STATEMENT OF BASIS

FOR THE ISSUANCE OF
A NPDES PERMIT

U.S. Environmental Protection Agency
Region 5, Permits Branch - WP-16J
77 West Jackson Boulevard
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Public Notice No.: 19-08-02-A

Public Notice Issued On: August 23, 2019 **Comment Period Ends:** September 23, 2019

Permit No.: WI-0049727-4 (REISSUANCE) **Application No.: WI-0049727 -4**

Name and Address of Applicant:

Red Cliff Band of Lake Superior Chippewa
Red Cliff Department of Public Works
88385 Pike Rd.
Bayfield, Wisconsin 54814

Name and Address of Facility Where Discharge Occurs:

Red Cliff Band WWTF
89160 Blueberry Rd.
Bayfield, Wisconsin 54814
Red Cliff Indian Reservation
Bayfield County
(S.W. ¼ of the S.E. ¼ of Section 30, T51N, R3W)

Receiving Water: Lake Superior

DESCRIPTION OF APPLICANT'S FACILITY AND DISCHARGE

The above facility is located within the boundaries of the Red Cliff Indian Reservation. The EPA has retained the authority to issue NPDES permits to facilities with discharges to waters of the United States within Indian Country. The EPA is issuing this NPDES permit under the authorities of the Clean Water Act.

Treatment Facility Description:

The treatment facility has pre-treatment consisting of a bar grate, mechanical screen, fine screen, and grit removal. The main treatment is by oxidation ditch with alum addition for phosphorus removal and two final clarifiers. Disinfection is by ultraviolet lights. Sludge is wasted to an aerobic digester and then transferred to a Reed Bed storage system.

The facility has a continuous discharge {Outfall 001 (N. ½ of the N.E. ¼ of Section 31, T51N, R3W) or (latitude: 46-51-31; longitude: 90-46-54)} to Lake Superior. The outfall extends 350 feet from shore in 25 feet deep water. The Red Cliff Band WWTF is designed to treat an average influent flow of 220,000 gallons per day (gpd).

Proposed Effluent Limitations:

The permittee is authorized to discharge treated municipal wastewater through Outfall 001, which discharges to Lake Superior.

Effluent Characteristics	Discharge Limitations			
	Concentration (Specified Units)			
Parameter	Daily Minimum	Monthly Average	Weekly Average	Daily Maximum
Flow (MGD)	-	-	-	-
pH (SU)	6.0	-	-	9.0
Total Suspended Solids (TSS) (mg/L)	-	30	45	-
Biochemical Oxygen Demand (BOD_5) (mg/L)	-	30	45	-
Phosphorus, Total (mg/L)	-	1.0	2.0	-
Nitrogen, ammonia (mg/L)	-	16.21	-	16.21
Mercury, Total (ng/L)	-	1.3	-	1.9
E. coli (#/100ml)	-	126	-	235
BOD percent removal (%)	-	≥85	-	-
TSS percent removal (%)	-	≥85	-	-
Outfall observation (yes/no)	-	-	-	-

Loading limits in the permit are calculated using the following formula:

(0.220 mgd * limit (mg/L) * 8.34) = Loading (lbs/d).

Basis for Permit Requirements

The limits were developed to ensure compliance with 40 CFR Parts 131 and 133, EPA's water quality criteria and protection of Wisconsin's water quality standards where they are applicable.

pH

The limits for pH are based on secondary treatment requirements pursuant to 40 CFR Part 133.

5-day Biochemical Oxygen Demand (BOD_5)

The limits for BOD_5 are based on secondary treatment requirements pursuant to 40 CFR Part 133. A 7-day average limit of 45 mg/L and a 30-day average limit of 30 mg/L are carried from the previous permit. The permittee has been in substantial compliance with these limits. The 7-day average and the 30-day average are the arithmetic mean of pollutant parameter values for samples collected in a period of 7 and 30 consecutive days, respectively. Also, for the average during the

discharge period, the effluent concentration for BOD5 shall not exceed 15% of the arithmetic mean of the value for influent samples for BOD5 collected during the related treatment period.

Total Suspended Solids (TSS)
The limits for TSS are based on secondary treatment requirements pursuant to 40 CFR Part 133. A 7-day average limit of 45 mg/L and a 30-day average limit of 30 mg/L are carried from the previous permit; these are the arithmetic mean of pollutant parameter values for samples collected in a period of 7 and 30 consecutive days, respectively. Also, for the average during the discharge period, the effluent concentration for TSS shall not exceed 15% of the arithmetic mean of the value for influent samples for TSS collected during the related treatment period.

E. coli
The previous permit limits for E. coli were based on the EPA's 1986 water quality criteria. The previous permit had the following limits: the geometric mean of samples collected over a 30-day period shall not exceed 126 E. coli per 100 milliliters (ml) and any single sample shall not exceed 235 E. coli per 100 ml. New water quality criteria were published in 2012 (EPA's 2012 Recreational Water Quality Criteria). These criteria are that the geometric mean of samples collected over a 30-day period shall not exceed 126 E. coli per 100 ml and that the statistical threshold value of 410 E. coli per 100 ml be set as a daily maximum. The facility was designed to meet the previous permit limits and has been able to routinely meet the limits with proper operation. Consistent with 40 CFR 122.44(l) (anti-backsliding) the previous permit limits remain in the permit. Since the discharge is to Lake Superior, a primary contact water, and in order to be protective of Wisconsin's water quality standards where are applicable, the limits are required year-round.

Mercury
The limits for mercury have been carried over from the previous permit. The mercury limits are consistent with the Great Lakes Initiative and the *Technical Support Document for Water Quality-Based Toxics Control* (1991). The permit also requires the continued implementation of a pollutant minimization program to assist the permittee in maintaining compliance with the limit.

Phosphorus
The permit contains a monthly average limit for total phosphorus of 1.0 mg/L and a weekly average limit of 2.0 mg/L which are carried over from the previous permit. These are considered technology-based limits.

In order to be protective of downstream Wisconsin water quality standards for Lake Superior found at N.R. 102.06, we looked at the following guidance developed by WDNR: https://dnr.wi.gov/topic/SurfaceWater/documents/phosphorus/PhosphorusGuidance.pdf

Pursuant to s. NR 217.13(4), Wis. Adm. Code, a model shall be used to calculate effluent limitations for discharges to the Great Lakes. In collaboration with EPA, Tetra Tech was enlisted to investigate available models that could be utilized to calculate effluent limitations for discharges to the Great Lakes. This investigation highlighted the complexity of this type of modeling, and the need for additional data collection, particularly in the nearshore area of the Great Lakes. Additional work is ongoing to develop a more robust data set and improve

modeling capabilities to be used to develop WQBELs for discharges to the Great Lakes. Based on current information available, and the modeling effort completed by Tetra Tech, it has been concluded in consultation with EPA that:

- Nearshore and lake data indicate that assimilative capacity is available throughout the coastline of Lake Michigan and Lake Superior in Wisconsin. Given that there appears to be assimilative capacity is most situations, it is not appropriate to establish effluent limitations equal to criteria at this time.
- Optimization requirements and interim effluent limitations should be included in permits for discharges into the Great Lakes. Based on model development work done up until this time, focused on assimilative capacity, it appears that optimization requirements and the use of interim limitations will be generally protective of nearshore and lake water quality.

Therefore, a water quality-based effluent limit is not needed at this time. The draft permit does contain optimization requirements and the technology-based limits stated above. The operational requirements include an evaluation of collected effluent data, possible source reduction measures, operational improvements or other minor facility modifications that will optimize reductions in phosphorus discharges from the wastewater treatment plant.

Ammonia

As there are no federally-approved water quality standards that apply at the discharge, we need to ensure that the state's water quality standards are protected where they are applicable. We calculated ammonia limits using Wisconsin procedures. To protect the state's acute criteria for ammonia, it has been determined that a daily maximum limit is needed based on data from the previous permit term. The calculated limit is 16.21 mg/L. This limit would have been violated 3 times during the previous permit term if it was in effect. Therefore, there is a reasonable potential that the discharge could cause or contribute to a violation of the state's water quality criteria. The calculated monthly and weekly average limits needed to protect the state's chronic criteria are higher than the daily maximum limit and therefore, we did not include these calculated limits. In accordance with 40 CFR § 122.45(d), a monthly average limit must be included in the permit unless it is impracticable and therefore, the daily maximum limit also becomes the monthly average limit. The facility was designed to remove ammonia and the data show that the facility would have been in compliance with the proposed limits for a majority of the permit period and therefore, no compliance schedule is needed.

Temperature

In order to be protective of Wisconsin's temperature water quality standards for Lake Superior found at N.R. 106, where applicable, the state developed procedures for calculating effluent limits for temperature. These can be found at N.R. 106.55(7)(b). Using the formula found in this section, the state did a reasonable potential analysis for POTWs discharging to Lake Superior. They assumed a maximum effluent temperature of 100 °F and back calculated the effluent flow needed that would violate the water quality standard. The state determined that an effluent flow of at least 10 mgd would be needed before there would be a reasonable potential to violate the standard. The design effluent flow for this facility is 0.220 mgd, well below the flow needed for reasonable potential. Therefore, no temperature limits are included in the draft permit.

Additional Monitoring

Additional monitoring for Total Kjeldahl Nitrogen (TKN), Oil and Grease, Nitrate plus Nitrite Nitrogen and Total Dissolved Solids (TDS) is required for discharges with a design flow greater than 0.1 MGD. This monitoring is an application requirement of 40 CFR § 122.21(j).

Asset Management – Operation & Maintenance Plan

Regulations regarding proper operation and maintenance are found at 40 CFR § 122.41(e). These regulations require, "that the permittee shall at all times operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of the permit." The treatment plant and the collection system are included in the definition of "facilities and systems of treatment and control" and are therefore subject to the proper operation and maintenance requirements of 40 CFR § 122.41(e).

Similarly, a permittee has a "duty to mitigate" pursuant to 40 CFR §122.41(d), which requires the permittee to "take all reasonable steps to minimize or prevent any discharge in violation of the permit which has a reasonable likelihood of adversely affecting human health or the environment."

The draft permit requirements are the first steps of an asset management program which contains goals of effective performance, adequate funding, adequate operator staffing and training. Asset management is a planning process that ensures that you get the most value from each of your assets and have the financial resources to rehabilitate and replace them when necessary, and typically includes five core elements which identify: 1) the current state of the asset; 2) the desired level of service (e.g., per the permit, or for the customer); 3) the most critical asset(s) to sustain performance; 4) the best life cycle cost; and 5) the long term funding strategy to sustain service and performance.

EPA believes that requiring a certified wastewater operator and adequate staffing is also essential to ensure that the treatment facilities will be properly operated and maintained. Mapping the collection system with the service area will help the operator better indentify the assets that he/she is responsible for and consider the resources needed to properly operate and maintain them. This will help in the development of a budget and a user rate structure that is necessary to sustain the operation. The development and implementation of a proactive preventive maintenance program is one reasonable step that the permittee can take to demonstrate that it is at all times, operating and maintaining all the equipment necessary to meet the effluent limitations of the permit.

Sludge Treatment

The previous permit contained conditions to minimize the spread of Phragmites (*Phragmites australis*). The permit also required the permittee to look at other sludge treatment options and alternatives to using *Phragmites australis* in the reed beds. The permittee complied with this requirement and removed the sludge and non-native reeds from the reed beds and then planted the beds with native reeds. The requirements related to removal of the non-native reeds in the previous permit have been removed in this permit. While non-native *Phragmites australis* beds were replaced with native reed beds in 2018, there has not been enough time and follow-up monitoring conducted to ensure that the renovated reed beds are, and will remain, free from the

non-native phragmites variety. As such, the draft permit prohibits the land application of sludge removed from the reed beds should it become necessary during the permit term and requires that any sludge that needs to be removed from the reed beds during the permit term be landfilled with the same precautions as those taken during the renovation of the reed beds. The draft permit does allow the land application of sludge that has not been put into the reed beds. Part III of the draft permit would apply to this sludge.

WET Testing

The previous permits required acute WET testing. This requirement has been removed in this permit. All the results of the testing indicated no toxicity and therefore there is no reasonable potential to cause or contribute to a water quality violation.

Priority Pollutant Monitoring

A onetime monitoring of the priority pollutants listed in 40 CFR Part 122, Appendix D, was required in the previous permit. Based on the data, this requirement has been removed from this permit as there is no reasonable potential to cause or contribute to a water quality violation.

Special Conditions

- The permit requires the implementation of an Operation & Maintenance Plan. The plan covers the use of a certified operator to oversee the facility, having adequate staff to help ensure compliance with the permit, mapping the treatment system, developing a preventive maintenance program and other items.
- Additional monitoring as required for discharges with a design flow greater than 0.1 MGD. This monitoring is an application requirement of 40 CFR § 122.21(j).
- The implementation of a pollutant minimization program for mercury that will help the permittee in maintaining compliance with the mercury effluent limit.
- The permit requires the submittal of a phosphorus operational evaluation report to help optimize phosphorus removal.
- The permit contains Industrial Waste Pretreatment Program requirements in accordance with 40 CFR Parts 122 and 403.
- Compliance with 40 CFR Part 503 (sludge use and disposal regulations) (Part III of the permit) if sludge is land applied within the Reservation. Part III was developed using the Part 503 Implementation Guidance for sludge and 40 CFR Parts 122, 501, and 503. Compliance with NR 204, Wisconsin Administrative Code, if land applied outside the boundaries of the Reservation. It is expected, however, that sludge will not be used or disposed of during this permit term.

Significant Changes from the Last Permit

Following are the significant changes in the draft permit:

- E. coli limits monitoring requirements are applicable year-round. (Part I.A)
- Ammonia-N limits have been included. (Part I.A)
- The Reporting requirement has been changed to require electronic submittal of DMRs. (Part I.C.2)
- Additional requirements related to Asset Management have been added. (Part I.C.3)
- The Sludge Disposal Requirements language has been updated specifically related to the

reed beds. (Part I.C.6)
- The phosphorus operational evaluation report requirement has been updated. (Part I.C.8)
- WET testing and priority pollutant monitoring have been removed.

The permit is based on an application dated September 20, 2018 and additional supporting documents found in the administrative record.

The permit will be effective for approximately five years from the date of reissuance as allowed by 40 CFR § 122.46.

Written By: John Colletti August 2019
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