

**REAUTHORIZATION ADDENDUM TO THE FACT SHEET FOR
CATHLAMET WASTEWATER TREATMENT PLANT
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
PERMIT WA0022667**

1. FACILITY GENERAL INFORMATION

Cathlamet Wastewater Treatment Plant	Renewal Date of Previous Permit:	October 3, 2011
171 East State Route 4 Cathlamet, Washington	Expiration Date:	October 31, 2016

2. APPLICATION AND COMPLIANCE REVIEW

The town of Cathlamet submitted an application to the Department of Ecology (Ecology) on April 18, 2016, for permit reissuance, and Ecology accepted it as complete on September 14, 2016. Ecology reviewed inspections and assessed compliance of the facility’s discharge with the terms and conditions in the previous permit. Ecology has sufficiently reviewed the application, Discharge Monitoring Reports (DMRs), and other facility information in enough detail to ensure that:

- The town of Cathlamet has complied with the terms, conditions, and requirements of the expired permit since commissioning a new wastewater treatment plant in early 2014.
- The discharge meets applicable effluent standards and limits, water quality standards, and other legally applicable requirements (see more information in Sections 3-5).
- Ecology has up-to date information on Cathlamet’s wastewater treatment practices, and the nature, content, volume, and frequency of its discharge.
- The discharge does not cause or contribute to listed receiving water body impairments.

Since commissioning the new wastewater treatment plant, Ecology has not received any additional information that indicates the environmental impacts from the discharge warrant a complete renewal of the permit. Therefore, Ecology chose to reauthorize this permit.

3. SUMMARY OF COMPLIANCE WITH PREVIOUS PERMIT ISSUED

Since commissioning a newly constructed wastewater treatment plant in early 2014, Cathlamet has complied with the effluent limits and conditions of the permit issued on October 3, 2011. Prior to startup of the new plant, the existing wastewater lagoon treatment system experienced permit compliance issues, including hydraulic and 5-day Biological Oxygen Demand (BOD₅) overloading, and excursions in permit limits for effluent pH, Fecal Coliform, and Total Suspended Solids (TSS). These instances largely occurred during wet weather months when the system appears to have been hydraulically overloaded. The new treatment plant more than doubled the hydraulic capacity of Cathlamet’s system and there have been no permit violations since the plant became operational.

Ecology assessed compliance based on its review of the facility’s information in the Ecology Permitting and Reporting Information System (PARIS), DMRs, and on inspections.

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4. EFFLUENT CHARACTERIZATION

Cathlamet reported the concentration of pollutants in the discharge in the permit application and in DMRs. The data tabulated below presents the quality of the wastewater effluent discharged between September 2015 and December 2019. This range was selected because 1) discreet sample data was not available in PARIS prior to September 2015 (i.e., PARIS only presents average weekly, average monthly, minimum/maximum, or geometric mean data prior to this date) and 2) data after December 2019 was not yet available in PARIS at the time this document was written.

Table 1 Wastewater Effluent Characterization (September 2015 - December 2019)

Parameter	Units	# of Samples	Average Value	Maximum Value
BOD ₅	mg/L	451	3.5	9.6
BOD ₅	lbs/day	451	3.0	51.2
TSS	mg/L	1088	7.5	>31.5
TSS	lbs/day	1088	7.3	>211
Parameter	Units	# of Samples	Minimum Value	Maximum Value
pH	Standard units	1582	6.1	8.3
Fecal coliform	Organisms/100mL	236	1	17.5

Cathlamet did not report certain monitoring parameters (Dissolved Oxygen, Nutrients, Oil and Grease, Total Dissolved Solids, and Total Hardness) listed under Condition S2.A.(6), Permit Renewal Application Requirements – Final Wastewater Effluent. These monitoring requirements will be carried forward in the reauthorized permit to better characterize the effluent discharge in the next permit renewal effort.

5. SURFACE WATER QUALITY STANDARDS AND IMPAIRMENTS

When the previous permit was issued to Cathlamet, the upgraded wastewater treatment plant had not yet been constructed and actual operational data was not available. Data from the new oxidation ditch was used to reassess the reasonable potential analyses in support of the reauthorized permit. Ecology also reviewed the impairment status of the Columbia River since issuance of the previous permit. The receiving water impairment now includes listings for Temperature, Dioxin, Polychlorinated Biphenyls, and Dissolved Oxygen.

Ecology has included a copy of the updated reasonable potential evaluation in Appendix C. Worst case or 95th percentile values were used for all effluent and receiving water quality parameters. Since no Ammonia data was reported for the new plant, Ecology used Ammonia data from Pe Ell’s wastewater treatment system, as it is a similar-sized oxidation ditch. Ecology does not expect Cathlamet’s discharge to be a potential source of Dioxin or Polychlorinated Biphenyls, and in the absence of any data otherwise, did not conduct any analyses for these compounds.

The updated reasonable potential evaluation shows no exceedance of water quality standards for Ammonia, Fecal Coliform, Dissolved Oxygen, Temperature, or pH. In order to assess the effect of soluble organic BOD₅ in the discharge on the river, the Streeter-Phelps equation was run twice – once with Cathlamet’s worst-case discharge and once with no discharge. These two analyses result in the same critical Dissolved

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Oxygen concentration at the same critical distance, demonstrating that BOD₅ concentrations the discharge have no practical influence on the river.

Since the facility's discharge does not cause or contribute to the water body impairment, no changes have been made to permit requirements as a result of the reasonable potential evaluation.

6. PERMIT LIMITS AND CONDITIONS

The reauthorized permit is virtually identical to the previous permit issued on October 3, 2011, with a few exceptions identified below. The proposed reauthorized permit includes:

- The discharge limits and conditions in effect for the new treatment plant at the time of expiration of the previous permit. Interim effluent limits, monitoring requirements, and design information for the former wastewater lagoon system have been removed from the reauthorized permit, as this system no longer exists.
- Changes to the submittal dates for reports and other submittal requirements carried over from the previous permit.
- Correction of a typographical error in the dilution factor for Human Health Criteria – Non-Carcinogen in Permit Condition S1.B.
- A requirement to submit monitoring data obtained during each monitoring period on the electronic DMR form and any other required permit submittal within the Water Quality Permitting Portal.
- Appendix A, which identifies the required test methods, detection levels and quantitation levels for the monitoring required in the proposed permit. Ecology added this requirement to ensure that facilities use sufficiently sensitive, federally approved [40 Code of Federal Regulation (CFR) Part 136] test methods with detection levels that provide usable analytical data for purposes of Water Quality Standards compliance assessments.
- Rainfall was added to the monitoring/reporting in order to allow Ecology to know when there is a significant rainfall event.

7. PUBLIC PROCESS

Ecology must public notice the availability of the draft reauthorized permit at least 30 days before it reissues the permit [Washington Administrative Code (WAC) 173-220-050]. Ecology invites you to review and comment on its decision to reauthorize the permit (see **Appendix A-Public Involvement Information** for more detail on the Public Notice procedures).

After the public comment period has closed, Ecology will prepare a *Response to Comments* document and attach it to this fact sheet addendum. Ecology will respond to each comment and describe the resultant changes to the permit in this document. Ecology sends a copy of the *Response to Comments* to all parties that submitted comments.

8. PERMIT APPEAL PROCESS

Appendix B describes the permit appeal process.

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9. RECOMMENDATION FOR PERMIT ISSUANCE

Ecology proposes to reissue this permit for five years.

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APPENDIX A — PUBLIC INVOLVEMENT INFORMATION

Ecology proposes to reauthorize a permit for the Cathlamet Wastewater Treatment Plant. 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 15, 2016; June 22, 2016; June 14, 2017; June 21, 2017; June 13, 2018; June 20, 2018; June 5, 2019; and June 12, 2019, in the *Chinook Observer* 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 _____, in the *Chinook Observer* 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 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*, available on our website: <http://www.ecy.wa.gov/biblio/0307023.html>. You may obtain further information from Ecology by email at carey.cholski@ecy.wa.gov or by writing to the address listed below.

Water Quality Permit Coordinator
Department of Ecology
Southwest Regional Office
PO Box 47775
Olympia, WA 98504-7775

The primary authors of this permit and fact sheet is Steve Ogle, P.E., and Carey Cholski.

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APPENDIX B — YOUR RIGHT TO APPEAL

You have a right to appeal this permit to the Pollution Control Hearing Board (PCHB) within 30 days of the date of receipt of the final permit. The appeal process is governed by [chapter 43.21B Revised Code of Washington (RCW)] and chapter 371-08 WAC. “Date of receipt” is defined in RCW 43.21B.001(2) (see glossary).

To appeal you must do the following within 30 days of the date of receipt of this permit:

- File your appeal and a copy of this permit with the PCHB (see addresses below). Filing means actual receipt by the PCHB during regular business hours.
- Serve a copy of your appeal and this permit on Ecology in paper form - by mail or in person. (See addresses below.) E-mail is not accepted.

You must also comply with other applicable requirements in chapter 43.21B RCW and chapter 371-08 WAC.

Table 2 Address and Location Information

Street Addresses	Mailing Addresses
<p>Department of Ecology Attn: Appeals Processing Desk 300 Desmond Drive Southeast Lacey, WA 98503</p> <p>Pollution Control Hearings Board 1111 Israel Road Southwest, Suite 301 Tumwater, WA 98501</p>	<p>Department of Ecology Attn: Appeals Processing Desk PO Box 47608 Olympia, WA 98504-7608</p> <p>Pollution Control Hearings Board PO Box 40903 Olympia, WA 98504-0903</p>

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APPENDIX C — REASONABLE POTENTIAL EVALUATION

Reasonable Potential Calculation

Facility	Town of Cathlamet	Dilution Factors:	
Water Body Type	Freshwater	Aquatic Life	Acute 34.0 Chronic 96.0
Rec. Water Hardness	61 mg/L	Human Health Carcinogenic	96.0
		Human Health Non-Carcinogenic	96.0

Pollutant, CAS No. & NPDES Application Ref. No.	AMMONIA, Criteria as Total NH3												
Effluent Data	# of Samples (n)	215											
	Coeff of Variation (Cv)	1.9	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	Effluent Concentration, ug/L (Max. or 95th Percentile)	6,500											
	Calculated 50th percentile Effluent Conc. (when n>10)												
Receiving Water Data	90th Percentile Conc., ug/L	68											
	Geo Mean, ug/L												
Water Quality Criteria	Aquatic Life Criteria, Acute ug/L	2,749	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Chronic	367	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	WQ Criteria for Protection of Human Health, ug/L	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Metal Criteria, Acute	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Translator, decimal Chronic	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Carcinogen?	N	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	

Aquatic Life Reasonable Potential

Effluent percentile value		0.950											
s	$s^2 = \ln(CV^2 + 1)$	1.236											
Pn	$Pn = (1 - \text{confidence level})^{1/n}$	0.986	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Multiplier		1.00	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Max concentration (ug/L) at edge of...	Acute	257	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Chronic	135	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Reasonable Potential? Limit Required?		NO	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Calculation of Fecal Coliform at Chronic Mixing Zone

INPUT	
Chronic Dilution Factor	96.0
Receiving Water Fecal Coliform, #/100 ml	52
Effluent Fecal Coliform - worst case, #/100 ml	400
Surface Water Criteria, #/100 ml	100
OUTPUT	
Fecal Coliform at Mixing Zone Boundary, #/100 ml	56
Difference between mixed and ambient, #/100 ml	4

Conclusion: At design flow, the discharge has no reasonable potential to violate water quality standards for fecal coliform.

Calculation of Dissolved Oxygen at Chronic Mixing Zone

INPUT	
Chronic Dilution Factor	96.0
Receiving Water DO Concentration, mg/L	8.8
Effluent DO Concentration, mg/L	2.0
Effluent Immediate DO Demand (IDOD), mg/L	
Surface Water Criteria, mg/L	8
OUTPUT	
DO at Mixing Zone Boundary, mg/L	8.76
DO decrease caused by effluent at chronic boundary, mg/L	0.07

Conclusion: At design flow, the discharge has no reasonable potential to violate water quality standards for dissolved oxygen.

References: EPA/600/6-85/002b and EPA/430/9-82-011

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Freshwater Temperature Reasonable Potential and Limit Calculation

Based on WAC 173-201A-200(1)(c)(i)-(ii) and the Water Quality Program Guidance. All data inputs must meet WQ guidelines. The Water Quality temperature guidance document may be found at:
<https://fortress.wa.gov/ecy/publications/summarypages/0610100.html>

	Core Summer Criteria	Supplemental Criteria
INPUT	July 1-Sept 14	Sept 15-July 1
1. Chronic Dilution Factor at Mixing Zone Boundary	96.0	96.0
2. 7DADMax Ambient Temperature (T) (Upstream Background 90th percentile)	21.7 °C	
3. 7DADMax Effluent Temperature (95th percentile)	24.0 °C	
4. Aquatic Life Temperature WQ Criterion in Fresh Water	17.5 °C	
OUTPUT		
5. Temperature at Chronic Mixing Zone Boundary:	21.7 °C	0.0 °C
6. Incremental Temperature Increase or decrease:	0.0 °C	0.0 °C
7. Maximum Allowable Incremental Temperature Increase:	0.3 °C	0.3 °C
8. Maximum Allowable Temperature at Mixing Zone Boundary:	22.0 °C	0.3 °C
A. If ambient temp is warmer than WQ criterion		
9. Does temp fall within this warmer temp range?	YES	YES
10. Temperature Limit if Required:	NO LIMIT	NO LIMIT
B. If ambient temp is cooler than WQ criterion but within $28/(T_{amb}+7)$ and within 0.3 °C of the criterion		
11. Does temp fall within this incremental temp. range?	---	---
12. Temp increase allowed at mixing zone boundary, if required:	---	---
C. If ambient temp is cooler than (WQ criterion-0.3) but within $28/(T_{amb}+7)$ of the criterion		
13. Does temp fall within this Incremental temp. range?	---	---
14. Temp increase allowed at mixing zone boundary, if required:	---	---
D. If ambient temp is cooler than (WQ criterion - $28/(T_{amb}+7)$)		
15. Does temp fall within this Incremental temp. range?	---	---
16. Temp increase allowed at mixing zone boundary, if required:	---	---
RESULTS		
17. Do any of the above cells show a temp increase?	NO	NO
18. Temperature Limit if Required?	NO LIMIT	NO LIMIT

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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.)

INPUT		
	@ Acute Boundary	@ Chronic Boundary
1. Dilution Factor at Mixing Zone Boundary	34.0	96.0
2. Ambient/Upstream/Background Conditions		
Temperature (deg C):	21.69	21.69
pH:	8.37	8.37
Alkalinity (mg CaCO3/L):	59.50	59.50
3. Effluent Characteristics		
Temperature (deg C):	24.00	24.00
pH:	8.30	8.30
Alkalinity (mg CaCO3/L):	78.00	78.00
4. Aquatic Life Use Designation	Both of the above	
OUTPUT		
1. Ionization Constants		
Upstream/Background pKa:	6.37	6.37
Effluent pKa:	6.36	6.36
2. Ionization Fractions		
Upstream/Background Ionization Fraction:	0.99	0.99
Effluent Ionization Fraction:	0.99	0.99
3. Total Inorganic Carbon		
Upstream/Background Total Inorganic Carbon (mg CaCO3/L):	60	60
Effluent Total Inorganic Carbon (mg CaCO3/L):	79	79
4. Conditions at Mixing Zone Boundary		
Temperature (deg C):	21.76	21.71
Alkalinity (mg CaCO3/L):	60.04	59.69
Total Inorganic Carbon (mg CaCO3/L):	60.65	60.29
pKa:	6.37	6.37
5. Allowable pH change	NA	0.20
RESULTS		
pH at Mixing Zone Boundary:	8.37	8.37
pH change at Mixing Zone Boundary:	0.00	0.00
Is permit limit needed?	NO	NO

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Streeter-Phelps Analysis of Critical Dissolved Oxygen Sag

INPUT			
1. EFFLUENT CHARACTERISTICS			
Discharge (cfs):			0.21
CBOD ₅ (mg/L):			8.7
NBOD (mg/L):			29.7
Dissolved Oxygen (mg/L):			2
Temperature (deg C):			24
2. RECEIVING WATER CHARACTERISTICS			
Upstream Discharge (cfs):			134000
Upstream CBOD ₅ (mg/L):			1.5
Upstream NBOD (mg/L):			0.09
Upstream Dissolved Oxygen (mg/L):			8.8
Upstream Temperature (deg C):			21.69
Elevation (ft NGVD):			0
Downstream Average Channel Slope (ft/ft):			0.000035
Downstream Average Channel Depth (ft):			21.8
Downstream Average Channel Velocity (fps):			0.938
3. REAERATION RATE (Base e) at 20 deg C (day⁻¹):			
	Applic.	Applic.	Suggested
<u>Reference</u>	<u>Vel (fps)</u>	<u>Dep (ft)</u>	<u>Values</u>
Churchill	1.5 - 6	2 - 50	0.06
O'Connor and Dobbins	0.1 - 1.5	2 - 50	0.12
Owens	0.1 - 6	1 - 2	0.07
Tsivoglou-Wallace	0.1 - 6	0.1 - 2	0.08
4. BOD DECAY RATE (Base e) AT 20 deg C (day⁻¹):			
			0.23
(or use Wright and McDonnell eqn, 1979, for small rivers.) Enter this value -->			0.03
OUTPUT			
1. INITIAL MIXED RIVER CONDITION			
CBOD ₅ (mg/L):			1.5
NBOD (mg/L):			0.1
Dissolved Oxygen (mg/L):			8.8
Temperature (deg C):			21.7
2. TEMPERATURE ADJUSTED RATE CONSTANTS (Base e)			
Reaeration (day ⁻¹):			0.12
BOD Decay (day ⁻¹):			0.25
3. CALCULATED INITIAL ULTIMATE CBODU AND TOTAL BODU			
Initial Mixed CBODU (mg/L):			2.2
Initial Mixed Total BODU (CBODU + NBOD, mg/L):			2.3
4. INITIAL DISSOLVED OXYGEN DEFICIT			
Saturation Dissolved Oxygen (mg/L):			8.796
Initial Deficit (mg/L):			0.00
5. TRAVEL TIME TO CRITICAL DO CONCENTRATION (days):			
			5.57
6. DISTANCE TO CRITICAL DO CONCENTRATION (miles):			
			85.52
7. CRITICAL DO DEFICIT (mg/L):			
			1.14
8. CRITICAL DO CONCENTRATION (mg/L):			
			7.65

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Streeter-Phelps Analysis of Critical Dissolved Oxygen Sag

INPUT			
1. EFFLUENT CHARACTERISTICS			
Discharge (cfs):			0
CBOD ₅ (mg/L):			0
NBOD (mg/L):			0
Dissolved Oxygen (mg/L):			0
Temperature (deg C):			0
2. RECEIVING WATER CHARACTERISTICS			
Upstream Discharge (cfs):			134000
Upstream CBOD ₅ (mg/L):			1.5
Upstream NBOD (mg/L):			0.09
Upstream Dissolved Oxygen (mg/L):			8.8
Upstream Temperature (deg C):			21.69
Elevation (ft NGVD):			0
Downstream Average Channel Slope (ft/ft):			0.000035
Downstream Average Channel Depth (ft):			21.8
Downstream Average Channel Velocity (fps):			0.938
3. REAERATION RATE (Base e) at 20 deg C (day⁻¹):			0.12
	Applic.	Applic.	Suggested
<u>Reference</u>	<u>Vel (fps)</u>	<u>Dep (ft)</u>	<u>Values</u>
Churchill	1.5 - 6	2 - 50	0.06
O'Connor and Dobbins	0.1 - 1.5	2 - 50	0.12
Owens	0.1 - 6	1 - 2	0.07
Tsivoglou-Wallace	0.1 - 6	0.1 - 2	0.08
4. BOD DECAY RATE (Base e) AT 20 deg C (day⁻¹):			0.23
(or use Wright and McDonnell eqn, 1979, for small rivers.) Enter this value -->			0.03
OUTPUT			
1. INITIAL MIXED RIVER CONDITION			
CBOD ₅ (mg/L):			1.5
NBOD (mg/L):			0.1
Dissolved Oxygen (mg/L):			8.8
Temperature (deg C):			21.7
2. TEMPERATURE ADJUSTED RATE CONSTANTS (Base e)			
Reaeration (day ⁻¹):			0.12
BOD Decay (day ⁻¹):			0.25
3. CALCULATED INITIAL ULTIMATE CBODU AND TOTAL BODU			
Initial Mixed CBODU (mg/L):			2.2
Initial Mixed Total BODU (CBODU + NBOD, mg/L):			2.3
4. INITIAL DISSOLVED OXYGEN DEFICIT			
Saturation Dissolved Oxygen (mg/L):			8.796
Initial Deficit (mg/L):			0.00
5. TRAVEL TIME TO CRITICAL DO CONCENTRATION (days):			
			5.57
6. DISTANCE TO CRITICAL DO CONCENTRATION (miles):			
			85.52
7. CRITICAL DO DEFICIT (mg/L):			
			1.14
8. CRITICAL DO CONCENTRATION (mg/L):			7.65