below the lethal level (but it is important to understand that temperature, body size, and time of exposure can influence the organism's response). The discharge from outfall 002 may contain chlorine originating from the on-site drinking water filtration facility.

To minimize the potential effects on desirable species of aquatic life from chlorine discharge into receiving waters, EPA (1986) established criteria for chlorine at 11 ug/L as a 4-day average and 19 ug/L as a 1-hour average. Idaho's water quality criteria for chlorine are equivalent to that established by EPA for residual chlorine in all waters of the State for the protection of aquatic life.

EPA has determined that the discharge from Outfall 002 does not have the reasonable potential to cause or contribute to excursions above water quality standards for total residual chlorine, with a mixing zone that takes into account the allowed 25 percent of the stream flow.

In addition, chlorine dissipates very quickly (within minutes) and does not bioaccumulate or cause chronic toxicity problems. Potential acute effects of chlorine are extremely low because of the high instantaneous dilution that occurs when the effluent is discharged. With the very quick dissipation of chlorine and the large instantaneous dilution in the receiving stream, only a very small area near the discharge point would have even marginally toxic concentrations of chlorine at any given time. Fish such as salmonids are adept at sensing and avoiding very low (subacute) concentrations of chlorine. Thus, even if there was a small area of relatively higher chlorine concentration near the discharge point in the river, fish would easily avoid the area.

The extremely small area of somewhat higher chlorine concentration in the stream, if any, will have no effect on threatened or endangered fish populations (or any other aquatic species) maintenance, reproduction, or growth.

Ammonia

Ammonia is not limited in the permit, because EPA has determined that the ammonia in the facility's discharge does not have the reasonable potential to cause or contribute to excursions above water quality standards for ammonia. As such, the ammonia in the facility's discharge will not have any effect on aquatic life.

Ammonia toxicity is related to the unionized fraction, which increases pH and temperature increase. The maximum pH recorded by the USGS in the Palouse River upstream of the discharge is only 8.0 standard units. The flows from the facility's outfalls are insignificant relative to the river flows, therefore, the discharges are not likely to influence the pH of the receiving water. The unionized fraction of ammonia will be relatively low (i.e., most of the ammonia is in an ionized or non-toxic state). Therefore, the ammonia in the discharge will not cause toxicity.

The concentration of ammonia at any point in the river will be low given the dilution experienced by the effluent. The instantaneous dilution would also negate any potentially higher effluent pH on ammonia toxicity; ammonia speciation and toxicity will be driven by the stream pH not the effluent pH because stream flow is so much greater.

Fish, such as the listed species, are adept at sensing and avoiding very low concentrations of ammonia. Thus, even if there was a small area of higher ammonia concentration, fish could easily avoid it. In addition, fish have been reported to have the ability to enter waters that contain acutely toxic concentrations of ammonia without suffering any obvious long-term effects, as long as the trips are followed by periods in which the fish are in waters that contain ammonia concentrations below acute toxicity levels (Thurston et al. 1981). The low ammonia

concentrations in the effluent vicinity and the extremely small effected area, if any, would not impact these fish populations because critical habitat would not be affected.

Indirect effects of ammonia, such as nutrient enrichment for primary producers, would also be insignificant because of the large instantaneous dilution of the effluents. This permit includes both ammonia monitoring of the effluent to verify that it is not causing any adverse water quality impacts. If this monitoring shows elevated ammonia levels, EPA will include effluent limits for ammonia when the permit is reissued.

pH

In 1969, the European Inland Fisheries Advisory Commission (EIFAC) concluded that pH values ranging from 5.0 to 6.0 are unlikely to harm any species unless either the concentration of free carbon dioxide exceeds 20 parts per million (ppm) or the water contains iron salts precipitated as ferric hydroxide, a compound of unknown toxicity. pH values ranging from 6.0 to 6.5 are unlikely to harm fish unless free carbon dioxide is present in excess of 100 ppm, while pH values ranging from 6.5 to 9.0 are harmless to fish, although the toxicity of other compounds may be affected by changes within this range. These and other studies evaluating the effects of pH on various fish species and macroinvertebrates led EPA (1986) to conclude that a pH range of 6.5 to 9.0 appears to provide adequate protection for the life of freshwater fish and bottom dwelling invertebrates. Idaho's water quality criterion for pH is equal to this range.

The pH of the Palouse River upstream of the discharge has ranged between 7.3 and 8.0 standard units, well within the range of the water quality criteria. EPA has determined that the discharges from the facility will not cause or contribute to nonattainment of water quality standards for pH. As such, the discharges will not have any effect on listed species.

Oxygen Demanding Materials and Dissolved Oxygen

The discharges from the Bennett Lumber Products facility are not expected to contain BOD in significant quantities. The permit requires monitoring of all outfalls for five-day biochemical oxygen demand (BOD_5) or chemical oxygen demand (COD) for each outfall.

Temperature

The Bull Trout Recovery Plan for the Snake River Recovery Unit identifies the need to address temperature-related effects. The permit contains a temperature effluent limit for Outfall 001 of 27ºC. The maximum effluent temperature reported by Bennett, out of a total of 36 samples from DMRs and the 1994 application, was 21ºC. A reasonable potential analysis has shown that a discharge in compliance with the 27ºC effluent limit will not cause or contribute to excursions above water quality standards for temperature. Much like ammonia and the other parameters discussed above, the prevailing temperature conditions near the discharge point will be driven overwhelmingly by the ambient stream conditions because the effluent is such a small proportion of the total flow. Therefore, temperature effects of the effluent, if any, will be limited to such a small area as to be negligible in terms of fish population survival, reproduction, and growth.

Nutrients

In the Western United States, phosphorus is the nutrient that most often limits production of aquatic plants and algae. Nitrogen (N) to phosphorus (P) ratios are often used to determine the limiting factor in aquatic vegetation production and biomass.

The Bennett Lumber Products facility is not expected discharge nutrients in significant quantities. The Palouse River is not listed as impaired for nutrients and, with the available dilution, nutrient loadings from the facility would be indistinguishable from background conditions.

D. Conclusions

The BE process concludes that the action of permit issuance for the City of Potlatch wastewater treatment plant in the Snake River Subbasin will have no effect on any of the listed threatened and endangered species.

E. Literature Cited

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