REAUTHORIZATION ADDENDUM TO THE FACT SHEET FOR COWLITZ INDIAN TRIBAL HOUSING – LEWIS COUNTY WASTEWATER TREATMENT FACILITY NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT WA0040258

1. GENERAL INFORMATION

Facility:	Cowlitz Indian Tribal Housing-Lewis County Wastewater Treatment Facility 107 Spencer Road Toledo, WA 98591	Issuance Date of Previous Permit: Expiration Date:	August 1, 2011 August 31, 2016

2. APPLICATION AND COMPLIANCE REVIEW

Cowlitz Indian Tribal Housing-Lewis County (CITH-LC) submitted an application to the Department of Ecology (Ecology) on February 25, 2016, for permit reissuance, and Ecology accepted it on April 13, 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:

- CITH-LC has substantially complied with all of the terms, conditions, and requirements of the expired permit.
- The discharge meets applicable effluent standards and limits, water quality standards, and other legally applicable requirements.
- Ecology has up-to date information on the system's waste treatment practices and the nature, content, volume, and frequency of its discharge.
- The receiving water body is not impaired for any pollutants present in the facility's discharge.

Since the issuance of the current permit, Ecology has not received any additional information that indicates 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

CITH-LC has largely complied with the effluent limits and permit conditions throughout the duration of the permit issued on August 1, 2011. While the system did experience 5-Day Biological Oxygen Demand (BOD_5) and Total Suspended Solids permit violations the first month of operation (November 2011), these issues were related to startup and

commissioning of the newly constructed treatment system. Subsequent to this first month of operation, the system only experienced two pH excursions (November and December of 2014), and one sampling frequency issue (July 2015). All other sampling events and results complied with the terms of the permit.

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.

4. EFFLUENT CHARACTERIZATION

CITH-LC reported the concentration of pollutants in the discharge in the permit application and in DMRs. The tabulated data represents the quality of the wastewater effluent discharged between November 2016 and October 2018. This range was selected because 1) discreet sample data was not available in PARIS prior to November 2016 (i.e., PARIS only presents average weekly, average monthly, minimum/maximum, or geometric mean data prior to this date); and 2) data after October 2018 was not yet available in PARIS at the time this document was written. The wastewater effluent is characterized as follows:

Table 1 Wastewater Effluent Characterization (Nov 2016 – Oct 2018)

Parameter	Units	# of Samples	Average Value	Maximum Value
BOD_5	mg/L	104	2.85	10.76
BOD_5	lbs/day	104	0.03	0.21
TSS	mg/L	104	3.66	14.00
TSS	lbs/day	104	0.04	0.14
Parameter	**Units**	**# of Samples**	**Minimum Value**	**Maximum Value**
pH	Standard Units	522	6.1	7.9
Fecal coliform	Organisms /100 ml	104	Below detection (<1)	33

5. SURFACE WATER QUALITY STANDARDS AND IMPAIRMENTS

When the previous permit was issued to CITH-LC, the wastewater treatment system was under construction and actual operational data was not available. Since issuance of that permit, the system has been operational and data from past DMRs was compiled and used to reassess the reasonable potential analysis in support the reauthorized permit. DMR data from 2014 through 2018 for Puget Sound Energy's (PSE's) Jackson Prairie Gas Storage

Project, NPDES Permit WA0040827, was also compiled and used in the analysis, as the two facilities discharge to the Cowlitz River through a shared outfall.

As part of the updated reasonable potential analysis, Ecology also reassessed the mixing zone and dilution factors for both facility's discharge using RiverPlume6 (i.e., the prior assessment relied on RIVPLUM5, an older Excel spreadsheet model available at that time). Two scenarios were evaluated during the reauthorization process - the maximum permitted discharges from both facilities and the highest actual discharges from both facilities in recent years - in order to evaluate potential impacts associated with various operating scenarios. Dilution factors contained in the reauthorized permit remain unchanged from the previous permit, and are based on simultaneous, maximum permitted effluent flows for both facilities through the outfall.

Ecology has included a copy of the reasonable potential analysis in **Appendix C**. In addition to recent DMR data, certain water quality parameters were taken from the *Cowlitz Mixing Zone Study Report* (Cosmopolitan Engineering Group, Inc., January 2011) and/or Table 2 in the September 2011 fact sheet for NPDES Permit WA0037141 for Lewis County Water and Sewer District #6, which discharges to the Cowlitz River upstream of CITH-LC. In cases where these references presented different or conflicting values for water quality parameters, the worst-case values were used in the reasonable potential analysis. It should also be noted that reasonable potential analysis was done without consideration of hardness in the effluent discharge (i.e., "mixed hardness").

The reasonable potential analysis conducted during the permit reauthorization process shows that the facility's discharge does not have reasonable potential to cause or contribute to an exceedance of water quality standards.

6. PERMIT LIMITS AND CONDITIONS

The reauthorized permit is virtually identical to the previous permit issued on August 1, 2011, with a few exceptions identified below. Ecology removed the completed report requirements that do not require additional or continued assessment. The proposed reauthorized permit includes:

- The effluent discharge limits and conditions in effect at the time of expiration of the previous permit.
- Existing submittal dates for reports and other submittal requirements carried over from the previous permit.
- A new, weekly monitoring requirement for effluent temperature has been added to the permit to characterize the effluent discharge. Refer to Permit Condition S2.A.
- New, annual sampling and analysis requirements for nutrients (i.e., Total Phosphorus, Soluble Reactive Phosphorus, Total Ammonia, Nitrate + Nitrite, and

Total Kjeldahl Nitrogen) to characterize concentrations in the effluent discharge. Refer to Permit Condition S2.A.

- 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. Refer to Permit Condition S3.A.

- The certification requirement for the operator in charge of each shift (i.e., backup operator) has been changed from Class II to Class I to align with the requirements of Washington Administrative Code (WAC) 173-230-040. Refer to Permit Condition S5.A.

- Reliability classification applied in Permit Condition S5.D has been revised to stipulate that Reliability Class II requirements apply to the treatment system, based on current receiving water classifications.

- A new requirement to review and update the Operations and Maintenance Manual as needed and submit it for Ecology review and approval has been added as Permit Condition S5.G.1. This condition also requires annual review of the manual every year of the permit, with written confirmation to Ecology when the review is completed.

- Updated information in Appendix A of the permit, which identifies the required test methods, detection levels and quantitation levels for the monitoring required in the proposed permit. Ecology added this update 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.

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.

9. RECOMMENDATION FOR PERMIT ISSUANCE

Ecology proposes to reissue this permit for five years.

APPENDIX A--PUBLIC INVOLVEMENT INFORMATION

Ecology proposes to reauthorize a permit to Cowlitz Indian Tribal Housing-Lewis County. The permit includes wastewater discharge limits and other conditions. This fact sheet describes the facility and Ecology's reasons for requiring permit conditions.

Ecology will place a Public Notice of Draft on April 18, 2019, in the *Daily Chronicle* 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,* which is available on our website at http://www.ecy.wa.gov/biblio/0307023.html.

You may obtain further information from Ecology by telephone, 360-407-6279, 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 are Carey Cholski and Steve Ogle, P.E.

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.

ADDRESS AND LOCATION INFORMATION

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

APPENDIX C--REASONABLE POTENTIAL ANALYSIS

Reasonable Potential Calculation

Facility	CITH - Lewis Co
Water Body Type	Freshwater
Rec. Water Hardness	35 mg/L

Dilution Factors:	Acute	Chronic
Aquatic Life	21.0	66.0
Human Health Carcinogenic		66.0
Human Health Non-Carcinogenic		66.0

Pollutant, CAS No. & NPDES Application Ref. No.			AMMONIA, Criteria as Total NH3	CADMIUM - 7440439 4M Hardness dependent	COPPER - 744058 6M Hardness dependent	LEAD - 7439921 7M Dependent on hardness	ZINC- 7440666 13M hardness dependent	CHROMIUM(TRI) -16065831 5M Hardness dependent	NICKEL - 7440020 9M - Dependent on hardness	SILVER - 7740224 11M dependent on hardness.	CHLORIDE (dissolved) in mg/L 16887006	MERCURY 7439976 8M	ARSENIC (dissolved) 7440382 2M
Effluent Data	# of Samples (n)		50	50	50	50	50	50	50	50	50	50	50
	Coeff of Variation (Cv)		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)		8,100	2.5	5	25	10	0.7	3.3	0.2	507	0.1	50
	Calculated 50th percentile Effluent Conc. (when n>10)				0.009		0.041		0.0033			0.0001	0.05
Receiving Water Data	90th Percentile Conc., ug/L		50	0	0	0	0	0	0	0	0	0	0
	Geo Mean, ug/L				0		0		0			0	0
Water Quality Criteria	Aquatic Life Criteria, ug/L	Acute	4,641	1.1856	6.3283	20.253	47.021	232.25	582.32	0.567	860	2.1	360
		Chronic	1,026	0.474	4.6285	0.7892	42.938	75.34	64.671	-	230	0.012	190
	WQ Criteria for Protection of Human Health, ug/L		-	-	1300	-	1000	-	80	-	-	0.14	-
	Metal Criteria Translator, decimal	Acute	-	0.943	0.996	0.466	0.996	0.316	0.998	0.85	-	0.85	1
		Chronic	-	0.943	0.996	0.466	0.996	0.86	0.997	-	-	-	1
	Carcinogen?		N	N	N	N	N	N	N	N	N	N	Y

Aquatic Life Reasonable Potential

Effluent percentile value			0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
s	$s^2=\ln(CV^2+1)$		0.555	0.555	0.555	0.555	0.555	0.555	0.555	0.555	0.555	0.555	0.555
Pn	$Pn=(1\text{-confidence level})^{1/n}$		0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942
Multiplier			1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Max concentration (ug/L) at edge of…		Acute	433	0.112	0.237	0.555	0.474	0.011	0.157	0.008	24.143	0.004	2.381
		Chronic	172	0.036	0.075	0.177	0.151	0.009	0.050	0.003	7.682	0.002	0.758
Reasonable Potential? Limit Required?			**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

Aquatic Life Limit Calculation

# of Compliance Samples Expected per month													
LTA Coeff. Var. (CV), decimal													
Permit Limit Coeff. Var. (CV), decimal													
Waste Load Allocations, ug/L		Acute											
		Chronic											
Long Term Averages, ug/L		Acute											
		Chronic											
Limiting LTA, ug/L													
Metal Translator or 1?													
Average Monthly Limit (AML), ug/L													
Maximum Daily Limit (MDL), ug/L													

Human Health Reasonable Potential

s	$s^2=\ln(CV^2+1)$				0.5545		0.5545		0.5545			0.5545	
Pn	$Pn=(1\text{-confidence level})1/n$				0.942		0.942		0.942			0.942	
Multiplier					0.4186		0.4186		0.4186			0.4186	
Dilution Factor					66		66		66			66	
Max Conc. at edge of Chronic Zone, ug/L					0.0001		0.0006		5.0E-05			2E-06	
Reasonable Potential? Limit Required?					**NO**		**NO**		**NO**			**NO**	

Human Health Limit Calculation

# of Compliance Samples Expected per month													
Average Monthly Effluent Limit, ug/L													
Maximum Daily Effluent Limit, ug/L													

Comments/Notes:

References: WAC 173-201A,

Technical Support Document for Water Quality-based Toxics Control, US EPA, March 1991, EPA/505/2-90-001, pages 56/99

Calculation of Fecal Coliform at Chronic Mixing Zone

INPUT	
Chronic Dilution Factor	66.0
Receiving Water Fecal Coliform, #/100 ml	12
Effluent Fecal Coliform - worst case, #/100 ml	400
Surface Water Criteria, #/100 ml	*100*
OUTPUT	
Fecal Coliform at Mixing Zone Boundary, #/100 ml	**18**
Difference between mixed and ambient, #/100 ml	6

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	66.0
Receiving Water DO Concentration, mg/L	10.7
Effluent DO Concentration, mg/L	2.0
Effluent Immediate DO Demand (IDOD), mg/L	
Surface Water Criteria, mg/L	*10*
OUTPUT	
DO at Mixing Zone Boundary, mg/L	**10.57**
DO decrease caused by effluent at chronic boundary, mg/L	**0.13**

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

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 Critera	Supplemental Criteria
INPUT	**July 1-Sept 14**	**Sept 1-Jun 15**
1. Chronic Dilution Factor at Mixing Zone Boundary	66.0	66.0
2. 7DADMax Ambient Temperature (T) (Upstream Background 90th percentile)	15.3 °C	15.3 °C
3. 7DADMax Effluent Temperature (95th percentile)	20.0 °C	20.0 °C
4. Aquatic Life Temperature WQ Criterion in Fresh Water	16.0 °C	13.0 °C
OUTPUT		
5. Temperature at Chronic Mixing Zone Boundary:	15.4 °C	15.4 °C
6. Incremental Temperature Increase or decrease:	0.1 °C	0.1 °C
7. Maximum Allowable Incremental Temperature Increase:	1.3 °C	0.3 °C
8. Maximum Allowable Temperature at Mixing Zone Boundary:	16.0 °C	15.6 °C
A. If ambient temp is warmer than WQ criterion		
9. Does temp fall within this warmer temp range?	NO	YES
10. Temperature Limit if Required:	---	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?	NO	---
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?	YES	---
14. Temp increase allowed at mixing zone boundary, if required:	NO LIMIT	---
D. If ambient temp is cooler than (WQ criterion - 28/(T_{amb}+7))		
15. Does temp fall within this Incremental temp. range?	NO	---
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**

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	21.0	67.0
2. Ambient/Upstream/Background Conditions		
Temperature (deg C):	15.30	15.30
pH:	8.10	8.10
Alkalinity (mg CaCO3/L):	35.00	35.00
3. Effluent Characteristics		
Temperature (deg C):	20.00	20.00
pH:	7.90	7.90
Alkalinity (mg CaCO3/L):	200.00	200.00
4. Aquatic Life Use Designation	Char spawning & rearing and/or core summer habitat	
OUTPUT		
1. Ionization Constants		
Upstream/Background pKa:	6.42	6.42
Effluent pKa:	6.38	6.38
2. Ionization Fractions		
Upstream/Background Ionization Fraction:	0.98	0.98
Effluent Ionization Fraction:	0.97	0.97
3. Total Inorganic Carbon		
Upstream/Background Total Inorganic Carbon (mg CaCO3/L):	36	36
Effluent Total Inorganic Carbon (mg CaCO3/L):	206	206
4. Condtions at Mixing Zone Boundary		
Temperature (deg C):	15.52	15.37
Alkalinity (mg CaCO3/L):	42.86	37.46
Total Inorganic Carbon (mg CaCO3/L):	43.84	38.27
pKa:	6.42	6.42
5. Allowable pH change	NA	0.20
RESULTS		
pH at Mixing Zone Boundary:	**8.06**	**8.08**
pH change at Mixing Zone Boundary:	0.04	0.02
Is permit limit needed?	NO	NO

Streeter-Phelps Analysis of Critical Dissolved Oxygen Sag

INPUT	
1. EFFLUENT CHARACTERISTICS	
Discharge (cfs):	0.22
$CBOD_5$ (mg/L):	0.102
NBOD (mg/L):	36.9
Dissolved Oxygen (mg/L):	2
Temperature (deg C):	20
2. RECEIVING WATER CHARACTERISTICS	
Upstream Discharge (cfs):	2000
Upstream $CBOD_5$ (mg/L):	1.0
Upstream NBOD (mg/L):	0.5
Upstream Dissolved Oxygen (mg/L):	9.93
Upstream Temperature (deg C):	15.3
Elevation (ft NGVD):	248
Downstream Average Channel Slope (ft/ft):	0.0002
Downstream Average Channel Depth (ft):	4
Downstream Average Channel Velocity (fps):	2
3. REAERATION RATE (Base e) at 20 deg C (day^{-1}):	2.23

Reference	Applic. Vel (fps)	Applic. Dep (ft)	Suggested Values
Churchill	1.5 - 6	2 - 50	2.23
O'Connor and Dobbins	0.1 - 1.5	2 - 50	2.29
Owens	0.1 - 6	1 - 2	2.64
Tsivoglou-Wallace	0.1 - 6	0.1 - 2	1.66

4. BOD DECAY RATE (Base e) AT 20 deg C (day^{-1}):	0.25
(or use *Wright and McDonnell eqn, 1979, for small rivers.) Enter this value -->*	0.25

OUTPUT	
1. INITIAL MIXED RIVER CONDITION	
$CBOD_5$ (mg/L):	1.0
NBOD (mg/L):	0.5
Dissolved Oxygen (mg/L):	9.9
Temperature (deg C):	15.3
2. TEMPERATURE ADJUSTED RATE CONSTANTS (Base e)	
Reaeration (day^-1):	1.99
BOD Decay (day^-1):	0.20
3. CALCULATED INITIAL ULTIMATE CBODU AND TOTAL BODU	
Initial Mixed CBODU (mg/L):	1.5
Initial Mixed Total BODU (CBODU + NBOD, mg/L):	2.0
4. INITIAL DISSOLVED OXYGEN DEFICIT	
Saturation Dissolved Oxygen (mg/L):	9.931
Initial Deficit (mg/L):	0.00
5. TRAVEL TIME TO CRITICAL DO CONCENTRATION (days):	1.27
6. DISTANCE TO CRITICAL DO CONCENTRATION (miles):	41.72
7. CRITICAL DO DEFICIT (mg/L):	0.15
8. CRITICAL DO CONCENTRATION (mg/L):	**9.78**

APPENDIX D—RESPONSE TO COMMENTS