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
Chicago, Illinois 60604
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Public Notice No.: 19-09-02-A

Public Notice Issued On: September 19, 2019

Comment Period Ends: October 22, 2019

Permit No.: MN-0061433-6 (REISSUANCE)

Application No.: MN-0061433-6

Name and Address of Applicant:

Lower Sioux Community Council
Lower Sioux Indian Reservation
P.O. Box 308
Morton, Minnesota 56270

Name and Address of Facility Where Discharge Occurs:

Lower Sioux Indian Reservation WWTF
32500 Porter Avenue
Morton, Minnesota 56270
Redwood County
(S.W. quarter of Sec.7, T112N, R34W)

Receiving Water: Unnamed Tributary to Wabasha Creek

DESCRIPTION OF APPLICANT'S FACILITY AND DISCHARGE

The above facility is located within the boundaries of the Lower Sioux 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 WWTF is designed to treat an average wet weather flow of 0.375 mgd and consists of preliminary treatment, an activated sludge process, tertiary treatment and chlorine disinfection. Preliminary treatment consist of a fine rotary screen, manual bar screen and gravity manual grit removal. The activated sludge process is a 3 basin extended air process with chemical feed for phosphorus removal, 2 final clarifiers and a solids recycling and wasting structure. Tertiary treatment consists of pumping the final clarifier effluent through a 3 cell horizontal pressure filter, then into a contact basin for chlorine disinfection, sulfur dioxide for dechlorination, and post aeration for dissolved oxygen control. Backwash water for the pressure filter is pumped from the chlorine contact basin and wasted into the solids recycling structure where it is pumped back through the activated sludge process. The discharge is continuous through Outfall 001 (Lat:

44.514750 Long: -94.985378) to an unnamed tributary to Wabasha Creek. Waste solids are treated in a covered aerobic digester with seasonal land application on agricultural land within the reservation. There is a back-up generator to power the WWTF during emergency conditions.

This wastewater treatment facility (WWTF) replaced a 5-cell stabilization lagoon. Though the cells are still in place, they are prohibited from discharging directly to surface waters. The primary aeration cell can still be used to accept peak flows beyond plant capacity or during times of upset. Wastewater in the aeration cell is pumped back to the head of the WWTF for full treatment.

Proposed Effluent Limitations:

The permittee is authorized to discharge treated municipal wastewater through Outfall 001, which discharges to an unnamed tributary to Wabasha Creek.

Effluent Characteristics	Discharge Limitations			
	Concentration (Specified Units)			
Parameter	Minimum	Monthly	Weekly	Maximum
Flow (MGD)	-	-	-	-
Dissolved Oxygen (mg/L)	6.0	-	-	-
pH (SU)	6.0	-	-	9.0
Total Suspended Solids (TSS) (mg/L)	-	14.2	21.3	-
Carbonaceous Biochemical Oxygen Demand (CBOD5) (mg/L)				
May 1 – September 30	-	5	-	10
October 1 – April 30	-	10	15	-
Phosphorus, Total (mg/L)				
May 1 – September 30 (see note "f" below)	-	0.8	-	-
October 1 – April 30	-	0.8	1.6	-
Nitrogen, ammonia (mg/L)				
May 1 – September 30	-	1.0	-	2.0
October 1 – April 30	-	4.1	-	4.1
E. coli (#/100ml)	-	126	-	410
Total Residual Chlorine (mg/L) (only when using chlorine)	-	-	-	0.038
Copper, Total (µg/L)	-	23	-	63

Oil and Grease (mg/L)	-	-	-	Report
Nitrite Plus Nitrate, Total (as N) (mg/L)	-	-	-	Report
Nitrogen, Kjeldahl, Total (mg/L)	-	-	-	Report
Nitrogen, Total (as N) (mg/L)	-	-	-	Report
Sulfates, Total (as SO_4) (mg/L)	-	-	-	Report
Chlorides, Total (mg/L)	-	-	-	860
Ca and Mg Hardness (as $CaCO_3$) (mg/L)	-	-	-	Report
Dissolved Solids, Total (mg/L)	-	-	-	Report
Bicarbonates (HCO_3) (mg/L)	-	-	-	Report
Sodium (mg/L)	-	-	-	Report
Calcium (mg/L)	-	-	-	Report
Magnesium (mg/L)	-	-	-	Report
Potassium (mg/L)	-	-	-	Report
Specific Conductance (umhos/cm)	-	-	-	Report
Outfall observation (yes/no)	-	Report	-	-

Loading limits in the permit were calculated using the following formulas:

(0.375 mgd * limit (mg/L) * 3.78) = Loading (kgs/d) for all limits but copper.
(0.375 mgd * limit (µg/L) * .00378) = Loading (kgs/d) for the copper limit.

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 Minnesota'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 Carbonaceous Biochemical Oxygen Demand ($CBOD_5$)

The limits in the previous permit are carried over to this permit as we believe they are still applicable. The limits are also the same limits that were developed for EPA's 2009 permit (MN-0061433-4) for this facility. At that time, a simple model was used to calculate the summer monthly average concentration limit. The winter monthly average concentration limit, in combination with the summer limit was developed in permit MN-0061433-4 to not allow an increase in loading above what was allowed for the discharge when treatment was by stabilization pond. The weekly average limit is 1.5 times the monthly average limit. Monitoring indicates the permittee is in substantial compliance with the limits.

Total Suspended Solids (TSS)
The limits in the previous permit are carried over to this permit as we believe they are still applicable. The monthly average concentration limit was originally developed in permit MN-0061433-4 to not allow an increase in loading above what was allowed for the discharge when treatment was by stabilization pond. The weekly average limit is 1.5 times the monthly average limit. Monitoring indicates the permittee is in substantial compliance with the limits.

Dissolved Oxygen (DO)
The limits in the previous permit are carried over to this permit. The limit was developed to protect state water quality standards where they are applicable. Monitoring indicates the permittee is in substantial compliance with the limit.

E. coli
The limits for E. coli are based on the EPA's 2012 Recreational Water Quality Criteria. The geometric mean of samples collected over a 30-day period shall not exceed 126 E. coli per 100 milliliters (ml). The statistical threshold value of 410 E. coli per 100 ml is set as the daily maximum. The limits are only applicable April 1 through October 31, annually. Monitoring indicates the permittee is in substantial compliance with the limits.

Total Residual Chlorine (TRC)
The permittee uses chlorine for disinfection and then dechlorinates. The permit contains a water quality based daily maximum limit of 0.038 mg/L when chlorine disinfection is utilized.

Copper
The concentration limits in the previous permit are carried over to this permit as we believe they are still applicable. As there are no federally-approved water quality standards that apply at the point of discharge, we need to ensure that the state's water quality standards are protected at the downstream reservation boundary. The limits (23 µg/L and 63 µg/L, monthly average and daily maximum, respectively) were developed to protect state water quality standards where they are applicable. Monitoring indicates the permittee is in substantial compliance with the concentration limits. The copper loading limits were miscalculated in the previous permit by using a 3.78 conversion factor meant for parameter concentrations reported in mg/L. Copper concentration limits are reported in µg/L and loading is calculated in the draft permit using the correct conversion factor of .00378. Monitoring indicates the permittee is in substantial compliance with the corrected loading limits.

Zinc
During the previous permit term, the permittee sampled its effluent for zinc monthly. Based on the results (maximum reported total zinc effluent concentration was 99 µg/L, based on 56 samples), the effluent does not have a reasonable potential to cause or contribute to a violation of Minnesota's chronic (and therefore also acute) total zinc water quality standard applicable to waters outside of the Lake Superior Basin (269 µg/L total zinc at a total hardness of 300 mg/L). Note, the average hardness of the effluent during this period was 333 mg/L, and the average hardness of Wabasha Creek is 412 mg/L. (MPCA 2016 Minnesota River-Mankato Watershed Monitoring and Assessment Report at page 98 (https://www.pca.state.mn.us/sites/default/files/wq-ws3-07020007b.pdf)). The Wabasha Creek

water chemistry sampling location is approximately 5.2 miles from where the effluent discharges into the unnamed tributary of Wabasha Creek. The draft permit no longer requires monitoring for zinc.

Mercury

During the last permit term, the permittee sampled its effluent annually for mercury using low level testing procedures. Based on the results (maximum reported total mercury effluent concentration was 0.621 ng/L), the effluent does not have a reasonable potential to cause or contribute to a violation of Minnesota's health based chronic water quality standard applicable to waters outside of the Lake Superior Basin (6.9 ng/L). The draft permit no longer requires monitoring for mercury.

Phosphorus

Section 303(d) of the federal Clean Water Act and EPA's Water Quality Planning and Management Regulations require states to develop Total Maximum Daily Loads (TMDLs) for water bodies that are not meeting water quality standards (i.e. are impaired). The TMDL process establishes the allowable loading of pollutants for a water body based on the relationship between pollutant sources and in-stream water quality conditions. TMDLs provide a basis for determining the pollutant reductions necessary from point and nonpoint sources to restore and maintain the quality of water resources.

The MPCA developed a TMDL Report to address dissolved oxygen (DO) water quality standard violations in the lower 22 miles of the Minnesota River. The TMDL specified the amount of phosphorus reduction needed in the Basin to meet state water quality standards in the lower 22 miles of the Minnesota River. The EPA approved the TMDL Report on September 28, 2004, in accordance with Section 303(d) of the federal Clean Water Act.

The DO impairment in the Lower Minnesota River is due to high Biochemical Oxygen Demand (BOD) caused by excessive phosphorus levels that generate algal blooms, which then die off and use up the dissolved oxygen. The TMDL found a causal link between the discharge of excess levels of phosphorus throughout the Basin and violations of the daily average 5 mg/L DO water quality standard in the lower 22 miles of the Minnesota River during low flow conditions. To eliminate expected water quality violations, the TMDL Report contains maximum phosphorus loads for point and nonpoint sources in the Basin. On December 1, 2005, MPCA issued the Minnesota River Basin General Phosphorus NPDES/SDS Permit (Basin Permit) MNG420000. The Basin Permit addresses only the phosphorus reductions required by the TMDL for WWTFs' point sources and begins implementation of the Waste Load Allocation portion of the Lower Minnesota River Dissolved Oxygen TMDL. A subsequent permit has not been issued by MPCA.

The Basin Permit also established Minnesota's first point-to-point phosphorus trading program. Trading is an approach to achieve water quality goals more efficiently. Trading is based on the fact that sources in a watershed can face very different costs to control the same pollutant. Trading programs allow facilities facing higher pollution control costs to meet their regulatory obligations by purchasing environmentally equivalent (or superior) pollution reductions from another source at lower cost, thus achieving the same water quality improvement at lower overall cost. The phosphorus trading program in the Basin Permit is the mechanism through which new

and expanded sources of phosphorus may be established while ensuring no net increase to phosphorus occurs in the Basin.

The limits in the draft permit for the Lower Sioux Indian Community, in the permit writer's judgment, are meant to comply with the phosphorus reduction goals of the TMDL. When EPA issued its 2009 permit (MN-0061433-4), the existing facility's discharge was not accounted for during the development of the TMDL, and as such, was considered a new and expanded source of phosphorus. New and expanded sources are not allowed to increase the amount of phosphorus discharged to the Minnesota River basin during the months of May-September. Therefore, the mass of phosphorus discharged from the facility shall be offset by removal of an equivalent mass of phosphorus from another discharger discharging treated wastewater into the Minnesota River basin, resulting in no net increase in phosphorus to the Minnesota River basin. The draft permit contains a monthly average mass limit of zero. In addition, the draft permit contains the following conditions related to phosphorus.

1. The Permittee shall maintain coverage as required by the MPCA for coverage under the Minnesota River Basin General Phosphorus NPDES/SDS Permit MNG420000. All applicable forms required under the Basin Permit shall be submitted to EPA and MPCA in addition to the requirements of this permit.

2. In addition to the requirements for coverage under the Basin Permit, the Permittee shall enter into a pollutant trade agreement, approved in writing by the MPCA, for the purpose of offsetting the mass discharged through Outfall 001 during the period of May 1 to September 30. A copy of the pollutant trade agreement shall be sent to EPA upon approval by MPCA and shall become an enforceable part of this permit.

   The trade agreement shall ensure that authorized phosphorus mass discharged from Outfall 001 is offset through the removal of an equivalent mass, plus a trade ratio "limit adjustment", of phosphorus from another wastewater discharge with an existing phosphorus mass limit discharging to the Minnesota River. This trade ratio limit adjustment shall be 1-to-1.1 for the mass discharges from Outfall 001 applicable May 1 to September 30. The trade agreement must be renewed and approved annually to the MPCA on the correct forms.

   The seasonal mass limit in units of kilograms (kg) is calculated as follows:

   For each month, multiply the total volume of effluent flow (in million gallons) by the monthly average concentration of effluent phosphorus (in mg/L) and by a 3.785 conversion factor (converts liters to gallons) to obtain phosphorus in kg/month. Then add all monthly values from the May 1 to September 30 season to obtain the seasonal total.

3. A Phosphorus Minimization Plan (PMP) is included in the draft permit to help identify possible sources of phosphorus.

4. If MPCA terminates the Basin Permit, the permittee can request a modification of its permit to remove requirements related to the Basin Permit.

Ammonia

The limits in the previous permit are carried over to this permit as we believe they are still applicable. 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 at the downstream reservation boundary. The limits were developed to protect state water quality standards were they are applicable. Monitoring indicates the permittee is in substantial compliance with the limits. The calculated monthly and weekly average limits needed to protect the state's chronic criteria during the October through April period 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 for this period.

Nitrogen Monitoring

In order to develop a more complete understanding of the magnitude and dynamics of nitrogen sources and discharges from wastewater sources, additional monitoring for Total Kjeldahl Nitrogen (TKN), Nitrate plus Nitrite Nitrogen and Total Nitrogen is being required. A better understanding of nitrogen concentrations and loadings received by and discharged from municipal and industrial wastewater sources is necessary in order to assess the accuracy of current nitrogen loading estimates and to develop realistic nitrogen reduction alternatives from wastewater sources.

"Salty" Discharge Monitoring

In the previous permit, MPCA requested that we include monitoring for "salty" discharge parameters to be consistent with their 2011 "Salty Discharge" Monitoring Strategy to gain a better understanding of the amount of these parameters being discharged. We agree with the reasoning and continue to include monitoring for Sulfates, Chlorides, Ca and Mg Hardness (as CaCO3), Dissolved Solids, Bicarbonates (HCO3), Sodium, Calcium, Magnesium, Potassium and Specific Conductance (umhos/cm).

Total Chlorides

As mentioned above, the previous permit required chloride effluent monitoring. The monitoring revealed elevated chloride effluent levels. However, instream monitoring for chloride, approximately 5.2 miles downstream of Outfall 001, shows chloride concentrations below Minnesota water quality standards (mean 60 mg/L and maximum 146 mg/L chloride based on 10 samples). MPCA 2016 Minnesota River-Mankato Watershed Monitoring and Assessment Report at page 98 (https://www.pca.state.mn.us/sites/default/files/wq-ws3-07020007b.pdf). To help ensure that Minnesota's water quality standards continue to be met downstream, this permit requires an 860 mg/L daily maximum chloride permit limit based on EPA's water quality criteria and also requires the development and implementation of a Chloride Minimization Plan. Monitoring indicates the permittee can meet the new limit and therefore no compliance schedule is needed.

Additional Monitoring

Additional monitoring for Oil and Grease 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.

Special Conditions

- The permit requires electronic reporting.
- The permit requires the continued 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.
- The permit requires 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 permit requires the continued implementation of a Phosphorus Minimization Plan.
- The permit contains requirements related to the coverage under the MPCA Minnesota River Basin General Phosphorus Permit.
- The permit requires the development and implementation of a Chloride Minimization Plan.

- The permit contains Industrial Waste Pretreatment Program requirements in accordance with 40 CFR Parts 122 and 403.
- The permit requires compliance with 40 CFR Part 503 (sludge use and disposal regulations) (Part III of the permit) if sludge is used or disposed within the Reservation. Part III was developed using the Part 503 Implementation Guidance for sludge and 40 CFR Parts 122, 501, and 503.

Significant Changes from the Last Permit

Following are the significant changes in the draft permit:

- Monitoring for zinc and mercury have been removed from the permit.
- An effluent limit for chloride has been added to the permit and the frequency of effluent chloride monitoring has been increased to monthly. (Part I.A)
- The copper loading limit has been corrected downward from the previous limit. (Part I.A)
- Influent chloride monitoring has been added to the permit. (Part I.B)
- In accordance with 40 CFR 122.45(d), a monthly average ammonia limit has been added for the period October through April. (Part I.B)
- Electronic reporting requirements have been added to the permit. (Part I.C.2)
- Requirements related to Asset Management have been expanded. (Part I.C.3)
- Requirements to develop and implement a Chloride Minimization Plan has been added to the permit. (Parts I.C.6)
- Additional sewage sludge land application sites have been added. (Part I.C.8)
- The copper compliance schedule has been removed from the permit since it has been completed.

The permit is based on an application dated April 9, 2019 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.

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September 2019