



June 28, 2024

Nick Bower, P.E., Senior Environmental Engineer
Capital Area Regional Planning Commission
100 State Street, Suite 400
Madison, WI 53703

RE: AREAWIDE WATER QUALITY PLAN AMENDMENT FOR WPDES PERMIT WI-0024597-09-2, OUTFALL 005 TO BADGER MILL CREEK

Dear Mr. Bower,

We are in receipt of your email request dated June 20, 2024, for additional information pursuant to Wis. Stat. § 283.83(1m) with respect to the above referenced Areawide Water Quality Plan Amendment Request (“Amendment Request”). The following provides our responses to those inquiries.

Question 1: Clarify the DNR’s acceptance of the recommendation for phosphorus compliance

We have attached the Wisconsin Department of Natural Resources letter from November 1, 2023 for your reference.

Question 2: Discuss how water quality standards will continue to be met in Badfish Creek.

This request is not relevant to the Amendment Request. The original Areawide Water Quality Plan Amendment was specific to “restore the hydrologic balance in the Sugar River basin” and did not impact, reference or address Badfish Creek. Badfish Creek is not the subject of this Amendment Request. Any issues associated with the discharge to Badfish Creek will be addressed in the District’s state-issued WPDES permit. The District will submit necessary data with respect to Badfish Creek with its WDPES permit application.

Question 3: Provide additional contextual information to support your determination that the Amendment Request will comply with WQ standards.

3.1 What are the periods of temporary cessation of effluent?

There were three periods during which effluent was partially or fully ceased:

2021: Effluent return to Outfall 005 began being ramped down from 3.5 MGD May 10, 2021 and was ceased by May 19, 2021. It remained at no return flow until June 3, 2021. The water was slowly restarted and returned to 3.5 MGD by June 18, 2021.

2023: Effluent return to Outfall 005 began being ramped down from 3.1 MGD on January 30, 2023. The flow was ceased on February 6, 2023 and remained off until April 17, 2023 when flow was slowly ramped back up. Flow was returned to 3.1 MGD by April 21, 2023.

2024: Effluent return to Outfall 005 was ramped down February 1, 2024 from 3.1 MGD to 1.5 MGD and remained at 1.5 MGD until February 23, 2024 when it began being ramped up and returned to 3.1 MGD by February 29, 2024.

Question 3.2 Provide additional regression analysis or other means to assess future, long-term impacts.

Regression analysis or other long-term assessment of future impacts is not required by Wis. Stat. § 283.83 or NR 102. The District has provided data showing the lack of impact on water quality standards from reduced flow volumes.

In addition, the relevant context for evaluating the impact of eliminating the discharge to Badger Mill Creek, is the basic fact that the discharge of pollutants from the District to Badger Mill Creek will end. As a result, impacts to water quality from the District's discharge will end. This entire process was initiated by the fact that District's discharge of phosphorus exceeded the water quality criteria. The District will no longer be adding to Badger Mill Creek compounds for which there are water quality criteria, such as phosphorus, BOD, pH, temperature and bacteria. In short, the long-term impact is that the District will no longer be impacting water quality with its discharge.

Question 3.3 Provide flow data to provide context to the DO readings presented.

We provided the flow data for Badger Mill Creek during the shut off periods, however, the standard for dissolved oxygen is the same regardless of flow volume, so this is not relevant.

Question 3.4 - Provide the time of day at which sampling took place.

The instream sampling is done in the mornings. The data indicates that the sampling began with the upstream samples being taken approximately 7:30 am. The sampling along Badger Mill Creek takes approximately 1.5 hours.

Question 3.5: Clarify/specify how BOD impacts DO.

Biochemical oxygen demand (BOD) and dissolved oxygen (DO) are related. The United States Environmental Protection Agency states, "The greater the BOD, the more rapidly oxygen is depleted from the stream." The United State Geological Survey defines BOD as follows:

Biochemical oxygen demand (BOD) represents the amount of oxygen consumed by bacteria and other microorganisms while they decompose organic matter under aerobic (oxygen is present) conditions. One water analysis that is utilized in order to better understand the effect of bacteria and other microorganisms on the amount of oxygen they consume as they decompose organic matter under aerobic (oxygen is present) is the measure of biochemical oxygen demand (BOD).

Determining how organic matter affects the concentration of dissolved oxygen in a stream or lake is integral to water-quality management. BOD is a measure of the amount of oxygen required to remove waste organic matter from water in the process of decomposition by aerobic bacteria (those bacteria that live only in an environment containing oxygen). The waste organic matter is stabilized or made unobjectionable through its decomposition by living bacterial organisms which need oxygen to do their work. BOD is used, often in wastewater-treatment plants, as an index of the degree of organic pollution in water.

Question 4: NR 102.06 identifies total phosphorus as a water quality criterion to be met in all surface waters. Please include a narrative describing how compliance with this criterion will be met after cessation of effluent to Badger Mill Creek and diversion to Badfish Creek

Implementation of this Amendment Request will significantly reduce the phosphorus in Badger Mill Creek because the District's discharge will cease.

The District's obligation is to meet its permit limit for phosphorus, which are developed based on the applicable water quality criteria for phosphorus. Once the discharge has ceased, the District will be in compliance with its permit and will no longer be discharging phosphorus over the water quality criteria to Badger Mill Creek.

Question 5: Provide additional discussion and reference (e.g., to WPDES permit) on why the District has historically monitored F. coli and why it is changing to E. coli.

The District's monitoring follows the requirements in its WPDES permit, which are developed based on state statute and administrative rules. The District's current permit requires compliance with fecal coliform limitations because historically fecal coliform requirements were established by administrative rule. On May 1, 2020 revisions to the recreational use water quality standards changed the relevant water quality criteria parameter from fecal coliform to E.coli. In accordance with this rule revision, the District will be required to monitor for and comply with E.coli limitations in future WPDES permits.

For the reasons set forth above, and in our initial submittal dated June 10, 2024 along with the accompanying material, the District hereby certifies that the proposed areawide water quality plan amendment is consistent with applicable water quality standards.

Sincerely,

Martin Griffin

Martin Griffin, Director of Ecosystem Services

Attachment – DNR letter, Nov 1, 2023

CC: Capital Area Regional Planning Commission: Jason Valerius
Wisconsin Department of Natural Resources: Tim Asplund, Ashley Brechlin,
Alixandra Burke, James Zellmer
Madison Metropolitan Sewerage District: Eric Dundee, Kathy Lake
Stafford Rosenbaum, LLC: Vanessa Wishart, Paul Kent

State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
101 S. Webster Street
Box 7921
Madison WI 53707-7921

Tony Evers, Governor
Adam N. Payne, Secretary
Telephone 608-266-2621
Toll Free 1-888-936-7463
TTY Access via relay - 711



November 1, 2023

D. Michael Mucha, Chief Engineer and Director
Madison Metropolitan Sewerage District
1610 Moorland Road
Madison WI 53713

Subject: Madison Metropolitan Sewerage District (MMSD): Final Phosphorus Compliance
Alternatives Plan
WPDES Permit #: WI-0024597-09-2

Dear Mr. Mucha:

Thank you for submitting the Final Phosphorus Compliance Alternatives Plan (FCAP) that was required as part of the "Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus" compliance schedule (Section 6.4 of the WPDES permit). As part of the FCAP received on May 31, 2023, MMSD recommends discontinuing the diversion to Badger Mill Creek to meet the future phosphorus water quality based effluent limits. The department has reviewed the report and determined that it meets the requirements of the compliance schedule action item for submittal of an FCAP. The department also acknowledges that MMSD is currently working through the amendment process for the Area Wide Water Quality Management Plan related to discontinuing the diversion.

Thank you for your attention to this matter. If you have any questions, please contact me at ashley.brechlin@wisconsin.gov or (608) 438-9930.

Sincerely,

Ashley Brechlin
Wastewater Engineer
Wisconsin Department of Natural Resources

CC. Martye Griffin
Thomas Bauman

Director of Ecosystem Services, MMSD
South Central Wastewater Supervisor, DNR