

**National Pollutant Discharge Elimination System (NPDES)/
State Disposal System (SDS) Permit Program Fact Sheet
Permit Reissuance
MN0030171**

Permittee: City Of Mankato
501 South Victory Drive
P.O. Box 3368
Mankato, Minnesota 56001

Facility name: Mankato Water Resource Recovery Facility
701 Pine Street
Mankato, Minnesota 56001-2930

Current permit expiration date: August 31, 2015

Public comment period begins: April 5, 2021

Public comment period ends: June 4, 2021

Receiving water: Minnesota River - Class 2B, 3C, 4A, 4B, 5, 6 water

Permitting contact: Nancy Heskett
7381 Airport View Drive Southwest
Rochester, MN 55902
507-206-2605
nancy.heskett@state.mn.us

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Purpose and participation

Applicable statutes

This fact sheet has been prepared according to the 40 CFR § 124.8 and 124.56 and Minn. R. 7001.0100, subp. 3 in regards to a draft National Pollutant Discharge Elimination System (NPDES)/State Disposal System (SDS) permit to construct and/or operate wastewater treatment facilities and to discharge into waters of the State of Minnesota.

Purpose

This fact sheet outlines the principal issues related to the preparation of this draft permit and documents the decisions that were made in the determination of the effluent limitations and conditions of this permit.

Public participation

You may submit written comments on the terms of the draft permit or on the Commissioner's preliminary determination. Your written comments must include the following:

1. A statement of your interest in the permit application or the draft permit.
2. A statement of the action you wish the Minnesota Pollution Control Agency (MPCA) to take, including specific references to sections of the draft permit that you believe should be changed.
3. The reasons supporting your position, stated with sufficient specificity as to allow the Commissioner to investigate the merits of your position.

You may also request that the MPCA Commissioner hold a public informational meeting. A public informational meeting is an informal meeting which the MPCA may hold to help clarify and resolve issues.

In accordance with Minn. R. 7000.0650 and Minn. R. 7001.0110, your petition requesting a public informational meeting must identify the matter of concern and must include the following: items one through three identified above; a statement of the reasons the MPCA should hold the meeting; and the issues you would like the MPCA to address at the meeting.

In addition, you may submit a petition for a contested case hearing. A contested case hearing is a formal hearing before an administrative law judge. Your petition requesting a contested case hearing must include a statement of reasons or proposed findings supporting the MPCA decision to hold a contested case hearing pursuant to the criteria identified in Minn. R. 7000.1900, subp. 1 and a statement of the issues proposed to be addressed by a contested case hearing and the specific relief requested. To the extent known, your petition should include a proposed list of witnesses to be presented at the hearing, a proposed list of publications, references or studies to be introduced at the hearing, and an estimate of time required for you to present the matter at hearing.

You must submit all comments, requests, and petitions during the public comment period identified on page one of this notice. All written comments, requests, and petitions received during the public comment period will be considered in the final decisions regarding the permit. If the MPCA does not receive any written comments, requests, or petitions during the public comment period, the Commissioner or other MPCA staff as authorized by the Commissioner will make the final decision concerning the draft permit.

Comments, petitions, and/or requests must be submitted by the last day of the public comment period to:

Nancy Heskett
Minnesota Pollution Control Agency
7381 Airport View Drive Southwest
Rochester, MN 55902

The permit will be reissued if the MPCA determines that the proposed Permittee or Permittees will, with respect to the facility or activity to be permitted, comply or undertake a schedule to achieve compliance with all applicable state and federal pollution control statutes and rules administered by the MPCA and the conditions of the permit and that all applicable requirements of Minn. Stat. ch. 116D and the rules promulgated thereunder have been fulfilled.

More detail on all requirements placed on the facility may be found in the Permit document.

Facility description

Background information

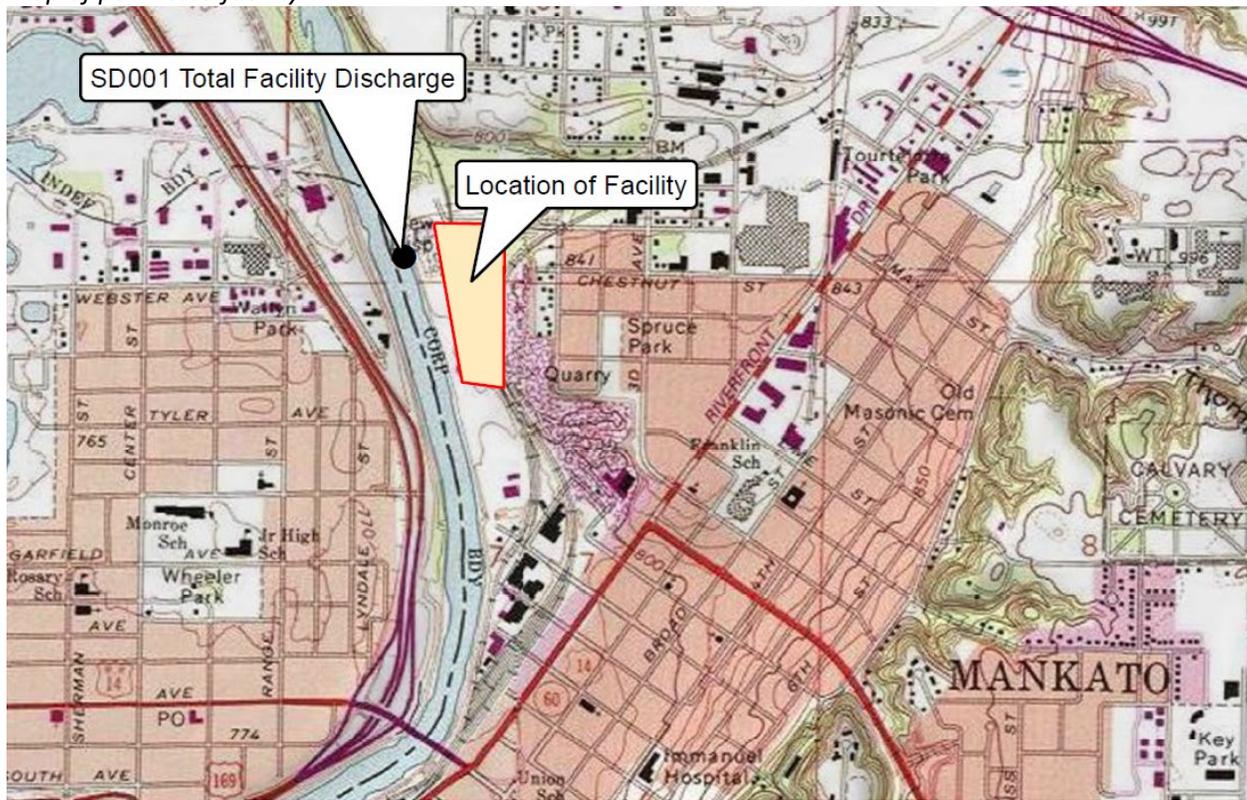
Facility location

This Facility is an existing municipal wastewater treatment facility that treats wastewater from the communities of Mankato, North Mankato, Eagle Lake, Madison Lake, South Bend Township, Skyline, and Lake Washington Sanitary Sewer District. The Facility is located in the SE ¼ of Section 6, Township 108 North, or approximately one mile southeast of the Highway 14/169 interchange on the north side of Mankato.

Outfall location

The continuous discharge outfall for this Facility (SD 001 in the permit) is located in the SE ¼ of Section 6, Township 108 North, or approximately one mile southeast of the Highway 14/169 interchange on the north side of Mankato.

Map of permitted facility



Components and treatment technology

Current information

The existing facility has a continuous discharge from SD 001. This is a Class A facility.

The facility is designed to treat:

- An average wet weather (AWW) flow of 11.25 million gallons per day (MGD);
 - an average dry weather (ADW) flow of 6.0 MGD;
 - a peak hourly wet weather (PHWW) flow of 36.0 MGD;
 - a peak instantaneous wet weather (PIWW) flow of 42.0 MGD;
 - an annual average flow of 9.38 MGD;
 - five-day carbonaceous biochemical oxygen demand (CBOD₅) of 160 milligrams per liter (mg/L).

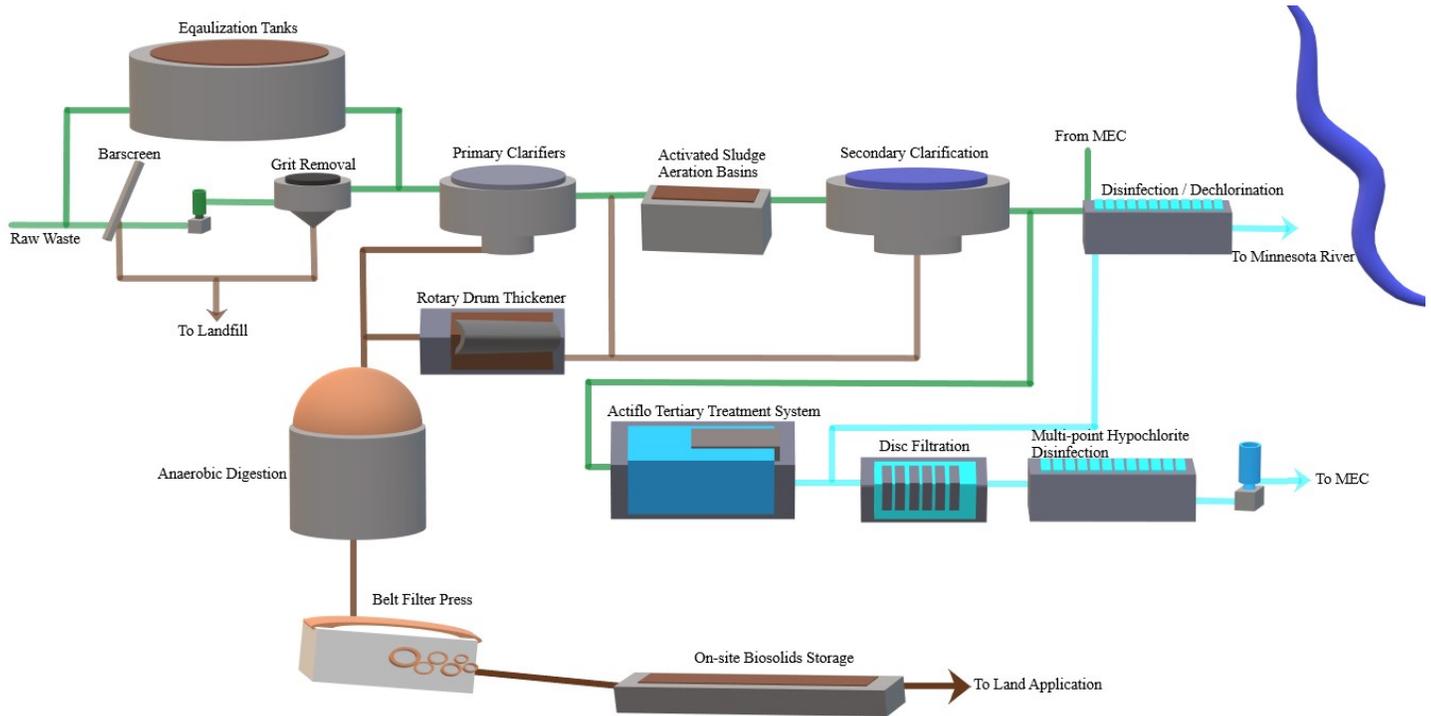
The facility consists of preliminary treatment (two mechanical bar screens, two vortex grit removal units, two grit concentrators and two grit dewatering units); flow equalization (three equalization basins); primary treatment (two primary clarifiers); secondary treatment (four complete mix-activated sludge aeration basins and three secondary clarifiers); tertiary treatment (a phosphorus removal process consisting of a high rate chemical/physical precipitation process, which consists of two microsand ballast assisted flocculation processes and two lamella clarification processes; cloth media filters; a chlorine contact basin and three rapid mix chambers and disinfection (two chlorination contact tanks and a dechlorination tank). The facility also includes a recycled water pumping station. Sludge treatment consists of two dissolved air floatation thickening tanks, two belt filter presses that include a gravity thickener phase and a press phase, and three primary anaerobic digesters and one secondary anaerobic digester. On-site biosolids storage consists of a dewatered solids bunker. Biosolids are land applied to approved sites.

The proposed facility will maintain the existing discharge at SD 001. It will also remain a Class A facility and will maintain design parameters and flow values above.

The proposed facility will maintain the two mechanical bar screens(to be replaced), two vortex grit removal units, two grit concentrators as well as the two grit dewatering units as well as the addition of a washer/compactor system. The three equalization basins, two primary clarifiers, four complete mix-activated sludge aeration basins and three secondary clarifiers will remain with work being done to replace the aeration basin walkways and electrical systems. The phosphorus removal process of high rate chemical/physical precipitation process consisting of two microsand ballast assisted flocculation processes, two lamella clarification processes and cloth media filters will remain. The chlorine contact basin, dechlorination basin and the reuse return building will be demolished and replaced and a new chemical feed building will be added. The dissolved air floatation tanks will be replaced with a rotary drum and new thickening system, the two primary digesters and single secondary digester will be replaced with three new anaerobic digesters, digester three will be retrofit to a sludge storage tank, work will include expansion of onsite biosolids storage. The septage receiving station will also be expanded.

The facility has an existing and will maintain an agreement to provide a portion of the disinfected tertiary recycled water from the facility for use as non-contact cooling water at the Mankato Energy Center (MEC). The amount of recycled water supplied to the MEC will vary due to energy demand, operational status of the MEC, and seasonal and daily conditions affecting the cooling efficiency and evaporation rate of water at the MEC cooling towers. Up to three-fourths of the cooling water will be lost to evaporation. The remaining water will be returned to the facility and commingled with treated effluent prior to dechlorination and discharge to the Minnesota River via SD 001.

Flow schematic



Significant industrial users (SIUs)

This Facility receives process wastewater from 16 SIUs; Ameripride Linen & Apparel, Archer Daniels Midland, Associated Finishing Inc., CAB Construction, CHS Oilseed Processing, Coloplast Corporation, D&K Powder Coating, Hiniker Company, Jones Metal Products Inc., Kato Engineering, Mankato Energy Center LLC, Pro-Fabrication, Thin-Film Technology, Viessman Incorporated, Wispak Incorporated, and Xcel Energy. The Permittee has delegated authority to operate its own pretreatment program under 40 CFR § 403. Pollutants of concern are monitored and controlled through contracts administered by the Facility to the SIU's.

Recent compliance history

A compliance Evaluation Inspection (CEI) was conducted at the facility on July 29, 2019. Violations were cited for three releases of wastewater over the period of December 1, 2016, through June 30, 2019, which included failure to immediately report the releases and to submit sampling results. In addition, incorrect limit types were calculated and reported and exceedances of the limits for fecal coliform were noted on monitoring stations WS 004 and WS 007. A letter of Warning was issued, and following discussion of all the violations and submittal of amended DMRs for the fecal coliform reporting, no further action was required.

A Desk Audit Report was conducted of the facility's pretreatment program on September 25, 2020. No requirements were found to be non-compliant during the inspection.

Recent monitoring history

The following table shows the average monthly reported values by the Facility from January through December 2020. Where no number is given in the Limit and Units column, the Facility is required to monitor only; no limit is required in the permit.

Table 1. Recent Monitoring History

Parameter	Limit	Units	Limit Type	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20
Beryllium, Total		ug/L	SingleValT	0	0	0	0	0	0	0	0	0	0	0	0
CBOD ₅	22	mg/L	CalMoAvg	0	0	0.47			0	0	2	0.62	0	0	2.7
CBOD ₅	25	mg/L	CalMoAvg				0	0.37							
CBOD ₅	936	kg/d	CalMoAvg	28	0	18			42	62	50	14	17	36	47
CBOD ₅	1,064	kg/d	CalMoAvg				50	8.5							
CBOD ₅	33	mg/L	MxCalWkAvg	2.4	0	0.68			2.7	0.82	4.4	0.92	0	2.4	5.3
CBOD ₅	40	mg/L	MxCalWkAvg				4.2	2.3							
CBOD ₅	1,404	kg/d	MxCalWkAvg	57	34	21			64	16	223	22	42	53	84
CBOD ₅	1,596	kg/d	MxCalWkAvg				150	49							
CBOD ₅ , % Removal	85	%	MnCalMoAvg	99	100	100	99	100	99	99	99	100	100	99	99
Cadmium, Total		ug/L	SingleValT	0	0	0	0	0	0	0	0	0	0	0	0
Chlorine, Total Residua	0.038	mg/L	DailyMax	0.02	0.02	0.03	0.02	0.02	0.02	0.033	0.03	0.03	0.02	0.03	0.01
Chromium, Total		ug/L	SingleValT	0	0	0	0	0	0	0	0	0	0	0	0
Copper, Total		ug/L	CalQtrAve			30			20			14			35
Cyanide, Total		ug/L	SingleValT	0	0	0	0	0	0	0	0	0	0	0	0
Fecal Coliform	200	#/100ml	CalMoGeoMn				4.7	2	18	20	16	5.6	5		
Flow		mgd	CalMoAvg	5.606	5.827	7.665	5.914	6.72	5.583	6.137	5.991	5.974	5.415	4.988	4.75
Flow		mgd	CalMoMax	7.579	7.402	12.119	9.372	12.286	11.784	22.363	9.367	7.894	6.83	8.089	6.403
Flow		Mgal	CalMoTot	173.779	168.973	237.603	177.433	208.319	167.488	190.261	185.737	179.22	167.878	149.664	147.259
Mercury, Total		ng/L	CalQtrMax			1.5			1.7			0.618			1.9
Nitrite Plus Nitrate		mg/L	CalMoAvg				23					19			
Nitrogen, Ammonia	5.6	mg/L	CalMoAvg						0	0.26	0.81	0.56			
Nitrogen, Ammonia	20.5	mg/L	CalMoAvg										0	0	
Nitrogen, Ammonia	62.1	mg/L	CalMoAvg	0	0	0									0
Nitrogen, Ammonia	62.7	mg/L	CalMoAvg				7	4.4							
Nitrogen, Ammonia	238	kg/d	CalMoAvg						0	8.62	27.51	171.82			
Nitrogen, Ammonia	872	kg/d	CalMoAvg										0	0	
Nitrogen, Ammonia	2,640	kg/d	CalMoAvg	0	0	0									0
Nitrogen, Ammonia	2,670	kg/d	CalMoAvg				148.1979	88.599							
Nitrogen, Kjeldahl		mg/L	CalQtrAve			1.9			2.2			5.2			2.3
Nitrogen, Nitrate		mg/L	CalQtrAve			28			23			19			39
Oxygen, Dissolved		mg/L	CalMoMin				8.5	8.7							
Oxygen, Dissolved	5	mg/L	CalMoMin	9.6	8.9	9.4			7.5	7.7	7.3	7.7	7.8	7.4	8.9
pH	9	SU	CalMoMax	7.3	7.4	7.6	7.4	7.3	7.4	7.5	7.3	7.4	7.5	7.3	7.2
pH	6	SU	CalMoMin	6.9	6.8	6.7	6.8	6.7	6.4	6.9	6.8	6.9	6.6	6.7	6.9
Phosphorus, Total		kg/d	12MoMovAve	13.1	12.98	12.65	12.82	11.539	11.637	11.65	11.48	11.65	11.5	11.31	10
Phosphorus, Total	43.1	kg/d	CalMoAvg	8.667	7.974	6.619	16.567	8.45	11.05	11.207	9.662	12.623	11.169	9.668	6.468
Phosphorus, Total	1	ratio	CalMoMax	0.375	0.3717	0.362	0.378	0.351	0.486	0.5	0.494	0.51	0.52	0.52	0.469
Phosphorus, Total	8,895.60	kg/yr	SeasTDTot	1653.218	1883.5	2090.46	2627.92						324.16	613.17	819.47
Selenium, Total		ug/L	SingleValT	0	0	0	0	0	0	0	0	0	0	0	0
Silver, Total		ug/L	SingleValT	0	0	0	0	0	0	0	0	0	0	0	0
Solids, Total Dissolved		mg/L	CalMoAvg				1600					1500			
TSS	30	mg/L	CalMoAvg	4.7	5.5	7.5	16	6.1	6.2	6.7	5.6	4.7	4.6	5.7	4.6
TSS	1,277	kg/d	CalMoAvg	100	121	230	338	156	137	207	127	108	96	110	83
TSS	45	mg/L	MxCalWkAvg	4.9	7	8.8	23	26	6.5	6.3	9.8	5.5	6.2	6.3	5.7
TSS	1,916	kg/d	MxCalWkAvg	117	163	243	399	538	131	118	535	149	138	142	99
TSS, % Removal	85	%	MnCalMoAvg	98	98	96	92	97	97	97	98	98	98	98	98

Receiving water(s)

Use classification

This Facility discharges to the Minnesota River. This water is classified as a 2B, 3C, 4A, 4B, 5, 6 water. This classification indicates that the body of water is capable of sustaining aquatic life and recreation. More information on the classification of waters can be found in Minn. R. 7050.0140.

Impairments

Statewide Mercury TMDL - A Total Maximum Daily Load (TMDL) has been completed to address mercury, statewide. The Facility has not shown reasonable potential to exceed the water quality standard of 6.9 nanograms per liter (ng/l), but must continue to monitor for total mercury and report the results to the MPCA.

Lower Minnesota River Low Dissolved Oxygen TMDL - The Facility was assigned loading based on discharge monitoring report records during low stage river events plus an estimated 20-year growth projection of the community. Although there is an individual waste load allocation (WLA) in the Lower Minnesota River Low Dissolved Oxygen TMDL, this TMDL's WLA's are implemented in accordance with the Minnesota River Basin: General Phosphorus Permit (General Permit). According to Appendix B of the General Permit, this Facility has a calculated phosphorous limit of > 1,800 lbs/yr. The Facility must comply with Appendix B, Part 1 and must use a trade ratio of 1.1 to 1. However, proposed River Eutrophication Standard (RES) limits for the permit will render the WLA for the General Phosphorus Permit obsolete, as the RES limits are more restrictive. The Permittee is still required to maintain coverage because they sell phosphorus credits under the General Permit and their buyers' permits have not been reissued with more restrictive RES limits.

Draft South Metro Mississippi TMDL Turbidity Impairment - The draft WLA for this TMDL is 466,105 kg/year and 1,277 kg/day for total suspended solids (TSS). WLAs were calculated based on the permitted average wet weather design flow (AWWDF) and the existing permitted TSS concentration limit of 30 mg/L. The draft WLA is equivalent to the Facility's current permitted TSS effluent limit. The draft TSS WLA for this Facility is 0.164 tons/day of TSS.

Draft Minnesota River Turbidity TMDL - This TMDL is currently underway to address 18 impairments on the Minnesota River and its tributaries. The draft WLA for this Facility is 1,277 kg/day TSS, which is equal to the current permit limit. WLAs were calculated based on the permitted AWWDF and the existing permitted TSS concentration limit of 30 mg/L.

Draft Lake Pepin Excess Nutrients TMDL - The discharge is located within the project area and as a result, a staff limnologist has reviewed the current phosphorous limit that is included in the permit and developed a pre-TMDL water quality based effluent limit (WQBEL) for this Facility.

Existing permit effluent limits

Technology based effluent limits (TBELs)

Limits for five-day carbonaceous biochemical oxygen demand (CBOD₅) (applicable April-May), TSS and percent removal are technology based limits, as specified by 40 CFR §133.102 and Minn. R. 7053.0215 to meet minimum secondary treatment levels.

Water quality based effluent limits (WQBELs)

The limits for CBOD₅ (applicable June-March), ammonia and total residual chlorine (TRC) are water quality based limits. The TRC limit is the final acute value for chlorine found in Minn. R. 7050.0222. This limit is determined to be necessary to protect the use classification of the receiving water. The seasonal dissolved oxygen limit has been applied pursuant to Minn. R. 7053.0205, subpart 8. The 8895.6 kg/year and the 43.1 kg/day phosphorus limits are WQBELs applicable under Minn. R. 7053.0205, subp. 8 and Minn. R. 7050.0222 and have been applied to protect downstream waters from eutrophication.

State Discharge Restrictions

The 1.0 mg/L limit for phosphorus was applied to meet discharge restrictions specified under Minn. R. 7053.0255. The limit for fecal coliform was developed to meet state discharge restrictions specified under Minn. R. 7053.0215, subp. 1, requiring the Facility to meet minimum secondary treatment levels.

Conditional Effluent Limits

The Facility operates under conditional effluent limits (Minn. R. 7050.0213). Conditional Effluent Limits are defined as two or more different sets of limits for a parameter that apply to a facility's discharge within the same effective period due to a conditional situation that does not meet the definition of Variability of Operation.

Under the conditional effluent limit requirements, monitoring for the parameters of Beryllium, Cadmium, Chromium, Cyanide, Selenium, and Silver are required only when the Facility accepts leachate from the Northern States Power (NSP) ash disposal site.

Proposed permit effluent limits

The Permittee has been authorized to reuse treated effluent from the Facility. Potential uses for the reused effluent include irrigation, landscaping, vehicle and equipment washing, internal equipment cooling, cooling towers, industrial uses (including those in which the water may come into contact with workers), pipeline testing, air conditioning, toilet and urinal flushing, priming drain traps, structural firefighting, decorative fountains, commercial laundries, consolidation and backfill around potable water pipelines, artificial snow making, commercial car washes (including unheated hand washes), industrial boiler feed, soil compaction, mixing concrete, dust control, cleaning of roads, sidewalks and outdoor work areas, and flushing sanitary sewers. Other uses not specifically listed above may be allowed on a case-by-case basis without permit modification, with prior MPCA approval. Wastewater that is reused is effluent from the treatment plant that is filtered and subsequently disinfected to a higher level and has stringent limits for total coliform bacteria and turbidity. Wastewater that does not meet these limits is not reused.

Technology based effluent limits

Limits for CBOD₅ (applicable April-May), TSS and percent removal are specified under Minn. R. 7053.0215, Supb. 1, requiring the Facility to meet minimum secondary treatment levels.

Water quality based limits

The limits for CBOD₅ (applicable June-March) are applicable under Minn. R. 7053.0225. The seasonal ammonia limits are applicable under Minn. R. 7053.0205, subp. 8 and Minn. R. 7050, subp. 0220 and have been applied to the Facility to protect downstream waters from ammonia toxicity. The Total Residual Chlorine limit is the final acute value for chlorine found in Minn. R. 7053.0205. This limit is determined to be necessary to protect the use classification of the receiving water. The 33.2 kg/day seasonal Phosphorus limit and the 12,434 kg/year calendar year to date limit are WQBELs applicable under Minn. R. 7053.0205, subp. 8 and Minn. R. 7050.0222 and have been applied to protect downstream waters from eutrophication. The WQBELs are more restrictive than the Minnesota River Basin Low Dissolved Oxygen Waste load Allocation for this Facility.

State Discharge Restrictions (SDRs)

The limit for fecal coliform has been developed to meet state discharge restrictions specified under Minn. R. 7053.0215, subp. 1, requiring the Facility to meet minimum secondary treatment levels.

The proposed limit and monitoring requirements for the facility are found in the limits and monitoring table in the accompanying draft permit document.

Reasonable Potential for Chemical Specific Pollutants (40CFR§122.44(d) (1))

Federal regulations require the MPCA to evaluate the discharge to determine whether it has the reasonable potential to cause or contribute to a violation of water quality standards. The Agency must use acceptable technical procedures, accounting for variability (coefficient of variation, or CV), when determining whether the effluent causes, has the reasonable potential to cause, or contribute to an excursion of an applicable water quality standard. Projected effluent quality (PEQ) derived from effluent monitoring data is compared to Preliminary Effluent Limits (PELs) determined from mass balance inputs. Both determinations account for effluent variability. Where PEQ exceeds the PEL, there is reasonable potential to cause or contribute to a water quality standards excursion. When reasonable potential is indicated, the permit must contain a Water Quality Based Effluent Limit (WQBEL) for that pollutant.

Whole Effluent Toxicity - The discharge is located on the Minnesota River. This portion of the Minnesota River has the following water classification: 2B, 3C, 4A, 4B, 5, and 6. The Permittee has chronic Whole Effluent Toxicity (WET) monitoring as a requirement. The Permittee has chronic WET testing because the ratio of the 7Q10 low flow (the lowest consecutive seven-day flow that a river experiences on average at least once every ten years) of the receiving water compared to the Facility's average dry weather (ADW) flow is less than or equal to 20:1.

The monitoring threshold value of 9.9 toxicity units, chronic (TUc) has been updated to 10.4 TUc because of updated information on updated 7Q10 receiving water flow. A reasonable potential evaluation was attempted on the chronic WET tests to determine if there was cause to exceed the WET monitoring threshold value of 10.4 TUc. Because all four chronic WET tests done during the last permit cycle had <1.0 TUc for all organisms tested, there was no reasonable potential to cause or contribute to a chronic WET WQBEL. Because no reasonable potential has been found, a monitoring threshold value of 10.4 TUc has been established. The 10.4 TUc is a monitoring threshold value, not a WET limit.

Priority Pollutants - The priority pollutant scan information of the effluent was evaluated using reasonable potential procedures. All but chloroform of the organic priority pollutants were below the level of detection. Since these pollutants were at low enough levels not to be detected, reasonable potential to cause or contribute to a water quality standards excursion is not indicated.

Total arsenic, free cyanide, chloroform, total copper, total selenium, total zinc, and total mercury indicated no reasonable potential to cause or contribute to an excursion above the applicable water quality standard. The Facility also monitored for total silver, total cadmium and total chromium in their effluent. Cadmium, chromium and silver data were all below reporting levels. As such, no reasonable potential evaluation could be done for these three metals. No effluent limits are needed.

Mercury- Monitoring results of the effluent include 17 data points at a calculated coefficient of variation (CV) of 0.6. Projected effluent quality (PEQ) is derived as an upper bound value from the highest value measured (5.49 nanograms per Liter, or ng/l), and the determined variability (CV = 0.6) and number of data points (17). The preliminary effluent limit (PEL) calculation assumes that the background mercury concentration is at the water quality standard (6.9 ng/l) when the listed stream impairment is for fish consumption advice, and no local river water column analytical data exist. To assure that the discharge does not cause or contribute to a water quality standards excursion for mercury-impaired waters, the numeric water quality standard (6.9) is applied at the point of discharge for the mass balance equation for the subsequent preliminary effluent limit calculations. The June 2013 mercury data point was removed because of ongoing facility maintenance issues from late April 2013 to early May 2013. Where PEQ exceeds the PEL, there is reasonable potential to cause or contribute to a water quality standards excursion. Since PEQ does not exceed the PEL in this case, reasonable potential to cause or contribute to an excursion above water quality standards is not indicated. A water quality-based effluent limit is not needed.

Phosphorus - The permit includes a final total phosphorous water quality based effluent limit (WQBEL) of 33.2 kg/day, June - September, calendar month average, at SD 001. The WQBEL is based on achieving a long-term average (multi-

summer) of 15.8 kg/day, June – September, which is necessary to achieve river eutrophication standards (RES) in the Minnesota River – Mankato Watershed. Since the long-term average is to be achieved over a multi-summer period, the MPCA calculated a monthly limit that accounts for variability of treatment over time. At permit reissuance, the MPCA will evaluate all available data to ensure RES are met.

Federal law [40 CFR § 122.44(d)] requires NPDES Permits to include effluent limits for pollutants discharged at levels that cause, or have the reasonable potential to cause or contribute to water quality standard violations. Water quality outcomes achieved by the application of these water quality based effluent limits (WQBELs) must be derived from and comply with applicable water quality standards, and must be consistent with the assumptions and requirements of any available EPA approved waste load allocation. The publication “Implementing River and Lake Eutrophication Standards for NPDES Wastewater Permits” (MPCA 2015) defines the procedures used to determine the need for and, if required, establish the magnitude of WQBELs necessary for attainment of the lake and river eutrophication standards found in Minn. R. ch.7050.0222.

Reasonable Potential (RP) - Establishing RP for a large river system such as the Minnesota River is complex. Several river reaches on the Minnesota River downstream of Mankato Water Resource Recovery Facility outfall exceed applicable river eutrophication standards (RES) and are affected by phosphorus discharged from a large number of point sources. Due to the complexity of the evaluation, a conservative assumption has been made that any point source discharger of phosphorus in excess of the 0.15 milligrams per liter (mg/L) to the Minnesota River Basin, downstream of the Lac Qui Parle Dam, has RP.

For lakes, dischargers are found to have RP for total phosphorus (TP) if they discharge TP concentrations greater than the ambient target, upstream of a nutrient impaired waterbody, and no geographical barrier capable of trapping a significant mass of nutrients exists between the outfall and the impairment. If a facility is found to have RP for Lake Eutrophication Standard (LES), a computer model is used to derive TP effluent limits calculated to meet LES.

River Eutrophication Standards (RES) Based Limits –The Mankato Water Resource Recovery Facility (Facility) currently discharges above the 150 micrograms per liter (µg/L) (0.150 mg/L) RES TP criterion and the majority of the TP from the Facility makes it the first downstream reach near St. Peter that exceeds river eutrophication standards. These two simple criteria have been used to determine if a wastewater treatment facility “contributes” to a downstream eutrophication impaired reach. The MPCA’s analysis concludes that phosphorus loadings from many upstream facilities in the Minnesota River Basin contribute to river concentrations in excess of the TP criterion. The memorandum “Phosphorus Effluent Limit Review: Minnesota River Basin” (Wasley 2016) evaluates RP and establishes WQBELs for facilities discharging to the Minnesota River Basin downstream of the Lac Qui Parle dam. A calendar month average 33.2 kg/day, June through September effluent limit has been assigned to the Mankato Facility in accordance with the memorandum’s recommendations.

It is generally assumed that limits set for RES at the outlet of a major watershed will also be sufficient to protect other downstream waters. Effluent limits developed for dischargers upstream of the Minnesota River – Mankato watershed are also protective of the downstream Minnesota River reaches, which are subject to the same RES criteria. Proposed limits are calculated to achieve the RES TP criterion of 0.150 mg/L at the outlet of the Minnesota River – Mankato watershed and in other downstream reaches of the Minnesota River.

Lake Eutrophication Standards (LES) Based Limits - Since 2008, the MPCA has set effluent limits for facilities upstream of lakes and reservoirs consistent with LES. Eutrophication standards for lakes, shallow lakes, and reservoirs can be found in Minn. R. 7050.0222.

A computer model for Lake Pepin was developed by the MPCA consultant, LimnoTech, (LTI) to evaluate site specific eutrophication criteria and the reductions necessary to achieve these criteria (LTI, 2009). The recently adopted site-

specific criteria for Lake Pepin were determined to be 0.100 mg/L for TP and 0.028 mg/L for chlorophyll-a (Minn. R. 7050.0222, Heiskary and Wasley 2012). Within the model, all major sources of TP upstream of Lake Pepin were considered and 21 separate scenarios were developed to evaluate existing conditions and the potential for various combinations of land use change and point source limit assumptions to attain water quality standards. Model scenario 21, which predicted compliance with the criteria, included the following tributary TP reduction assumptions: 50 percent from the Cannon River, HSPF modeled reductions for the Minnesota River and 20 percent from the Mississippi River upstream of Lock and Dam 1 and the St. Croix River. During the modeling process, the MPCA staff simultaneously developed draft waste load allocations (WLAs) compatible with scenario 21 reductions for all NPDES dischargers within the contributing watershed.

A categorical approach was used to develop individual WLAs for the draft Lake Pepin TMDL. Calculations use the general formula below.

- Facility WLA = AWWDF/Maximum daily flow (11.25 mgd) x categorical concentration mg/L TP (0.8 mg/L) x 3.785 L/gal x 365 days/yr.

Based on this calculation, the Mankato Water Resource Recovery Facility has been assigned a calendar year to date effluent limit of 12,434 kg/year.

Nitrogen monitoring requirements

Nitrogen is a pollutant that can negatively impact the quality of Minnesota's water resources, including water used for drinking. Studies have shown that nitrogen in lakes and streams have a toxic effect on aquatic life such as fish. Like phosphorus, nitrogen is a nutrient that promotes algae and aquatic plant growth often resulting in decreased water clarity and oxygen levels. In September 2014, the MPCA completed the final draft of the Statewide Nutrient Reduction Strategy (<https://www.pca.state.mn.us/water/nutrient-reduction-strategy>) which identifies goals and milestones for nitrogen reductions for both point and nonpoint nitrogen sources within Minnesota. To gain a better understanding of the current nitrogen concentrations and loadings received by and discharged from the Facility, additional effluent nitrogen monitoring has been added to the permit. This monitoring has been added in accordance with Minn. Stat. § 115.03. Refer to the Limits and Monitoring section of the draft permit for the specific influent and effluent monitoring and frequency.

Additional requirements

Phosphorus Trade Agreement

The outfall SD 001 limit for Total Phosphorus of 12,243 kg/year reflects the phosphorus trade agreement between the Permittee and Granite Falls Energy, LLC (permit MN0066800). If this trade agreement is altered or terminated at any time during the permit term, both parties shall submit an application for a permit modification to alter the trade amount or to restore the Permittee's limit to its pre-trade limit of 12,434 kg/year.

In addition to this individual permit, the Mankato Water Resource Recovery Facility is covered by the Minnesota River Basin General Phosphorus Permit, MNG420017. The Mankato Water Resource Recovery Facility currently actively trades Jordan Trading Units (JTUs) under the Minnesota River Basin General Phosphorus Permit with ADM Marshall (MNG420002), Granite Falls WWTP (MNG420011), Walnut Grove WWTP (MNG420035), and the Lower Sioux Agency (MNG420045). As per an April 30, 2020 letter sent out to Minnesota River Basin Permittees, RES-based limits will lead to the termination of the MNG42 permit as follows:

- The MPCA will reissue individual WWTF permits with RES-based phosphorus limits.
- The WWTFs meeting their RES-based limits will also be protective of the dissolved oxygen water quality standard for the Lower Minnesota River, previously required by the MNG42 Permit.

- As such, the WWTFs will no longer need to comply with the MNG42 Permit and their individual permits will include language excluding them from the general permit.
- This change will streamline compliance and reporting requirements for permit holders as they only need to meet their individual permit, not both the individual and general permits.

The April 30 2020 letter went on to state that current MNG42 trade “buyers” and “sellers” can continue to trade under the MNG42 Permit until such time as the trades are no longer needed, or the trades are incorporated into an alternative permit. Put in another way, the Mankato Water Resource Recovery Facility can continue to trade with their current trade partners under the MNG42 permit until those trade partners either achieve compliance with their RES based limit or identify an alternative trade or offset.

Non-point source pollutant reduction

This permit authorizes the permittee to develop and submit non-point source pollutant reduction project proposals to the MPCA for approval of water quality trade credits during the permit term. The intent of these point to non-point trading credits is the reduce phosphorus in the Minnesota River. The permittee can utilize the credits and/or can sell the credits to other eligible permittees. The inclusion of the point to non-point trade authorization does not authorize the permittee to decrease the effectiveness of the facility’s phosphorus treatment. The permit contains the following language (5.19.86), based upon Minnesota Rule, to ensure that the permittee treats phosphorus at their WWTP to the fullest practicable extent and doesn’t rely upon future non-point trade credits in lieu of phosphorus treatment at the WWTP:

The Permittee shall continue to operate the WWTP in a manner that ensures removal of nutrients from the waste stream is occurring at to the fullest practicable extent.

Pollutant minimization plans (PMP)

The Permittee is required to submit a Mercury Minimization Plan (MMP). The MMP requirements include educating users with regard to proper mercury disposal in order to prevent its introduction into the waste stream.

Total facility requirements (TFR)

Certified laboratory

Effective January 1, 2013, all Minnesota municipal, county or industrial laboratories that analyze wastewater per Clean Water Act requirements must be certified by the MPCA or the Minnesota Department of Health. Information regarding MPCA laboratory certification is located on the MPCA’s website at <http://www.pca.state.mn.us/4p44whk>. If there are any questions concerning MPCA laboratory certification, please contact the MPCA at 800-657-3864 or by email at qa.questions.mPCA@state.mn.us. Commercial laboratories doing these analyses must maintain Minnesota Department of Health certification.

Electronic Discharge Monitoring Reports (eDMRs)

The eDMRs, Sample Values/Operational Spreadsheets, and related attachments shall be electronically submitted via the MPCA e-Services (https://rsp.pca.state.mn.us/TEMPO_RSP/Orchestrate.do?initiate=true). Paper copies of DMRs will no longer be accepted. The eDMR and Sample Value/Operational Spreadsheets are generated directly from the limits and monitoring requirements in the reissued permit for the facility. They are generated by the Pollution Control Data Specialist assigned to manage the data for the facility and will be available online within 30 days of the permit action, please make sure to download the most recent version of the eDMR and Sample Value/Operational Spreadsheet prior to submitting the next monthly eDMRs.

Construction projects

Separate written approval of plans and specifications, in addition to the final issued permit, must be obtained from the MPCA before construction can begin for any planned construction projects.

Antidegradation and anti-backsliding

Changes to the facility may result in an increase in pollutant loading to surface waters or other causes of degradation to surface waters. If a change to the facility will result in a net increase in pollutant loading or other causes of degradation that exceed the maximum loading authorized through conditions specified in the existing permit, the changes to the facility are subject to antidegradation requirements found in Minn. R. 7050 to 7050.0335.

This Permit also complies with Minn. R. 7053.0275 regarding anti-backsliding.

Any point source discharger of sewage, industrial, or other wastes for which a NPDES permit has been issued by the agency that contains effluent limits more stringent than those that would be established by Minn. R. 7053.0215 to 7053.0265 shall continue to meet the effluent limits established by the permit, unless the permittee establishes that less stringent effluent limits are allowable pursuant to federal law, under section 402(o) of the Clean Water Act, United States Code, title 33, section 1342.