Young Environmental Consulting Group, LLC

Technical Memorandum

To: Linda Loomis, Administrator
Lower Minnesota River Watershed District

From: Katy Thompson, PE
Della Schall Young, CPESC, PMP

Date: March 25, 2021

Re: Blue Lake Wastewater Treatment Plant Improvements Project - Public Comment (LMRWD No. 2021-006)

The Metropolitan Council Environmental Services (MCES) has prepared a draft facility plan for improvements to its Blue Lake Wastewater Treatment Plant (WWTP) in Shakopee (Figure 1). The draft plan has been made available to the public for comment, including the Lower Minnesota River Watershed District (LMRWD or District). The draft facility plan outlines upgrades needed to service the expected population growth in the southwest metropolitan area through 2050 and upgrades necessary to meet the new water quality standards for phosphorus.

Background

The Blue Lake WWTP currently services 29 communities (approximately 300,000 people), including the LMRWD communities of Carver, Chanhassen, Chaska, Eden Prairie, Savage, and Shakopee. It has a permitted average wet weather (AWW) flow capacity to treat 42 million gallons per day (mgd) of wastewater and discharge it to the Minnesota River. It is projected to exceed its average daily wastewater flow capacity of 35 mgd and reach its permitted AWW flow capacity in 2030 due to the projected sewered population growth within its service area. Additionally, many of the plant facilities are nearing the end of their service lives and will need extensive rehabilitation or replacement within the next 30 years.

Finally, the MCES expects that the Minnesota Pollution Control Agency (MPCA) will soon propose more stringent phosphorus discharge standards for the Blue Lake WWTP

with its future permit renewal as part of the anticipated Total Maximum Daily Load (TMDL) study for the Minnesota River. The Blue Lake WWTP's operations and treatment processes currently meet the existing 1.0 mg/L permit limit for phosphorus implemented in 2009; however, they are insufficient to meet the anticipated summer mass load limits and the 0.3 mg/L total phosphorus limits the MPCA is considering as part of the TMDL study.

The MCES inspected the 78-inch-diameter effluent pipe and outfall structure (Figure 1) as part of the plan development and noted that the Minnesota River had changed course since the outfall was constructed in 1970 and currently was experiencing erosion and scouring of the riverbank. The MCES recommends extending the riprap outfall protection up- and downstream of the structure to slow future erosion. Additionally, the MCES noted that a casting at Manhole 4 was detached, and televised inspections of the pipeline showed several locations where root intrusion was present.

According to the National Levee Database, the Blue Lake WWTP is located within the floodplain of the Minnesota River, but because the Blue Lake WWTP Levee surrounds it, it is protected from the 100-year flood risk. The levee does not entirely mitigate the risk of flooding, as portions of the Blue Lake WWTP site are much lower (El. 708) than the 100-year flood elevation (El. 721.8); should the levee fail, much of the site would be inundated. The levee is an accredited levee system that FEMA recognizes as reducing the flood hazards posed by the 100-year flood, but FEMA does not own, operate, maintain, or certify these levees; it is up to the owner of the levee to maintain this accreditation.

In January 2020, the District requested the Blue Lake WWTP dewatering records related to the Minnesota Department of Natural Resources (MnDNR) groundwater appropriations permit and was provided with the plant's records from 2010 to 2019, including a map of the existing and future wells. The groundwater pumpage report showed that since 2011 the Blue Lake WWTP has remained below the 2014 MnDNR appropriation annual limit of roughly 1.6 billion gallons (Permit Number 1992-6215).

The Blue Lake WWTP is not within any other LMRWD special overlay districts, including the High-Value Resources Area or Steep Slopes Overlay District.

Proposed Improvements

The draft Facility Plan lays out the proposed improvements for the Blue Lake WWTP necessary to maintain the plant, meet the forecasted AWW flow of 53 mgd, and meet increased phosphorus effluent limits of 0.3 mg/L. The draft plan breaks the proposed improvements into three phases, generally described below.

Phase I – 2022 through 2031

Phase I improvements are required within the next 10 years to continue meeting demand. Proposed improvements include modifications to the existing primary and secondary treatment system, two new secondary clarifiers, a new mixed liquor distribution structure, adding a second effluent channel or pipeline, and expanding the liquid waste receiving (LWR) area.

Phase II – 2027 through 2037

Phase II improvements can be deferred up to 15 years and still maintain current service levels. Improvements include a new and expanded primary treatment complex to meet 2050 projected population growth, the addition of tertiary filtration to meet the proposed MPCA permit requirements for phosphorus, and rehabilitation of the plant effluent structure.

Phase III – 2033 through 2041

Phase III improvements have been identified within the 30-year plan period but could be deferred beyond 15 years and still maintain current service levels. Improvements include upgrades to preliminary treatment facilities, replacement and rehabilitation of existing equipment and buildings, and the expansion of the effluent pump station and disinfection basin to meet the projected 2050 population growth.

Recommendations

The LMRWD supports the MCES for being proactive in identifying future needs and improvements to the Blue Lake WWTP to meet the projected demand and future MPCA permit requirements. We offer the following comments on the draft plan:

- The erosion identified at the effluent pipe outfall is concerning to the LMRWD, and given the turbidity impairment of the lower Minnesota River and the future integrity of the outfall structure itself, we recommend making the effluent outfall repairs part of Phase I.
- The expansion of the LWR area would likely require a permit from LMRWD, as would any other future construction projects that alone or in subsequent phases meet any of the following conditions:
    - Disturbing more than one acre of land will require a permit from the LMRWD for Rule B – Erosion and Sediment Control.
    - For all construction activities within the Minnesota River floodplain, outside the accredited levee system, including repairs to the effluent outfall structure, the District Rule C – Floodplain and Drainage Alterations would apply.
    - Creating new impervious surfaces over one acre will require a permit from

the LMRWD for Rule D – Stormwater Management.

- With the future plant expansion, is the current appropriation level adequate, or does the MCES anticipate needing to modify the existing permit?
- The District had previously requested pump records information; based on the data provided, it appears that approximately 1.6 billion gallons are being appropriated annually, near the current MnDNR limit. Is all of the appropriated water used internally for plant operations? If not, what is the water used for, and how much is used versus discarded? Additionally, where is excess water discharged?

Attachments:

- Figure 1. Project Location

LOWER MINNESOTA RIVER
WATERSHED DISTRICT

Figure 1: Blue Lake Wastewater Treatment Plant Location

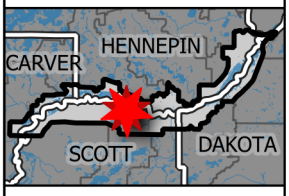
LEGEND

- Blue Lake WWTP Expansion
- Areas of Concern
- Proposed Plant Expansions
- Effluent Line
- LMRWD Lakes

Scott Co. FEMA Floodplain
- 100-yr Floodplain
- Floodway
- 500-yr Floodplain
- Area Protected by Levee
- FEMA Levee

- Scott Co. Parcel Data
- LMRWD Boundary
- County Boundaries

LMRWD Watershed Location Map



Young Environmental Consulting Group, LLC

Gmail Linda Loomis <naiadconsulting@gmail.com>

Response to Comments on the Draft Blue Lake Facility Plan from the LMRWD

Peterson, Jason <jason.peterson@metc.state.mn.us> Thu, Apr 8, 2021 at 11:45 AM
To: "admin@lowermnriverwd.org" <admin@lowermnriverwd.org>
Cc: "Odonnell, Tim" <tim.odonnell@metc.state.mn.us>, "Bearinger, Kurt" <Kurt.Bearinger@hdrinc.com>, "Clancy, Jeannine" <Jeannine.Clancy@metc.state.mn.us>, "Heflin, Katherine" <rene.heflin@metc.state.mn.us>

Attn: Linda Loomis,

Thank you for your comments regarding the Blue Lake WWTP Improvements Facility Plan included in Technical Memorandum Public Comment LMRWD #2021-006, dated March 25, 2021.

MCES response to these comments are given below:

LMRWD Comment 1: The erosion identified at the effluent pipe outfall is concerning to the LMRWD, and given the turbidity impairment of the lower Minnesota River and the future integrity of the outfall structure itself, we recommend making the effluent outfall repairs part of Phase I.

MCES Response: MCES has planned repairs to the riverbank near the outfall based on MCES annual erosion monitoring.

LMRWD Comment 2: The expansion of the LWR area would likely require a permit from LMRWD, as would any other future construction projects that alone or in subsequent phases meet any of the following conditions:

o Disturbing more than one acre of land will require a permit from the LMRWD for Rule B – Erosion and Sediment Control.

o For all construction activities within the Minnesota River floodplain, outside the accredited levee system, including repairs to the effluent outfall structure, the District Rule C – Floodplain and Drainage Alterations would apply.

o Creating new impervious surfaces over one acre will require a permit from the LMRWD for Rule D – Stormwater Management.

MCES Response: MCES intends to apply for a permit from LMRWD for the work at the outfall and the Liquid Waste Receiving work as necessary and in accordance with the criteria above.

LMRWD Comment 3: With the future plant expansion, is the current appropriation level adequate, or does the MCES anticipate needing to modify the existing permit?

MCES Response: MCES does not anticipate needing to modify the existing groundwater appropriation permit for the Blue Lake WWTP.

LMRWD Comment 4: The District had previously requested pump records information; based on the data provided, it appears that approximately 1.6 billion gallons are being appropriated annually, near the current MnDNR limit. Is all of the appropriated water used internally for plant operations? If not, what is the water used for, and how much is used versus discarded? Additionally, where is excess water discharged?

MCES Response: The Blue Lake WWTP reuses effluent water for non-potable water uses throughout the plant. Groundwater is withdrawn for protection of infrastructure then discharged to the Minnesota river through the outfall pipe.

METROPOLITAN COUNCIL

Jason Peterson PE

pronouns: he/him/his

Principal Engineer

Wastewater Planning and Capital Delivery

jason.peterson@metc.state.mn.us

P. 651.602.1614 | C. 651.325.5788

390 North Robert Street | St. Paul, MN | 55101 | metrocouncil.org