MUNICIPAL FACILITY FACT SHEET

**NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
PERMIT TO DISCHARGE TREATED WASTEWATER
TO WATERS OF THE UNITED STATES**

Permit No.: NC0052469 Last Updated: April 2, 2025

1. Summary of Proposed Permit Changes

A. The Eastern Band Cherokee Indians (EBCI) have adopted federally recommended metals and toxicants criteria. Priority pollutant scan data were evaluated per EPA protocols to ensure effluent toxics pollutant loads will meet applicable water quality standards. Subsequently, quarterly monitoring for copper and zinc is being removed due to lack of reasonable potential to violate water quality standards for these pollutants.

B. Total Nitrogen and Total Phosphorus show reasonable potential to exceed reference values for Ecoregion XI and Subecoregion 66. This permit includes increased monitoring frequency for Total Nitrogen and Total Phosphorus from once per quarter to once per month, which will allow EPA to evaluate the need for adding nutrient limits during the next permit reissuance.

C. Updated language to be consistent with E. Coli monitoring instead of Fecal Coliform monitoring.

D. Updated language for 401 Certification section, Fish and Wildlife Consultation section, and NHPA section was added.

E. Updated Flow Weekly Average Limit from 9.0 MGD to 6.0 MGD to be consistent with 40 CFR 122.45(d)(2), but not exceed design flow.

2. Facility Information

A. Name and Address of Permittee: Eastern Band of Cherokee Indians
Post Office Box 455
Cherokee, North Carolina 28719

B. Facility Address: Cherokee Wastewater Treatment Plant
2000 Old Number 4 Road
Cherokee, North Carolina 28719

C. Type of Facility: Municipal Wastewater Treatment Plant
Publicly-Owned Treatment Works (POTW)
Standard Industrial Classification Code: 4952

D. Location and Description of the discharge (as reported by applicant):

Outfall	Latitude	Longitude	Receiving Waterbody	Watershed
001 and 002	35° 28′ 03″ N	83° 21′ 08″ W	Oconaluftee River	Upper Little Tennessee HUC 06010201

E. Permitted Capacity: 6.0 MGD

F. Description of Wastewater Treatment Facility:

Outfall	Operation Description	Treatment Description
002 (routine outfall)	Sanitary Wastewater	Collection system serves ~9,000 persons. Mechanical fine screens, grit chamber, Modified Ludzack-Ettinger biological nutrient removal, secondary clarification, ferric chloride addition, UV disinfection, sludge processed to Class A
001 (backup or maintenance outfall)	Sanitary Wastewater	Collection system serves ~9,000 persons. Mechanical fine screens, grit chamber, Modified Ludzack-Ettinger biological nutrient removal, secondary clarification, ferric chloride addition, UV disinfection, sludge processed to Class A

G. Type of Wastewater Discharge:

☐ Process Wastewater ☐ Stormwater
☒ Domestic Wastewater ☐ Combined (describe)
☐ Other (describe)

H. Characterization of Effluent

Outfall No. 002 (As reported on application)

Effluent Characteristic	Minimum Daily Value	Average Daily Value	Maximum Daily Value
Flow, MGD	---	1.64	2.21
Carbonaceous Biochemical Oxygen Demand, 5-day ($CBOD_5$), mg/L	---	3.5	9.0
Total Suspended Solids, mg/L	---	4.3	7.9
E. Coli, #/100mL	---	4.4	24.1
pH, S.U.	6.61	---	8.24
Water Temperature (Winter), degrees Celsius	---	13.0	17.7
Water Temperature (Summer), degrees Celsius	---	20.7	24.1
Ammonia (as N), mg/L	---	0.102	0.16
Dissolved Oxygen, mg/L	---	9.24	11.8

Total Kjeldahl Nitrogen (TKN), mg/L	---	0.68	1.36
Nitrate plus Nitrite (as N), mg/L	---	5.87	11.3
Oil and Grease, mg/L	---	5.2	5.9
Phosphorus (Total), mg/L	---	1.024	3.944
Total Dissolved Solids (TDS), mg/L	---	174.2	207
Copper (Total Recoverable), mg/L		0.0065	0.0088
Zinc (Total Recoverable) mg/L		0.0372	0.119

Outfall No. 002 (As reported on DMRs March 2018 - January 2024.

Parameter Code	**Parameter Name**	**Units**	**No. Obs.**	**Mean**	**Min**	**Max**
80082	BOD, carbonaceous [5 day, 20 C], Weekly Avg	mg/L	122	44.65	1.86	143.8
80082	BOD, carbonaceous [5 day, 20 C], Monthly Avg	mg/L	69	4.03	2	21.2
300	Oxygen, dissolved [DO]	mg/L	69	8.6	10.91	5.42
51040	E. Coli, Monthly Avg	#/100mL	16	1.58	0.992	4.12
51040	E. Coli, Daily Max	#/100mL	16	4.26	1.0	17.3
TRP3B	IC_{25} (inhibition concentration) Static Renewal 7 Day Chronic ceriodaphnia	%	3	39.73	9.6	100
TRP6C	IC_{25} Static Renewal 7 Day Chronic pimephales	%	3	39.73	9.6	100
400	pH	SU	69	6.96	6.18	7.8
50050	Flow, in conduit or thru treatment plant, Monthly Avg	MGD	69	1.83	1.08	3.15
50050	Flow, in conduit or thru treatment plant, Weekly Avg	MGD	69	2.12	1.36	4.58
610	Nitrogen, ammonia total [as N], Monthly Avg	mg/L	69	0.22	0.02	3.25
610	Nitrogen, ammonia total [as N], Weekly Avg	mg/L	16	0.24	0.061	1.3
600	Nitrogen, total [as N], Monthly Avg	mg/L	24	9.00	0.5	73
665	Phosphorus, total [as P], Monthly Avg	mg/L	24	1.00	0.106	3.94
81011	Solids, suspended percent removal, Monthly Avg	%	69	96.16	85.4	99.99
530	Solids, total suspended, Monthly Avg	mg/L	137	68.5	1.35	256

530	Solids, total suspended, Weekly Avg	mg/L	69	5.95	2.1	46.6

3. Water Quality Standards & Receiving Waterbody Information

Section 301(b)(1)(C) of the Clean Water Act (CWA) requires the development of limitations in permits necessary to meet water quality standards. Federal Regulations 40 CFR 122.4(d) require that conditions in NPDES permits ensure compliance with the water quality standards which are composed of use classifications, numeric and or narrative criteria, and an anti-degradation policy. The use classification system designates the beneficial use that each waterbody is expected to achieve, such as drinking water, fishing or recreation. The numeric and narrative water quality criteria are deemed necessary to support beneficial use classification for each waterbody. The antidegradation policy represents an approach to maintain and to protect various levels of water quality and uses.

A. Receiving Waterbody Classification and Information

The EBCI has promulgated their own Water Quality Standards (WQS) that are now applicable to the Tribal waters including the receiving stream (Oconaluftee River). The Oconaluftee River receiving waters have been classified as Tribal Resource Waters and designated as Cold-Water Habitat use, Recreation use and Ceremonial use. Downstream, the State of North Carolina WQS are applicable as well. A State/Tribal Boundary is located within the Oconaluftee River near the headwaters of Lake Oconaluftee (~0.9 RKM downstream of the Birdtown Bridge). The Oconaluftee River within the state of North Carolina has designated uses of Class C (Aquatic Life, Secondary Recreation, Fresh Water), T (Trout Waters), and HQW (High Quality Water). By developing this permit to comply with newly adopted Tribal criteria, this permit is protective of downstream State-designated uses.

B. Specific Water Quality Criteria for Classified Water Usage

The following are the most protective of criteria within the following applicable use classifications: EBCI Tribal WQS Ceremonial use, Cold-Water Aquatic Habitat use and Recreational use:

i. pH: The normal pH of the water shall be 6.0 to 9.0 and shall not vary more than 1.0 unit.

ii. Water Temperature: Water temperature shall not be increased by more than 0.5 °C as a result of discharge and in no case be increased to exceed 20 °C (68 °F), the required temperature necessary to support trout habitat.

iii. Turbidity: The turbidity in the receiving water shall not exceed 10 NTU in streams, lakes and reservoirs.

iv. Phenolic Compounds: No substances shall be added which will cause the phenolic content to exceed 300 µg/L (expressed as phenol).

v. Ammonia (toxicity): Ammonia criteria shall be in accordance with EPA Recommendations as expressed on pages 40, 41, 42, 44, 45, 46, and 49 of Aquatic Life Ambient Water Quality Criteria for Ammonia – Freshwater 2013 (April 2013, EPA-822-R-13-001). Such information is hereby incorporated by reference. Where mussels in the order Unionoida are absent at a site, ammonia

criteria may be calculated on a site-specific basis. Any such site-specific criteria shall be in accordance with the equations and tables expressed on pages 228, 229, 231, 235, 236, 239, and 240 in Appendix N of the document referenced above.

vi. Dissolved Oxygen: A minimum concentration of 6.5 mg/L as a daily average and 5 mg/L as an instantaneous minimum shall be maintained at all times.

vii. Bacteria: Escherichia coli shall not exceed a geometric mean of 126 colonies per 100 mL nor shall more than ten percent of the samples examined during any month exceed 410 colonies per100mL.

viii. Nutrients: Except as due to natural conditions, nutrients shall not be allowed in concentrations that render the waters unsuitable for the existing or designated uses due to objectionable algal densities, nuisance aquatic vegetation, diurnal fluctuations in dissolved oxygen, or pH indicative of excessive photosynthetic activity, detrimental changes to the composition of aquatic ecosystems or other indicators of use impairment caused by nutrients.

ix. Flow: Natural daily, seasonal, annual, and inter-annual fluctuations of flow shall be maintained to support the naturally balanced indigenous biological community including those species most sensitive to alterations in flow, including trout and all life stages of trout.

x. Toxicants

a. Narrative:
   1. Aquatic Life Criteria: The concentration of toxic substances shall not result in chronic or acute toxicity or impairment of the uses of aquatic life and shall not exceed the chronic or acute criteria in Table 1[1], unless within a mixing zone or a site-specific criterion is developed consistent with the documented procedures.

   2. Human Health Criteria: The concentration of toxic substances shall not exceed the level necessary to protect human health through exposure routes of fish tissue consumption, water consumption, or other routes identified as appropriate for the particular body of water, as presented in Table 2[1]. "Water and Organisms" criteria assume the consumption of 2.4 liters of water and 22.0 grams of fish per day, while the "Organisms Only" criteria are based on the consumption of 22.0 grams of fish per day.

b. Numerics: *Eastern Band of Cherokee Indians Water Quality Standards: Administrative Rules Appendix A: Table 1 and Table 2*[1]

xi. "Free-Froms": All surface waters, including those within the mixing zone, must be capable of supporting aquatic life and shall be free from: a. Substances that settle to form objectionable deposits or sediments, b. Floating debris, scum, oil, and other floating materials that form a nuisance or interfere with designated water uses, c. Material or practices that produce objectionable color, odor, taste, or turbidity, d. Substances which are acutely toxic or produce

[1] Table 1 and Table 2 are found in the *Eastern Band of Cherokee Indians Water Quality Standards: Administrative Rules* found at https://19january2021snapshot.epa.gov/sites/static/files/2019-04/documents/ebci_wqs_0001_081518.pdf

adverse physiological or behavioral responses in humans, animals, plants, fish and other aquatic life, e. Substances which produce undesirable aquatic life or result in the dominance of nuisance species, and f. Substances which cause fish flesh tainting.

C. Critical flows:

Implementing EBCI water quality standards requires consideration of flow design criteria for effluent limitations. Critical flows were estimated using published USGS data from the Oconaluftee River near Birdtown, NC gage #03512000.

https://streamstats.usgs.gov/ss/?gage=03512000&tab=info

Critical Drought Flows for Permitting: 7Q10 = 96 cfs

D. 303(d) Status – The Oconaluftee River has not been assessed for water quality by the EBCI, nor does it appear on the State of North Carolina's 2022 303(d) List. Downstream, the Tuckasegee River Arm of Fontana Lake with designated use of Recreation is listed as impaired by NCDEQ for fecal coliform.

E. Total Maximum Daily Loads – Tuckasegee River Arm of Fontana Lake is covered under NCDEQ's statewide mercury TMDL (2012). There is currently no TMDL that addresses the fecal coliform impairment.

F. Receiving Waterbody Ambient Information

i. Hardness: Necessary for metals toxicity calculations. The combined hardness downstream of the discharge is expected to be less than 25 mg/L. However, a combined hardness of 25 mg/L was assumed for toxicity calculations for this site based on EPA permitting protocol of setting a minimum hardness of 25 mg/L when the combined hardness is expected to be lower.

ii. TSS: Necessary for metals toxicity calculations. A default value of 10 mg/L was used for the combined TSS downstream of the discharge.

4. Effluent Limits and Permit Conditions

A. Proposed Effluent Limitations for outfall 002 (and 001 if utilized).

PARAMETERS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS		
	Daily Minimum	Monthly Avg	Weekly Avg	Daily Maximum	Sampling Location	Measurement Frequency	Sample Type
Flow, MGD	---	6.0	6.0	---	Effluent	Continuous	Recorder
Dissolved Oxygen (DO), mg/L	5.0	---	---	---	Effluent	1/Week	Grab

PARAMETERS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS		
	Daily Minimum	Monthly Avg	Weekly Avg	Daily Maximum	Sampling Location	Measurement Frequency	Sample Type
Carbonaceous Biochemical Oxygen Demand 5-Day ($CBOD_5$), mg/L	--- ---	Report 18.0	--- 27.0	--- ---	Influent Effluent	1/Week 1/Week	24-hour Composite 24-hour Composite
Carbonaceous Biochemical Oxygen Demand 5-Day ($CBOD_5$) Percent Removal, %	---	85%[a]	---	---	Influent/ Effluent	1/Month	Calculated
Total Suspended Solids (TSS), mg/L	--- ---	Report 30.0	--- 45.0	--- ---	Influent Effluent	1/Week 1/Week	24-hour Composite 24-hour Composite
Total Suspended Solids (TSS) Percent Removal, %	---	85%[a]	---	---	Influent/ Effluent	1/Month	Calculated
Total Ammonia as Nitrogen (TAN), mg/L	---	7.0	---	10.5	Effluent	1/Week	24-hour Composite
pH, standard units (SU)	6.0	---	---	9.0	Effluent	1/Week	Grab
E. coli, #/100 mL	---	126[b]	---	410	Effluent	1/Week	Grab
Chronic Whole Effluent Toxicity	See Page 5 Item 4 in Permit				Effluent	See Part III in Permit	
Total Nitrogen (TN) as Nitrogen, mg/L	---	Report	---	---	Effluent	1/Month	24-hour Composite
Total Phosphorus (TP) as Phosphorous, mg/L	---	Report	---	---	Effluent	1/Month	24-hour Composite
Turbidity, NTU	---	Report	---	---	Effluent	Quarterly	Grab
Water Temperature, ºC	---	Report	---	---	Effluent	1/Week	Grab

[a] Each month, the monthly average effluent $CBOD_5$ and TSS concentrations shall not exceed 15% of the monthly average of their respective influent concentration values (85% removal). The percent removal shall be reported on the DMR and submitted electronically using NetDMR.

[b] The geometric mean of the E. coli values collected during any monthly period shall not exceed 126 colonies per 100 ml of effluent sample and shall be reported as the monthly average value on the DMR Form.

B. Reasonable Potential (RP)

Title 40 of the Federal Code of Regulations, 40 CFR 122.44(d) requires NPDES permit issuing authorities to develop procedures for determining whether a discharge causes, has the reasonable potential to cause, or contributes to an instream excursion above a narrative or numeric criterion. If such reasonable potential is determined to exist, the NPDES permit must contain pollutant effluent limits and/or effluent limits for whole effluent toxicity. EPA's reasonable potential analysis is based on guidelines provided in "U.S. EPA NPDES Permit Writer's Manual (2010)" and its references. A reasonable potential analysis was conducted using data from March 31, 2018 through December 31, 2023 and application data from the application received December 21, 2023 (see Appendix 3). The results of the analysis indicated that there was no reasonable potential for copper and zinc to exceed water quality standards, therefore the quarterly monitoring was removed. Additional information on the process and results of the reasonable potential analysis can be found in Appendix 3.

C. Nutrients: <u>Total Nitrogen (TN) and Total Phosphorus (TP)</u>

In order to protect and maintain waters of the State, consideration must be given to control nutrients reaching North Carolina's waterways. Excessive nutrient concentrations in a river can produce an overabundance of algae that create eutrophic conditions. There are no numeric water quality criteria for TP and TN in the EBCI water quality standards. Therefore, EPA interpreted EBCI's narrative nutrient criteria that is applicable to all waterbodies to assess for reasonable potential for TN and TP.

<u>Interpretation of EBCI Narrative Nutrient Criteria</u>

Where a State or Tribe has not established a numeric water quality criterion for a specific chemical pollutant that is present in an effluent at a concentration that causes, has the reasonable potential to cause, or contributes to an excursion above a narrative criterion, the permitting authority must establish effluent limits using one or more of the options provided in 40 CFR 122.44(d)(1)(vi).

EPA is collecting additional information this permit cycle to determine the potential necessity of water quality-based effluent limits for TN and TP based on 40 CFR 122.44(d)(1)(vi)(B), which allows the permitting authority to establish effluent limits using EPA's water quality criteria, published under Section 304(a) of the CWA. EPA has interpreted EBCI's narrative criterion, which states that "Nutrients shall not be allowed in concentrations that render the waters unsuitable for the existing or designated uses due to objectionable algal densities, nuisance aquatic vegetation, diurnal fluctuations in dissolved oxygen, or pH indicative of excessive photosynthetic activity, detrimental changes to the composition of aquatic ecosystems or other indicators of use impairment caused by nutrients."

(Eastern Band of Cherokee Indians Administrative Regulations Title 15, Subchapter B: Surface Water Quality Standards 4.1.1).

To interpret EBCI's narrative nutrient criteria, EPA compared approved ecoregion and sub-ecoregion Total Nitrogen (TN) and Total Phosphorus (TP) concentrations with neighboring Tennessee's ecoregion numbers as well as previous DMR data for the facility.

Various Reference Nutrient Concentrations for Rivers and Streams			
Parameter	**EPA Ecoregion XI Subecoregion 66**	**EPA Ecoregion XI**	**TN's 2001 Ecoregion-based "interpretation of narrative" for TP and nitrate+nitrite**
Total Nitrogen (mg/L)	0.28 (Reported values- 25th percentile of data)	0.305 (Reported values- 25th percentile of data)	Only **nitrate+nitrite** 66d: 0.50 66e, f, & g: 0.31
Total Phosphorus (ug/L)	7.125 (ug/L) (25th percentile of data)	10 (ug/L) (25th percentile of data)	66d, g, & e: 0.1mg/L 66f: 0.2mg/L

It was determined that use of the target values identified within the Subecoregion 66 would be an appropriate interpretation for the narrative nutrient criteria applicable at the tribal boundary, since that is the ecoregion the WWTP is located in.

Reasonable Potential and status of receiving waterbody

EPA used reported quarterly effluent data at reported 7Q10 flows to assess reasonable potential for the likelihood of the discharger to cause or contribute to an exceedance of water quality standards. Limited receiving water body (RWB) data available requires EPA to make conservative assumptions that may not be representative of the current conditions in the RWB. Therefore, EPA is requiring the permittee to increase water quality monitoring for Total Nitrogen and Total Phosphorus.

The data collected from this plan will be used to develop models and establish NPDES permit limits for TN and TP in time for the next permit reissuance, if necessary. For the purpose of collecting sufficient effluent data reasonably reflecting effluent characteristics and seasonal fluctuations, monitoring for these parameters will be included in the permit at 1/Month frequency. This data will be used as input for developing and calibrating the watershed model.

D. Whole Effluent Toxicity (WET)

The chronic WET test measures the effect of wastewater on an indicator organism's growth, reproduction and survival. The two species of indicator organisms designated in this permit are *Ceriodaphnia dubia* and *Pimephales promelas*. The effects of an effluent in chronic toxicity tests are estimated based on the statistical calculation of the effluent concentration which causes a 25% reduction in growth or reproduction of test organisms. This inhibition concentration, denoted as IC_{25}, is then compared to the instream waste concentration (IWC), which is the proportion of effluent in the receiving water, to determine if toxicity has occurred at a level of concern. If the IC_{25} is lower than the IWC, the effluent has the potential to inhibit aquatic organisms in the receiving water. WET testing also requires a measure of test sensitivity known as Percent Minimum Significant Difference (PMSD). See the table below from Section 10.2.8.3 of Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, 4th Edition, EPA 821-R-02-013, 2002 for PMSD variability criteria.

TABLE 6. VARIABILITY CRITERIA (UPPER AND LOWER PMSD BOUNDS) FOR SUBLETHAL HYPOTHESIS TESTING ENDPOINTS SUBMITTED UNDER NPDES PERMITS.[1]

Test Method	Endpoint	Lower PMSD Bound	Upper PMSD Bound
Method 1000.0, Fathead Minnow Larval Survival and Growth Test	growth	12	30
Method 1002.0, *Ceriodaphnia dubia* Survival and Reproduction Test	reproduction	13	47
Method 1003.0, *Selenastrum capricornutum* Growth Test	growth	9.1	29

[1] Lower and upper PMSD bounds were determined from the 10th and 90th percentile, respectively, of PMSD data from EPA's WET Interlaboratory Variability Study (USEPA, 2001a; USEPA, 2001b).

The effluent shall not be chronically toxic to, or produce adverse physiological or behavioral responses in, aquatic animals. The critical maximum instream waste concentration is 9.6%. An IC_{25} of less than or equal to 9.6% will constitute a violation. The permittee submitted the results of five individual multi-species annual chronic WET tests with the permit renewal application. No test indicates toxicity such that the IC_{25} is less than 9.6%. No additional WET monitoring beyond the current required annual monitoring is proposed for permit renewal.

E. Basis for Conventional Pollutants Limits

Pollutant of Concern	Basis
pH, SU	The effluent limits for pH were based on minimum level of effluent quality requirements of 40 CFR § 133.102 for discharges of wastewater from POTWs and is protective of downstream water quality standards.
5-Day Carbonaceous Biochemical Oxygen Demand (CBOD5), mg/L	The monthly average and weekly average effluent limitations for $CBOD_5$ are protective of instream DO based on WASP model results protective of downstream water quality standards. (See Appendix 1) No changes proposed to existing Water Quality Based Effluent Limits (WQBELs). The percent removal limitation for CBOD5 is based on minimum level of effluent quality requirements of 40 CFR § 133.102 for discharges of wastewater from POTWs.
Total Suspended Solids (TSS), mg/L	The effluent limitations for TSS are based on minimum level of effluent quality requirements of 40 CFR § 133.102 for discharges of wastewater from POTWs.
E. Coli #/100 ml	Effluent limits are set at end-of-pipe concentrations that are protective of applicable downstream water quality criteria.

F. Basis for Nonconventional Pollutants Limits

Pollutant of Concern	Basis
Total Ammonia as N, mg/L	The effluent limitations for ammonia are protective of instream DO based on WASP model results. (See Appendix 1) The limits are protective of EBCI NH3 toxicity-based Water Quality Standard (EPA 2013 Ambient Water Quality Criteria for Ammonia). The previous ammonia toxicity analysis is included in Appendix 2.
Dissolved Oxygen (DO), mg/L	The effluent limitation for dissolved oxygen is protective of instream DO based on WASP model results. (See Appendix 1). The proposed effluent limit is protective of downstream dissolved oxygen criteria.
Total Nitrogen as N, mg/L	Monitoring for Total Nitrogen is required so that sufficient information will be available from this point source should it be necessary at some later time to impose limits on this discharge.
Total Phosphorus as P, mg/L	Monitoring for Total Phosphorus is required so that sufficient information will be available from this point source should it be necessary at some later time to impose limits on this discharge.
Turbidity, NTU	Effluent turbidity is not included with application data. Collecting such data is necessary to determine for future analysis if this facility has reasonable potential to cause or contribute to an excursion of downstream applicable turbidity water quality criteria. This permit includes monitoring and reporting for turbidity.
Water Temperature, ºC	The downstream water temperature water quality criterion is “shall not be increased by more than 0.5 degrees C (0.9 degrees F) due to the discharge of heated liquids, but in no case to exceed 20 degrees C”. Collecting effluent water temperature data is necessary to determine for future analysis if this facility has reasonable potential to cause or contribute to an excursion of downstream applicable thermal water quality criteria. This permit proposes to include monitoring and reporting for water temperature.

G. Basis for Toxic Pollutants Limits

Pollutant of Concern	Basis
Copper, Total Recoverable, µg/l	The reasonable potential (RP) analysis (Appendix 3) for toxics identified Copper as a pollutant that does not exhibit potential to cause a violation of applicable downstream Copper water quality criteria. The toxicities of some metals, such as Copper, vary with the hardness of the water. Therefore, the water quality criteria for these metals also vary with hardness. EPA uses the hardness of the receiving water when mixed with the effluent to determine the water quality criteria for such metals. Since toxicity decreases (and numeric water quality criteria increase) as hardness increases, EPA has used the average hardness measured from the outfall as the assumption for hardness. In the absence of site-specific translators, EPA used *The Metals Translator: Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criterion* (EPA 823-B-96-007, June 1996). This guidance recommends the use of water quality criteria conversion factors as the default translators. Because site-specific translators were not available, EPA has used the Eastern Band of Cherokee Indian's downstream Copper water quality criteria in the reasonable potential and effluent limit calculations for this discharge. Static Copper limit calculations are based on long-term average hardness (60.16 mg/L) and long-term average TSS (4.78 mg/L), values that are calculated from effluent data from the facility. To be conservatively protective of water quality, no dilution allowance was provided to the facility. There was found to be no reasonable potential for Copper to exceed the water quality standards, therefore Copper monitoring has been removed from the permit. For more information on the calculations, see Appendix 5.
Zinc, Total Recoverable, µg/l	The reasonable potential (RP) analysis (Appendix 3) for toxics identified Zinc as a pollutant that does not exhibit potential to cause a violation of applicable downstream Zinc water quality criteria. The toxicities of some metals, such as Zinc, vary with the hardness of the water. Therefore, the water quality criteria for these metals also vary with hardness. EPA uses the hardness of the receiving water when mixed with the effluent to determine the water quality criteria for such metals. Since toxicity decreases (and numeric water quality criteria increase) as hardness increases, EPA has used the average hardness measured from the outfall as the assumption for hardness. In the absence of site-specific translators, EPA used *The Metals Translator: Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criterion* (EPA 823-B-96-007, June 1996). This guidance recommends the use of water quality criteria conversion factors as the default translators. EPA has used the Eastern Band of Cherokee Indian's zinc water quality criteria in the reasonable potential and effluent limit calculations for this discharge. There was found to be no reasonable potential for zinc to exceed the water quality standards, therefore Zinc monitoring has been removed from the permit. For more information on the calculations, see Appendix 5.

H. Comparison & Summary of Water Quality-Based vs. Technology-Based Effluent Limits

For each parameter, applicable technology-based limits (TBELs) were compared to the applicable water-quality based limits (WQBELs), and the most stringent limits were selected for the permit. The

selected limits, which are indicated by bold text, were compared to the limits in the current permit, and all are at least as stringent as the current permit limits.

Parameter	Current Permit Limits				Proposed Permit Limits							
					WQBELs				TBELs			
	Daily Min	Monthly Avg	Weekly Avg	Daily Max	Daily Min	Monthly Avg	Weekly Avg	Daily Max	Daily Min	Monthly Avg	Weekly Avg	Daily Max
Flow	---	**6.0 MGD**	**9.0 MGD**	---	---	**6.0 MGD**	**9.0 MGD**	---	---	---	---	---
Dissolved Oxygen	5.0	---			**5.0**	---			---			
$CBOD_5$	---	18.0 mg/L	27.0 mg/L	---	---	**18.0 mg/L**	**27.0 mg/L**	---	---	25 mg/L	37.5 mg/L	---
$CBOD_5$ % Removal	---	85%	---	---	---				**---**	**85%**	---	---
TSS	---	30 mg/L	45 mg/L	---	---				**---**	**30 mg/L**	**45 mg/L**	**---**
TSS % Removal	---	85%	---	---	---				**---**	**85%**	---	---
Total Ammonia as Nitrogen	---	7.0 mg/L	---	10.5 mg/L	---	**7.0 mg/L**	**---**	**10.5 mg/L**	---			
pH	6.0	---		9.0	6.0	---		9.0	**6.0**	**---**		**9.0**
E. coli		**126 #/100 ml**	**410 #/ 100 ml**			**126 #/100 ml**	**410 #/ 100 ml**		---			
Chronic WET	$IC_{25} \geq 9.6\%$				**$IC_{25} \geq 9.6\%$**				---			
TN	---	Report	---	---	---	**Report**	---		---			
TP	---	Report	---	---	---	**Report**	---		---			
Turbidity	---	**Report**	---		---	**Report**	---		---			
Copper, Total Recoverable	---	**Report**	---		---	---	---		---			
Zinc, Total Recoverable	---	**Report**	---		---	---	---		---			
Water Temperature	---	**Report**	---		---	**Report**	---		---			

5. 401 Certification

The Clean Water Act (CWA) § 401 statute and regulations stipulate that no federal permit or license can be issued that may result in a discharge to waters of the United States unless the state or authorized tribe certifies that the discharge is consistent with water quality standards and other water quality goals or waives its certification authority. The EPA Regional offices are the certifying authority on behalf of tribes without CWA § 401 program authority.

The CWA § 401 regulations direct certifying authorities to conclude that the permitted activity will be consistent with effluent limitations for conventional and non-conventional pollutants, water quality

standards, new source performance standards, and toxic pollutant limitations, and any other appropriate state and/or tribal requirements. A second component of the scope of the CWA § 401 review is determining whether an activity requiring certification in one state or tribe (i.e., in the location where the discharge originates) may potentially impact the water quality of a neighboring state or tribe. In those instances, the EPA is directed to notify the state or tribe whose water quality may be affected, and neighboring state or tribe may object to permit issuance.

The EBCI has promulgated water quality standards. The subject permit was developed to be consistent with the EBCI's Water Quality Standards. It is protective of designated uses of Tribal waters and with the other applicable provisions of the CWA (i.e., §§ 301, 302, 303, 306, and 307). The Tribe has been granted § 401 certification authority and this authority covers the reissuance of the Cherokee WWTP NPDES permit. EPA sent the 401 certification request on 8/27/2024 and it was signed on 9/18/2024.

6. Services Consultation

In accordance with 40 CFR § 122.49(c) the EPA is required to ensure, in consultation with the U.S. Fish and Wildlife Service (Service), that "any action authorized EPA is not likely to jeopardize the continued existence of any endangered or threatened species or adversely affect its critical habitat". The EPA submitted this permit to the Service for consultation on August 14, 2024 and is currently pending.

7. National Historic Preservation Act

Section 106 of the National Historic Preservation Act (NHPA), and implementing regulations 36 CFR Part 800 require the EPA, before issuing a license (permit), to identify the area of potential effect of a permitted discharge and, if historic or cultural resources within that area would be adversely affected by the discharge, to adopt measures when feasible to mitigate potential adverse effects of the licensed activity and properties listed or eligible for listing in the National Register of Historic Places. The MBCI are responsible for administering the NHPA within tribal boundaries. The NHPA consultation for this facility was completed on August 20, 2024, with a determination from EBCI's THPO "that the issuance of wastewater discharge as described in the information provided will not impact cultural or archaeological resources important to the EBCI".

8. Public Participation

The public notice for this draft permit will be published in the Cherokee One Feather with the permit documents available on the EPA Region 4 website. The public comment period will be open for 30 days after publication of the public notice. A response to comment document will be drafted and included with the final permit should any significant comments be received.

9. Public Notice Summary

On November 14, 2024, the EPA published for public notification the Cherokee Wastewater Treatment Plant (NC0052469) NPDES permit in both the Cherokee One Feather publication and online at the EPA Region 4 website. EPA did not receive any public comments during the 30-day notification period.

APPENDIX 1

Model Selection:

EPA's Advanced Eutrophication WASP Model (version 8.41) was parameterized to evaluate fate and transport of oxygen demanding substances and ammonia as nitrogen from the discharger into downstream receiving waters.

Key Model Assumptions:

The one-dimensional longitudinally segmented model was run in a steady-state mode with the following assumptions:

- Primary drivers for dissolved oxygen concentration in the receiving stream are reaeration, CBOD demand and Boundary conditions
- Receiving stream Oconaluftee River flow boundary at critical 7Q10 drought flow (56.01 MGD, 2.46 cms)
- Simulated POTW effluent for 12 different scenarios with the following conditions:
    - FLOW values range from 0.2633 cms (6.0 MGD) to 0.4736 cms (9.0 MGD)
    - Temperature values range from 19.00 – 23.40 deg C., based on critical conditions
    - CBOD-ultimate values range from 27 – 40.5 mg/L, assuming a CBOD5/CBOD-ultimate ratio of 0.67 and CBOD5 ranging from 18 – 27 mg/L
    - Total Suspended Solids (TSS) values range from 30 – 45 mg/L
    - NH3 values range from 7 – 10.5 mg/L
    - NO3O2 values range from 7.36 to 14 mg/L
- Assumed Oconaluftee River upstream boundary conditions: NH3 as 0.02 mg/L, CBOD-ultimate as 6.00 mg/L, NO2NO3 as 0.02 mg/L.
- Assumed Tuckasegee River upstream boundary conditions: NH3 as NH3 as 0.02 mg/L, CBOD-ultimate as 6.00 mg/L, NO2NO3 as 0.02 mg/L.
- Reaeration rates for Oconaluftee River ranged from 0.43 – 21.91 g/m^2/day, and for Tuckasegee River ranged from 1.72 – 17.04 g/m^2/day, based on the USGS Pool-Riffle and O'Connor methods, respectively
- Assumed variable receiving stream background water temperature of 23.40 deg C.
- The DO discharge was set at the minimum permitted limit of 5.0-mg/L
- The effluent pH was set to the minimum permitted limit of 6.0
- BOD decay rate set to 0.1/day and corrected for temperature. Rate is consistent with typical secondary treated effluent.
- Nitrification rate set to 0.1/day and corrected for temperature. Rate is consistent with typical secondary treated effluent.
- SOD assumed in Oconaluftee River and Tuckasegee River to range from 0.25 – 1.0-g/m2-day

Original model segmentation was developed using the USGS NHDPlus dataset. Modeling files are available upon request.

Model scenario run input boundary conditions detailed in attached Excel file (Oconaluftee_Testing_2024_Run_Notes.xlsx)

APPENDIX 2

Ammonia Toxicity Analysis

The EBCI has adopted the *Aquatic Life Ambient Water Quality Criteria for Ammonia Freshwater - 2013; EPA document number EPA-822-R-13-001 (April 2013)* for ammonia toxicity. Toxicity-based ammonia limits have been developed for this permit so that these criteria will be met in receiving waters.

This permit will implement the criterion continuous concentration (CCC) and thus be protective of the criterion maximum concentration (CMC) component by default. A dilution allowance equivalent to the 7Q10 drought flow is provided for this analysis- rapid and complete mixing is assumed.

The 30-day average TAN value shall not exceed the average of the values calculated from the following equation with no sample exceeding 2.5 times the value from the equation:

$$30\text{-day average} = 0.8876 \times \left(\frac{0.0278}{1+10^{7.688-pH}} + \frac{1.1994}{1+10^{pH-7.688}}\right) \times \left(2.126 \times 10^{0.028\times(20-Max(T,7))}\right)$$

where T and pH are defined as paired temperature and pH associated with the TAN sample. This equation is valid for pH values 6.5 to 9.0.

Outfall Discharge (Design)	= 6 MGD (9.28 cfs)
Receiving Stream Discharge	= 87 cfs
Mixed Discharge	= 96.4 cfs
Instream Waste Concentration	= 9.6 %

Outfall pH	= 8.0
Receiving Stream pH	= 7.4
Mixed pH	= 7.46

Outfall Temperature	= 26 °C
Receiving Temperature	= 22.3 °C
Mixed Temperature	= 22.7 °C

Calculation CCC

CCC TAN (mg/L) 1.13 = mg/L Total Ammonia as Nitrogen (TAN)

Reasonable Potential Analysis:

Outfall TAN	= 7.0 mg/L
Receiving Stream TAN	= 0.02 mg/L
Mixed TAN	= 0.70 mg/L

At 7Q10 critical drought flow the maximum in-stream concentration allowed by the current permit (at design flow and 7 mg/L monthly average TAN) protective of downstream dissolved oxygen is estimated to be 0.7 mg/L

TAN. The CCC calculated for TAN under the above design conditions is 1.13 mg/L (based on mixed temperature and pH) which is much greater than maximum stream impact in the near field. Therefore, the permit limit of 7 mg/L will be maintained as a monthly average protective of chronic toxicity.

The applicable instream single sample TAN criterion equals 2.5 x CCC = 3.03 mg/L. An effluent discharge less than 31 mg/L is required to be protective of "no single sample shall exceed" provisions in the criteria. The permit currently implements a weekly average limit of 10.5 mg/L monitored once per week (effectively a daily maximum). For clarity, this permit is revised to propose a daily maximum limit of 10.5 mg/L protective of the single sample maximum TAN criterion.

APPENDIX 3

Toxics Analysis

Method Discussion

EPA's *Technical Support Document for Water Quality-Based Toxics Control* (1991 EPA/505/2-90-001) (TSD) provides guidance for assessing potential toxicity for metals and man-made organic toxicant pollutants. The EBCI has promulgated metals and organics water quality criteria protective of designated uses in the Oconaluftee River. The following analysis is used to assess if there is reasonable potential for the Cherokee WWTP's effluent to cause or contribute to an exceedance of such criteria, and to consider whether such a pollutant should be limited in the permit.

The following from the TSD Chapter 3 page 53 illustrates methodology employed for this permit reissuance:

Box 3-2. Determining "Reasonable Potential" for Excursions Above Ambient Criteria Using Effluent Data Only

EPA recommends finding that a permittee has "reasonable potential" to exceed a receiving water quality standard if it cannot be demonstrated with a high confidence level that the upper bound of the lognormal distribution of effluent concentrations is below the receiving water criteria at specified low-flow conditions.

Step 1 Determine the number of total observations ("*n*") for a particular set of effluent data (concentrations or toxic units [TUs]), and determine the highest value from that data set.

Step 2 Determine the coefficient of variation for the data set. For a data set where $n<10$, the coefficient of variation (CV) is estimated to equal 0.6, or the CV is calculated from data obtained from a discharger. For a data set where $n>10$, the CV is calculated as standard deviation/mean (see Figure 3-1). For less than 10 items of data, the uncertainty in the CV is too large to calculate a standard deviation or mean with sufficient confidence.

Step 3 Determine the appropriate ratio from Table 3-1 or 3-2.

Step 4 Multiply the highest value from a data set by the value from Table 3-1 or 3-2. Use this value with the appropriate dilution to project a maximum receiving water concentration (RWC).

Step 5 Compare the projected maximum RWC to the applicable standard (criteria maximum concentration, criteria continuous concentration [CCC], or reference ambient concentration). EPA recommends that permitting authorities find reasonable potential when the projected RWC is greater than an ambient criterion.

Example

Consider the following results of toxicity measurements of an effluent that is being characterized: 5 TU_c, 2 TU_c, 9 TU_c, and 6 TU_c. Assume that the effluent is diluted to 2 percent at the edge of the mixing zone. Further assume that the CV is 0.6, the upper bound of the effluent distribution is the 99th percentile, and the confidence level is 99 percent.

Step 1 There are four samples, and the maximum value of the sample results is 9 TU_c.

Step 2 The value of the CV is 0.6.

Step 3 The value of the ratio for four pieces of data and a CV of 0.6 is 4.7.

Step 4 The value that exceeds the 99th percentile of the distribution (ratio times x_{max}) after dilution is calculated as:

$$[9\ TU_c \times 4.7 \times 0.02] = 0.85\ TU_c.$$

Step 5 0.85 TU_c is less than the ambient criteria concentration of 1.0 TU_c. There is no reasonable potential for this effluent to cause an excursion above the CCC.

The method references a Table 3-1 or 3-2 in the TSD for selection of reasonable potential multiplying factors. For this analysis, EPA used the 95% table (3-2).

This analysis considers the rapid and complete mixing assumption to be valid for the purposes of permitting toxicants. Therefore, the appropriate drought flows are considered for dilution allowance (Table 1 below).

Reasonable Potential Analysis (EPA Method)	
Address	**4 Road Cherokee NC 28719**
Applicant	EBCI
Project	EBCI WWTP
RWB	Oconoluftee River
NPDES #	NC0052469
INPUT	
7Q10 (cfs)	96
HMF (cfs)	570
Effluent Flowrate (cfs)	2.500983333
Hardness (after mixing)	48.1
DWS	no

Table 2 below lists parameters of concern for this permit based off of the priority pollutant scan and their applicable chronic and acute water quality criteria. For hardness dependent metals, the average hardness given in the priority pollutant scan is used, 42.07 mg/L.

INPUT	**VARIABLES**			
Pollutant	Water Quality Criteria (mg/L)			
	Human Health		Warm Water Aquatic Habitat	
	DWS	FC	Acute	Chronic
Flow, MGD			Report	Report
Nitrogen (total) TN as N			Report	Report
Phosphorus (total) TP as P			Report	Report
CBOD5, mg/l			11.00	3.39
TSS, mg/l			45.00	30.00
DO			5.00	4.00
pH			8.38	7.06
Fecal Coliform			410.00	126.00
Ammonia Nitrogen				
Zinc	7.4	26.0	0.0630	0.0635
Copper	1.3		0.0067	0.0048
Mercury (ng/l)			1,400	770

Table 3 illustrates how total dissolved metals criteria are translated to total recoverable metals criteria for the specific metals relevant to the permit. Tables 4 and 5 below represent hardness dependent criteria formulations and EPA metals translator default partition coefficients.

Table 3: Dissolved Total Metals Calculator:

	Hardness (mg/L)	Total acute (ug/l)	total chronic (ug/l)	Water Quality Criteria dissolved acute (mg/l)	Water Quality Criteria dissolved chronic (mg/l)
Zinc	42.07	57.532	57.532	0.056	0.057
Copper	42.07	6.192	4.452	0.006	0.004

Hardness-dependent metals criteria may be calculated from the following:
CMC (total) = exp{mA [ln(hardness)]+ bA}
CCC (total) = exp{mC [ln(hardness)]+ bC}
CMC (dissolved) = exp{mA [ln(hardness)]+ bA} (CF)
CCC (dissolved) = exp{mC [ln (hardness)]+ bC} (CF).

Table 4: Dissolved Freshwater Standards for Hardness-Dependent Metals Criteria

Table A: Dissolved Freshwater Standards for Hardness Dependent Metals	
Metal	**µg/L**
Cadmium, Acute	{1.136672-[ln hardness](0.041838)} · e^{0.9151 [ln hardness]-3.1485}
Cadmium, Acute (Trout Waters)	{1.136672-[ln hardness](0.041838)} · e^{0.9151[ln hardness]-3.6236}
Cadmium, Chronic	{1.101672-[ln hardness](0.041838)} · e^{0.7998[ln hardness]-4.4451}
Chromium III, Acute	0.316 · e^{0.8190[ln hardness]+3.7256}
Chromium III, Chronic	0.860 · e^{0.8190[ln hardness]+0.6848}
Copper, Acute	0.960 · e^{0.9422[ln hardness]-1.700}
Copper, Chronic	0.960 · e^{0.8545[ln hardness]-1.702}
Lead, Acute	{1.46203-[ln hardness](0.145712)} · e^{1.273[ln hardness]-1.460}
Lead, Chronic	{1.46203-[ln hardness](0.145712)} · e^{1.273[ln hardness]-4.705}
Nickel, Acute	0.998 · e^{0.8460[ln hardness]+2.255}
Nickel, Chronic	0.997 · e^{0.8460[ln hardness]+0.0584}
Silver, Acute	0.85 · e^{1.72[ln hardness]-6.59}
Silver, Chronic	Not applicable
Zinc, Acute	0.978 · e^{0.8473[ln hardness]+0.884}
Zinc, Chronic	0.986 · e^{0.8473[ln hardness]+0.884}

Table 5: EPA Translators Using Default Partition Coefficients

Translator equation using Default Partition Coefficients = $\frac{1}{[1 + (Kpo * TSS^{(1+\alpha)} * 10^{-6})]}$

Kpo and α are constants that express the equilibrium relationship between dissolved and adsorbed forms of metals.

A default value of 10 mg/L **Total Suspended Solids (TSS)** will be used.

Table A contains the Default Partition Coefficients for the equation.

Table B contains the calculated translators using the default partition coefficients for streams.

TABLE A. Default Partition Coefficients

	STREAMS	
Metal **(1)**	Kpo	α
Cu	1.04E+06	-0.7436
Zn	1.25E+06	-0.7038
Pb	2.80E+06	-0.8
Cr (III) **(2)**	3.36E+06	-0.09304
Cd	4.00E+06	-1.1307
Ni	4.90E+05	-0.5719

(1) Delos, C.G., et al. Technical Guidance for Performing Waste Load Allocations. Book II: Streams and Rivers. Chapter 3: Toxic Substances, For the U.S. EPA. (EPA-440/

(2) Linear partition coefficients shall not apply to the Chromium VI numerical criterion. The approved analytical method for Chromium VI measures only the dissolved form.

TABLE B. US EPA Translators

PARAMETER	**US EPA Translators** Using stream Default Partition Coefficients *TSS = 10 mg/L*
Cadmium	0.252
Chromium III	0.202
Chromium VI	1
Chromium, Total	N/A
Copper	0.348
Lead	0.184
Nickel	0.432
Silver	1
Zinc	0.288

Table 6 contains pollutant specific reasonable potential analyses wherein the dilution allowance is applied to both hardness and non-hardness dependent in-stream water quality criteria. Hardness dependent criteria assume a hardness of 25 mg/L in the fully mixed stream/effluent streamflow for this analysis as a hardness floor recommended for application of the hardness-based stream criteria metals formulations. Maximum predicted concentrations in the effluent (Max Pred Cw in Table 6) are compared to maximum allowable concentrations in the effluent necessary to meet water quality criteria that have been translated from total dissolved to total recoverable (Allowable Cw in Table 6).

Table 6: Reasonable Potential Analysis

	INPUT				VARIABLES					OUTPUT				
						Water Quality Criteria (mg/L)								
						Human Health		Warm Water Aquatic Habitat						
Pollutant	In-stream Concentration (mg/L)	MAXIMUM Effluent Concentration (mg/L)	AVERAGE Effluent Concentration (mg/L)	Sample Quantity	Multiplying Factor (CV = 0.6)	DWS	FC	Acute	Chronic	RWC$_{CHMF}$ (mg/L)	FC$_{HMF}$ RP	RWC$_{7Q10}$ (mg/L)	DWS$_{7Q10}$ RP	WWAH$_{7Q10}$ RP
Flow, MGD	0.0000	2.21	1.64	11	2.9			Report	Report	0.0471		0.1835		
Nitrogen (total) TN as N	0.0000	73.0	9.0	24	2.2			0.2800	0.2800	1.1811	YES	4.5989		YES
Phosphorus (total) TP as P	0.0000	3.9	1.0	24	2.2			0.0071	0.0071	0.0638	YES	0.2485		YES
CBOD5, mg/l	0	9.0	3.5	52	1.7			11.00	3.39	0.1125	YES	0.1704		
TSS, mg/l	0.0000	7.9	4.3	53	1.7			45.00	30.00	0.0988	YES	0.2093		
DO	0.0000	11.8	9.2	53	1.7			5.00	4.00	0.1475	YES	0.4498		
E. Coli	0.00000	24.1	4.4	51	1.7			410.00	126.00	0.3013	YES	0.2142		
Zinc	0	0.1190	0.03933	18	2.4	7.4	26.0	0.0630	0.0635	0.0007		0.0082		
Copper	0.0000	0.0200	0.0062	17	2.4	1.3		0.0067	0.0048	0.0001		0.0014		
Mercury (ng/l)	0.0000	6	3	3	5.6			1.400	770	0.2463	YES	0.9589		

Effluent Flow	
Monitoring Period End Date	**Monthly Avg, MGD**
03/31/2018	2.35
04/30/2018	1.96
05/31/2018	1.89
06/30/2018	1.93
07/31/2018	1.83
08/31/2018	2.16
09/30/2018	1.46
10/31/2018	1.64
11/30/2018	2.03
12/31/2018	2.67
01/31/2019	2.38
02/28/2019	3.01
03/31/2019	2.50
04/30/2019	2.47
05/31/2019	2.20
06/30/2019	1.88
07/31/2019	1.84
08/31/2019	1.71
09/30/2019	1.50
10/31/2019	1.78
11/30/2019	1.99
12/31/2019	2.51
01/31/2020	2.39
02/29/2020	3.15
03/31/2020	2.55
04/30/2020	2.18
05/31/2020	1.87
06/30/2020	1.56
07/31/2020	1.82
08/31/2020	1.63
09/30/2020	1.65
10/31/2020	1.73
11/30/2020	1.72
12/31/2020	1.76
01/31/2021	1.76
02/28/2021	2.06
03/31/2021	2.07
04/30/2021	1.74
05/31/2021	1.69
06/30/2021	1.59
07/31/2021	1.47

08/31/2021	1.74
09/30/2021	1.49
10/31/2021	1.51
11/30/2021	1.44
12/31/2021	1.38
01/31/2022	1.65
02/28/2022	2.16
03/31/2022	1.72
04/30/2022	1.55
05/31/2022	1.66
06/30/2022	1.08
07/31/2022	1.60
08/31/2022	1.57
09/30/2022	1.45
10/31/2022	1.24
11/30/2022	1.27
12/31/2022	1.59
01/31/2023	1.75
02/28/2023	1.62
03/31/2023	1.70
04/30/2023	1.51
05/31/2023	1.26
06/30/2023	1.87
07/31/2023	1.87
08/31/2023	1.90
09/30/2023	1.69
10/31/2023	1.50
11/30/2023	1.38
12/31/2023	
Data Points	53
Average	1.73
Maximum	3.15

$CBOD_5$			
Monitoring Period End Date	**Effluent Monthly Avg, mg/L**	**Influent Monthly Avg, mg/L**	**Monthly Avg, % removal**
07/31/2019	2.66	119.50	97.77
08/31/2019	3.30	125.40	97.37
09/30/2019	3.10	126.70	97.55
10/31/2019	2.25	113.72	98.02
11/30/2019	3.61	125.00	97.11
12/31/2019	2.14	92.20	97.68
01/31/2020	2.29	105.80	97.84
02/29/2020	2.02	82.10	97.54
03/31/2020	2.46	143.80	98.29
04/30/2020	2.23	76.46	97.08
05/31/2020	3.73	82.00	95.45

06/30/2020	2.63	107.60	97.56
07/31/2020	3.00	78.60	96.18
08/31/2020	3.11	137.60	97.74
09/30/2020	2.70	128.90	97.91
10/31/2020	2.58	92.12	97.20
11/30/2020	2.88	99.60	97.11
12/31/2020	2.69	98.80	97.28
01/31/2021	4.65	107.70	95.68
02/28/2021	4.24	82.30	94.85
03/31/2021	3.96	102.60	96.14
04/30/2021	2.29	99.10	97.69
05/31/2021	3.73	110.00	96.61
06/30/2021	2.57	112.10	97.71
07/31/2021	2.31	123.40	98.13
08/31/2021	2.47	93.60	97.36
09/30/2021	2.69	122.40	97.80
10/31/2021	2.32	92.30	97.49
11/30/2021	2.94	95.30	96.92
12/31/2021	2.45	120.60	97.97
01/31/2022	2.64	76.40	96.54
02/28/2022	2.38	91.70	97.40
03/31/2022	2.10	85.50	97.54
04/30/2022	2.11	80.70	97.39
05/31/2022	2.10	55.80	96.24
06/30/2022	2.31	85.00	97.28
07/31/2022	3.36	113.60	97.04
08/31/2022	3.23	98.50	96.72
09/30/2022	3.10	76.00	95.92
10/31/2022	2.00	78.30	97.45
11/30/2022	2.96	107.00	97.23
12/31/2022	2.03	73.30	97.23
01/31/2023	2.15	60.40	96.44
02/28/2023	2.13	98.70	97.84
03/31/2023	2.59	88.00	97.06
04/30/2023	3.03	85.60	96.46
05/31/2023	2.79	134.50	97.93
06/30/2023	6.69	80.30	91.67
07/31/2023	7.15	111.10	93.56
08/31/2023	5.70	132.30	95.69
09/30/2023	3.41	119.50	97.15
10/31/2023	3.68	52.30	92.96
11/30/2023	2.22	66.30	96.65
12/31/2023			
Data Points	53	53	53
Average	2.98	99.02	96.88
Maximum	7.15	143.80	98.29

TSS			
Monitoring Period End Date	**Effluent Monthly Avg, mg/L**	**Influent Monthly Avg, mg/L**	**Monthly Avg, % removal**
03/31/2018	2.70	132.67	97.96
04/30/2018	2.30	159.00	98.55
05/31/2018	1.72	128.40	98.66
06/30/2018	3.80	127.00	97.01
07/31/2018	2.50	119.70	97.91
08/31/2018	2.52	148.80	98.31
09/30/2018	2.60	123.00	97.89
10/31/2018	3.66	130.90	97.20
11/30/2018	3.40	93.40	96.36
12/31/2018	3.60	86.25	95.83
01/31/2019	2.74	132.80	97.94
02/28/2019	1.90	138.00	98.62
03/31/2019	2.15	191.50	98.88
04/30/2019	2.20	164.00	98.66
05/31/2019	2.18	191.20	98.86
06/30/2019	1.50	123.00	98.78
07/31/2019	1.70	145.20	98.83
08/31/2019	1.35	161.60	99.16
09/30/2019	2.60	122.50	97.88
10/31/2019	2.00	140.00	98.57
11/30/2019	2.08	120.20	98.27
12/31/2019	1.70	106.50	98.40
01/31/2020	2.18	135.60	98.39
02/29/2020	2.60	104.00	97.50
03/31/2020	2.30	73.00	96.85
04/30/2020	1.80	40.40	95.54
05/31/2020	2.60	81.00	96.79
06/30/2020	3.48	126.40	97.25
07/31/2020	3.50	69.00	94.93
08/31/2020	7.90	163.50	95.17
09/30/2020	11.40	168.00	93.21
10/31/2020	4.20	121.80	96.55
11/30/2020	5.30	85.00	93.76
12/31/2020	5.50	94.20	94.16
01/31/2021	6.10	133.30	95.42
02/28/2021	5.80	58.00	90.00
03/31/2021	3.70	82.40	95.51
04/30/2021	2.80	72.50	96.14
05/31/2021	3.30	101.00	96.73
06/30/2021	2.70	122.00	97.79
07/31/2021	2.70	123.20	97.81
08/31/2021	2.50	109.50	97.72

09/30/2021	2.64	112.80	97.66
10/31/2021	3.40	99.50	96.58
11/30/2021	5.20		
12/31/2021	3.70	178.70	97.93
01/31/2022	7.10	81.50	91.29
02/28/2022	5.50	88.80	93.81
03/31/2022	4.10	118.20	96.53
04/30/2022	5.10	184.00	97.23
05/31/2022	3.40	121.30	97.20
06/30/2022	2.90	236.20	98.77
07/31/2022	3.68	170.30	97.84
08/31/2022	3.00	181.40	98.35
09/30/2022	2.70	205.00	98.68
10/31/2022	3.30	181.50	98.18
11/30/2022	2.70	180.80	98.51
12/31/2022	4.40	148.00	97.03
01/31/2023	4.70	157.30	97.01
02/28/2023	4.90	95.80	94.89
03/31/2023	4.00	87.90	95.45
04/30/2023	4.60	123.30	96.27
05/31/2023	3.80	187.40	97.97
06/30/2023	4.40	185.30	97.63
07/31/2023	4.30	256.00	98.32
08/31/2023	5.80	224.40	97.42
09/30/2023	4.30	221.00	98.05
10/31/2023	3.10	175.30	98.23
11/30/2023	5.40	90.40	94.03
12/31/2023			
Data Points	69	68	68
Average	3.59	134.43	97.01
Maximum	11.40	256.00	99.16

Effluent Total Ammonia as N	
Monitoring Period End Date	**Monthly Avg, mg/L**
03/31/2018	0.10
04/30/2018	0.10
05/31/2018	0.10
06/30/2018	0.10
07/31/2018	0.10
08/31/2018	0.10
09/30/2018	0.10
10/31/2018	0.10
11/30/2018	0.23
12/31/2018	0.10
01/31/2019	0.10
02/28/2019	0.40

03/31/2019	0.25
04/30/2019	0.10
05/31/2019	0.10
06/30/2019	0.05
07/31/2019	0.06
08/31/2019	0.04
09/30/2019	0.40
10/31/2019	0.26
11/30/2019	0.11
12/31/2019	0.09
01/31/2020	0.91
02/29/2020	0.13
03/31/2020	0.04
04/30/2020	0.05
05/31/2020	0.06
06/30/2020	0.06
07/31/2020	0.05
08/31/2020	0.08
09/30/2020	0.08
10/31/2020	2.00
11/30/2020	0.04
12/31/2020	0.13
01/31/2021	1.00
02/28/2021	0.42
03/31/2021	0.21
04/30/2021	0.27
05/31/2021	0.08
06/30/2021	0.08
07/31/2021	0.11
08/31/2021	0.02
09/30/2021	0.04
10/31/2021	0.02
11/30/2021	3.25
12/31/2021	0.04
01/31/2022	0.04
02/28/2022	0.79
03/31/2022	0.03
04/30/2022	0.05
05/31/2022	0.10
06/30/2022	0.10
07/31/2022	0.10
08/31/2022	0.10
09/30/2022	0.10
10/31/2022	0.10
11/30/2022	0.10
12/31/2022	0.12

01/31/2023	0.11
02/28/2023	0.10
03/31/2023	0.10
04/30/2023	0.10
05/31/2023	0.10
06/30/2023	0.10
07/31/2023	0.10
08/31/2023	0.10
09/30/2023	0.10
10/31/2023	0.10
11/30/2023	0.10
12/31/2023	
Data Points	69
Average	0.22
Maximum	3.25

E.coli	
Monitoring Period End Date	**Monthly Average, #/100 mL**
07/31/2019	5.68
08/31/2019	4.33
09/30/2019	2.67
10/31/2019	8.84
11/30/2019	1.58
12/31/2019	1.88
01/31/2020	1.52
02/29/2020	77.60
03/31/2020	1.00
04/30/2020	2.00
05/31/2020	2.02
06/30/2020	3.60
07/31/2020	5.50
08/31/2020	24.28
09/30/2020	8.40
10/31/2020	12.49
11/30/2020	1.41
12/31/2020	4.26
01/31/2021	12.28
02/28/2021	1.89
03/31/2021	1.00
04/30/2021	119.00
05/31/2021	1.88
06/30/2021	6.84
07/31/2021	22.80
08/31/2021	7.60
09/30/2021	3.04
10/31/2021	2.66

11/30/2021	51.20
12/31/2021	1.88
01/31/2022	1.00
02/28/2022	4.32
03/31/2022	2.35
04/30/2022	2.47
05/31/2022	2.27
06/30/2022	4.91
07/31/2022	6.75
08/31/2022	6.30
09/30/2022	8.06
10/31/2022	4.76
11/30/2022	3.09
12/31/2022	1.19
01/31/2023	1.79
02/28/2023	1.11
03/31/2023	1.08
04/30/2023	2.20
05/31/2023	2.92
06/30/2023	3.90
07/31/2023	3.90
08/31/2023	6.90
09/30/2023	7.30
10/31/2023	5.39
11/30/2023	2.90
12/31/2023	
Data Points	53
Average	9.21
Maximum	119.00

Effluent Total Recoverable Copper	
Monitoring Period End Date	**Monthly Avg, mg/L**
09/30/2019	5.80
12/31/2019	5.00
03/31/2020	5.00
06/30/2020	6.10
09/30/2020	8.80
12/31/2020	5.00
03/31/2021	6.10
06/30/2021	5.00
09/30/2021	6.80
12/31/2021	5.00
03/31/2022	5.00
06/30/2022	20.00
09/30/2022	6.60
12/31/2022	5.00

03/31/2023	5.00
06/30/2023	5.40
09/30/2023	
12/31/2023	5.10
Data Points	17
Average	6.51
Maximum	20.00

Effluent Total Nitrogen as N	
Monitoring Period End Date	**Monthly Avg, mg/L**
03/31/2018	
04/30/2018	0.50
05/31/2018	6.60
06/30/2018	
07/31/2018	9.20
08/31/2018	
09/30/2018	
10/31/2018	5.85
11/30/2018	
12/31/2018	
01/31/2019	
02/28/2019	
03/31/2019	3.37
04/30/2019	
05/31/2019	
06/30/2019	6.21
09/30/2019	73.00
12/31/2019	6.68
03/31/2020	2.43
06/30/2020	5.55
09/30/2020	6.73
12/31/2020	5.06
03/31/2021	3.79
06/30/2021	6.89
09/30/2021	9.44
12/31/2021	5.19
03/31/2022	3.81
06/30/2022	8.13
09/30/2022	8.85
12/31/2022	6.01
03/31/2023	4.12
06/30/2023	7.00
09/30/2023	12.20
12/31/2023	9.50
Data Points	24
Average	9.00
Maximum	73.00

Effluent Total Phosphorous as P	
Monitoring Period End Date	**Monthly Avg, mg/L**
03/31/2018	
04/30/2018	0.53
05/31/2018	0.65
06/30/2018	
07/31/2018	1.10
08/31/2018	
09/30/2018	
10/31/2018	1.70
11/30/2018	
12/31/2018	
01/31/2019	
02/28/2019	
03/31/2019	0.39
04/30/2019	
05/31/2019	
06/30/2019	1.13
09/30/2019	1.05
12/31/2019	0.61
03/31/2020	0.13
06/30/2020	1.10
09/30/2020	1.45
12/31/2020	0.43
03/31/2021	0.11
06/30/2021	1.06
09/30/2021	1.83
12/31/2021	0.14
03/31/2022	0.11
06/30/2022	0.80
09/30/2022	1.44
12/31/2022	0.48
03/31/2023	0.25
06/30/2023	3.94
09/30/2023	2.40
12/31/2023	1.10
Data Points	24
Average	1.00
Maximum	3.94

Temp	
Monitoring Period End Date	**Monthly Avg, *C**
07/31/2019	22.60
08/31/2019	24.04
09/30/2019	22.90
10/31/2019	19.10

11/30/2019	13.70
12/31/2019	12.00
01/31/2020	10.98
02/29/2020	11.86
03/31/2020	14.10
04/30/2020	14.70
05/31/2020	17.40
06/30/2020	21.20
07/31/2020	23.20
08/31/2020	11.00
09/30/2020	7.90
10/31/2020	12.30
11/30/2020	1.73
12/31/2020	10.80
01/31/2021	10.50
02/28/2021	11.80
03/31/2021	13.40
04/30/2021	16.70
05/31/2021	17.40
06/30/2021	22.50
07/31/2021	24.00
08/31/2021	22.50
09/30/2021	21.70
10/31/2021	19.30
11/30/2021	14.10
12/31/2021	12.70
01/31/2022	10.00
02/28/2022	11.20
03/31/2022	13.20
04/30/2022	15.50
05/31/2022	19.20
06/30/2022	22.30
07/31/2022	22.60
08/31/2022	22.30
09/30/2022	18.50
10/31/2022	16.30
11/30/2022	15.10
12/31/2022	11.30
01/31/2023	11.30
02/28/2023	12.70
03/31/2023	12.60
04/30/2023	16.30
05/31/2023	19.30
06/30/2023	19.50
07/31/2023	21.70
08/31/2023	23.10

09/30/2023	21.70
10/31/2023	18.70
11/30/2023	11.60
12/31/2023	
Data Points	53
Average	16.30
Maximum	24.04

Zinc	
Monitoring Period End Date	**Monthly Avg, ug/l**
09/30/2019	33.30
12/31/2019	18.40
03/31/2020	10.00
06/30/2020	32.00
09/30/2020	48.00
12/31/2020	28.00
03/31/2021	32.00
06/30/2021	47.70
09/30/2021	43.00
12/31/2021	40.00
03/31/2022	55.50
06/30/2022	119.00
09/30/2022	25.70
12/31/2022	37.00
03/31/2023	28.40
06/30/2023	42.80
09/30/2023	
12/31/2023	27.80
Data Points	17
Average	39.33
Maximum	119.00

Summary of Results

Copper and Zinc do not exhibit reasonable potential. Significant conservatism is built into the approach as minimum drought flows are rare and the additional monitoring provided in the last permit cycle allowed for more accurate predicted effluent concentration that was less than the maximum allowable value. Therefore, EPA is electing to remove the monitoring for both Copper and Zinc.