

APPENDIX B
NPDES PERMIT

Page 1 of 30
Permit No.: WA-002237-3
Issuance Date: April 16, 2008
Effective Date: June 1, 2008
Expiration Date: May 31, 2013

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
WASTE DISCHARGE PERMIT NO. WA-002237-3

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
YAKIMA, WASHINGTON 98902

In compliance with the provisions of
The State of Washington Water Pollution Control Law
Chapter 90.48 Revised Code of Washington
and
The Federal Water Pollution Control Act
(The Clean Water Act)
Title 33 United States Code, Section 1342 et seq.

CITY OF BINGEN
112 NORTH ASH
PO BOX 607
BINGEN, WASHINGTON 98605

Plant Location:
208 Marina Drive, Bingen, WA 98605

Receiving Water:
Columbia River

Water Body I.D. No.:
NN57SG (WA-CR-1020)

Discharge Location:
Latitude: 47° 42' 27" N
Longitude: 121° 28' 02" W

Plant Type:
Activated sludge oxidation ditch

is authorized to discharge in accordance with the special and general conditions that follow.

Denise E. Mills, LHG
Section Manager
Water Quality Program
Central Regional Office
Washington State Department of Ecology

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SUMMARY OF PERMIT REPORT SUBMITTALS

Refer to the Special and General Conditions of this permit for additional submittal requirements.

Permit Section	Submittal	Frequency	First Submittal Date
S3.	Discharge Monitoring Report	Monthly	July 15, 2008
S3.E	Noncompliance Notification	As necessary	
S4.B	Plans for Maintaining Adequate Capacity	As necessary	
S4.D	Notification of New or Altered Sources	As necessary	
S4.E	Infiltration and Inflow Evaluation	1/permit cycle	December 15, 2011
S4.F	Waste load Assessment	Annually	December 15, 2009 (Initial)
S5.G	Operations and Maintenance Training Manual	1/permit cycle	December 15, 2010
S6.D	List of Industrial Users	Annually	December 15, 2008
S8.	Application for permit renewal	1/permit cycle	May 31, 2012
G1.	Notice of Change in Authorization	as necessary	
G4.	Reporting Planned Changes	As necessary	
G5.	Engineering Report for Construction or Modification Activities	As necessary	
G21.	Reporting Anticipated Non-compliance	As necessary	
G22.	Reporting Other Information	As necessary	
G23.	Contract Submittal	As necessary	

SPECIAL CONDITIONS

In this permit the word must denotes an action that is mandatory and is equivalent to the word shall used in previous permits.

S1. DISCHARGE LIMITATIONS

A. Effluent Limitations

All discharges and activities authorized by this permit must comply with the terms and conditions of this permit. The discharge of any of the following pollutants more frequently than, or at a level in excess of, that identified and authorized by this permit constitutes a violation of the terms and conditions of this permit.

Beginning on **June 1, 2008** and lasting through **May 31, 2013**, the permittee may discharge municipal wastewater to the Columbia River at the permitted location subject to compliance with the following limitations:

EFFLUENT LIMITATIONS^a: OUTFALL # 001		
Parameter	Average Monthly	Maximum Average Weekly
Biochemical Oxygen Demand, 5 day (BOD₅)	30 mg/L, 197 lbs/day 85% removal of influent BOD ₅	45 mg/L, 296 lbs/day
Total Suspended Solids (TSS)	30 mg/L, 197 lbs/day 85% removal of influent TSS	45 mg/L, 296 lbs/day
Fecal Coliform Bacteria	200 /100 mL	400 /100 mL
pH^b	Daily minimum is equal to or greater than 6.0 and the daily maximum is less than or equal to 9.0.	
Parameter	Average Monthly	Maximum Daily^c
Temperature	23.8 °C	25.0 °C
Total Ammonia (as NH₃-N)	10.0 mg/L	10.2 mg/L
^a The average monthly and weekly effluent limitations equal the arithmetic mean of the samples taken. The average monthly and weekly limitations for fecal coliform are equal to the geometric mean of the samples taken.		
^b Indicates the range of permitted values. The permittee must report the instantaneous maximum and minimum pH monthly. Do not average pH values.		
^c The maximum daily effluent limitation is defined as the highest allowable daily discharge. The daily discharge means the discharge of a pollutant measured during a calendar day. For pollutants with limitations expressed in units of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the day. For other units of measurement, the daily discharge is the average measurement of the pollutant over the day. This does not apply to pH.		

B. Mixing Zone Descriptions

The following paragraphs define the maximum boundaries of the mixing zones:

1. Chronic Mixing Zone

WAC 173-201A-400(7)(a) specifies mixing zones must not extend downstream from the discharge point for a distance greater than 300 feet plus the depth of water. The chronic mixing zone extends downstream 319.6 feet. At that distance the mixing zone was estimated to be 6.3 feet wide by 3.15 feet high.

2. Acute Mixing Zone

WAC 173-201A-400(8)(a) specifies that a zone where the acute toxics criteria may be exceeded must not extend downstream beyond 10% of the distance of the chronic zone. The acute mixing zone extends downstream 32 feet. At that distance the mixing zone was estimated to be 2.5 feet wide by 1.25 feet high.

	Available Dilution (dilution factor)
Acute Aquatic Life Criteria	4.0
Chronic Aquatic Life Criteria	59.1
Human Health Criteria - Non-carcinogen	59.7

S2. MONITORING REQUIREMENTS

A. Monitoring Schedule

The permittee must monitor in accordance with the following schedule:

Category	Parameter	Units	Sample Point	Minimum Sampling Frequency	Sample Type
Wastewater Influent	BOD ₅	mg/L	Influent	1/week ^a	24-hr Composite ^b
"	TSS	mg/L	"	2/week ^c	24-hr Composite
"	Flow	MGD	"	Continuous ^d	Measurement
Wastewater Effluent ^e	BOD ₅	mg/L	Effluent	1/week	24-hr Composite
"	BOD ₅	lbs/day	"	1/week	Calculation ^f
"	BOD ₅	% removal ^g	"	Monthly ^h	Calculation
"	TSS	mg/L	"	2/week	24-hr Composite
"	TSS	lbs/day	"	2/week	Calculation
"	TSS	% removal	"	Monthly	Calculation
"	pH	Standard Units	"	5/week ⁱ	Grab ^j
"	Dissolved Oxygen	mg/L	"	2/week	Grab
"	Temperature ^k	°C	"	Continuous	Measurement
"	Fecal Coliform Bacteria	Colonies/100 mL	"	2/week	Grab
"	Total Ammonia	mg/L	"	Monthly	24-hr Composite
Sludge	As specified in section S7				

Monitoring Schedule, Continued

Category	Parameter	Units	Sample Point	Minimum Sampling Frequency	Sample Type
Reapplication Monitoring	Nitrate plus Nitrite N	mg/L N	Effluent	Yearly ¹	24-hr Composite
"	Oil and Grease	mg/L	"	Yearly	24-hr Composite
"	Phosphorus (Total)	mg/L P	"	Yearly	24-hr Composite
"	Alkalinity	mg/L	"	Yearly	24-hr Composite
"	Total Hardness	mg/L	"	Yearly	24-hr Composite

Footnotes:

- a "1/week" means once per week on at least two alternate days.
- b "2/week" means two times during each calendar week, except weekends and holidays.
- c 24-hour composite means a series of individual samples collected over a 24-hour period into a single container, and analyzed as one sample.
- d "Continuous" means uninterrupted except for brief lengths of time for calibration, for power failure, or for unanticipated equipment repair or maintenance. Sampling shall be taken six times per day when continuous monitoring is not possible. Daily maximum and monthly average must be calculated for the monthly report.
- e "Wastewater Effluent" means wastewater which is exiting, or has exited, the last treatment process or operation. Typically, this is after or at the exit from the disinfection process.
- f "Calculation" means figured concurrently with the respective sample, using the following formula: Concentration (in mg/L) X Flow (in MGD) X Conversion Factor (8.34) = lbs/day.
- g Percent (%) removal of BOD and TSS shall be calculated with the following algorithm (concentrations in mg/L): (Average Monthly Influent Concentration - Average Monthly Effluent Concentration)/Average Monthly Influent Concentration.
- h "Monthly" means once every calendar month during alternate weeks.
- i "5/week" means five times during each calendar week, except weekends and holidays.
- j "Grab" means an individual sample collected over a 15 minute, or less, period
- k For temperature, the permittees must report the highest value each day. The monitoring system must record values every thirty minutes or less. Chart recorders may be used, with the peak temperature reported as read from the chart. Exclude any false readings caused during probe maintenance. Keep a record of each day's chart or temperature readings.
- l "Yearly" means once each year during alternate quarters.

B. Sampling and Analytical Procedures

Samples and measurements taken to meet the requirements of this permit must be representative of the volume and nature of the monitored parameters. The permittee must conduct representative sampling of any unusual discharge or discharge condition, including bypasses, upsets and maintenance-related conditions that may affect effluent quality.

Sampling and analytical methods used to meet the monitoring requirements specified in this permit must conform to the latest revision of the *Guidelines Establishing Test Procedures for the Analysis of Pollutants* contained in 40 CFR Part 136.

C. Flow Measurement

The permittee must select and use appropriate flow measurement devices and methods consistent with accepted scientific practices. The permittee must install, calibrate, and maintain the flow devices. This work is necessary to ensure that the accuracy of the measurements are consistent with the accepted industry standard and the manufacturers recommendation for that type of device. The permittee must maintain calibration records for at least three years.

D. Laboratory Accreditation

The permittee must ensure that all monitoring data required by Ecology is prepared by a laboratory registered or accredited under the provisions of Chapter 173-50 WAC, *Accreditation of Environmental Laboratories*. Flow, temperature, settleable solids, conductivity, pH, and internal process control parameters are exempt from this requirement. Conductivity and pH must be accredited if the laboratory must otherwise be registered or accredited. Ecology exempts crops, soils, and hazardous waste data from this requirement pending accreditation of laboratories for analysis of these media.

S3. REPORTING AND RECORDING REQUIREMENTS

The permittee must monitor and report in accordance with the following conditions. Falsification of information submitted to Ecology is a violation of the terms and conditions of this permit.

A. Reporting

The first monitoring period begins on **June 1, 2008**. The permittee must submit monitoring results each month. The permittee must summarize, report, and submit monitoring data obtained during each monitoring period on a Discharge Monitoring Report (DMR) form provided, or otherwise approved, by Ecology. The permittee must

ensure that DMR forms are postmarked or received by Ecology no later than the 15th day of the month following the completed monitoring period, unless otherwise specified in this permit.

The permittee must send the reports to:

**Permit Data Systems Manager
Department of Ecology
Central Regional Office
15 West Yakima Avenue, Suite 200
Yakima, Washington 98902**

The permittee must submit DMR forms monthly whether or not the facility was discharging. If there was no discharge during a given monitoring period, the permittee must submit the form as required with the words "no discharge" entered in place of the monitoring results.

B. Records Retention

The permittee must retain records of all monitoring information for a minimum of three years. Such information must include all calibration and maintenance records and all original recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit. During the course of any unresolved litigation regarding the discharge of pollutants by the permittee or when requested by Ecology, the permittee must extend this period of retention.

C. Recording of Results

For each measurement or sample taken, the permittee must record the following information:

- (1) date, exact place, method, and time of sampling or measurement;
- (2) individual who performed the sampling or measurement;
- (3) dates the analyses were performed;
- (4) individual who performed the analyses;
- (5) analytical techniques or methods used; and
- (6) results of all analyses.

D. Additional Monitoring by the Permittee

If the permittee monitors any pollutant more frequently than required by Special Condition S2 of this permit, then the permittee must include the results of such monitoring in the calculation and reporting of the data submitted in the DMR.

E. Notice of Noncompliance Reporting

The permittee must take the following action upon violation of any permit condition:

Immediately take action to stop, contain, and cleanup unauthorized discharges or otherwise stop the noncompliance and correct the problem and, if applicable, immediately repeat sampling and analysis. The results of any repeat sampling must be submitted to Ecology within 30 days of sampling.

1. Immediate Noncompliance Notification

Any failure of the disinfection system, must be reported immediately to the Department of Ecology's Regional Office 24-hr. number 509/575-2490.

Any failure of the disinfection system, any collection system overflows, or any plant bypass discharging to a water body used as a source of drinking water must be reported immediately to the Department of Ecology and the Department of Health, Drinking Water Program.

The Department of Health's Drinking Water Program number is (360) 521-0323 (business hours) or (360) 481-4901 (after business hours).

2. Twenty four hour Noncompliance Notification

The permittee must report the following occurrences of noncompliance by telephone, to Ecology at 509/575-2490, within 24 hours from the time the permittee becomes aware of any of the following circumstances:

- a. any noncompliance that may endanger health or the environment, unless previously reported under subpart 1. above,
- b. any unanticipated **bypass** that exceeds any effluent limitation in the permit (See Part S4.B, "Bypass Procedures");
- c. any **upset** that exceeds any effluent limitation in the permit (See G15, "Upset");
- d. any violation of a maximum daily or instantaneous maximum discharge limitation for any of the pollutants in Section S1.A of this permit; or

- e. any overflow prior to the treatment works, whether or not such overflow endangers health or the environment or exceeds any effluent limitation in the permit.

3. Report Within Five Days

The permittee must also provide a written submission within five days of the time that the permittee becomes aware of any event required to be reported under subparts 1 or 2, above. The written submission must contain:

- a. a description of the noncompliance and its cause;
- b. the period of noncompliance, including exact dates and times;
- c. the estimated time noncompliance is expected to continue if it has not been corrected;
- d. steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance; and
- e. if the non compliance involves an overflow prior to the treatment works, an estimate of the quantity (in gallons) of untreated overflow.

4. Waiver of Written Reports

Ecology may waive the written report required in subpart 3 above on a case-by-case basis upon request, if a timely oral report has been received.

5. Report Submittal

Reports must be submitted to the address in S3 ("REPORTING AND RECORDKEEPING REQUIREMENTS").

F. Other Noncompliance Reporting

The permittee must report all instances of noncompliance, not required to be reported immediately or within 24 hours, at the time that monitoring reports for S3.A ("Reporting") are submitted. The reports must contain the information listed in paragraph E3 above. Compliance with these requirements does not relieve the Permittee from responsibility to maintain continuous compliance with the terms and conditions of this permit or the resulting liability for failure to comply.

The spill of oil or hazardous materials **must** be reported in accordance with the instructions obtained at the following website:

<http://www.ecy.wa.gov/programs/spills/other/reportaspill.htm>

G. Maintaining a Copy of This Permit

The permittee must keep a copy of this permit at the facility and make it available upon request to Department of Ecology inspectors.

S4. FACILITY LOADING

A. Design Criteria

The flows or waste loads for the permitted facility must not exceed the following design criteria:

- Average daily flow: 0.8 MGD
- Maximum peak flow: 2.0 MGD
- BOD₅ loading for maximum month: 1,311 lbs/day
- TSS loading for maximum month: 1,311 lbs/day

B. Plans for Maintaining Adequate Capacity

The permittee must submit a plan and a schedule for continuing to maintain capacity to Ecology when:

1. The actual flow or waste load reaches 85 percent of any one of the design criteria in S4.A for three consecutive months; or
2. The projected increase would reach design capacity within five years, whichever occurs first.

The plan and schedule for continuing to maintain capacity must be sufficient to achieve the effluent limitations and other conditions of this permit. This plan must identify any of the following actions or any other actions necessary to meet the objective of maintaining capacity.

- a. Analysis of the present design including the introduction of any process modifications that would establish the ability of the existing facility to achieve the effluent limits and other requirements of this permit at specific levels in excess of the existing design criteria specified in paragraph A above.
- b. Reduction or elimination of excessive infiltration and inflow of uncontaminated ground and surface water into the sewer system.
- c. Limitation on future sewer extensions or connections or additional waste loads.
- d. Modification or expansion of facilities necessary to accommodate increased flow or waste load.

- e. Reduction of industrial or commercial flows or waste loads to allow for increasing sanitary flow or waste load.
4. Engineering documents associated with the plan must meet the requirements of WAC 173-240-060, "Engineering Report," and be approved by Ecology prior to any construction.
5. If the permittee intends to apply for State or Federal funding for the design or construction of a facility project, the plan must also meet the requirements of a "Facility Plan" as described in 40 CFR 35.2030. The plan must specify any contracts, ordinances, methods for financing, or other arrangements necessary to achieve this objective.

C. Duty to Mitigate

The permittee must take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit that has a reasonable likelihood of adversely affecting human health or the environment

D. Notification of New or Altered Sources

1. The permittee must submit written notice to Ecology whenever any new discharge or a substantial change in volume or character of an existing discharge into the POTW is proposed which:
 - a. would interfere with the operation of, or exceed the design capacity of, any portion of the POTW;
 - b. is not part of an approved general sewer plan or approved plans and specifications; or
 - c. would be subject to pretreatment standards under 40 CFR Part 403 and Section 307(b) of the Clean Water Act.
2. This notice must include an evaluation of the POTW's ability to adequately transport and treat the added flow and/or waste load, the quality and volume of effluent to be discharged to the POTW, and the anticipated impact on the permittee's effluent [40 CFR 122.42(b)].

E. Infiltration and Inflow Evaluation

1. The permittee must conduct an infiltration and inflow evaluation. Refer to the U.S. EPA publication, *I/I Analysis and Project Certification*, available as Publication No. 97-03 at: Publications Office, Department of Ecology, PO Box 47600, Olympia, WA, 98504-7600 or at

<http://www.ecy.wa.gov/programs/wq/permits/guidance.html>. The permittee may use plant monitoring records to assess measurable infiltration and inflow.

2. The permittee must prepare a report which summarizes any measurable infiltration and inflow. If infiltration and inflow have increased by more than 15 percent from that found in the previous report based on equivalent rainfall, the report must contain a plan and a schedule for:
 - a. Locating the sources of infiltration and inflow; and
 - b. Fixing collection system leaks.

The report must be received by **December 15, 2011**.

F. Waste Load Assessment

1. The permittee must conduct an annual assessment of its flow and waste load and submit a report to Ecology by **December 15, 2009**, and annually thereafter.
2. The report must contain the following: an indication of compliance or noncompliance with the permit effluent limitations; a comparison between the existing and design monthly average, peak flows, BOD, and total suspended solids loadings; and (except for the first report) the percentage change in these parameters since the previous report.
3. The report must also state the present and design population or population equivalent, projected population growth rate, and the estimated date upon which the design capacity is projected to be reached, according to the most restrictive of the parameters above.
4. Ecology may modify the interval for review and reporting if it determines that a different frequency is sufficient.

S5. OPERATION AND MAINTENANCE

The permittee must at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) that are installed to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance also includes keeping a daily operation logbook (paper or electronic), adequate laboratory controls and appropriate quality assurance procedures. This provision of the permit requires the permittee to operate back-up or auxiliary facilities or similar systems only when the operation is necessary to achieve compliance with the conditions of this permit.

A. Certified Operator

This permitted facility must be operated by an operator certified by the state of Washington for at least a Class II plant. This operator must be in responsible charge of the day-to-day operation of the wastewater treatment plant. An operator certified for at least a Class I plant must be in charge during all regularly scheduled shifts.

B. Operation and Maintenance (O & M) Program

1. The permittee must institute an adequate operation and maintenance program for the entire sewage system.
2. The permittee must keep maintenance records on all major electrical and mechanical components of the treatment plant, as well as the sewage system and pumping stations. Such records must clearly specify the frequency and type of maintenance recommended by the manufacturer and must show the frequency and type of maintenance performed.
3. The permittee must make maintenance records available for inspection at all times.

C. Short-term Reduction

If a permittee contemplates a reduction in the level of treatment that would cause a violation of permit discharge limitations on a short-term basis for any reason, and such reduction cannot be avoided, the permittee must :

1. Give written notification to Ecology, if possible, 30 days prior to such activities,
2. The notice must detail the reasons for, length of time of, and the potential effects of the reduced level of treatment.
3. This notification does not relieve the permittee of its obligations under this permit.

D. Electrical Power Failure

The permittee must ensure that adequate safeguards prevent the discharge of untreated wastes or wastes not treated in accordance with the requirements of this permit during electrical power failure at the treatment plant and/or sewage lift stations. Adequate safeguards include but are not limited to: alternate power sources, standby generator(s), or retention of inadequately treated wastes.

The permittee must maintain Reliability Class II (EPA 430/9-74-001) at the wastewater treatment plant, Reliability Class II requires a backup power source sufficient to operate

all vital components and critical lighting and ventilation during peak wastewater flow conditions. Vital components used to support the secondary processes (i.e., mechanical aerators or aeration basin air compressors) need not be operable to full levels of treatment, but must be sufficient to maintain the biota.

E. Prevent Connection of Inflow

The permittee must strictly enforce its sewer ordinances and not allow the connection of inflow (roof drains, foundation drains, etc.) to the sanitary sewer system.

F. Bypass Procedures

Bypass is the intentional diversion of waste streams from any portion of a treatment facility. This permit prohibits bypass. Ecology may take enforcement action against a Permittee for bypass unless one of the following circumstances (1, 2, or 3) is applicable.

1. Bypass is for essential maintenance without the potential to cause violation of permit limits or conditions.

This permit authorizes a bypass if it allows for essential maintenance and does not have the potential to cause violations of limitations or other conditions of this permit, or adversely impact public health as determined by Ecology prior to the bypass. The permittee must submit prior notice, if possible, at least ten (10) days before the date of the bypass.

2. Bypass is unavoidable, unanticipated and results in noncompliance with the conditions of this permit.

This permit authorizes such a bypass only if:

- a. Bypass is unavoidable to prevent loss of life, personal injury, or severe property damage. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which would cause them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass.
- b. No feasible alternatives to the bypass exist, such as:
 - i. the use of auxiliary treatment facilities,
 - ii. retention of untreated wastes,
 - iii. stopping production,

- iv. maintenance during normal periods of equipment downtime, but not if adequate backup equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass
 - v. or transport of untreated wastes to another treatment facility..
 - c. The permittee has properly notified Ecology of the bypass as required in condition S3.E of this permit.
- 3. If bypass is anticipated and has the potential to result in noncompliance of this permit.
 - a. The permittee must notify Ecology at least 30 days before the planned date of bypass. The notice must contain:
 - i. a description of the bypass and its cause;
 - ii. an analysis of all known alternatives which would eliminate, reduce, or mitigate the need for bypassing;
 - iii. a cost-effectiveness analysis of alternatives including comparative resource damage assessment;
 - iv. the minimum and maximum duration of bypass under each alternative;
 - v. a recommendation as to the preferred alternative for conducting the bypass;
 - vi. the projected date of bypass initiation;
 - vii. a statement of compliance with SEPA;
 - viii. a request for modification of water quality standards as provided for in WAC 173-201A-410, if an exceedance of any water quality standard is anticipated; and
 - ix. details of the steps taken or planned to reduce, eliminate, and prevent reoccurrence of the bypass.
 - b. For probable construction bypasses, the permittee must notify Ecology of the need to bypass as early in the planning process as possible. The permittee must consider the analysis required above during preparation of the engineering report or facilities plan and plans and specifications and must include these to the extent practical. In cases where the permittee determines the probable need to bypass early, the permittee must continue to analyze conditions up to and including the construction period in an effort to minimize or eliminate the bypass.
 - c. Ecology will consider the following prior to issuing an administrative order for this type of bypass:
 - i. If the bypass is necessary to perform construction or maintenance-related activities essential to meet the requirements of this permit.

- ii. If feasible alternatives to bypass exist, such as the use of auxiliary treatment facilities, retention of untreated wastes, stopping production, maintenance during normal periods of equipment down time, or transport of untreated wastes to another treatment facility.
- iii. If the permittee planned and scheduled the bypass to minimize adverse effects on the public and the environment.

After consideration of the above and the adverse effects of the proposed bypass and any other relevant factors, Ecology will approve or deny the request. The public will be given an opportunity to comment on bypass incidents of significant duration, to the extent feasible. Ecology will approve of a request to bypass by issuing an administrative order under RCW 90.48.120.

G. Operations and Maintenance Manual

The permittee must keep the approved Operations and Maintenance Manual available at the treatment plant and all operators must follow the instructions and procedures of this manual.

The permittee must review the O&M Manual at least annually. Whenever the permittee makes substantial changes or updates to the O&M Manual the permittee must submit the changes to Ecology for review and approval.

The permittee must prepare a supplemental Operations and Maintenance Training Manual and submit it to Ecology for approval by **December 15, 2010**. The O&M Training Manual must include:

1. Emergency procedures for plant shutdown and cleanup in the event of wastewater system upset or failure.
2. Wastewater system maintenance procedures that contribute to the generation of process wastewater and sludge quality and quantity.
3. Any directions to maintenance staff when cleaning, or maintaining other equipment or performing other tasks which are necessary to protect the operation of the wastewater system (for example, defining maximum allowable discharge rate for draining a tank, blocking all floor drains before beginning the overhaul of a stationary engine.)
4. The treatment plant process control monitoring schedule.
5. Sampling and analysis procedures.

6. Daily and weekly tasks such as: hose-downs, accumulation checks, cleanings, inspections, RAS/WAS pump checks, and UV system checks; and, clarifier flow, sludge build-up, operation/rotation, and torque.

Requirements for O&M manuals can be found in chapter 173-240 WAC.

S6. PRETREATMENT

A. General Requirements

The permittee must work with Ecology to ensure that all commercial and industrial users of the publicly owned treatment works (POTW) comply with the pretreatment regulations in 40 CFR Part 403 and any additional regulations that may be promulgated under Section 307(b) (pretreatment) and 308 (reporting) of the Federal Clean Water Act.

B. Wastewater Discharge Permit Required

The permittee must not allow any significant industrial users (SIUs) to discharge wastewater to the sewer systems discharging to the Bingen POTW until such user has received a wastewater discharge permit from Ecology in accordance with Chapter 90.48 RCW and Chapter 173-216 WAC.

C. Identification and Reporting of Existing, New, and Proposed Industrial Users

1. The permittee must take continuous, routine measures to identify all existing, new, and proposed SIUs and potential significant industrial users (PSIUs) discharging or proposing to discharge to the sewer systems discharging to the Bingen POTW (see Appendix B of the Fact Sheet for definitions).
2. Within 30 days of becoming aware of an unpermitted existing, new, or proposed industrial user who may be an SIU, the permittee must notify such user by registered mail that, if classified as an SIU, they must apply to Ecology and obtain a State Waste Discharge Permit. The permittee must send a copy of this notification letter to Ecology within this same 30-day period.
3. The permittee must also notify all Potential SIUs (PSIUs), as they are identified, that if their classification should change to an SIU, they must apply to Ecology for a State Waste Discharge Permit within 30 days of such change.

D. Annual Submittal of List of Industrial Users

The permittee must annually submit to Ecology a list summarizing all existing and proposed SIUs and PSIUs. The permittee must submit this list to Ecology by **December 15 of each year** of the permit.

E. Duty to Enforce Discharge Prohibitions

1. Under 40 CFR 403.5(a), the permittee must not authorize or knowingly allow the discharge of any pollutants into its POTW which cause pass through or interference, or which otherwise violate general or specific discharge prohibitions contained in 40 CFR Part 403.5 or WAC-173-216-060.
2. The permittee must not authorize or knowingly allow the introduction of any of the following into their treatment works:
 - a. Pollutants which create a fire or explosion hazard in the POTW (including, but not limited to waste streams with a closed cup flashpoint of less than 140 degrees Fahrenheit or 60 degrees Centigrade using the test methods specified in 40 CFR 261.21).
 - b. Pollutants which will cause corrosive structural damage to the POTW, but in no case discharges with pH lower than 5.0, or greater than 11.0 standard units, unless the works are specifically designed to accommodate such discharges.
 - c. Solid or viscous pollutants in amounts that could cause obstruction to the flow in sewers or otherwise interfere with the operation of the POTW.
 - d. Any pollutant, including oxygen demanding pollutants, (BOD, etc.) released in a discharge at a flow rate and/or pollutant concentration which will cause interference with the POTW.
 - e. Petroleum oil, nonbiodegradable cutting oil, or products of mineral origin in amounts that will cause interference or pass through.
 - f. Pollutants which result in the presence of toxic gases, vapors, or fumes within the POTW in a quantity which may cause acute worker health and safety problems.
 - g. Heat in amounts that will inhibit biological activity in the POTW resulting in interference but in no case heat in such quantities such that the temperature at the POTW headworks exceeds 40 degrees Centigrade (104 degrees Fahrenheit) unless Ecology, upon request of the permittee, approves, in writing, alternate temperature limits.
 - h. Any trucked or hauled pollutants, except at discharge points designated by the permittee.

- i. Wastewaters prohibited to be discharged to the POTW by the Dangerous Waste Regulations (Chapter 173-303 WAC), unless authorized under the Domestic Sewage Exclusion (WAC 173-303-071).
3. This Permit prohibits all of the following from discharge to the POTW unless approved in writing by Ecology under extraordinary circumstances (such as a lack of direct discharge alternatives due to combined sewer service or the need to augment sewage flows due to septic conditions):
 - a. Noncontact cooling water in significant volumes.
 - b. Stormwater, and other direct inflow sources.
 - c. Wastewaters significantly affecting system hydraulic loading, which do not require treatment, or would not be afforded a significant degree of treatment by the system.
 4. The permittee must notify Ecology if any industrial user violates the prohibitions listed in this section.

S7. RESIDUAL SOLIDS

Residual solids include screenings, grit, scum, primary sludge, waste activated sludge, and other solid waste. The permittee must store and handle all residual solids in a manner that prevents their entry into state ground or surface waters. The permittee must not discharge leachate from residual solids to state surface or ground waters.

Sampling and analysis of biosolids must be conducted as required by the permittees' General Permit for Biosolids Management.

S8. APPLICATION FOR PERMIT RENEWAL

The permittee must submit an application for renewal of this permit by **May 31, 2012**.

S9. TEMPERATURE REDUCTION STUDY

Submit a scope of work for an effluent temperature reduction study by **March 30, 2009**. Using information provided by Ecology and other available information, the study will identify temperature reduction best management practices and low-cost technology suitable for the Bingen POTW. The study does not need to be prepared by an engineer.

Submit the completed temperature reduction study to Ecology for approval by **November 1, 2009**.

GENERAL CONDITIONS

G1. SIGNATORY REQUIREMENTS

A. All applications, reports, or information submitted to Ecology must be signed and certified.

(a) In the case of corporations, by a responsible corporate officer.

For the purpose of this section, a responsible corporate officer means: (i) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

(b) In the case of a partnership, by a general partner.

(c) In the case of sole proprietorship, by the proprietor.

(d) In the case of a municipal, state, or other public facility, by either a principal executive officer or ranking elected official.

Applications for permits for domestic wastewater facilities that are either owned or operated by, or under contract to, a public entity shall be submitted by the public entity.

B. All reports required by this permit and other information requested by Ecology must be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

1. The authorization is made in writing by a person described above and submitted to Ecology.
2. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility, such as the position of plant manager, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.)

- C. Changes to authorization. If an authorization under paragraph B.2 above is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of paragraph B2 above must be submitted to Ecology prior to or together with any reports, information, or applications to be signed by an authorized representative.
- D. Certification. Any person signing a document under this section must make the following certification:

I certify under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

G2. RIGHT OF INSPECTION AND ENTRY

The permittee must allow an authorized representative of Ecology, upon the presentation of credentials and such other documents as may be required by law:

- A. To enter upon the premises where a discharge is located or where any records must be kept under the terms and conditions of this permit.
- B. To have access to and copy, at reasonable times and at reasonable cost, any records required to be kept under the terms and conditions of this permit.
- C. To inspect, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, methods, or operations regulated or required under this permit.
- D. To sample or monitor, at reasonable times, any substances or parameters at any location for purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act.

G3. PERMIT ACTIONS

This permit may be modified, revoked and reissued, or terminated either at the request of any interested person (including the permittee) or upon Ecology's initiative. However, the permit may only be modified, revoked and reissued, or terminated for the reasons specified in 40 CFR 122.62, 40 CFR 122.64 or WAC 173-220-150 according to the procedures of 40 CFR 124.5.

- A. The following are causes for terminating this permit during its term, or for denying a permit renewal application:
1. Violation of any permit term or condition.
 2. Obtaining a permit by misrepresentation or failure to disclose all relevant facts.
 3. A material change in quantity or type of waste disposal.
 4. A determination that the permitted activity endangers human health or the environment, or contributes to water quality standards violations and can only be regulated to acceptable levels by permit modification or termination.
 5. A change in any condition that requires either a temporary or permanent reduction, or elimination of any discharge or sludge use or disposal practice controlled by the permit.
 6. Nonpayment of fees assessed pursuant to RCW 90.48.465.
 7. Failure or refusal of the permittee to allow entry as required in RCW 90.48.090.
- B. The following are causes for modification but not revocation and reissuance except when the permittee requests or agrees:
1. A material change in the condition of the waters of the state.
 2. New information not available at the time of permit issuance that would have justified the application of different permit conditions.
 3. Material and substantial alterations or additions to the permitted facility or activities which occurred after this permit issuance.
 4. Promulgation of new or amended standards or regulations having a direct bearing upon permit conditions, or requiring permit revision.
 5. The permittee has requested a modification based on other rationale meeting the criteria of 40 CFR part 122.62.

6. Ecology has determined that good cause exists for modification of a compliance schedule, and the modification will not violate statutory deadlines.
 7. Incorporation of an approved local pretreatment program into a municipality's permit.
- C. The following are causes for modification or alternatively revocation and reissuance:
1. When cause exists for termination for reasons listed in A1 through A7 of this section, and Ecology determines that modification or revocation and reissuance is appropriate.
 2. When Ecology has received notification of a proposed transfer of the permit. A permit may also be modified to reflect a transfer after the effective date of an automatic transfer (General Condition G8) but will not be revoked and reissued after the effective date of the transfer except upon the request of the new permittee.

G4. REPORTING PLANNED CHANGES

The permittee must, as soon as possible, but no later than 60 days prior to the proposed changes, give notice to Ecology of planned physical alterations or additions to the permitted facility, production increases, or process modification which will result in: 1) the permitted facility being determined to be a new source pursuant to 40 CFR 122.29(b); 2) a significant change in the nature or an increase in quantity of pollutants discharged; or 3) a significant change in the permittee's sludge use or disposal practices. Following such notice, and the submittal of a new application or supplement to the existing application, along with required engineering plans and reports, this permit may be modified, or revoked and reissued pursuant to 40 CFR 122.62(a) to specify and limit any pollutants not previously limited. Until such modification is effective, any new or increased discharge in excess of permit limits or not specifically authorized by this permit constitutes a violation.

G5. PLAN REVIEW REQUIRED

Prior to constructing or modifying any wastewater control facilities, an engineering report and detailed plans and specifications must be submitted to Ecology for approval in accordance with Chapter 173-240 WAC. Engineering reports, plans, and specifications must be submitted at least 180 days prior to the planned start of construction unless a shorter time is approved by Ecology. Facilities must be constructed and operated in accordance with the approved plans.

G6. COMPLIANCE WITH OTHER LAWS AND STATUTES

Nothing in this permit must be construed as excusing the permittee from compliance with any applicable federal, state, or local statutes, ordinances, or regulations.

G7. TRANSFER OF THIS PERMIT

In the event of any change in control or ownership of facilities from which the authorized discharge emanate, the permittee must notify the succeeding owner or controller of the existence of this permit by letter, a copy of which must be forwarded to Ecology.

A. Transfers by Modification

Except as provided in paragraph (B) below, this permit may be transferred by the permittee to a new owner or operator only if this permit has been modified or revoked and reissued under 40 CFR 122.62(b)(2), or a minor modification made under 40 CFR 122.63(d), to identify the new permittee and incorporate such other requirements as may be necessary under the Clean Water Act.

B. Automatic Transfers

This permit may be automatically transferred to a new permittee if:

1. The permittee notifies Ecology at least 30 days in advance of the proposed transfer date.
2. The notice includes a written agreement between the existing and new permittees containing a specific date transfer of permit responsibility, coverage, and liability between them.
3. Ecology does not notify the existing permittee and the proposed new permittee of its intent to modify or revoke and reissue this permit. A modification under this subparagraph may also be minor modification under 40 CFR 122.63. If this notice is not received, the transfer is effective on the date specified in the written agreement.

G8. REDUCED PRODUCTION FOR COMPLIANCE

The permittee, in order to maintain compliance with its permit, must control production and/or all discharges upon reduction, loss, failure, or bypass of the treatment facility until the facility is restored or an alternative method of treatment is provided. This requirement applies in the situation where, among other things, the primary source of power of the treatment facility is reduced, lost, or fails.

G9. REMOVED SUBSTANCES

Collected screenings, grit, solids, sludge, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters must not be resuspended or reintroduced to the final effluent stream for discharge to state waters.

G10. DUTY TO PROVIDE INFORMATION

The permittee must submit to Ecology, within a reasonable time, all information which Ecology may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The permittee must also submit to Ecology upon request, copies of records required to be kept by this permit.

G11. OTHER REQUIREMENTS OF 40 CFR

All other requirements of 40 CFR 122.41 and 122.42 are incorporated in this permit by reference.

G12. ADDITIONAL MONITORING

Ecology may establish specific monitoring requirements in addition to those contained in this permit by administrative order or permit modification.

G13. PAYMENT OF FEES

The permittee must submit payment of fees associated with this permit as assessed by Ecology.

G14. PENALTIES FOR VIOLATING PERMIT CONDITIONS

Any person who is found guilty of willfully violating the terms and conditions of this permit is deemed guilty of a crime, and upon conviction thereof must be punished by a fine of up to \$10,000 and costs of prosecution, or by imprisonment in the discretion of the court. Each day upon which a willful violation occurs may be deemed a separate and additional violation.

Any person who violates the terms and conditions of a waste discharge permit will incur, in addition to any other penalty as provided by law, a civil penalty in the amount of up to \$10,000 for every such violation. Each and every such violation is a separate and distinct offense, and in case of a continuing violation, every day's continuance is deemed to be a separate and distinct violation.

G15. UPSET

Definition – "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment

facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the requirements of the following paragraph are met.

A permittee who wishes to establish the affirmative defense of upset must demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that: 1) an upset occurred and that the permittee can identify the cause(s) of the upset; 2) the permitted facility was being properly operated at the time of the upset; 3) the permittee submitted notice of the upset as required in condition S3.E; and 4) the permittee complied with any remedial measures required under S4.C of this permit.

In any enforcement action the permittee seeking to establish the occurrence of an upset has the burden of proof.

G16. PROPERTY RIGHTS

This permit does not convey any property rights of any sort, or any exclusive privilege.

G17. DUTY TO COMPLY

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.

G18. TOXIC POLLUTANTS

The permittee must comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that establish those standards or prohibitions, even if this permit has not yet been modified to incorporate the requirement.

G19. PENALTIES FOR TAMPERING

The Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit must, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than two years per violation, or by both. If a conviction of a person is for a violation committed after a first conviction of such person under this Condition, punishment must be a fine of not

more than \$20,000 per day of violation, or by imprisonment of not more than four (4) years, or by both.

G20. REPORTING ANTICIPATED NON-COMPLIANCE

The permittee must give advance notice to Ecology by submission of a new application or supplement thereto at least one hundred and eighty (180) days prior to commencement of such discharges, of any facility expansions, production increases, or other planned changes, such as process modifications, in the permitted facility or activity which may result in noncompliance with permit limits or conditions. Any maintenance of facilities, which might necessitate unavoidable interruption of operation and degradation of effluent quality, must be scheduled during noncritical water quality periods and carried out in a manner approved by Ecology.

G21. REPORTING OTHER INFORMATION

Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application, or in any report to Ecology, such facts or information must be submitted promptly.

G22. COMPLIANCE SCHEDULES

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit must be submitted no later than 14 days following each schedule date.

G23. CONTRACT REVIEW

The permittee must submit to Ecology any proposed contract for the operation of any wastewater treatment facility covered by this permit. The review is to insure consistency with chapters 90.46 and 90.48 RCW. In the event that Ecology does not comment within a thirty-day period, the permittee may assume consistency and proceed with the contract.

**FACT SHEET FOR NPDES PERMIT
NO. WA-002237-3**

BINGEN PUBLICLY OWNED TREATMENT WORKS

DATE OF THIS FACT SHEET – JANUARY 28, 2008

PURPOSE OF THIS FACT SHEET

This fact sheet explains and documents the decisions Ecology made in drafting the proposed National Pollutant Discharge Elimination System (NPDES) Permit No. WA-002237-3, for the Bingen Publicly Owned Treatment Works (POTW).

This fact sheet complies with Section 173-220-060 of the Washington Administrative Code (WAC), which requires Ecology to prepare a draft permit *and accompanying fact sheet* for public evaluation before issuing an NPDES permit.

Ecology makes the draft permit and fact sheet available for public review and comment at least 30 days before we issue the final permit. Copies of the fact sheet and draft permit for the Bingen NPDES permit, are available for public review and comment from March 6, 2008 until April 6, 2008. For more details on preparing and filing comments about these documents, please see **Appendix A - Public Involvement**.

The City of Bingen POTW reviewed the draft permit and fact sheet for factual accuracy. Ecology corrected any errors or omissions regarding the facility's location, history, discharge, or receiving water.

After the public comment period closes, Ecology will summarize substantive comments and provide responses to them. Ecology will include the summary and responses to comments in this Fact Sheet as **Appendix D - Response to Comments**.

SUMMARY

The Bingen Publicly Owned Treatment Works (POTW) serves the communities of Bingen and White Salmon. The Bingen POTW outfall discharges to the Columbia River between The Dalles and Bonneville dams. A total maximum daily load study for temperature is in progress for the Columbia and Snake rivers.

The previous permit included limits for Biochemical Oxygen Demand, Total Suspended Solids, Fecal Coliform, and pH. The proposed permit will add limits for ammonia and temperature.

Additional requirements in the proposed permit include an Operations and Maintenance Training Manual and a Temperature Reduction Study.

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INTRODUCTION

The Federal Clean Water Act (FCWA, 1972, and later amendments in 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. One mechanism for achieving the goals of the Clean Water Act is the National Pollutant Discharge Elimination System (NPDES), administered by the federal Environmental Protection Agency (EPA). The EPA authorized the State of Washington to manage the NPDES permit program in our state. Our state legislature accepted the delegation and assigned the power and duty for conducting NPDES permitting and enforcement to Ecology. The legislature defined Ecology's authority and obligations for the wastewater discharge permit program in 90.48 RCW (Revised Code of Washington).

The following regulations apply to municipal NPDES permits:

- Procedures Ecology follows for issuing NPDES permits (chapter 173-220 WAC),
- Technical criteria for discharges from municipal wastewater treatment facilities (chapter 173-221 WAC)
- Water quality criteria for surface waters (chapter 173-201A WAC) and for ground waters (chapter 173-200 WAC)
- Sediment management standards (chapter 173-204 WAC).

These rules require any treatment facility operator to obtain an NPDES permit before discharging wastewater to state surface waters. They also define the basis for limits on each discharge and for other requirements imposed by the permit.

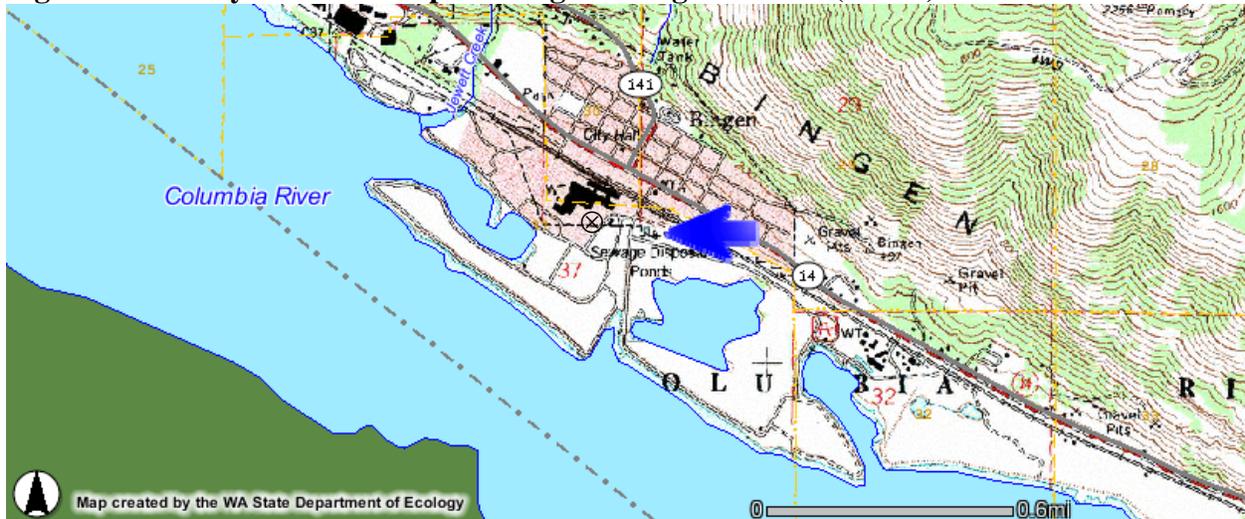
Under the NPDES permit program Ecology must prepare a draft permit and accompanying fact sheet, and make it available for public review. Ecology must also publish an announcement (public notice) telling people where they can read the draft permit, and where to send their comments on the draft permit, during a period of thirty days (WAC 173-220-050). (See **Appendix A--Public Involvement** for more detail about the Public Notice and Comment procedures). After the Public Comment Period ends, Ecology may make changes to the draft NPDES permit. Ecology will summarize the responses to comments and any changes to the permit in **Appendix D—Response to Comments**.

BACKGROUND INFORMATION

Table 1 - General Facility Information

Applicant:	City of Bingen
Facility Name and Address:	Bingen Publicly Owned Treatment Works 208 Marina Drive, Bingen, WA 98605
Type of Treatment:	Activated sludge oxidation ditch
SIC Code	4952
Discharge Location:	Columbia River Latitude: 47° 42' 27" N Longitude: 121° 28' 02" W
Water Body ID Number:	NN57SG (WA-CR-1020)

Figure 1. Facility Location Map showing the Bingen POTW (arrow).



The Bingen POTW outfall is located in the Columbia River at river mile 170.2 (EPA 2002). Bingen Lake is located ¼-mile southeast of the POTW. The Dalles Dam is located upstream at river mile 191.5. The City of Hood River, Oregon is located on the other side of the river and about one mile downstream from Bingen.

FACILITY DESCRIPTION

History

The City of White Salmon (White Salmon) is located northwest and adjacent to the City of Bingen (Bingen) along Highway 141. Bingen's POTW treats waste from both cities.

In 1972, Bingen upgraded the POTW from the original 1954 primary treatment plant to secondary treatment. The city completed another extensive upgrade in May 1996. The upgrade included a new oxidation ditch, three new clarifiers, a new laboratory, influent grit chamber and fine screen, an ultraviolet (UV) disinfection system, sludge digestion and dewatering facilities, and an outfall extension.

During 1997, the city constructed a new sewer line to serve future commercial and industrial facilities in the mostly undeveloped Bingen Point area. That area is owned by the Klickitat Port District No. 1. The Port District's property includes a large wetland called Bingen Lake and the Bingen Marina. The Bingen POTW is located on the Bingen Marina road.

Growth of residential areas in the Bingen is constrained by steep terrain north and east of the city (Figure 1). Bingen does have room for industrial growth on approximately 50 acres of Port District land. White Salmon is a growing residential area.

Collection System Status

Both Bingen and White Salmon have gravity flow collection systems. The total population served is currently estimated to be 3,125.

During the 2006 period of high rainfall, infiltration and inflow into the collection system exceeded an acceptable level according to EPA guidance. Bingen has purchased a televideo inspection camera to identify sewer blockages and a portable Thelmar weir to determine instantaneous flow readings. Public works staff from both Bingen and White Salmon are working together to identify and fix problem areas. The cities monitor flow at manholes with higher winter flows. Repairs of leaks in sewer joints and manholes are planned.

Bingen is currently replacing a 10-inch sewer line near the treatment plant with a larger pipe to prevent overflows. In the past, sewage overflows have occurred near the railroad track. There is no public access in that area.

Treatment Processes

Raw wastewater inflow passes through gravity grit removal channels to a Parshall flume with ultrasonic flow measurement. A rotating fine screen follows to remove material that does not

settle in the grit chamber, such as rags. After screening, the wastewater flows to a splitter box which can direct flow to one or both of the two oxidation ditches. The new oxidation ditch, constructed in 1996, currently receives all of the flow. The old 1972 oxidation ditch was renovated in 1996, and is useable, but needs new rotors to function optimally. Oxidation Reduction Potential (ORP) sensors control the rotors in the new ditch to keep oxygen at optimal levels.

From the oxidation ditch, the wastewater flows to a splitter box that can direct flow to the three clarifiers. Clarifier sludge is either returned to the oxidation ditch or wasted to the digesters. Clarifier effluent is disinfected with UV lights prior to discharge.

The Bingen POTW is operating its two aerobic sludge digester cells using the Ennix Digester Optimization Program. The Ennix system adds beneficial facultative bacteria along with proteins, minerals, organic acids, and enzymes for growth. Facultative bacteria can live under aerobic or anaerobic conditions, but are usually anaerobic bacteria. The system has reduced the need for aeration and has prevented foam and odor problems. Digested sludge (Biosolids) are dewatered and stored in a covered area prior to land disposal.

Currently, one industrial user, Underwood Fruit, discharges to the POTW. Another industrial user, the East White Salmon Fish Processing Plant, plans to begin seasonal processing during fall 2008.

The POTW is a Class II facility. The plant has two operators; one is a Class III and the other is a Class I operator. The plant is staffed as follows:

- Monday and Wednesday, 7 am to 3:30 pm;
- Tuesday, Thursday, and Friday, 7 am to 5 pm;
- Weekends and after hours the automatic dialer on the process computer calls one of three people (including the nearby Dallesport POTW operator).

Discharge Outfall

The treated and disinfected effluent flows into the Columbia River at river mile 170.2. Prior to the 1996 upgrade, the outfall discharged to a small bay south of the treatment plant. During the upgrade, 900 feet of 16-inch pipe was added to extend the outfall to the river channel, submerged in 25 feet of water (average). The outfall is located approximately 450 feet from the shoreline. The outfall does not have a diffuser.

Residual Solids

Grit, screenings, and other debris from the headworks are collected and sent to a landfill for disposal.

The Bingen POTW has received coverage under the state General Permit for Biosolids Management. Biosolids are land applied on an approved biosolids site. The site is located 10 miles north of White Salmon. The POTW has a covered biosolids collection area. The collection area wall was undersized, but will be increased by three feet.

PERMIT STATUS

Ecology issued the previous permit for this facility on February 7, 2003. The previous permit placed effluent limits on Biochemical Oxygen Demand (BOD₅), Total suspended Solids, pH, and fecal coliform bacteria.

Bingen submitted an application for permit renewal on April 2, 2007. Ecology accepted it as complete on April 5, 2007.

SUMMARY OF COMPLIANCE WITH PREVIOUS PERMIT ISSUED

Ecology staff last conducted a non-sampling compliance inspection on July 3, 2007. Ecology's assessment of compliance is based on review of the facility's Discharge Monitoring Reports (DMRs) and inspections conducted by Ecology.

The Bingen POTW has been substantially in compliance with the previous permit, but has had problems with sludge settling due to the presence of filamentous bacteria. Plant upsets have also occurred from high flows due to infiltration and inflow to the collection system during stormwater events.

An upset in April 2007 occurred as a result of the initial decant from the new Ennix digester process. That process causes higher levels of ammonia in the digester decant water. The upset caused violations of BOD₅ removal and average monthly BOD₅ concentrations. The operators have reduced the amount of decant added at any one time to prevent further problems.

BOD₅, TSS, and percent removal violations occurred as a result of a period of high flow during January 2007. A high peak flow caused the one clarifier in use to overflow sludge. The operator put a second clarifier online to resolve the problem.

During February 2004 and April 2005, the POTW discharge exceeded the maximum weekly fecal coliform bacteria limit. The monthly limit was not exceeded between July 2003 and May 2007. The POTW has had occasional blooms of filamentous bacteria which causes foaming. If the foam is discharged, it is not readily treated by UV disinfection. The foam problem may be reduced by efforts to control fats, oil, and grease (FOG) and by the new Ennix digester process.

WASTEWATER CHARACTERIZATION

The concentration of pollutants in the discharge was reported in the NPDES application and in discharge monitoring reports. The effluent is characterized as shown in Table 2.

Table 2. Bingen POTW Wastewater Characterization (January 2004 to May 2007).

Parameter	Units	Average Monthly	Monthly Maximum	Maximum Average Weekly
<i>Effluent</i>				
BOD₅	mg/L	7.76	24.2	75.0
	lbs/day	25.7	187.0	664.0
	Percent removal	95.9	80.1 (minimum)	N/A
TSS	mg/L	12.2	24	399.0
	lbs/day	51.3	97	3531.0
	Percent removal	93.3	20.6 (minimum)	N/A
Fecal Coliform Bacteria, geometric mean	Colonies per 100 mL	24.8	38.0	516.0
Alkalinity	mg/L	123.1	148	N/A
Hardness	mg/L	81.4	94	N/A
Ammonia	mg/L	1.7	7.0	N/A
Dissolved Oxygen	Maximum, mg/L	5.6	8.5	N/A
	Minimum, mg/L	3.7	3.0 (minimum)	N/A
pH, range	Standard Units (SU)	6.3 to 8.1		N/A
Maximum Temperature	°C	17.5	25.0	N/A

Parameter	Units	Average Monthly	Monthly Maximum	Maximum Average Weekly
Influent				
Flow	mgd	0.35	0.75	1.371
BOD ₅	mg/L	211	317	442
	lbs/day	578	870	1,341
TSS	mg/L	240	397	689
	lbs/day	641	952	1,710

Footnotes

N/A: Not Applicable
 mg/L: milligram per liter
 lbs/day: pounds per day
 MGD: million gallons per day

Biocides have the potential to kill beneficial bacteria required for the biological treatment processes at the POTW. During the previous permit period, The POTW conducted a study of fungicides used by Underwood Fruit. Both the influent and effluent were sampled and analyzed for thiobenzdazole (TBZ) and sodium orthophenylphenate (SOPP). Four POTW effluent samples were collected and analyzed for the fungicides. TBZ was measured in one effluent sample, collected during February 2004, at a low concentration (0.36 mg/L); SOPP was not detected. The POTW operators have not identified an upset or problem related to the Underwood Fruit discharge. The State of California has identified TBZ as a developmental and reproductive toxicant (California OEHHA 2007a), and SOPP as a carcinogen (California OEHHA 2007b).

Because the POTW is not experiencing problems due to fungicides in the influent, no further testing will be required. There are no water quality criteria for these chemicals, but effects on aquatic life are not likely at concentrations tolerated by the POTW biological process bacteria.

PROPOSED PERMIT LIMITS

Federal and State regulations require that effluent limits in an NPDES permit must be either technology- or water quality-based.

- Technology-based limits are based upon the treatment methods available to treat specific pollutants. Technology-based limits are set by the EPA and published as a regulation, or Ecology develops the limit on a case-by-case basis (40 CFR 125.3, and chapter 173-220 WAC).

- Water quality-based limits are calculated so that the effluent will comply with the Surface Water Quality Standards (chapter 173-201A WAC), Ground Water Standards (chapter 173-200 WAC), Sediment Quality Standards (chapter 173-204 WAC) or the National Toxics Rule (40 CFR 131.36).
- Ecology must apply the most stringent of these limits to each parameter of concern. These limits are described below.

The limits in this permit reflect information received in the application. Ecology evaluated the permit application and determined the limits needed to comply with the rules adopted by the State of Washington. Ecology does not develop effluent limits for all reported pollutants. Some pollutants are not treatable at the concentrations reported, are not controllable at the source, are not listed in regulation, or do not have a reasonable potential to cause a water quality violation. Ecology does not usually develop limits for pollutants that were not reported in the permit application, but that may be present in the discharge. The permit does not authorize discharge of the non-reported pollutants. If significant changes occur in any constituent of the effluent discharge, the POTW is required to notify Ecology (40 CFR 122.42(a)). The POTW may be in violation of the permit until the permit is modified to reflect additional discharge of pollutants.

DESIGN CRITERIA

Under WAC 173-220-150 (1)(g), flows and waste loadings must not exceed approved design criteria. Ecology approved design criteria for the Bingen POTW were obtained from the Bingen/White Salmon Predesign Report, approved by Ecology on June 27, 1994 (Gray & Osborne 1994).

Table 3: Design Criteria for the Bingen POTW.

Parameter	Design Quantity
Average daily flow	0.8 mgd
Maximum peak flow	2.0 mgd
BOD ₅ influent loading	1,311 lbs/day
TSS influent loading	1,311 lbs/day

TECHNOLOGY-BASED EFFLUENT LIMITS

Federal and state regulations define technology-based effluent limits for municipal wastewater treatment plants. These effluent limits are given in 40 CFR Part 133 (federal) and in chapter 173-221 WAC (state). These regulations are performance standards that constitute all known, available, and reasonable methods of prevention, control, and treatment (AKART) for municipal wastewater.

Chapter 173-221 WAC lists the following technology-based limits for pH, fecal coliform, BOD₅, and TSS:

Table 4: Technology-based Limits.

Parameter	Limit
pH:	shall be within the range of 6 to 9 standard units
Fecal Coliform Bacteria	Monthly Geometric Mean = 200 organisms/100 mL Weekly Geometric Mean = 400 organisms/100 mL
BOD ₅ (concentration)	Average Monthly Limit is the most stringent of the following: - 30 mg/L - may not exceed fifteen percent (15%) of the average influent concentration Average Weekly Limit = 45 mg/L
TSS (concentration)	Average Monthly Limit is the most stringent of the following: - 30 mg/L - may not exceed fifteen percent (15%) of the average influent concentration Average Weekly Limit = 45 mg/L

The technology-based mass limits are based on WAC 173-220-130(3)(b) and 173-221-030(11)(b).

Monthly effluent mass loadings (lbs/day) = maximum monthly influent design loading (1311 lbs/day) x 0.15 = 197 lbs/day.

The weekly average effluent mass loading = 1.5 x monthly loading = 296 lbs/day.

SURFACE WATER QUALITY-BASED EFFLUENT LIMITS

The Washington State Surface Water Quality Standards (chapter 173-201A WAC) are designed to protect existing water quality and preserve the beneficial uses of Washington's surface waters. Waste discharge permits must include conditions that ensure the discharge will meet the surface water quality standards (WAC 173-201A-510). Water quality-based effluent limits may be based on an individual waste load allocation or on a waste load allocation developed during a basin wide total maximum daily load (TMDL) study. TMDLs result from a scientific study of the water body and are developed in order to reduce pollution from all sources.

A TMDL study for temperature is in progress for the Columbia and Snake Rivers. Ecology will be working with the facility to reduce temperature in the discharge as part of the process to reduce overall temperature in the receiving water.

Numerical Criteria for the Protection of Aquatic Life and Recreation

Numerical water quality criteria are listed in the water quality standards for surface waters (chapter 173-201A WAC). They specify the maximum levels of pollutants allowed in receiving water to protect aquatic life and recreation in and on the water. Ecology uses numerical criteria along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit. When surface water quality-based limits are more stringent or potentially more stringent than technology-based limits, the discharge must meet the water quality-based limits.

Numerical Criteria for the Protection of Human Health

The U.S. EPA has published 91 numeric water quality criteria for the protection of human health that are applicable to dischargers in Washington State (EPA 1992). These criteria are designed to protect humans from exposure to pollutants linked to cancer and other diseases, based on consuming fish and shellfish and drinking contaminated surface waters. The Water Quality Standards also include radionuclide criteria to protect humans from the effects of radioactive substances.

Narrative Criteria

Narrative water quality criteria (WAC 173-201A) limit concentrations of toxic, radioactive, or deleterious material. Levels are set below those which have the potential to adversely affect characteristic water uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health. Narrative criteria protect the specific beneficial uses of all fresh and marine surface waters in the state of Washington.

Antidegradation

The purpose of Washington's Antidegradation Policy (WAC 173-201A-300-330; 2006) is to:

- Restore and maintain the highest possible quality of the surface waters of Washington.
- Describe situations under which water quality may be lowered from its current condition.
- Apply to human activities that are likely to have an impact on the water quality of surface water.
- Ensure that all human activities likely to contribute to a lowering of water quality, at a minimum, apply all known, available, and reasonable methods of prevention, control, and treatment (AKART).
- Apply three tiers of protection (described below) for surface waters of the state.

Tier I ensures existing and designated uses are maintained and protected and applies to all waters and all sources of pollutions. Tier II ensures that waters of a higher quality than the criteria

assigned are not degraded unless such lowering of water quality is necessary and in the overriding public interest. Tier II applies only to a specific list of polluting activities. Tier III prevents the degradation of waters formally listed as "outstanding resource waters," and applies to all sources of pollution.

A facility must prepare a Tier II analysis when all three of the following conditions are met:

- The facility is planning a new or expanded action.
- Ecology regulates or authorizes the action.
- The action has the potential to cause measurable degradation to existing water quality at the edge of a chronic mixing zone.

This facility must meet Tier I requirements.

- Existing and designated uses must be maintained and protected. No degradation may be allowed that would interfere with, or become injurious to, existing or designated uses, except as provided for in chapter 173-201A WAC.
- For waters that do not meet assigned criteria, or protect existing or designated uses, Ecology will take appropriate and definitive steps to bring the water quality back into compliance within the water quality standards.

Ecology's analysis described in this section of the fact sheet demonstrates that the existing and designated uses of the receiving water will be protected under the conditions of the proposed permit.

Mixing Zones

A mixing zone is the defined area in the receiving water surrounding the discharge port(s), where wastewater mixes with receiving water. Within mixing zones the pollutant concentrations may exceed water quality numeric standards, so long as the diluting wastewater doesn't interfere with designated uses of the receiving water body (e.g., recreation, water supply, and aquatic life and wildlife habitat, etc.) The pollutant concentrations outside of the mixing zones must meet water quality numeric standards.

State and federal rules allow mixing zones because the concentrations and effects of most pollutants diminish rapidly after discharge, due to dilution. Ecology defines mixing zone sizes to limit the amount of time any exposure to the end-of-pipe discharge could harm water quality, plants, or fish.

The state's water quality standards allow Ecology to authorize mixing zones for the facility's permitted wastewater discharges only if those discharges already receive AKART. Mixing

zones typically require compliance with water quality criteria within 300 feet from the point of discharge; and use no more than 25% of the available width of the water body for dilution. We use modeling to estimate the amount of mixing within the zone. Through modeling we determine the potential for violating the water quality standards at the edge of the mixing zone and derive any necessary effluent limits. Steady-state models are the most frequently used tools for conducting mixing zone analyses. Ecology chooses values for each effluent and for receiving water variables that correspond to the time period when the most critical condition is likely to occur (see Ecology's Permit Writer's Manual). Each critical condition parameter, by itself, has a low probability of occurrence and the resulting dilution factor is conservative. The term "reasonable worst-case" applies to these values.

The mixing zone analysis produces a numerical value called a dilution factor. A dilution factor represents the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. For example, a dilution factor of 10 means the effluent is 10% and the receiving water is 90% of the total volume of water at the boundary of the mixing zone. We use dilution factors with the water quality criteria to calculate reasonable potentials and effluent limits. Water quality standards include both aquatic life-based criteria and human health-based criteria. The former are applied at both the acute and chronic mixing zone boundaries; the latter are applied only at the chronic boundary. The concentration of pollutants at the boundaries of any of these mixing zones may not exceed the numerical criteria for that zone.

Each aquatic life **acute** criterion is based on the assumption that organisms are not exposed to that concentration for more than one hour and more often than one exposure in three years. Each aquatic life **chronic** criterion is based on the assumption that organisms are not exposed to that concentration for more than four consecutive days and more often than once in three years.

The two types of human health-based water quality criteria distinguish between those pollutants linked to non-cancer effects (non-carcinogenic) and those linked to cancer effects (carcinogenic). The human health-based water quality criteria incorporate several exposure and risk assumptions. These assumptions include:

- A 70-year lifetime of daily exposures.
- An ingestion rate for fish or shellfish measured in kg/day.
- An ingestion rate of two liters/day for drinking water.
- A one-in-one-million cancer risk for carcinogenic chemicals.

This permit authorizes a small acute mixing zone, surrounded by a chronic mixing zone around the point of discharge (WAC 173-201A-400). The water quality standards impose certain conditions before allowing the discharger a mixing zone:

1. Ecology must specify both the allowed size and location in a permit.

The proposed permit specifies the size and location of the allowed mixing zone.

2. The facility must fully apply “all known available and reasonable methods of prevention, control and treatment” (AKART) to its discharge.

Ecology has determined that the treatment provided at the Bingen POTW meets the requirements of AKART (see “Technology-based Limits”).

3. Ecology must consider critical discharge conditions.

Surface water quality-based limits are derived for the water body’s critical condition (the receiving water and waste discharge condition with the highest potential for adverse impact on the aquatic biota, human health, and existing or designated water body uses). The critical discharge condition is often pollutant-specific or water body-specific.

Critical discharge conditions are those conditions that result in reduced dilution or increased effect of the pollutant. Factors affecting dilution include the depth of water, the density stratification in the water column, the currents and the rate of discharge. Density stratification is determined by the salinity and temperature of the receiving water. Temperatures are warmer in the surface waters in summer. Therefore, density stratification is generally greatest during the summer months. Density stratification affects how far up in the water column a freshwater plume may rise. The rate of mixing is greatest when an effluent is rising. The effluent stops rising when the mixed effluent is the same density as the surrounding water. After the effluent stops rising, the rate of mixing is much more gradual. Water depth can affect dilution when a plume might rise to the surface when there is little or no stratification. Ecology’s Permit Writer’s Manual describes additional guidance on criteria/design conditions for determining dilution factors. The manual can be obtained from Ecology’s website at: <http://www.ecy.wa.gov/biblio/92109.html>.

4. Supporting information must clearly indicate the mixing zone would not:

- Have a reasonable potential to cause the loss of sensitive or important habitat,
- Substantially interfere with the existing or characteristic uses,
- Result in damage to the ecosystem, or
- Adversely affect public health.

Ecology established Washington State water quality criteria for toxic chemicals using EPA criteria. EPA developed the criteria using toxicity tests with numerous organisms,

and set the criteria to generally protect 95% of the species tested and to fully protect all commercially and recreationally important species.

EPA sets acute criteria for toxic chemicals assuming organisms are exposed to the pollutant at the criteria concentration for one hour. They set chronic standards assuming organisms are exposed to the pollutant at the criteria concentration for 4 days. Dilution modeling under critical conditions generally shows that both acute and chronic criteria concentrations are reached within minutes of being discharged.

The discharge plume does not impact drifting and non-strong swimming organisms because they cannot stay in the plume close to the outfall long enough to be affected. Strong swimming fish could maintain a position within the plume, but they can also avoid the discharge by swimming away. Mixing zones generally do not affect benthic organisms (bottom dwellers) because the buoyant plume rises in the water column. Ecology has additionally determined that the effluent will not exceed 33 degrees Celsius (°C); and that the temperature of the water will not create lethal conditions or blockages to fish migration.

Ecology evaluates the cumulative toxicity of an effluent by testing the discharge with whole effluent toxicity (WET) testing.

Ecology reviewed the above information, the specific information on the characteristics of the discharge, the receiving water characteristics and the discharge location. Based on this review we conclude that the discharge does not have a reasonable potential to cause the loss of sensitive or important habitat, substantially interfere with existing or characteristic uses, result in damage to the ecosystem or adversely affect public health.

5. The discharge/receiving water mixture must not exceed water quality criteria outside the boundary of a mixing zone.

Ecology conducted a reasonable potential analysis, using procedures established by the EPA and by Ecology, for each pollutant. We concluded the discharge/receiving water mixture will not violate water quality criteria outside the boundary of the mixing zone.

6. The size of the mixing zone and the concentrations of the pollutants must be minimized.

At any given time, the effluent plume uses only a portion of the acute and chronic mixing zone, which minimizes the volume of water involved in mixing. The plume rises through the water column as it mixes therefore much of the receiving water volume at lower depths in the mixing zone is not mixed with discharge. Similarly, because the discharge may stop rising at some depth due to density stratification, waters above that depth will

not mix with the discharge. Ecology determined it is impractical to specify in the permit the actual, much more limited volume in which the dilution occurs as the plume rises and moves with the current.

Ecology minimizes the size of mixing zones by requiring dischargers to install diffusers when they are appropriate to the discharge and the specific receiving waterbody. When a diffuser is installed the discharge is more completely mixed with the receiving water in a shorter time. Ecology also minimizes the size of the mixing zone (in the form of the dilution factor) using design criteria with a low probability of occurrence. For example, Ecology uses the expected 95th percentile pollutant concentration, the 90th percentile background concentration, the centerline dilution factor (from modeling results) and the lowest flow occurring once in every 10 years to perform the reasonable potential analysis.

By applying the above standards, Ecology has effectively minimized the size of the mixing zone authorized in the proposed permit.

7. Maximum size of mixing zone.

The authorized mixing zone does not exceed the maximum size restriction.

8. Acute Mixing Zone.

- **The discharge/receiving water mixture must comply with acute criteria as near to the point of discharge as practicably attainable**
We determined the acute criteria will be met at 10% of the distance (or volume fraction) of the chronic mixing zone at the 10-year low flow.
- **The pollutant concentration, duration and frequency of exposure to the discharge, will not create a barrier to migration or translocation of indigenous organisms to a degree that has the potential to cause damage to the ecosystem.**

As described above the toxicity of any pollutant depends upon the exposure, the pollutant concentration and the time the organism is exposed to that concentration. Authorizing a limited acute mixing zone for this discharge assures that it will not create a barrier to migration. The effluent from this discharge will rise as it enters the receiving water, assuring that the rising effluent will not cause translocation of indigenous organisms near the point of discharge (below the rising effluent).

- **Comply with size restrictions.**

The mixing zone authorized for this discharge complies with the size restrictions published in chapter 173-201A WAC.

9. Overlap of Mixing Zones.

This mixing zone does not overlap another mixing zone. The area that is used at the end of the mixing zone is small relative to the size of the river. The Cormix model predicts that complete vertical mixing occurs within 700 feet. Within 2,500 feet, well above the downstream Hood River discharge, the dilution factor exceeds 3,000.

DESCRIPTION OF THE RECEIVING WATER

The Bingen POTW discharges to the Columbia River. The river has many point and non-point sources of contaminants from both Washington and Oregon. Other nearby point source outfalls include the Hood River (Oregon) treatment plant located downstream on the opposite side of the river and the Lyle, Washington treatment plant discharge, located 9 miles upriver. The Klickitat River discharges about 9 miles upriver from Bingen. The White Salmon and Hood rivers discharge downstream of Bingen.

The Columbia River in the vicinity of the Bingen POTW is over 2,000 feet wide. The river channel is over 50 feet deep in some places. The river velocity is low near Bingen. The Dalles Dam is approximately 20 river miles upstream of Bingen. The Bonneville Dam is approximately 25 miles downstream.

Two segments of the Columbia River immediately downstream from Bingen are listed on Ecology's 303-(d) list of impaired waters. One area is a Category 2 "Water of Concern" for temperature exceedance. The other area, which includes the mouth of nearby Jewett Creek, is listed as Category 4B for "Invasive Exotic Species."

The EPA is conducting a Columbia/Snake River Temperature TMDL study. Columbia River temperature has been increased by the large dams by 13 percent (EPA 2002). The areas impounded by the dams are not cooled as are the free-flowing areas. The Bingen POTW may receive a temperature wasteload allocation as a result of the TMDL study. The EPA is the lead agency for the temperature TMDL.

The nearest Ecology long-term upriver sampling station is the I-82 bridge over the Columbia located near Umatilla, Oregon (Ecology 2007). Data collected in the Columbia River at Hood River Hook during the critical period (eight samples) include field measurements for conductivity, dissolved oxygen, pH, Temperature, and Turbidity (ODEQ 2007a). Data was also collected upriver at the Dalles Dam (two critical period samples) including alkalinity, ammonia, dissolved oxygen, pH, temperature, total coliform, total suspended solids, BOD, hardness, and orthophosphate (ODEQ 2007b). The Columbia RiverKeeper staff collected samples from the Columbia River downstream of the Bingen POTW between 7 August and 3 September, 2007 and analyzed for E. Coli (Pecore 2007). A summary of the available data is included in Table 5.

The ambient background concentrations used for analysis are shown in Table 6.

Table 5. Ambient data summary (Ecology 2007; ODEQ 2007a and b; and, Pecore 2007).

Parameter	Water Quality Standard	Source	Average concentration or measurement	Maximum or minimum (min)
Temperature Critical Period °C	20 °C 1-DayMax	Ecology 2007 ODEQ 2007a ODEQ 2007b	19.2 19.9 21.2	22.4 22.1 22
Dissolved Oxygen Critical Period	8 mg/L(use-based); Special condition > 90% of saturation	Ecology 2007 ODEQ 2007a ODEQ 2007b	9.8 mg/L 8.9 mg/L 99 % saturation	8.5mg/L min 8.27 mg/L min 95 % min saturation
pH, Range Critical Period Standard Units	6.5 to 8.5 SUs	Ecology 2007 ODEQ 2007a ODEQ 2007b	7.1 to 8.8 7.61 to 8.65 8.1	
Alkalinity, mg/L Critical Period	N/A	Ecology 2007 ODEQ 2007b	53.4 57	67 59
Ammonia, mg/L Critical Period		Ecology 2007 ODEQ 2007b	0.017 0.095	0.07 0.17
Hardness, mg/L Critical Period	N/A	Ecology 2007 ODEQ 2007b	60.3 56	65.6 68
BOD₅, mg/L	N/A	ODEQ 2007b	0.98	1.7
Fecal coliform bacteria Critical Period	100 Colonies/ 100 mL (See Table 9)	Ecology 2007 ODEQ 2007b	2.5 (Geometric Mean) 11.7(Geometric Mean)	280 23
E. Coli, Most probable number (MPN) Critical period	235 MPN/100 mL (EPA criteria)	Pecore 2007	8.2 MPN/100 mL (Geometric Mean)	55.6 MPN/100 mL

Table 6. Ambient background concentrations used for analysis.

Parameter	Value used
Temperature (highest annual 1-Day Maximum (1-DMax))	22.1 °C (Maximum local measurement)
pH (high)	8.4 (90 th percentile)
Dissolved Oxygen	8.94 mg/L (10 th percentile)
Total Ammonia-N	0.04 mg/L (90 th percentile log-transformed using SPSS ^a)
Fecal Coliform Bacteria	11.7/100 mL (critical period local geometric mean; ODEQ 2007b)
Hardness	60.3 mg/L as CaCO ₃ (Average)
Alkalinity	53.4 mg/L as CaCO ₃ (Average)

a: SPSS is a statistical software package.

DESIGNATED USES AND SURFACE WATER QUALITY CRITERIA

Applicable designated uses and surface water quality criteria are defined in chapter 173-201A WAC. In addition, the U.S. EPA set human health criteria for toxic pollutants (EPA 1992). Criteria applicable to this facility's discharge are summarized in Tables 7 and 8.

Aquatic Life Uses are designated based on the presence of, or the intent to provide protection for, the key uses. All indigenous fish and non-fish aquatic species must be protected in waters of the state in addition to the key species. The Aquatic Life Uses for this receiving water are identified in Table 7.

Table 7. Aquatic Life Uses & Associated Criteria (Chapter 173-201A WAC).

Salmonid Spawning, Rearing, And Migration	
Temperature Criteria – 1-Day Maximum (1-DMax)	20°C When natural conditions exceed a 1-DMax of 20°C, no temperature increase will be allowed which will raise the receiving water temperature greater than 0.3°C due to any single source or 1.1°C due to all activities combined.
Dissolved Oxygen Criteria – Lowest 1 Day Minimum	Dissolved oxygen shall exceed 90 percent of saturation (or 8.0 mg/L use-based)
Turbidity Criteria	<ul style="list-style-type: none"> • 5 NTU over background when the background is 50 NTU or less; or • A 10 percent increase in turbidity when the background turbidity is more than 50 NTU
pH Criteria	pH shall be within the range of 6.5 to 8.5 with a human-caused variation within the above range of less than 0.5 units

The recreational uses are extraordinary primary contact recreation, primary contact recreation, and secondary contact recreation. The recreational uses for this receiving water are identified below.

Table 8. Recreational Uses & Associated Criteria

Recreational use	Criteria
Primary Contact Recreation	Fecal coliform organism levels must not exceed a geometric mean value of 100 colonies /100 mL, with not more than 10 percent of all samples (or any single sample when less than ten sample points exist) obtained for calculating the geometric mean value exceeding 200 colonies /100 mL

The **water supply uses** are domestic, agricultural, industrial, and stock watering.

The **miscellaneous fresh water uses** are wildlife habitat, harvesting, commerce and navigation, boating, and aesthetics.

A wide diversity of native and introduced fish species use the Columbia River habitat near Bingen. Sturgeon and salmonids are popular recreational fishing species. Deepwater main stem Columbia River fall Chinook salmon spawning historically occurred from the lower river upriver to the area now inundated as a result of construction of the Grand Coulee dam (Chapman 1943; van der Naald et al. 2001). Little work has been done above Bonneville dam to identify deepwater spawning areas (Gray 2007; Mueller 2002; van der Naald et al. 2001). Chum salmon also spawn in the main stem of the Columbia River and use habitat in the vicinity of Bingen (Keller 2005).

Many different salmonid stocks migrate upriver past the Bingen POTW outfall. These stocks include upper Columbia River steelhead, Chinook and Coho salmon, as well as Snake River Sockeye salmon (Gray 2007).

Two fish hatcheries are located downstream of Bingen on Spring Creek and the little White Salmon River (van der Naald 2001). Salmonid stocks that spawn in the nearby Klickitat and White Salmon rivers are listed in Table 9.

Table 9. Status and run timing of Klickitat and White Salmon spawning stocks (Washington State Department of Fish and Wildlife 2007).

Stock Name	Start Spawning	Status
Klickitat Spring Chinook	Early August	Depressed
Klickitat Tule Fall Chinook	Early August	Healthy
Klickitat Bright Fall Chinook	Early August	Healthy
Klickitat Coho	Unknown	Unknown
Klickitat Summer Steelhead	Early March	Threatened
Klickitat Winter Steelhead	Late December	Unknown
Klickitat Bull Trout/ Dolly Varden	Unknown	Unknown
White Salmon River Bright Fall Chinook	Early October	Healthy
White Salmon River Tule Fall Chinook	Late August	Depressed
White Salmon River Summer Steelhead	Early March	Threatened
White Salmon River Winter Steelhead	Early December	Threatened
White Salmon River Bull Trout/Dolly Varden	Unknown	Unknown

EVALUATION OF SURFACE WATER QUALITY -BASED EFFLUENT LIMITS FOR NUMERIC CRITERIA

Pollutants in an effluent may affect the aquatic environment near the point of discharge (near field) or at a considerable distance from the point of discharge (far field). Toxic pollutants, for example, are near-field pollutants--their adverse effects diminish rapidly with mixing in the receiving water. Conversely, a pollutant such as biological oxygen demand (BOD) is a far-field pollutant whose adverse effect occurs away from the discharge even after dilution has occurred. Thus, the method of calculating surface water quality-based effluent limits varies with the point at which the pollutant has its maximum effect.

With technology-based controls (AKART), predicted pollutant concentrations in the discharge exceed water quality criteria. Ecology therefore authorizes a mixing zone in accordance with the geometric configuration, flow restriction, and other restrictions imposed on mixing zones by chapter 173-201A WAC.

Chronic Mixing Zone

WAC 173-201A-400(7)(a) specifies that mixing zones must not extend in a downstream direction from the discharge ports for a distance greater than 300 feet plus the depth of water over the discharge ports or extend upstream for a distance of over 100 feet, not utilize greater than 25% of the flow, and not occupy greater than 25% of the width of the water body. The horizontal distance of the chronic mixing zone is 319.6 feet. The mixing zone occupies a space of approximately 6.3 feet wide by 3.15 feet vertical (Cormix estimate).

Acute Mixing Zone

WAC 173-201A-400(8)(a) specifies that in rivers and streams a zone where acute toxics criteria may be exceeded must not extend beyond 10% of the distance towards the upstream and downstream boundaries of the chronic zone, not use greater than 2.5% of the flow and not occupy greater than 25% of the width of the water body.

The acute mixing zone for Outfall 001 extends 32 feet horizontally from the discharge port. The dilution factor is based on this distance.

Ecology determined the dilution factors that occur within these zones at the critical condition using the Cormix steady state model. The dilution factors are listed in Table 10.

Previous Modeling

Consultants conducted modeling with Cormix1 for the 1994 Predesign Report (Gray & Osborne 1994) for POTW improvements. The consultants used a 30-day ten-year low flow of 92,000 cubic feet per second (cfs). The dimensions of the mixing zone were determined to be 20-feet

deep by 50-feet wide or 1% of the Columbia River flow. They estimated an effluent dilution of 320:1. The model used a lower depth for the discharge than the city actually constructed.

Effluent concentrations of dissolved oxygen, ammonia, pH, temperature, BOD, and suspended solids were modeled to determine if water quality standards were exceeded. There were no potential problems identified using design criteria.

Ecology Modeling

Ecology used the following critical conditions to model the discharge:

- The 7-day average low river flow (May through October) with a recurrence interval of ten years (7Q10) is 81,700 cfs (from the EPA’s DFLOW model; Appendix C).
- The thirty day low river flow with a recurrence interval of five years (30Q5) is 93,300 cfs (from the EPA’s DFLOW model; Appendix C)
- Depth to outfall: 19.6 feet at the 7Q10 period.
- Depth to outfall: 22.3 feet at the 30Q5 period.
- Channel width: about 1,980 feet (for modeling a bounded section).
- Maximum average monthly effluent flow of 0.8 million gallons per day (mgd) for chronic and human health non-carcinogen.
- Maximum daily flow of 2.0 mgd for acute mixing zone.

Ambient data at critical conditions in the vicinity of the outfall was estimated from:

- The Bingen/ White Salmon Wastewater Treatment Facilities Predesign Report (Gray & Osborne 1994).
- Ecology data (Ecology 2007).
- Oregon Department of Environmental Quality data (ODEQ 2007a & b).
- Columbia RiverKeeper data (Pecore 2007).
- Bingen POTW effluent data.

Table 10. Dilution Factors (DF)

Criteria	Acute	Chronic
Aquatic Life	4.0	59.1
Human Health, Carcinogen		Not Applicable
Human Health, Non-carcinogen		59.7

Ecology determined the impacts of dissolved oxygen deficiency, temperature, pH, fecal coliform bacteria, chlorine, and ammonia, as described below, using the dilution factors in the above table. The derivation of surface water quality-based limits also takes into account the variability of pollutant concentrations in both the effluent and the receiving water.

BOD₅

Ecology modeled the impact of biochemical oxygen demand (BOD) on the receiving water using the EPA Streeter-Phelps analysis of critical dissolved oxygen sag, at critical condition and with the technology-based effluent limitation for BOD₅ described under "Technology-Based Effluent Limits" above. The calculations to determine dissolved oxygen impacts are shown in **Appendix C**.

Ecology predicted no violation of the surface water quality standards for BOD under critical conditions. Therefore, the proposed permit contains the technology-based effluent limitation for BOD₅.

Temperature

The state temperature standards include multiple criteria, each with different durations of exposure and points of application. Ecology evaluates each criterion independently to determine reasonable potential and permit limits. For this permitted discharge, there was not sufficient information on temperature of the effluent or the receiving water to determine compliance with water quality criteria for temperature. The permit requires continuous monitoring of effluent temperature. The permit will not require the Bingen POTW to monitor receiving water for the following reasons:

- The Columbia and Snake River temperature TMDL is in progress and a waste load allocation for the POTW may be developed as part of that process (EPA 2002).
- Sampling in the Columbia River requires expensive equipment and specialized expertise. The whole water column must be sampled at three different locations from a boat or bridge with a crane. Temperature data must be collected at more than one depth. Bingen is a small community and does not have the resources to conduct the study.
- A Temperature Reduction Study will be required in the permit to identify methods that may work at the Bingen POTW. Information will be provided to Bingen to do the study and it does not need to be conducted by an engineer.

Because there is a TMDL for temperature in progress, performance-based temperature limits will be included in this permit. The limits are based on the 95th and 99th percentiles of maximum monthly temperatures for monthly average and maximum daily, respectively. The performance-based limits are 23.8 °C (average monthly) and 25.0 °C (maximum daily). The percentiles were calculated using the SPSS statistical package and are based on frequency (Appendix C).

pH

Ecology modeled the impact of the effluent pH on the receiving water using the calculations from EPA, 1988, and the chronic dilution factor of 59.1. The receiving water input variables used are listed above in Table 6. The effluent input variables used are included in Table 2. Ecology predicts no violation of the pH criteria under critical conditions. Therefore, the proposed permit includes technology-based effluent limits for pH.

Fecal coliform bacteria

An increase in E. Coli concentrations in surface water samples were identified in samples collected by the Columbia RiverKeeper downstream of the Bingen POTW outfall during the late summer (Pecore 2007). The increase may indicate that there may be some surface warming occurring due to impoundment of the river. Warming could reduce mixing at the surface and allow bacteria from bird feces to increase in the surface layer. The concentrations did not exceed the EPA water quality standard. Additional study is needed to determine if the surface layer is warming compared to the river at depth.

Ecology modeled the numbers of fecal coliform by simple mixing analysis using the technology-based limit of 400 organisms per 100 milliliter (ml) and a dilution factor of 59.7 (Human Health non-carcinogen; Table 10). Under critical conditions modeling predicts no violation of the water quality criterion for fecal coliform bacteria. The proposed permit includes the technology-based effluent limitation for fecal coliform bacteria. If additional data are available, the fecal coliform bacteria limit will be evaluated again during the next permit cycle.

Toxic Pollutants (Ammonia)

Federal regulations (40 CFR 122.44) require Ecology to place limits in NPDES permits on toxic chemicals in an effluent whenever there is a reasonable potential for those chemicals to exceed the surface water quality criteria. Ecology does not exempt facilities with technology-based effluent limits from meeting the surface water quality standards.

Ammonia is a toxic pollutant present in the discharge. Ecology conducted a reasonable potential analysis (See Appendix C) to determine whether effluent limits for ammonia would be required in this permit, using procedures given in EPA, 1991.

Ecology derived effluent limits for ammonia, determined to have a reasonable potential to cause a violation of the water quality standards. Ecology calculated effluent limits using methods from EPA, 1991 as shown in Appendix C. The ammonia effluent limits are 10.0 mg/L and 10.2 mg/L for the monthly average and maximum daily limits, respectively.

WHOLE EFFLUENT TOXICITY

The water quality standards for surface waters forbid discharge of effluent that causes toxic effects in the receiving waters. Many toxic pollutants cannot be measured by commonly available detection methods. However, laboratory tests can measure toxicity directly by exposing living organisms to the wastewater and measuring their responses. These tests measure the aggregate toxicity of the whole effluent, so this approach is called whole effluent toxicity (WET) testing. Some WET tests measure acute toxicity and other WET tests measure chronic toxicity.

Using the screening criteria in chapter 173-205-040 WAC, Ecology determined that toxic effects caused by unidentified pollutants in the effluent are unlikely. Therefore, this permit does not require WET testing. Ecology may require WET testing in the future, if we receive information indicating that toxicity may be present in this effluent.

HUMAN HEALTH

Washington's water quality standards include 91 numeric human health-based criteria that Ecology must consider when writing NPDES permits. These criteria were established in 1992 by the U.S. EPA in its National Toxics Rule (40 CFR 131.36). The National Toxics Rule allows states to use mixing zones to evaluate whether discharges comply with human health criteria. Ecology determined the applicant's discharge is unlikely to contain chemicals regulated to protect human health. Ecology will re-evaluate this discharge for impacts to human health at the next permit reissuance.

GROUND WATER QUALITY LIMITS

The Ground Water Quality Standards, (chapter 173-200 WAC), protect beneficial uses of ground water. Permits issued by Ecology must not allow violations of those standards (WAC 173-200-100).

The Bingen POTW does not discharge wastewater to the ground. No permit limits are required to protect ground water.

TEMPERATURE REDUCTION STUDY

Using information provided by Ecology, the permittee will identify methods to reduce the temperature of its effluent. The study does not need to be prepared by an engineer.

COMPARISON OF EFFLUENT LIMITS WITH THE PREVIOUS PERMIT

Table 11. Comparison of Effluent Limits.

Parameter	Basis of Limit	Previous Effluent Limits: Outfall # 001		Proposed Effluent Limits: Outfall # 001	
		Average Monthly	Maximum Average Weekly	Average Monthly	Maximum Average Weekly
Biochemical Oxygen Demand (5-day), mg/L	Technology	30	45	30	45
Biochemical Oxygen Demand (5-day), lbs/day		197	296	197	296
Total Suspended Solids, mg/L	Technology	30	45	30	45
Total Suspended Solids, lbs/day		197	296	197	296
Fecal Coliform Bacteria, colonies per 100 mL	Technology	200	400	200	400
Temperature, °C	Water Quality	None	None	23.8	25.0
Ammonia (Total) mg/L	Water Quality	None	None	10.0	10.2
pH Range; Standard Units	Technology		Daily 6 to 9		Daily 6 to 9

MONITORING REQUIREMENTS

Ecology requires monitoring, recording, and reporting (WAC 173-220-210 and 40 CFR 122.41) to verify that the treatment process is functioning correctly and that the discharge complies with the permit's effluent limits.

Permit Condition S2 details the proposed monitoring schedule. Specified monitoring frequencies take into account the quantity and variability of the discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring. The required monitoring frequency is consistent with agency guidance given in the current version of Ecology's *Permit Writer's Manual* (July 1994) for an activated sludge oxidation ditch.

Monitoring of sludge quantity and quality is necessary to determine the appropriate uses of the sludge. Sludge monitoring is required by the current state and local solid waste management program and also by EPA under 40 CFR 503.

LAB ACCREDITATION

Ecology requires that all monitoring data (with the exception of certain parameters) must be prepared by a laboratory registered or accredited under the provisions of chapter 173-50 WAC, *Accreditation of Environmental Laboratories*. Ecology accredited the laboratory at this facility for Biochemical Oxygen Demand (5-day), Total Suspended Solids, Dissolved Oxygen, Fecal Coliform Bacteria, and pH.

OTHER PERMIT CONDITIONS

REPORTING AND RECORDKEEPING

Ecology based Special Condition S3 on our authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 173-220-210).

PREVENTION OF FACILITY OVERLOADING

Overloading of the treatment plant is a violation of the terms and conditions of the permit. To prevent this from occurring, RCW 90.48.110 and WAC 173-220-150 require the permittee to take the actions detailed in proposed Special Condition S4 to plan expansions or modifications before existing capacity is reached and to report and correct conditions that could result in new or increased discharges of pollutants. Special Condition S4 restricts the amount of flow.

OPERATION AND MAINTENANCE (O&M)

The proposed permit contains Special Condition S5 authorized under RCW 90.48.110, WAC 173-220-150, Chapter 173-230 WAC, and WAC 173-240-080. It is included to ensure proper operation and regular maintenance of equipment, and to ensure that adequate safeguards are taken so that constructed facilities are used to their optimum potential in terms of pollutant capture and treatment.

Consultants prepared the current O&M manual in 1997 as part of the upgrade. The manual does not contain adequate explanation of daily, weekly, and yearly tasks that must be performed for proper operation and maintenance at the POTW. The proposed permit requires an operator training operations and maintenance manual that fully explains maintenance tasks that need to be performed and the frequency.

INFILTRATION AND INFLOW EVALUATION

Inflow and overflows have been documented in the Bingen POTW collection system and need to be further characterized. The permit will require the collection system to be characterized for the presence of leaks:

- how much of the annual average and peak daily flow under worst conditions (inflow or infiltration) can be attributed to leaks?
- where are the (individual) leaks?
- how large is each leak or how much inflow or infiltration does a run of sewer contribute?

Three good references to aid in these tasks are: 1) American Society of Civil Engineers and Water Environment Federation Manual of Practice FD-6. Existing Sewer Evaluation and Rehabilitation, 2) U.S. Environmental Protection Agency. Handbook for Sewer System Infrastructure Analysis and Rehabilitation. EPA/625/6-91/030. 1991, and 3) Washington State Department of Transportation. Standard Specifications for Road, Bridge, and Municipal Construction. 2002.

An updated infiltration and inflow evaluation will be required under permit condition S4.E. The evaluation will show the effectiveness of efforts to reduce collection system leaks.

PRETREATMENT

Federal and State Pretreatment Program Requirements

Under the terms of the addendum to the “Memorandum of Understanding between Washington Department of Ecology and the United States Environmental Protection Agency, Region 10” (1986), Ecology has been delegated authority to administer the Pretreatment Program. Under this delegation of authority, Ecology issues wastewater discharge permits for significant industrial users discharging to POTWs which have not been delegated authority to issue their own wastewater discharge permits. The requirements for a Pretreatment Program are contained in Title 40, part 403 of the Code of Federal Regulations. Under the requirements of the Pretreatment Program (40 CFR 403.8(f)(1)(iii)), Ecology is required to approve, condition, or deny new discharges or a significant increase in the discharge for existing significant industrial users (SIUs) (40 CFR 403.8 (f)(1)(i)).

Ecology is responsible for issuing State Waste Discharge Permits to industrial users of the sewer system. Industrial dischargers must obtain these permits from Ecology before the POTW accepts the discharge (WAC 173-216-110(5)). Industries discharging wastewater that is similar in character to domestic wastewater are not required to obtain a permit.

Requirements for Routine Identification and Reporting of Industrial Users

The NPDES permit requires non-delegated POTWs to take “continuous, routine measures to identify all existing, new, and proposed SIUs and potential significant industrial users (PSIUs)” discharging to their sewer system. Examples of such routine measures include regular review of business tax licenses, water billing records and existing connection authorization records. System maintenance personnel can also identify and report new industrial dischargers in the course of performing their jobs. Local newspapers, telephone directories, and word-of-mouth can also be important sources of information regarding new or existing discharges. The POTW must notify an industrial discharger, in writing, of their responsibility to apply for a state waste discharge permit and send a copy of the written notification to Ecology.

Annual Submittal of List of Industrial Users

This provision requires the POTW to submit annually a list of existing and proposed SIUs and PSIUs. This requirement is intended to provide Ecology with an update of the status of industrial users in the POTW's service area, without requiring the POTW to go through the formal Industrial User Survey. The POTW is still required to take adequate continuous routine measures to identify existing and new industrial discharges.

Duty to Enforce Discharge Prohibitions

This provision prohibits the POTW from authorizing or permitting an industrial discharger to discharge certain types of waste into the sanitary sewer.

- The first portion of the provision prohibits acceptance of pollutants which cause pass through or interference. Definitions of pass through and interference are in Appendix B of the fact sheet.
- The second portion of this provision prohibits the POTW from accepting certain specific types of wastes, namely those which are explosive, flammable, excessively acidic, basic, otherwise corrosive, or obstructive to the system. In addition, wastes with excessive BOD, petroleum based oils, or wastes which result in toxic gases are prohibited. The regulatory basis for these prohibitions is 40 CFR Part 403, with the exception of the pH provisions which are based on WAC 173-216-060.
- The third portion of this provision prohibits certain types of discharges unless the POTW receives prior authorization from Ecology. These discharges include cooling water in

significant volumes, stormwater and other direct inflow sources, and wastewaters significantly affecting system hydraulic loading, which do not require treatment.

Support by Ecology for Developing Partial Pretreatment Program by POTW

Ecology commits to providing technical and legal assistance to the Bingen POTW in fulfilling these joint obligations. In particular, Ecology will assist with developing an adequate sewer use ordinance, notification procedures, enforcement guidelines, user contracts, and developing local limits and inspection procedures.

RESIDUAL SOLIDS HANDLING

To prevent water quality problems, the permittee is required in permit condition S7. to store and handle all residual solids (grit, screenings, scum, sludge, and other solid waste) in accordance with the requirements of RCW 90.48.080 and State Water Quality Standards.

The final use and disposal of sewage sludge from this facility is regulated by U.S. EPA under 40 CFR 503, and by Ecology under Chapter 70.95J RCW, Chapter 173-308 WAC "Biosolids Management", and Chapter 173-350 WAC "Solid Waste Handling Standards". The disposal of other solid waste is under the jurisdiction of the Klickitat County Health Department.

GENERAL CONDITIONS

Ecology bases the standardized General Conditions on state and federal law and regulations. They are included in all individual municipal NPDES permits issued by Ecology.

PERMIT ISSUANCE PROCEDURES

PERMIT MODIFICATIONS

Ecology may modify this permit to impose numerical limits, if necessary to comply with water quality standards for surface waters, with sediment quality standards, or with water quality standards for ground waters, based on new information from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

Ecology may also modify this permit to comply with new or amended state or federal regulations.

PROPOSED PERMIT ISSUANCE

This proposed permit meets all statutory requirements for Ecology to authorize a wastewater discharge. The permit includes limits and conditions to protect human health and aquatic life, and the beneficial uses of waters of the State of Washington. Ecology proposes to issue this permit for a term of 5 years.

REFERENCES FOR TEXT AND APPENDICES

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APPENDIX A--PUBLIC INVOLVEMENT INFORMATION

Ecology proposes to reissue a permit to the City of Bingen POTW. The permit includes wastewater discharge limits and other conditions. This fact sheet describes the facility and Ecology's reasons for requiring permit conditions.

Ecology placed a Public Notice of Application on June 21, 2007 in the White Salmon Enterprise and the Goldendale Sentinel to inform the public about the submitted application and to invite comment on the reissuance of this permit.

Ecology will place a Public Notice of Draft on March 6, 2008 in the White Salmon Enterprise to inform the public and to invite comment on the proposed draft National Pollutant Discharge Elimination System permit and fact sheet.

The Notice –

- tells where copies of the draft Permit and Fact Sheet are available for public evaluation (a local public library, the closest Regional or Field Office, posted on our website.).
- offers to provide the documents in an alternate format to accommodate special needs.
- asks people to tell us how well the proposed permit would protect the receiving water.
- invites people to suggest fairer conditions, limits, and requirements for the permit.
- invites comments on Ecology's determination of compliance with antidegradation rules.
- urges people to submit their comments, in writing, before the end of the Comment Period
- tells how to request a public hearing of comments about the proposed NPDES Permit.
- explains the next step(s) in the permitting process.

Ecology has published a document entitled **Frequently Asked Questions about Effective Public Commenting** which is available on our website at <http://www.ecy.wa.gov/biblio/0307023.html>.

You may obtain further information from Ecology by telephone, 509/457-7105 or by writing to the address listed below.

Water Quality Permit Coordinator
Department of Ecology
Central Regional Office
15 West Yakima Avenue, Suite 200
Yakima, WA 98902

The primary author of this permit and fact sheet is Jean Hays.

NOTICE: ANNOUNCEMENT OF AVAILABILITY OF DRAFT PERMIT

PERMIT NO.: WA-002237-3

**APPLICANT: CITY OF BINGEN
PO BOX 607
BINGEN, WA 98605**

has applied for renewal of National Pollutant Discharge Elimination System (NPDES) Permit No. WA-002237-3 in accordance with the provisions of Chapter 90.48 Revised Code of Washington (RCW), Chapter 173-220 Washington Administrative Code (WAC), and the Federal Clean Water Act.

Following evaluation of the application and other available information, a draft permit has been developed which would allow the discharge of municipal wastewater average daily flow of 800,000 gallons per day to the Columbia River from its facility located at 208 Marina Drive, Bingen, WA. All discharges to be in compliance with the Department of Ecology's Water Quality Standards for a permit to be issued.

A tentative determination has been made to reissue this permit based on the effluent limitations and special permit conditions that will prevent and control pollution. A final determination will not be made until all timely comments received in response to this notice have been evaluated.

PUBLIC COMMENT AND INFORMATION

The draft permit and fact sheet may be viewed at the Department of Ecology (Department) website: http://www.ecy.wa.gov/programs/wq/permits/central_permits.html. The application, fact sheet, proposed permit, and other related documents are also available at the Department's Central Regional Office for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m., weekdays. To obtain a copy or to arrange to view copies at the Central Regional Office, please call Cindy Huwe at 509/457-7105, e-mail chuw461@ecy.wa.gov, or write to the address below.

Interested persons are invited to submit written comments regarding the proposed permit. All comments must be submitted by April 6, 2008 (within 30 days of the final date of publication of this notice) to be considered for the final determination. Comments should be sent to: Department of Ecology, Central Regional Office, 15 West Yakima Avenue, Suite 200, Yakima, WA 98902, Attention: Cindy Huwe. E-mail comments should be sent to Cindy Huwe at chuw461@ecy.wa.gov.

Any interested party may request a public hearing on the proposed permit within 30 days of the publication date of this notice. The request for a hearing shall state the interest of the party and the reasons why a hearing is necessary. The request should be sent to the above address. The Department will hold a hearing if it determines that there is significant public interest. If a hearing is to be held, public notice will be published at least 30 days in advance of the hearing date. Any party responding to this notice with comments will be mailed a copy of a hearing public notice. Please bring this public notice to the attention of persons who you know would be interested in this matter. The Department is an equal opportunity agency. If you have a special accommodation needs, please contact Cindy Huwe at 509/457-7105 or TTY (for the speech and hearing impaired) at 1-800-833-6388.

Publication date of this Notice is March 6, 2008.

APPENDIX B--GLOSSARY

Acute Toxicity--The lethal effect of a compound on an organism that occurs in a short period of time, usually 48 to 96 hours.

AKART-- An acronym for "all known, available, and reasonable methods of prevention, control and treatment".

Ambient Water Quality--The existing environmental condition of the water in a receiving water body.

Ammonia--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Average Monthly Discharge Limitation --The average of the measured values obtained over a calendar month's time.

Best Management Practices (BMPs)--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD₅--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD₅ is used in modeling to measure the reduction of dissolved oxygen in receiving waters after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass--The intentional diversion of waste streams from any portion of a treatment facility.

Chlorine--Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

Chronic Toxicity--The effect of a compound on an organism over a relatively long time, often 1/10 of an organism's lifespan or more. Chronic toxicity can measure survival, reproduction or growth rates, or other parameters to measure the toxic effects of a compound or combination of compounds.

Clean Water Act (CWA)--The Federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117; USC 1251 et seq.

Compliance Inspection - Without Sampling--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance Inspection - With Sampling--A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the 85 percent removal requirement. Additional sampling may be conducted.

Composite Sample--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing discrete samples. May be "time-composite"(collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots.

Construction Activity--Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

Continuous Monitoring --Uninterrupted, unless otherwise noted in the permit.

Critical Condition--The time during which the combination of receiving water and waste discharge conditions have the highest potential for causing toxicity in the receiving water environment. This situation usually occurs when the flow within a water body is low, thus, its ability to dilute effluent is reduced.

Dilution Factor (DF)--A measure of the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. Expressed as the inverse of the percent effluent fraction e.g., a dilution factor of 10 means the effluent comprises 10% by volume and the receiving water 90%.

Engineering Report--A document which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report must contain the appropriate information required in chapter 173-240 WAC.

Fecal Coliform Bacteria--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

Grab Sample--A single sample or measurement taken at a specific time or over as short a period of time as is feasible.

Industrial Wastewater--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Major Facility--A facility discharging to surface water with an EPA rating score of > 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Maximum Daily Discharge Limitation--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Method Detection Level (MDL)--The minimum concentration of a substance that can be measured and reported with 99% confidence that the pollutant concentration is above zero and is determined from analysis of a sample in a given matrix containing the pollutant.

Minor Facility--A facility discharging to surface water with an EPA rating score of < 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Mixing Zone--An area that surrounds an effluent discharge within which water quality criteria may be exceeded. The area of the authorized mixing zone is specified in a facility's permit and follows procedures outlined in state regulations (chapter 173-201A WAC).

National Pollutant Discharge Elimination System (NPDES)--The NPDES (Section 402 of the Clean Water Act) is the Federal wastewater permitting system for discharges to navigable waters of the United States. Many states, including the State of Washington, have been delegated the authority to issue these permits. NPDES permits issued by Washington State permit writers are joint NPDES/State permits issued under both State and Federal laws.

pH--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

Quantitation Level (QL)-- A calculated value five times the MDL (method detection level).

Responsible Corporate Officer-- A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or have gross annual sales or expenditures exceeding \$25 million (in second quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures (40 CFR 122.22).

Technology-based Effluent Limit--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

Total Suspended Solids (TSS)--Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to receiving waters may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

State Waters--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

Stormwater--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

Upset--An exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limits because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventative maintenance, or careless or improper operation.

Water Quality-based Effluent Limit--A limit on the concentration of an effluent parameter that is intended to prevent the concentration of that parameter from exceeding its water quality criterion after it is discharged into receiving waters.

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APPENDIX C—DATA AND TECHNICAL CALCULATIONS

Several of the Excel® spreadsheet tools used to evaluate a discharger's ability to meet Washington State water quality standards can be found on Ecology's homepage at <http://www.ecy.wa.gov>.

Effluent Data

	ALKALINITY	BOD, 5-DAY	COLIFORM	COLIFORM	FLOW	FLOW	HARDNESS	AMMONIA	OXYGEN	OXYGEN	PH	PH	SOLIDS	SOLIDS	T SOLIDS	T SOLIDS	T SOLIDS	TEMPERATURE				
	AVG	AVG	AVG	AVW	AVW	AVG	GEM	GM7	AVG	MAX	AVG	AVG	MAX	MIN	MAX	MIN	AVG	AVG	AVG	AVW	AVW	MAX
	MG/L	LBS/DAY	MG/L	LBS/DAY	MG/L	PERCENT	#/100 ML	#/100 ML	MGD	MCD	MG/L	MG/L	MG/L	MG/L	S.U.	S.U.	PERCENT	LBS/DAY	MG/L	LBS/DAY	MG/L	°C
	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value
BINGEN STP																						
WA0022373C																						
DMR (MONTHLY)																						
EFFLUENT																						
1-Jan-04		14.00	3.40	19.00	7.10	97.90	26.00	32.00	0.55	1.03			7.50	4.50	7.40	6.80	92.20	48.00	10.00	98.00	18.00	11.80
1-Feb-04		52.00	11.80	100.00	25.90	90.90	138.00	516.00	0.55	0.82			7.40	4.90	7.20	6.90	84.50	59.00	19.00	177.00	46.00	11.80
1-Mar-04	137.00	30.00	8.70	39.00	9.20	96.60	61.00	206.00	0.40	0.51	76.00	1.60	6.10	3.90	7.40	6.80	86.40	81.00	24.00	120.00	38.00	15.00
1-Apr-04		15.00	5.50	25.00	6.50	97.50	10.00	16.00	0.31	0.42			5.70	4.20	7.20	7.00	95.90	27.00	10.00	70.00	24.00	17.20
1-May-04		11.00	4.60	14.00	6.40	97.10	4.00	32.00	0.27	0.32			5.50	4.10	7.30	7.00	90.00	13.00	6.00	22.00	10.00	10.30
1-Jun-04		13.00	5.50	14.00	7.00	97.00	32.00	202.00	0.29	0.36			5.40	4.20	6.10	7.00	90.00	17.00	6.00	32.00	7.00	22.20
1-Jul-04	116.00	13.00	5.80	17.00	7.30	96.50	34.00	109.00	0.27	0.29	74.00	1.35	5.20	3.90	7.47	7.00	98.00	13.00	6.00	20.00	9.00	22.20
1-Aug-04		10.00	4.90	11.00	6.00	96.70	28.00	78.00	0.26	0.30			6.20	3.70	7.30	7.00	96.70	12.00	5.00	19.00	8.00	25.00
1-Sep-04		14.00	6.20	19.00	7.80	96.00	26.00	78.00	0.28	0.36			5.40	3.60	7.60	7.20	97.90	13.00	6.00	21.00	9.00	21.90
1-Oct-04		13.00	5.60	17.00	7.40	96.30	13.00	260.00	0.28	0.36			5.60	3.10	7.30	7.10	96.70	8.00	4.00	12.00	6.00	21.11
1-Nov-04	136.00	13.00	6.10	19.00	10.00	97.10	10.00	132.00	0.26	0.32	07.00	1.00	6.20	3.70	7.30	7.10	97.90	11.00	5.00	23.00	2.00	16.66
1-Dec-04		0.40	3.70	19.00	9.00	98.30	21.00	240.00	0.27	0.37			6.40	3.00	7.40	7.10	97.40	15.00	7.00	19.00	10.00	15.00
1-Jan-05		13.00	5.00	22.00	8.40	97.50	12.00	83.00	0.30	0.39			5.40	3.60	7.70	7.10	97.60	15.00	6.00	24.00	9.00	13.80
1-Feb-05	120.00	13.00	5.10	16.00	6.50	97.50	18.00	84.00	0.29	0.33	80.00	1.43	6.00	4.50	7.30	7.10	97.30	15.00	6.00	23.00	10.00	14.44
1-Mar-05		11.00	4.40	16.00	6.40	98.30	32.00	297.00	0.30	0.48			4.86	3.80	7.30	7.00	98.00	14.00	5.00	22.00	9.00	15.00
1-Apr-05		16.00	5.90	18.00	7.00	97.20	64.00	417.00	0.33	0.39			5.60	3.60	7.30	7.10	97.60	15.00	6.00	26.00	11.00	16.11
1-May-05	140.00	15.00	5.50	20.00	7.60	97.50	8.00	43.00	0.30	0.37	06.00	1.49	3.79	3.60	7.30	7.00	97.30	19.00	7.00	37.00	12.00	17.77
1-Jun-05		9.00	4.20	12.00	5.30	98.30	14.00	25.00	0.27	0.31			3.63	3.30	7.50	7.20	98.50	9.00	4.00	13.00	6.00	20.55
1-Jul-05		11.00	4.70	13.00	5.90	98.10	16.00	57.00	0.26	0.30			3.88	3.20	7.40	7.20	98.60	8.00	4.00	16.00	7.00	23.33
1-Aug-05		12.00	6.00	13.00	6.00	98.00	17.00	28.00	0.25	0.32			5.20	3.10	7.40	7.20	98.00	13.00	6.00	18.00	8.00	23.90
1-Sep-05		12.00	5.30	20.00	8.00	98.00	22.00	27.00	0.27	0.30			5.00	3.10	7.40	7.20	98.60	12.00	5.00	15.00	7.00	21.10
1-Oct-05		7.00	3.40	10.00	4.60	98.70	14.00	42.00	0.27	0.30			4.40	3.20	7.40	7.20	99.10	7.00	3.00	13.00	6.00	19.40
1-Nov-05	142.00	15.00	6.30	24.00	9.60	98.00	4.00	12.00	0.33	0.41	06.00	1.48	5.70	3.70	7.40	7.10	97.40	19.00	6.00	26.00	11.00	16.67
1-Dec-05		27.00	5.90	72.00	0.50	97.30	5.00	7.00	0.49	1.37			7.50	4.00	7.40	7.10	90.10	29.00	5.00	110.00	13.00	12.00
1-Jan-06	94.00	54.00	10.10	69.00	11.00	91.20	14.00	230.00	0.75	1.14	78.00	1.12	0.50	3.90	7.60	7.00	87.10	83.00	15.00	110.00	16.00	12.20
1-Feb-06		57.00	12.30	69.00	18.00	92.00	39.00	202.00	0.55	0.96			6.80	3.80	7.40	7.00	86.30	97.00	21.00	143.00	37.00	13.90
1-Mar-06		32.00	9.60	47.00	14.00	95.50	12.00	37.00	0.40	0.46			6.90	4.00	7.50	7.10	96.00	27.00	8.00	41.00	12.00	14.40
1-Apr-06	106.00	33.00	11.60	46.00	16.50	94.90	15.00	76.00	0.34	0.37	74.00	1.06	5.10	3.70	7.20	6.90	93.30	39.00	14.00	65.00	20.00	16.70
1-May-06		32.00	12.40	43.00	18.00	94.80	24.00	68.00	0.30	0.34			6.20	4.10	7.30	6.80	93.30	37.00	14.00	60.00	19.00	20.00
1-Jun-06		22.00	9.40	30.00	13.00	96.00	37.00	90.00	0.29	0.37			5.00	3.20	7.30	6.90	94.70	32.00	14.00	46.00	20.00	20.60
1-Jul-06		24.00	9.70	20.00	10.00	95.90	14.00	41.00	0.30	0.32			5.70	4.00	7.50	7.20	95.40	31.00	13.00	47.00	10.00	23.90
1-Aug-06	116.00	10.00	0.40	29.00	14.40	96.00	36.00	61.00	0.27	0.39	94.00	0.43	4.90	3.70	7.60	7.30	95.50	36.00	16.00	54.00	24.00	23.30
1-Sep-06		20.00	8.80	24.00	11.00	96.30	70.00	151.00	0.27	0.28			5.20	3.60	7.60	7.20	96.50	21.00	9.00	28.00	12.00	22.20
1-Oct-06		17.00	8.00	23.00	11.50	97.10	76.00	120.00	0.26	0.36			5.10	3.30	7.60	7.20	96.40	23.00	11.00	44.00	22.00	20.00
1-Nov-06		23.00	6.20	36.00	8.70	96.80	15.00	166.00	0.51	0.74			5.40	3.60	7.40	7.10	96.30	24.00	6.00	32.00	7.00	16.10
1-Dec-06		37.00	7.10	49.00	9.40	94.80	20.00	261.00	0.61	1.08			5.80	4.30	7.40	7.00	89.90	60.00	11.00	109.00	16.00	13.90
1-Jan-07	103.00	107.00	24.20	64.00	75.00	90.10	3.00	10.00	0.51	1.06	76.00	0.70	5.60	3.40	7.20	6.90	20.60	913.00	100.00	3531.00	399.00	11.10
1-Feb-07		24.00	6.00	32.00	8.00	96.10	5.00	10.00	0.42	0.53			4.90	3.00	7.10	6.00	95.40	24.00	7.00	30.00	12.00	11.70
1-Mar-07		31.00	8.90	33.00	9.60	96.60	8.00	20.00	0.41	0.51			4.60	3.10	7.10	7.00	96.30	34.00	10.00	67.00	23.00	13.30
1-Apr-07	127.00	57.00	21.80	102.00	40.80	90.10	3.00	10.00	0.32	0.40	84.00	7.00	4.30	3.40	7.30	6.30	79.90	107.00	42.00	225.00	90.00	15.60
1-May-07		19.00	9.50	28.00	11.00	94.60	6.00	19.00	0.29	0.34			4.30	3.30	7.30	7.00	93.80	25.00	10.00	40.00	15.00	18.30
Average	123.09	26.72	7.76	46.83	12.10	96.94	24.78	112.32	0.36	0.50	81.36	1.70	5.66	3.70	7.39	7.03	93.30	61.32	12.24	137.41	26.80	17.64
Maximum	148.00	187.00	24.20	64.00	75.00	98.70	138.00	516.00	0.75	1.37	94.00	7.00	8.60	4.90	8.10	7.30	99.10	913.00	108.00	3531.00	399.00	25.00
Minimum	94.00	7.00	3.40	10.00	4.60	90.10	3.00	7.00	0.25	0.26	74.00	0.43	3.79	3.00	7.10	6.30	20.60	7.00	3.00	12.00	2.00	11.10
Limit/ Design criteria		197	30	296	45	05	200	400	0.8	2					9	6	05	197	30	296	45	

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CITY OF BINGEN POTW
EXPIRATION DATE: MAY 31, 2013
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Influent Data

	BOD, 5-DAY	BOD, 5-DAY	BOD, 5-DAY	BOD, 5-DAY	OXYGEN,	OXYGEN,	PH	PH	SOLIDS, T	SOLIDS, T	SOLIDS, T	SOLIDS, T	TEMPERA	TEMPERA
	AVG	AVG	MAX	MAX	AVG	MIN	MAX	MIN	AVG	AVG	MAX	MAX	AVG	MAX
	LBS/DAY	MG/L	LBS/DAY	MG/L	MG/L	MG/L	S. U.	S. U.	LBS/DAY	MG/L	LBS/DAY	MG/L	°C	°C
	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value
BINGEN STP														
WA0022373C														
DMR (MONTHLY)														
INFLUENT														
IN1														
1-Jan-04	704	160	876	199	8	5.9	8.1	7.4	605	131	939	171	11.1	12.2
1-Feb-04	540	129	651	154	8	7	7.9	7.3	506	123	649	174	11.1	12.2
1-Mar-04	826	248	963	329	6.2	5.2	9.3	7.8	564	166	678	196	13.3	14.4
1-Apr-04	598	219	744	274	5	3.4	8.2	7.7	634	232	878	323	15	17.2
1-May-04	370	160	396	167	5.2	4.2	8.2	7.8	651	281	753	306	17.2	18.3
1-Jun-04	383	160	601	242	6.5	4.1	8.1	7.6	523	220	572	238	18.9	21.1
1-Jul-04	409	186	551	242	2.6	1.6	8	7.6	662	301	756	331	20.5	22.2
1-Aug-04	324	151	376	170	2.3	0.7	8.9	7.6	818	397	1224	689	22.2	25
1-Sep-04	362	156	507	214	2.4	0.4	9.1	7.2	643	278	815	343	20.5	21.6
1-Oct-04	349	149	388	161	3	1.2	8.8	7.6	615	260	725	308	18.9	21.1
1-Nov-04	439	212	528	264	3.8	2.6	8.6	7.7	536	253	617	270	16.11	17.22
1-Dec-04	500	216	610	277	4.6	2.8	8.2	7.7	581	251	653	294	14.44	15
1-Jan-05	612	240	737	276	5.9	4.8	8.6	7.9	636	252	699	279	12.2	14.4
1-Feb-05	587	244	641	256	6.2	5.4	8.4	7.3	558	231	683	273	12.22	13.88
1-Mar-05	621	255	704	326	4.9	3.6	8.2	7.8	661	272	704	313	13.89	15
1-Apr-05	538	209	639	238	6.2	5	8	7.5	623	235	810	284	14.44	15.55
1-May-05	613	226	928	300	4.1	3	8	7.7	677	254	919	297	16.66	17.22
1-Jun-05	538	244	637	281	3.1	2	8	7.5	612	278	881	397	18.33	19.44
1-Jul-05	540	251	601	294	2.4	0.5	7.9	7.1	578	268	635	285	20.56	22.78
1-Aug-05	538	261	632	287	2	1.1	8.1	7.6	721	363	790	385	21.6	23.3
1-Sep-05	631	271	788	346	1.6	0.4	8.1	7.8	783	336	1071	424	20.5	21.1
1-Oct-05	592	270	728	341	2.8	0.4	8	7.4	828	378	1065	499	18.8	19.4
1-Nov-05	765	317	930	387	5.3	2.8	9.8	7.8	711	293	944	393	15.6	17.2
1-Dec-05	723	218	1062	299	6.8	5.1	8.1	7.4	952	269	1631	459	11.1	13.3
1-Jan-06	606	115	712	158	8.4	7.3	7.6	7	610	116	658	146	11.1	12.2
1-Feb-06	689	153	739	184	7.7	4.9	8.1	7.2	672	150	717	186	11.7	12.2
1-Mar-06	779	232	1341	397	6.3	4.4	10.3	7.5	680	202	996	295	12.2	13.9
1-Apr-06	660	230	723	262	5	4.1	8	7.4	565	202	658	215	14.4	18.3
1-May-06	610	238	665	278	4.7	2.8	9.5	7.6	549	213	565	219	16.7	18.9
1-Jun-06	564	238	684	276	2.7	2	8	7.6	613	260	807	328	19.4	23.3
1-Jul-06	584	236	646	250	2.2	1.1	7.9	7.5	672	272	806	330	20.6	22.2
1-Aug-06	574	260	621	305	2.6	1.4	8.2	7.6	784	355	1044	452	22.8	23.9
1-Sep-06	538	238	695	323	2	1.2	8.3	7.4	606	267	741	323	21.1	22.2
1-Oct-06	582	274	693	305	2.8	2.2	8.4	7.6	653	309	753	376	19.4	20.6
1-Nov-06	703	192	893	284	4.7	3	8.4	7.3	563	155	668	237	15	17.2
1-Dec-06	684	136	583	199	6.4	5.4	7.6	7.2	555	107	733	127	11.7	13.9
1-Jan-07	561	122	788	197	6.4	5.7	7.8	7.2	710	136	1416	160	10.6	12.2
1-Feb-07	584	174	624	195	6	5.5	8.2	7.5	512	152	589	184	11.7	12.2
1-Mar-07	870	259	1294	442	5.4	4.6	7.8	7.5	918	277	1710	584	11.7	13.3
1-Apr-07	585	219	766	306	4.4	3.5	8.2	6.9	553	208	726	290	13.9	15.6
1-May-07	434	177	602	225	3.3	2.4	8.1	7.3	392	160	589	220	16.1	18.3
Average	578.27	210.85	714.32	266.10	4.63	3.29	8.32	7.49	641.10	240.32	835.78	307.39	15.98	17.57
Maximum	870.00	317.00	1341.00	442.00	8.40	7.30	10.30	7.90	952.00	397.00	1710.00	689.00	22.80	25.00
Minimum	324.00	115.00	376.00	154.00	1.60	0.40	7.60	6.90	392.00	107.00	565.00	127.00	10.60	12.20

DFLOW 7Q10 RESULTS; 27 JULY 2007

INPUT:
 US GAGE: 14105700 COLUMBIA RIVER
 PERIOD: 1968-2006; SEASON DEFINED AS May 1 to October 31

Output:
 DAYS IN RECORD: 14,062
 7Q10: 81,700 cfs
 Percentile: 1.87%
 Excursions per 3 years: 2.16

DFLOW 30Q5 Results, August 30, 2007

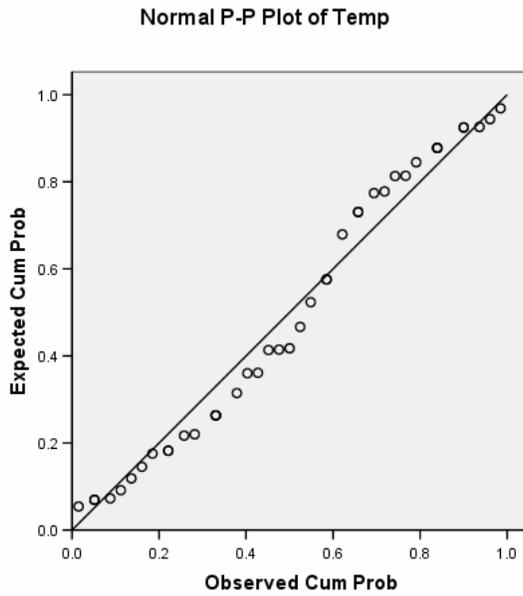
INPUT:
 US GAGE: 14105700 COLUMBIA RIVER
 DAYS IN RECORD: 18,261
 30Q5: 93,300 cfs
 Percentile: 6%
 Excursions per 3 years: 9.24
 Harmonic: 1.52E5

**Effluent Temperature
 Frequencies**

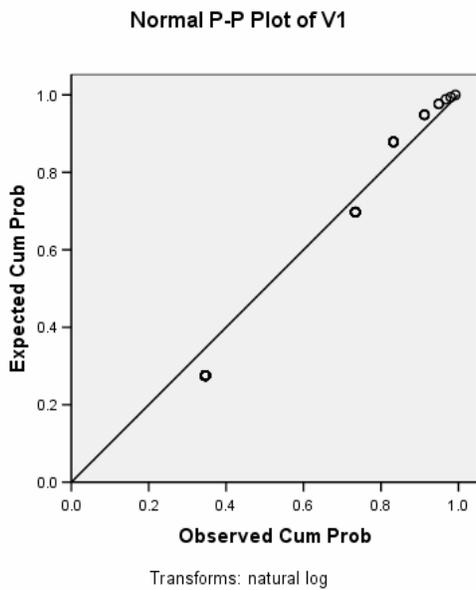
[DataSet1]

Statistics

Temp		
N	Valid	41
	Missing	0
Mean		17.535
Percentiles	50	16.700
	95	23.843
	99	25.000



Receiving Water Ammonia (log-transformed)



Statistics

log		
N	Valid	81
	Missing	0
Percentiles	50	-4.6052
	90	-3.2189
	95	-2.9957

Estimated Distribution Parameters

		V1
Normal Distribution	Location	-4.2339
	Scale	.62201

The cases are unweighted.

Effluent Ammonia Criteria Calculations

Freshwater un-ionized ammonia criteria based on Chapter 173-201A WAC
 Amended November 20, 2006

INPUT	
1. Temperature (deg C):	22.1
2. pH:	8.40
3. Is salmonid habitat an existing or designated use?	Yes
4. Are non-salmonid early life stages present or absent?	Present
OUTPUT	
1. Unionized ammonia NH3 criteria (mgNH3/L)	
Acute:	0.327
Chronic:	0.042
2. Total ammonia nitrogen criteria (mgN/L):	
Acute:	2.593
Chronic:	0.335

Effluent Ammonia Reasonable Potential Calculations

This spreadsheet calculates the reasonable potential to exceed state water quality standards for a small number of samples. The procedure and calculations are done per the procedure in Technical Support Document for Water Quality-based Toxics Control. U.S. EPA, March, 1991 (EPA/505/2-90-001) on page 56. User input columns are shown with red headings. Corrected formulas in col G and H on 5/98 (GB)

Parameter	Metal Criteria Translator as decimal	Metal Criteria Translator as decimal	Ambient Concentration (metals as dissolved) ug/L	State Water Quality Standard		Max concentration at edge of...		LIMIT REQ'D?
				Acute ug/L	Chronic ug/L	Acute Mixing Zone ug/L	Chronic Mixing Zone ug/L	
Ammonia	1.00	1.00	40.0000	2593.0000	335.0000	2966.69	245.02	YES

Effluent percentile value	Pn	Max effluent conc. measured (metals as total recoverable) ug/L	Coeff Variation CV	S	# of samples n	Multiplier	Acute Dil'n Factor	Chronic Dil'n Factor	COMMENTS

Effluent Ammonia Limit Calculation

PARAMETER	Dilution (Dil'n) factor is the inverse of the percent effluent concentration at the edge of the acute or chronic mixing zone.		Permit Limit Calculation Summary								Comments
	Acute Dil'n Factor	Chronic Dil'n Factor	Metal Criteria Translator or Acute	Metal Criteria Translator or Chronic	Ambient Concentration ug/L	Water Quality Standard Acute ug/L	Water Quality Standard Chronic ug/L	Average Monthly Limit (AML) ug/L	Maximum Daily Limit (MDL) ug/L		
ammonia	4.0	59.10	1.00	1.00	40.0000	2593.0000	335.0000	9964.7	10252.0		

Waste Load Allocation (WLA) and Long Term Average (LTA) Calculations							Statistical variables for permit limit calculation				
WLA Acute ug/L	WLA Chronic ug/L	LTA Acute ug/L	LTA Chronic ug/L	LTA Coeff. Var. (CV) decimal	LTA Prob'y Basis decimal	Limiting LTA ug/L	Coeff. Var. (CV) decimal	AML Prob'y Basis decimal	MDL Prob'y Basis decimal	# of Samples per Month n	
10252	17474.50	3291.7	9216.6	0.60	0.99	3291.7	0.60	0.95	0.99	0.25	

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BOD

Streeter-Phelps analysis of critical dissolved oxygen sag.

Based on Lotus File DOSAG2.WK1 Revised 19-Oct-93

INPUT				
1. EFFLUENT CHARACTERISTICS				
Discharge (cfs):				1.23787
CBOD5 (mg/L):				40
NBOD (mg/L):				5
Dissolved Oxygen (mg/L):				3.7
Temperature (deg C):				25
2. RECEIVING WATER CHARACTERISTICS				
Upstream Discharge (cfs):				81700
Upstream CBOD5 (mg/L):				0.0
Upstream NBOD (mg/L):				0
Upstream Dissolved Oxygen (mg/L):				8.94
Upstream Temperature (deg C):				22.1
Elevation (ft NGVD):				75
Downstream Average Channel Slope (ft/ft):				0.001
Downstream Average Channel Depth (ft):				40
Downstream Average Channel Velocity (fps):				
3. REAERATION RATE (Base e) AT 20 deg C (day ⁻¹):				
Reference	Applic. Vel (fps)	Applic. Dep (ft)		Suggested Values
Churchill	1.5 - 6	2 - 50		0.00
O'Connor and Dobbins	.1 - 1.5	2 - 50		0.00
Owens	.1 - 6	1 - 2		0.00
Tsivoglou-Wallace	.1 - 6	.1 - 2		0.00
4. BOD DECAY RATE (Base e) AT 20 deg C (day ⁻¹):				
Reference				Suggested Value
Wright and McDonnell, 1979				0.39

OUTPUT	
1. INITIAL MIXED RIVER CONDITION	
CBOD5 (mg/L):	0.0
NBOD (mg/L):	0.0
Dissolved Oxygen (mg/L):	8.9
Temperature (deg C):	22.1
2. TEMPERATURE ADJUSTED RATE CONSTANTS (Base e)	
Reaeration (day ⁻¹):	0.01
BOD Decay (day ⁻¹):	0.43
3. CALCULATED INITIAL ULTIMATE CBODU AND TOTAL BODU	
Initial Mixed CBODU (mg/L):	0.0
Initial Mixed Total BODU (CBODU + NBOD, mg/L):	0.0
4. INITIAL DISSOLVED OXYGEN DEFICIT	
Saturation Dissolved Oxygen (mg/L):	8.704
Initial Deficit (mg/L):	-0.24
5. TRAVEL TIME TO CRITICAL DO CONCENTRATION (days):	
	0.00
6. DISTANCE TO CRITICAL DO CONCENTRATION (miles):	
	0.00
7. CRITICAL DO DEFICIT (mg/L):	
	-0.24
8. CRITICAL DO CONCENTRATION (mg/L):	
	8.94

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pH

Calculation of pH of a mixture of two flows. Based on the procedure in EPA's DESCON program (EPA, 1988. Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling. USEPA Office of Water, Washington D.C.)

Based on Lotus File PHMIX2.WK1 Revised 19-Oct-93

INPUT		Max
1. DILUTION FACTOR AT MIXING ZONE BOUNDARY		59.100
2. UPSTREAM/BACKGROUND CHARACTERISTICS		
Temperature (deg C):		22.10
pH:		8.40
Alkalinity (mg CaCO3/L):		53.40
Temperature (deg C):		25.00
pH:		8.10
Alkalinity (mg CaCO3/L):		123.1
OUTPUT		
1. IONIZATION CONSTANTS		
Upstream/Background pKa:		6.37
Effluent pKa:		6.35
2. IONIZATION FRACTIONS		
Upstream/Background Ionization Fraction:		0.99
Effluent Ionization Fraction:		0.98
3. TOTAL INORGANIC CARBON		
Upstream/Background Total Inorganic Carbon (mg CaCO3/L):		53.90
Effluent Total Inorganic Carbon (mg CaCO3/L):		125.29
4. CONDITIONS AT MIXING ZONE BOUNDARY		
Temperature (deg C):		22.15
Alkalinity (mg CaCO3/L):		54.58
Total Inorganic Carbon (mg CaCO3/L):		55.10
pKa:		6.37
pH at Mixing Zone Boundary:		8.38

Cormix Output 7Q10 Chronic & Acute

The Cormix output is not readable in electronic form. If you would like a paper copy of the original output, please contact Jean Hays at 509.457-7119 or jhay461@ecy.wa.gov.

Cormix 30Q5

The Cormix output is not readable in electronic form. If you would like a paper copy of the original output, please contact Jean Hays at 509.457-7119 or jhay461@ecy.wa.gov.

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APPENDIX D--RESPONSE TO COMMENTS

No comments were received by the Department of Ecology.