

Permit Fact Sheet

General Information

Permit Number:	WI-0060348-10-1 *Modification items are highlighted and go into effect May 1, 2024.	
Permittee Name:	Brighton Dale Links WWTP	
Address:	19600 75th St	
City/State/Zip:	Bristol, WI 53104	
Discharge Location:	Holding pond immediately south of the treatment plant located on the Brighton Dale Links Golf Course property.	
Receiving Water:	Unnamed wetland-marsh complex (Brighton Creek Watershed, Des Plaines River Basin) in Kenosha County	
Stream Flow (Q _{7,10}):	0 cfs	
Stream Classification:	Wetland, Limited Aquatic Life, non-public water supply	
Design Flow(s)	Daily Maximum	0.0690 MGD
	Weekly Maximum	0.0290 MGD
	Monthly Maximum	0.0185 MGD
	Annual Average	0.010 MGD
Significant Industrial Loading?	Not Applicable – treatment plant only serves golf course and park restrooms	
Operator at Proper Grade?	Yes, the plant is a Basic plant in subclasses A1, B, C and SS. Jeff Bratz, the Operator-in-Charge is certified in all the plants subclasses.	
Approved Pretreatment Program?	N/A	

Description of Permit Modification

Brighton Dale Links has a compliance schedule to meet a daily maximum ammonia limit of 3.7 mg/L by 05/31/2024. The permittee requested the Department to recalculate the ammonia limit because the facility made a few changes at the plant including purchasing a new pH meter which seems to be more accurate than their previous meter. The daily maximum ammonia limit was recalculated using more representative effluent pH data in February 2024. The lower effluent pH values increased the calculated daily maximum ammonia limit from 3.7 to 11 mg/L. Considering recent effluent ammonia and pH data, there is no reasonable potential for the discharge to exceed the recalculated ammonia limit therefore the limit is removed and the monitoring frequency is reduced to monthly for the remainder of the permit term. The modifications will go into effect May 1, 2024 and the permit's expiration date will remain June 30th, 2027.

Facility Description

Brighton Dale Links Golf Course is located at 830 248th Ave in Kansasville, WI, and is operated by the Kenosha County Park System. A small, activated sludge wastewater treatment plant (WWTP) was constructed in 1971 to provide on-site treatment of domestic waste from the clubhouse, park washrooms, maintenance building, and a single residence which no longer exists. Wastewater treatment consists of influent screening (bar screen), comminution, aeration, clarification, and a chlorine contact chamber that has not been used since 2016. Waste activated sludge is stored in a 3,600-gallon tank.

Effluent from the mechanical plant is discharged to a 0.27-acre square shaped holding pond which has a detention time of at least 30 days. Sample point outfall 001 is located on the west side of the holding pond at the overflow structure. From there, a drain tile flows 220' southwest to a wetland-marsh complex.

In the early 1990's the facility constructed pump house "B" near the wetland-complex in order to utilize the local water supply to irrigate the southern half of the golf course. This water contained the discharge from the mechanical plant and as a result the plant began disinfecting the effluent and sample point 102 was added to the permit and included monitoring and limitations for chlorine and fecal coliforms. Operations remained this way until fall of 2016, when the facility decommissioned the pump house "B" and reverted back to strictly using Lake Juniper and Pump house "A" for all irrigation needs. This change in operation has eliminated the need for disinfection and fecal coliform and chlorine monitoring and limitations are no longer required. As a result, Mechanical Plant Sample Point 102 was removed from the permit as part of the 2017 permit reissuance and the discharge remains strictly to the wetland-marsh complex.

Substantial Compliance Determination

After a desk top review of all discharge monitoring reports, CMARs, land app reports, compliance schedule items, and a site visit on November 8, 2021, this facility has been found to be in substantial compliance with their current permit.

Sample Point Designation		
Sample Point Number	Discharge Flow, Units, and Averaging Period	Sample Point Location, Waste Type/sample Contents and Treatment Description (as applicable)
701	NOTE: The current permit required influent flow monitoring but it was identified that the permittee was actually recording and reporting effluent flow.	INFLUENT: Raw wastewater from the clubhouse, maintenance shop, and four bathrooms in the park. 3-hour composite samples shall be collected at the stainless-steel box just prior to the package plant. A 3-hour composite sample consists of 3 grab samples of equal volume collected at least 1 hour apart and composited for analysis. Samples must be collected when influent pump is running.
001	Actual Avg. flow = 0.0066 MGD (July 2017 – Nov. 2021)	EFFLUENT: Flow shall be measured at the effluent trough from the clarifier. Effluent samples shall be collected from the overflow structure at the end of the polishing pond. A 3-hour composite sample consists of 3 grab samples of equal volume collected at least 1 hour apart and composited for analysis.
003	4 dry U.S. tons, as reported in the 2021 permit application	Sludge is hauled to another facility. Sludge samples shall be collected prior to hauling and test results shall be reported on Form 3400-49 'Waste Characteristics Report'. Hauled sludge reports shall be submitted on Form 3400-52 'Other Methods of Disposal or Distribution Report' following each year that the sludge is hauled. The permittee must notify the Department if Brighton Dale Links wishes to pursue land application as an option.

1 Influent - Proposed Monitoring

1.1 Sample Point Number: 701- INFLUENT TO PLANT

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
BOD5, Total		mg/L	3/Week	3-Hr Comp	April 1- October 31 (summer)
BOD5, Total		mg/L	Monthly	3-Hr Comp	November 1 - March 31 (winter)
Suspended Solids, Total		mg/L	3/Week	3-Hr Comp	April 1 - October 31 (summer)
Suspended Solids, Total		mg/L	Monthly	3-Hr Comp	November 1 - March 31 (winter)

1.1.1 Changes from Previous Permit:

Influent monitoring requirements were re-evaluated for the proposed permit term. Based on the observations of the compliance inspection completed on November 8, 2021, it was noted that flow monitoring is conducted at the effluent end of the treatment plant and not at the influent location as stated in the current permit. Therefore, the influent flow monitoring requirement was removed, and effluent flow monitoring was added to the proposed permit.

1.1.2 Explanation of Limits and Monitoring Requirements

BOD₅ and Total Suspended Solids: Tracking of BOD₅ and Suspended Solids are required for percent removal requirements found in s. NR 210.05, Wis. Adm. Code and in the Standard Requirements section of the permit. Taking into consideration guidance and requirements in administrative code, influent monitoring frequencies for Brighton Dale Links' permit were determined to be appropriate for pollutants that have final effluent limits in effect during this permit term.

2 Surface Water - Proposed Monitoring and Limitations

2.1 Sample Point Number: 001- POLISHING POND EFFLUENT

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	Daily	Continuous	
BOD5, Total	Weekly Avg	30 mg/L	3/Week	3-Hr Comp	April 1 - October 31 (summer)
BOD5, Total	Monthly Avg	20 mg/L	3/Week	3-Hr Comp	April 1 - October 31 (summer)
BOD5, Total	Weekly Avg	30 mg/L	Monthly	3-Hr Comp	November 1 - March 31 (winter)

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
BOD5, Total	Monthly Avg	20 mg/L	Monthly	3-Hr Comp	November 1 - March 31 (winter)
Suspended Solids, Total	Weekly Avg	30 mg/L	3/Week	3-Hr Comp	April 1 - October 31 (summer)
Suspended Solids, Total	Monthly Avg	20 mg/L	3/Week	3-Hr Comp	April 1 - October 31 (summer)
Suspended Solids, Total	Weekly Avg	30 mg/L	Monthly	3-Hr Comp	November 1 - March 31 (winter)
Suspended Solids, Total	Monthly Avg	20 mg/L	Monthly	3-Hr Comp	November 1 - March 31 (winter)
pH Field	Daily Max	9.0 su	3/Week	Grab	April 1 - October 31 (summer)
pH Field	Daily Min	6.0 su	3/Week	Grab	April 1 - October 31 (summer)
pH Field	Daily Max	9.0 su	Monthly	Grab	November 1 - March 31 (winter)
pH Field	Daily Min	6.0 su	Monthly	Grab	November 1 - March 31 (winter)
Dissolved Oxygen	Daily Min	4.0 mg/L	3/Week	Grab	April 1 - October 31 (summer)
Dissolved Oxygen	Daily Min	4.0 mg/L	Monthly	Grab	November 1 - March 31 (winter)
Nitrogen, Ammonia (NH3-N) Total	Daily Max	3.7 mg/L	3/Week	3-Hr Comp	Monitoring only April 1—May 31. Limits effective June 1—October 31(summer) and become effective beginning May 31, 2024.
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	3.7 mg/L	3/Week	3-Hr Comp	Monitoring only April 1—May 31. Limits effective June 1—October 31(summer) and become effective beginning May 31, 2024.
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	3.7 mg/L	3/Week	3-Hr Comp	Monitoring only April 1—May 31. Limits effective June 1—October 31(summer) and become effective beginning May 31, 2024.

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
					31, 2024.
Nitrogen, Ammonia (NH ₃ -N) Total	Daily Max	3.7 mg/L	Monthly	3-Hr Comp	November 1 – March 31 (winter). Limits effective beginning May 31, 2024.
Nitrogen, Ammonia (NH ₃ -N) Total	Weekly Avg	3.7 mg/L	Monthly	3-Hr Comp	November 1 – March 31 (winter). Limits effective beginning May 31, 2024.
Nitrogen, Ammonia (NH ₃ -N) Total	Monthly Avg	3.7 mg/L	Monthly	3-Hr Comp	November 1 – March 31 (winter). Limits effective beginning May 31, 2024.
Nitrogen, Ammonia (NH ₃ -N) Total		mg/L	Monthly	3-Hr Comp	Monthly monitoring effective May 1, 2024 - June 30, 2027.
Phosphorus, Total		mg/L	Monthly	3-Hr Comp	Monitoring only in calendar year 2025 (January 1 - December 31)
Chloride		mg/L	Monthly	3-Hr Comp	Monitoring only in calendar year 2025 (January 1 - December 31)
Temperature Maximum		deg F	3/Week	Continuous	Monitoring only in calendar year 2025 (January 1 - December 31)
Nitrogen, Total Kjeldahl		mg/L	See Listed Qtr(s)	3-Hr Comp	Annual in rotating quarters. See Nitrogen Series Monitoring section below.
Nitrogen, Nitrite + Nitrate Total		mg/L	See Listed Qtr(s)	3-Hr Comp	Annual in rotating quarters. See Nitrogen Series Monitoring section below.
Nitrogen, Total		mg/L	See Listed Qtr(s)	Calculated	Annual in rotating quarters. See Nitrogen Series Monitoring section below. Total Nitrogen shall be calculated as the sum of reported values for Total Kjeldahl Nitrogen and Total Nitrite + Nitrate Nitrogen.

2.1.1 Changes from Previous Permit

Effluent limitations and monitoring requirements were re-evaluated for the proposed permit term and the following changes were made from the previous permit;

- **Flow Rate** – Based on the observations of the compliance inspection completed on November 8, 2021, it was noted that flow monitoring is conducted at the effluent end of the treatment plant and not at the influent location as stated in the current permit. Therefore, the influent flow monitoring requirement was removed, and effluent flow monitoring was added to the proposed permit.
- ~~**Ammonia Nitrogen** – Monitoring effective year-round, throughout permit term at the following frequencies; 3/Week (April – October), Monthly (November – March). Daily maximum, weekly average, and monthly average limit of 3.7 mg/L is included for the months of June – March and becomes effective May 31, 2024.~~
- **Ammonia Nitrogen**- Monthly monitoring effective year-round throughout permit term.
- **Total Phosphorus** – Monthly monitoring in the 3rd year of permit, (calendar year 2025) was added.
- **Chloride** – Monthly monitoring in the 3rd year of permit, (calendar year 2025) was added.
- **Temperature** – 3/week monitoring in the 3rd year of permit, (calendar year 2025) was added.
- **Nitrogen Series Monitoring** – Annual monitoring in rotating quarters throughout the permit term was added to the proposed permit.

2.1.2 Explanation of Limits and Monitoring Requirements

Categorical Limits

- **BOD, Total Suspended Solids, Dissolved Oxygen, and pH:** Standard municipal wastewater requirements for BOD, total suspended solids, pH, and fecal coliforms are included based on ch. NR 210, Wis. Adm. Code, ‘Sewage Treatment Works’ and s. NR 104.02(3)(b), Wis. Adm. Code, requirements for discharges to limited aquatic life waterbodies.

Water Quality Based Limits and Disinfection

Refer to the Water Quality-Based Effluent Limitations (WQBELs) memo for Brighton Dale Links, prepared by Nicole Krueger dated March 21, 2022, and Ammonia Water Quality-Based Effluent Limitations for Brighton Dale Links, dated February 21, 2024, used for this reissuance.

- ~~**Ammonia (NH₃-N) Total Nitrogen:** Current acute and chronic ammonia toxicity criteria for the protection of aquatic life are included in Tables 2C and 4B of ch. NR 105, Wis. Adm. Code (effective March 1, 2004). Subchapter III of ch. NR 106 establishes the procedure for calculating water quality based effluent limitations (WQBELs) for ammonia (effective March 1, 2004). Data collected during the current permit term was compared to the calculated limits and it is determined that a daily maximum limit of 3.7 mg/L is needed for the months of June – March. In order to satisfy requirements in s. NR 106.07(3), Wis. Adm. Code, weekly average and monthly average limits for June – March are also included in the proposed permit and become effective May 31, 2024. Since daily maximum ammonia limits are based on the acute toxicity criteria in ch. NR 105, Wis. Adm. Code, and those criteria are a function of the effluent pH and the receiving water classification, a compliance schedule is given to allow the facility additional time to investigate the accuracy of effluent pH measurements and make operational adjustments at the treatment plant in order to meet the newly imposed limits. The permittee may also request the inclusion of pH variable ammonia limits as a condition of the schedule.~~
- **Ammonia (NH₃-N) Total Nitrogen (Modification):** Brighton Dale Links has a compliance schedule to meet a daily maximum ammonia limit of 3.7 mg/L by 05/31/2024. The permittee requested the Department to recalculate the ammonia limit because the facility made a few changes at the plant including purchasing a new pH meter which seems to be more accurate than their previous meter. The daily maximum ammonia limit was recalculated using more representative effluent pH data in February 2024. The lower effluent pH values increased the calculated daily maximum ammonia limit from 3.7 to 11 mg/L. Considering recent effluent ammonia and pH data, there is no reasonable potential for the discharge to exceed the recalculated ammonia limit therefore the limit

is removed and the monitoring frequency is reduced to monthly for the remainder of the permit term. The modifications will go into effect May 1, 2024 and the permit's expiration date will remain June 30th, 2027.

- **E. Coli:** Disinfection of the effluent is not required based on the conditions of s. 210.06(3), Wis. Adm. Code. It should be noted that recreational use surveys may be re-evaluated in the future to ensure the conditions are being met. This re-evaluation could result in requiring disinfection of the effluent at Outfall 001 at that time.
- **Total Phosphorus:** Phosphorus requirements are based on the Phosphorus Rules that became effective December 1, 2010, as detailed in ch. NR 102 Water Quality Standards and ch. NR 217 Effluent Standards and Limitations for Phosphorus. Chapter NR 217 of the Wis. Adm. Code addresses point source dischargers of phosphorus to surface waters. The code categorically limits municipal dischargers of more than 150 pounds of phosphorus per month to 1.0 mg/L unless an alternative limit is approved. Based on available data collected during the current permit term, the annual monthly average phosphorus loading is less than 150 lbs/month. Therefore, no technology-based effluent limit is required.

Chapter NR 217, Wis. Adm. Code, also specifies WQBELs (water quality based effluent limits) for discharges of phosphorus to surface waters of the state from publicly and privately owned wastewater facilities, not sufficient to meet phosphorus criteria. WQBELs for phosphorus are needed whenever the discharge contains phosphorus at concentrations or loadings that will cause or contribute to an exceedance of the water quality standards. Based on Section 2.04 of the *Guidance for Implementing Wisconsin's Phosphorus Water Quality Standards for Point Source Discharges V 2.0* and the discussion given on pages 10 and 11 of the WQBEL, no water quality based effluent limits for total phosphorus are included in the proposed permit. Monthly monitoring in the third year of the proposed permit (January 1, 2025 – December 31, 2025) is included and will be used for the next permit reissuance.

- **Chloride:** When the representative data, collected during the current permit term (July 2021 – March 2022) is compared to the calculated limits, the data shows there is no reasonable potential for the discharge to exceed the calculated limits. Therefore, no chloride limits are included in the proposed permit. However, monthly chloride monitoring in the third year (January 1, 2025 – December 31, 2025) of the proposed permit is included in order to meet the data requirements of s. NR 106.85, Wis. Adm. Code. This data will be used in the reasonable potential determination for the next permit reissuance.
- **Temperature Maximum:** Surface water quality standards for temperature took effect on October 1, 2010. These regulations are detailed in Chapters NR 102 (Subchapter II – Water Quality Standards for Temperature) and NR 106 (Subchapter V – Effluent Limitations for Temperature) of the Wisconsin Administrative Code. There was no facility specific temperature data available however, based on the available effluent data from two similar facilities, no effluent limits are recommended for temperature. One year of monitoring in the third year of the permit (January 1, 2025 – December 31, 2025) is included in the proposed permit and will be used for the next permit reissuance.
- **Total Nitrogen Monitoring (NO₂+NO₃, TKN and Total N):** The Department has included effluent monitoring for Total Nitrogen in the permit through the authority under §§ 283.55(1)(e), Wis. Stats., which allows the department to require the permittee to submit information necessary to identify the type and quantity of any pollutants discharged from the point source, and through s. NR 200.065(1)(h), Wis. Adm. Code, which allows for this monitoring to be collected during the permit term. More information on the justification to include total nitrogen monitoring in wastewater permits can be found in the “Guidance for Total Nitrogen Monitoring in Wastewater Permits” dated October 1, 2019. Annual tests are scheduled in the following rotating quarters: *July – September 2022; January – March 2023; April – June 2024; October – December 2025; July – September 2026.*

3 Land Application - Proposed Monitoring and Limitations

Municipal Sludge Description						
Sample Point	Sludge Class (A or B)	Sludge Type (Liquid or Cake)	Pathogen Reduction Method	Vector Attraction Method	Reuse Option	Amount Reused/Disposed (Dry Tons/Year)
003	B	Liquid	Do not land apply. Sludge is hauled to another permitted facility.			4 dry U.S. tons
Does sludge management demonstrate compliance? Yes						
Is additional sludge storage required? No						
Is Radium-226 present in the water supply at a level greater than 2 pCi/liter? No						
Is a priority pollutant scan required? No						
Priority pollutant scans are required once every 10 years at facilities with design flows between 5 MGD and 40 MGD, and once every 5 years if design flow is greater than 40 MGD.						

3.1 Sample Point Number: 003- Hauled Sludge

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Solids, Total		Percent	Annual	Composite	
Arsenic Dry Wt	Ceiling	75 mg/kg	Annual	Composite	
Arsenic Dry Wt	High Quality	41 mg/kg	Annual	Composite	
Cadmium Dry Wt	Ceiling	85 mg/kg	Annual	Composite	
Cadmium Dry Wt	High Quality	39 mg/kg	Annual	Composite	
Copper Dry Wt	Ceiling	4,300 mg/kg	Annual	Composite	
Copper Dry Wt	High Quality	1,500 mg/kg	Annual	Composite	
Lead Dry Wt	Ceiling	840 mg/kg	Annual	Composite	
Lead Dry Wt	High Quality	300 mg/kg	Annual	Composite	
Mercury Dry Wt	Ceiling	57 mg/kg	Annual	Composite	
Mercury Dry Wt	High Quality	17 mg/kg	Annual	Composite	
Molybdenum Dry Wt	Ceiling	75 mg/kg	Annual	Composite	
Nickel Dry Wt	Ceiling	420 mg/kg	Annual	Composite	
Nickel Dry Wt	High Quality	420 mg/kg	Annual	Composite	
Selenium Dry Wt	Ceiling	100 mg/kg	Annual	Composite	
Selenium Dry Wt	High Quality	100 mg/kg	Annual	Composite	

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Zinc Dry Wt	Ceiling	7,500 mg/kg	Annual	Composite	
Zinc Dry Wt	High Quality	2,800 mg/kg	Annual	Composite	

3.1.1 Changes from Previous Permit:

Sample frequencies of all parameters updated from “Once” during the permit term to “Annual” in order to meet the minimum sample frequency requirements in Table A of s. NR 204.06(2)(c)(3.), Wis. Adm. Code.

3.1.2 Explanation of Limits and Monitoring Requirements

Requirements for municipal sludge are determined in accordance with ch. NR 204 Wis. Adm. Code. Ceiling and high quality limits for metals in sludge are specified in s. NR 204.07(5), Wis. Adm. Code. Monitoring frequencies are in accordance with NR 204.06(2), Wis. Adm. Code. Monitoring requirements are also based on the Departments policy for hauled sludges and does not include monitoring for Nitrogen, Phosphorus, and Potassium.

4 Schedules

4.1 Ammonia Nitrogen (NH₃-N) Limitations and pH Evaluation - Outfall 001

Required Action	Due Date
Action Plan: The permittee shall submit an action plan detailing the steps that will be taken to ensure accurate pH results are being recorded and reported.	12/31/2022
Progress Report: The permittee shall submit a report on the progress of meeting the effluent ammonia limits and operation and maintenance of accurate pH monitoring equipment. The report shall include the following: <ol style="list-style-type: none"> 1. Analysis of pH, including updates to monitoring equipment to ensure accurate pH values are recorded. 2. Analysis of pH and relationship to ammonia concentrations. 3. If applicable, a request to recalculate effluent ammonia limitations based on updated pH values along with a request to modify the permit in order to incorporate updated limits. 	12/31/2023
Limit Effective: The Ammonia WQBEL of 3.7 mg/L as a daily maximum, weekly average, and monthly average limits become effective, unless the permit is modified to incorporate updated limitations based on new information submitted in the progress report.	05/31/2024

4.1.1 Explanation of Schedule

Since daily maximum ammonia limits are based on the acute toxicity criteria in ch. NR 105, Wis. Adm. Code, and those criteria are a function of the effluent pH and the receiving water classification, a compliance schedule is given to allow the facility additional time to investigate the accuracy of effluent pH measurements and make operational adjustments at the treatment plant in order to meet the newly imposed limits. The permittee may also request the inclusion of pH variable ammonia limits as a condition of the schedule.

Attachments:

Water Quality Based Effluent Limitations for Brighton Dale Links dated December 7, 2021 (updated February 1, 2022) and prepared by Nicole Krueger

Ammonia Water Quality-Based Effluent Limitations for Brighton Dale Links dated February 21, 2024 and prepared by Nicole Krueger

Proposed Expiration Date:

June 30, 2027

Justification Of Any Waivers From Permit Application Requirements

No waivers were given from the permit application requirements.

Prepared By:

Laura Dietrich, Advanced Wastewater Specialist

Date: April 20, 2022

No changes made based on fact check review.

No changes made based on public review.

Modified By: Melanie Burns, Wastewater Specialist

Date: March 5, 2024

Date Post Public Notice:

CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: 03/21/2022

TO: Laura Dietrich – SER

FROM: Nicole Krueger – SER *Nicole Krueger*

SUBJECT: Water Quality-Based Effluent Limitations for Brighton Dale Links Wastewater Treatment Plant
WPDES Permit No. WI-0060348-10

This is in response to your request for an evaluation of the need for water quality-based effluent limitations (WQBELs) using chapters NR 102, 104, 105, 106, 207, 210, 212, and 217 of the Wisconsin Administrative Code (where applicable), for the discharge from Brighton Dale Links WWTP in Kenosha County. This wastewater treatment plant (WWTP) discharges to the unnamed wetland-marsh complex, located in the Brighton Creek Watershed in the Des Plaines River Basin. The evaluation of the permit recommendations is discussed in more detail in the attached report.

Based on our review, the following recommendations are made on a chemical-specific basis at Outfall 001:

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Six-Month Average	Footnotes
BOD ₅			30 mg/L	20 mg/L		1
TSS			30 mg/L	20 mg/L		1
pH	9.0 s.u.	6.0 s.u.				1
Dissolved Oxygen		4.0 mg/L				1
Ammonia Nitrogen June – March	3.7 mg/L		3.7 mg/L	3.7 mg/L		2,3,4
Phosphorus						1,5
Chloride						5
Temperature						5
TKN, Nitrate+Nitrite, and Total Nitrogen						6

Footnotes:

1. No changes from the current permit.
2. The variable daily maximum ammonia nitrogen limit table corresponding to various effluent pH values may be included in the permit in place of the single limit. These limits apply June – March.

Effluent pH s.u.	Limit mg/L	Effluent pH s.u.	Limit mg/L	Effluent pH s.u.	Limit mg/L
6.0 ≤ pH ≤ 6.1	83	7.0 < pH ≤ 7.1	51	8.0 < pH ≤ 8.1	11
6.1 < pH ≤ 6.2	82	7.1 < pH ≤ 7.2	46	8.1 < pH ≤ 8.2	8.8
6.2 < pH ≤ 6.3	80	7.2 < pH ≤ 7.3	40	8.2 < pH ≤ 8.3	7.3
6.3 < pH ≤ 6.4	78	7.3 < pH ≤ 7.4	35	8.3 < pH ≤ 8.4	6.0
6.4 < pH ≤ 6.5	75	7.4 < pH ≤ 7.5	31	8.4 < pH ≤ 8.5	5.0
6.5 < pH ≤ 6.6	72	7.5 < pH ≤ 7.6	26	8.5 < pH ≤ 8.6	4.1
6.6 < pH ≤ 6.7	69	7.6 < pH ≤ 7.7	22	8.6 < pH ≤ 8.7	3.4
6.7 < pH ≤ 6.8	65	7.7 < pH ≤ 7.8	19	8.7 < pH ≤ 8.8	2.8
6.8 < pH ≤ 6.9	60	7.8 < pH ≤ 7.9	16	8.8 < pH ≤ 8.9	2.4

6.9 < pH ≤ 7.0	56	7.9 < pH ≤ 8.0	13	8.9 < pH ≤ 9.0	2.0
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If the variable daily maximum daily limit table is effective in the reissued permit, the following weekly and monthly average limits shall also be included, in place of the weekly and monthly average limits in the table above:

	Weekly Average mg/L	Monthly Average mg/L
June – September	24	9.6
October – March	54	22

3. Ammonia monitoring is recommended for April and May.
4. Additional limits to comply with the expression of limits requirements in ss. NR 106.07 and NR 205.065(7), Wis. Adm. Codes, are included in bold.
5. Monitoring only.
6. As recommended in the Department's October 1, 2019 Guidance for Total Nitrogen Monitoring in Wastewater Permits, annual total nitrogen monitoring is recommended for all minor municipal permittees. Total Nitrogen is the sum of nitrate (NO₃), nitrite (NO₂), and total kjeldahl nitrogen (TKN) (all expressed as N).

No WET testing is required because information related to the discharge indicates low to no risk for toxicity.

Please consult the attached report for details regarding the above recommendations. If there are any questions or comments, please contact Nicole Krueger at Nicole.Krueger@wisconsin.gov or Diane Figiel at Diane.Figiel@wisconsin.gov.

Attachments (2) – Narrative & Map

PREPARED BY: Nicole Krueger, Water Resources Engineer

E-cc: Nick Lent, Wastewater Engineer – SER
 Bryan Hartsook, Regional Wastewater Supervisor – SER
 Diane Figiel, Water Resources Engineer – WY/3

Attachment #1
**Water Quality-Based Effluent Limitations for
Brighton Dale Links WWTP**

WPDES Permit No. WI-0060348-10

Prepared by: Nicole Krueger

PART 1 – BACKGROUND INFORMATION

Facility Description

Brighton Dale Links Golf Course is located at 830 248th Ave in Kansasville WI, and is operated by the Kenosha County Park System. A small activated sludge wastewater treatment plant (WWTP) was constructed in 1971 to provide on-site treatment of domestic waste from the clubhouse, park washrooms, maintenance building, and a single residence which no longer exists. Wastewater treatment consists of influent screening (bar screen), communitation, aeration, aerated digestion, clarification, and a chlorine contact chamber. The use of chlorine was discontinued in 2016 when the facility ceased using wastewater effluent for irrigation. Effluent from the mechanical plant is discharged to a 0.27 acre square-shaped holding pond which has a detention time of at least 30 days. Sample point outfall 001 is located on the west side of the holding pond at the overflow structure. From there, a drain tile flows 220 feet southwest to a wetland-marsh complex.

Disinfection of the effluent is not required based on the conditions of s. NR 210.06(3), Wis. Adm. Code. It should be noted that recreational use surveys may be re-evaluated in the future to ensure the conditions are being met. This re-evaluation could result in requiring disinfection of the effluent at that time.

Attachment #2 is a map of the area showing the approximate location of Outfall 001.

Existing Permit Limitations

The current permit, expiring on 06/30/2022, includes the following effluent limitations and monitoring requirements.

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Six-Month Average	Footnotes
BOD ₅			30 mg/L	20 mg/L		1,2
TSS			30 mg/L	20 mg/L		1,2
pH	9.0 s.u.	6.0 s.u.				1
Dissolved Oxygen		4.0 mg/L				1,2
Ammonia Nitrogen						3
Phosphorus						3

Footnotes:

1. These limitations are not being evaluated as part of this review. Because the water quality criteria (WQC), reference effluent flow rates, and receiving water characteristics have not changed, limitations for these water quality characteristics do not need to be re-evaluated at this time.
2. These limits are based on the Limited Aquatic Life (LAL) community of the immediate receiving water as described in s. NR 104.02(3)(b), Wis. Adm. Code.
3. Monitoring only.

Receiving Water Information

- Name: Unnamed wetland marsh complex
- Classification used in accordance with chs. NR 102 and 104, Wis. Adm. Code: Limited aquatic life (LAL) community, non-public water supply. This classification is used because the discharge is to a wetland feature on the golf course's property but it is not listed in ch. NR 104, Wis. Adm. Code. A site visit will be conducted in the future to determine if the LAL classification should continue and if limits based on downstream protection should be considered. Note: Cold Water and Public Water Supply criteria are used for bioaccumulating compounds of concern because the discharge is within the Great Lakes basin.
- Low flows used in accordance with chs. NR 106 and 217, Wis. Adm. Code: The following 7-Q₁₀ and 7-Q₂ values are estimates from USGS where Outfall 001 is located.
7-Q₁₀ = 0 cfs (cubic feet per second)
7-Q₂ = 0 cfs
- Hardness = 501 mg/L as CaCO₃. This value represents the geometric mean of data from effluent data from the permit application from 07/06/2021 to 07/27/2021. Effluent hardness is used in place of receiving water because there is no receiving water flow upstream of the discharge.
- % of low flow used to calculate limits in accordance with s. NR 106.06(4)(c)5., Wis. Adm. Code: Not applicable where the receiving water low flows are zero.
- Source of background concentration data: Background concentrations are not included because they don't impact the calculated WQBEL when the receiving water low flows are equal to zero.
- Multiple dischargers: None.
- Impaired water status: The immediate receiving water is not impaired. The Des Plaines River approximately 10 miles downstream is 303(d) listed as impaired for total phosphorus.

Effluent Information

- Design flow rate(s):
Annual average = 0.010 MGD (Million Gallons per Day)
Peak daily = 0.069 MGD
Peak weekly = 0.029 MGD
Peak monthly = 0.0185 MGD
For reference, the actual average flow from 07/01/2017 to 11/30/2021 was 0.0066 MGD.
- Hardness = 501 mg/L as CaCO₃. This value represents the geometric mean of data from the permit application from 07/06/2021 to 07/27/2021.
- Acute dilution factor used in accordance with s. NR 106.06(3)(c), Wis. Adm. Code: Not applicable – this facility does not have an approved Zone of Initial Dilution (ZID).
- Water source: Domestic wastewater with water supply from private wells at Brighton Dale Links.
- Additives: None. Chlorine was previously added for disinfection, but this requirement was removed in 2016.
- Effluent characterization: This facility is categorized as a minor municipality, so the permit application required effluent sample analyses for a limited number of common pollutants, as specified in s. NR 200.065, Table 1, Wis. Adm. Code, primarily metal substances plus ammonia, chloride, hardness and phosphorus.
- Effluent data for substances for which a single sample was analyzed is shown in the tables in Part 2 below, in the column titled "MEAN EFFL. CONC.". Otherwise, substances with multiple effluent data are shown in the tables below or in their respective parts in this evaluation.

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Sample Date	Copper µg/L
07/06/2021	6.9
07/13/2021	4.0
07/20/2021	<1.3
07/27/2021	1.8
Average	3.2

“<” means that the pollutant was not detected at the indicated level of detection. The mean concentration was calculated using zero in place of the non-detected results.

	Chloride mg/L
1-day P ₉₉	365
4-day P ₉₉	323
30-day P ₉₉	299
Mean	285
Std	30.9
Sample size	12
Range	224 – 333

The following table presents the average concentrations and loadings at Outfall 001 from 07/01/2017 to 11/30/2021 for all parameters with limits in the current permit to meet the requirements of s. NR 201.03(6), Wis. Adm. Code:

Parameter Averages with Limits

	Average Measurement
BOD ₅	6.31 mg/L*
TSS	11.3 mg/L*
pH field	7.71 s.u.
Dissolved Oxygen	5.95 mg/L

*Results below the level of detection (LOD) were included as zeroes in the calculation of an average.

**PART 2 – WATER QUALITY-BASED EFFLUENT LIMITATIONS
FOR TOXIC SUBSTANCES – EXCEPT AMMONIA NITROGEN**

Permit limits for toxic substances are required whenever any of the following occur:

1. The maximum effluent concentration exceeds the calculated limit (s. NR 106.05(3), Wis. Adm. Code)
2. If 11 or more detected results are available in the effluent, the upper 99th percentile (or P₉₉) value exceeds the comparable calculated limit (s. NR 106.05(4), Wis. Adm. Code)
3. If fewer than 11 detected results are available, the mean effluent concentration exceeds 1/5 of the calculated limit (s. NR 106.05(6), Wis. Adm. Code)

Acute Limits based on 1-Q₁₀

Daily maximum effluent limitations for toxic substances are based on the acute toxicity criteria (ATC), listed in ch. NR 105, Wis. Adm. Code. Previously daily maximum limits for toxic substances were calculated as two times the ATC. However, changes to ch. NR 106, Wis. Adm. Code, (September 1,

2016) require the Department to calculate acute limitations using the same mass balance equation as used for other limits along with the 1-Q₁₀ receiving water low flow to determine if more restrictive effluent limitations are needed to protect the receiving stream from discharges which may cause or contribute to an exceedance of the acute water quality standards. The mass balance equation is provided below.

$$\text{Limitation} = \frac{(\text{WQC}) (Q_s + (1-f) Q_e) - (Q_s - f Q_e) (C_s)}{Q_e}$$

Where:

WQC = Acute toxicity criterion or secondary acute value according to ch. NR 105, Wis. Adm. Code.

Q_s = average minimum 1-day flow which occurs once in 10 years (1-day Q₁₀)
if the 1-day Q₁₀ flow data is not available = 80% of the average minimum 7-day flow which occurs once in 10 years (7-day Q₁₀).

Q_e = Effluent flow (in units of volume per unit time) as specified in s. NR 106.06(4)(d), Wis. Adm. Code.

f = Fraction of the effluent flow that is withdrawn from the receiving water, and

C_s = Background concentration of the substance (in units of mass per unit volume) as specified in s. NR 106.06(4)(e), Wis. Adm. Code.

If the receiving water is effluent dominated under low stream flow conditions, the 1-Q₁₀ method of limit calculation produces the most stringent daily maximum limitations and should be used while making reasonable potential determinations. This is the case for Brighton Dale Links.

The following tables list the calculated WQBELs for this discharge along with the results of effluent sampling. All concentrations are expressed in terms of micrograms per Liter (µg/L), except for hardness and chloride (mg/L).

Daily Maximum Limits based on Acute Toxicity Criteria (ATC)

RECEIVING WATER FLOW = 0 cfs

SUBSTANCE	REF. HARD.* mg/L	ATC	MAX. EFFL. LIMIT**	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	1-day P ₉₉	1-day MAX. CONC.
Arsenic		340	340	68.0	<5		
Cadmium	457	164.9	165	33.0	<0.2		
Chromium	301	4446	4446	889	<9		
Copper	495	70.2	70.2	14.0	3.18		
Lead	356	365	365	72.9	<5		
Nickel	268	1080	1080	216	1		
Zinc	333	345	345	68.9	<3.2		
Chloride (mg/L)		757	757			365	333

* The indicated hardness may differ from the effluent hardness because the effluent hardness exceeded the maximum range in ch. NR 105, Wis. Adm. Code, over which the acute criteria are applicable. In that case, the maximum of the range is used to calculate the criterion.

* * Per the changes to s. NR 106.07(3), Wis. Adm. Code, effective 09/01/2016 consideration of ambient concentrations and 1-Q₁₀ flow rates yields a more restrictive limit than the 2 × ATC method of limit calculation.

Weekly Average Limits based on Chronic Toxicity Criteria (CTC)

RECEIVING WATER FLOW = 0 cfs

SUBSTANCE	REF. HARD.* mg/L	CTC	WEEKLY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	4-day P ₉₉
Arsenic		152	152	30.4	<5	
Cadmium	175	3.82	3.82	0.8	<0.2	
Chromium	301	326	326	65.2	<9	
Copper	495	40.7	40.7	8.14	3.18	
Lead	356	95.5	95.5	19.1	<5	
Nickel	268	169	169	33.8	1	
Zinc	333	345	345	68.9	<3.2	
Chloride (mg/L)		395	395	79.0		323

* The indicated hardness may differ from the receiving water hardness because the receiving water hardness exceeded the maximum range in ch. NR 105, Wis. Adm. Code, over which the chronic criteria are applicable. In that case, the maximum of the range is used to calculate the criterion.

Monthly Average Limits based on Wildlife Criteria (WC)

The effluent characterization did not include any effluent sampling results for substances for which Wildlife Criteria exist.

Monthly Average Limits based on Human Threshold Criteria (HTC)

RECEIVING WATER FLOW = 0 cfs

SUBSTANCE	HTC	MO'LY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.
Cadmium	880	880	176.0	<0.2
Chromium (+3)	8400000	8400000	1680000	<9
Lead	2240	2240	448.0	<5
Nickel	110000	110000	22000	1

Monthly Average Limits based on Human Cancer Criteria (HCC)

RECEIVING WATER FLOW = 0 cfs

SUBSTANCE	HCC	MO'LY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.
Arsenic	40	40	8.0	<5

In addition to evaluating the need for limits for each individual substance for which HCC exist, s. NR 106.06(8), Wis. Adm. Code, requires the evaluation of the cumulative cancer risk. Because no effluent limits are needed based on HCC, determination of the cumulative cancer risk is not needed per s. NR 106.06(8), Wis. Adm. Code.

Conclusions and Recommendations

Based on a comparison of the effluent data and calculated effluent limitations, effluent limitations are required for zero toxic substances in this section.

Chloride – Considering available effluent data from the current permit reissuance application (07/06/2021 – 03/07/2022), the 1-day P₉₉ chloride concentration is 365 mg/L, and the 4-day P₉₉ of effluent data is 323 mg/L.

These effluent concentrations are below the calculated WQBELs for chloride, therefore no effluent limits are needed. Chloride monitoring is recommended to ensure that 11 sample results are available at the next permit issuance to meet the data requirements of s. NR 106.85, Wis. Adm. Code.

Mercury – The permit application did not require monitoring for mercury because Brighton Dale Links is categorized as a minor facility as defined in s. NR 200.02(8), Wis. Adm. Code. In accordance with s. NR 106.145(3)(a)3., Wis. Adm. Code, a minor municipal discharger shall monitor, and report results of influent and effluent mercury monitoring once every three months if, “there are two or more exceedances in the last five years of the high-quality sludge mercury concentration of 17 mg/kg specified in s. NR 204.07(5).” However, sludge sampling is not available from the past five years because sludge was not removed. It is not expected that there are exceedances of the high-quality mercury concentration based on similar municipal treatment plants and the lack of industries. **No monitoring is recommended.**

PART 3 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR AMMONIA NITROGEN

The State of Wisconsin promulgated revised water quality standards for ammonia nitrogen in ch. NR 105, Wis. Adm. Code, effective March 1, 2004 which includes criteria based on both acute and chronic toxicity to aquatic life. Given the fact that Brighton Dale Links does not currently have ammonia nitrogen limits, the need for limits is evaluated at this time.

Daily Maximum Limits based on Acute Toxicity Criteria (ATC)

Daily maximum limitations are based on acute toxicity criteria in ch. NR 105, Wis. Adm. Code, which are a function of the effluent pH and the receiving water classification. The acute toxicity criterion (ATC) for ammonia is calculated using the following equation:

$$\text{ATC in mg/L} = [A \div (1 + 10^{(7.204 - \text{pH})})] + [B \div (1 + 10^{(\text{pH} - 7.204)})]$$

Where:

A = 0.633 and B = 90.0 for Limited Aquatic Life, and
pH (s.u.) = that characteristic of the effluent.

The effluent pH data was examined as part of this evaluation. A total of 289 sample results were reported from 12/03/2018 to 11/03/2021. The maximum reported value was 9.00 s.u. (Standard pH Units). The effluent pH was 8.66 s.u. or less 99% of the time. The 1-day P₉₉, calculated in accordance with s. NR 106.05(5), Wis. Adm. Code, is 8.71 s.u. The mean plus the standard deviation multiplied by a factor of 2.33, an estimate of the upper ninety ninth percentile for a normally distributed dataset, is 8.66 s.u. Therefore, a value of 8.66 s.u. is believed to represent the maximum reasonably expected pH, and therefore most appropriate for determining daily maximum limitations for ammonia nitrogen. Substituting a value of 8.66 s.u. into the equation above yields an ATC = 3.7 mg/L.

Potential Changes to Daily Maximum Ammonia Nitrogen Effluent Limitations

Subchapter IV of ch. NR 106, Wis. Adm. Code (effective September 1, 2016) specifies methods for the use of the 1-Q₁₀ receiving water low flow to calculate daily maximum ammonia nitrogen limits if it is

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determined that the previous method of acute ammonia limit calculation ($2 \times \text{ATC}$) is not sufficiently protective of the fish and aquatic life. The more restrictive calculated limits shall apply.

The calculated daily maximum ammonia nitrogen effluent limits using the mass balance approach with the 1-Q₁₀ (estimated as 80 % of 7-Q₁₀) and the $2 \times \text{ATC}$ approach are shown below.

Daily Maximum Ammonia Nitrogen Determination

	Ammonia Nitrogen Limit mg/L
$2 \times \text{ATC}$	7.3
1-Q ₁₀	3.7

The 1-Q₁₀ method yields the most stringent limits for Brighton Dale Links.

Presented below is a table of daily maximum limitations corresponding to various effluent pH values. Use of this table is not necessarily recommended in the permit, but it is presented herein for informational purposes.

Daily Maximum Ammonia Nitrogen Limits – LAL

Effluent pH s.u.	Limit mg/L	Effluent pH s.u.	Limit mg/L	Effluent pH s.u.	Limit mg/L
$6.0 \leq \text{pH} \leq 6.1$	83	$7.0 < \text{pH} \leq 7.1$	51	$8.0 < \text{pH} \leq 8.1$	11
$6.1 < \text{pH} \leq 6.2$	82	$7.1 < \text{pH} \leq 7.2$	46	$8.1 < \text{pH} \leq 8.2$	8.8
$6.2 < \text{pH} \leq 6.3$	80	$7.2 < \text{pH} \leq 7.3$	40	$8.2 < \text{pH} \leq 8.3$	7.3
$6.3 < \text{pH} \leq 6.4$	78	$7.3 < \text{pH} \leq 7.4$	35	$8.3 < \text{pH} \leq 8.4$	6.0
$6.4 < \text{pH} \leq 6.5$	75	$7.4 < \text{pH} \leq 7.5$	31	$8.4 < \text{pH} \leq 8.5$	5.0
$6.5 < \text{pH} \leq 6.6$	72	$7.5 < \text{pH} \leq 7.6$	26	$8.5 < \text{pH} \leq 8.6$	4.1
$6.6 < \text{pH} \leq 6.7$	69	$7.6 < \text{pH} \leq 7.7$	22	$8.6 < \text{pH} \leq 8.7$	3.4
$6.7 < \text{pH} \leq 6.8$	65	$7.7 < \text{pH} \leq 7.8$	19	$8.7 < \text{pH} \leq 8.8$	2.8
$6.8 < \text{pH} \leq 6.9$	60	$7.8 < \text{pH} \leq 7.9$	16	$8.8 < \text{pH} \leq 8.9$	2.4
$6.9 < \text{pH} \leq 7.0$	56	$7.9 < \text{pH} \leq 8.0$	13	$8.9 < \text{pH} \leq 9.0$	2.0

Weekly and Monthly Average Limits based on Chronic Toxicity Criteria (CTC)

The ammonia limit calculation also warrants evaluation of weekly and monthly average limits based on chronic toxicity criteria for ammonia, because those limits relate to the assimilative capacity of the receiving water.

Weekly average and monthly average limits for ammonia nitrogen are based on chronic toxicity criteria in ch. NR 105, Wis. Adm. Code.

The 30-day chronic toxicity criterion (CTC) for ammonia in waters classified as Limited Aquatic Life is calculated by the following equation, according to subchapter IV of NR 106, Wis. Adm. Code.

$$\text{CTC} = E \times \{ [0.0676 \div (1 + 10^{(7.688 - \text{pH})})] + [2.912 \div (1 + 10^{(\text{pH} - 7.688)})] \} \times C$$

Where:

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pH = the pH (s.u.) of the receiving water,

E = 1.0,

$C = 8.09 \times 10^{(0.028 \times (25 - T))}$

T = the temperature of the receiving (°C)

The 4-day criterion is equal to the 30-day criterion multiplied by 2.5. The 4-day criteria are used in a mass-balance equation with the 7-Q₁₀ (4-Q₃, if available) to derive weekly average limitations. And the 30-day criteria are used with the 30-Q₅ (estimated as 85% of the 7-Q₂ if the 30-Q₅ is not available) to derive monthly average limitations. The stream flow value is further adjusted to temperature; 100% of the flow is used if the Temperature ≥ 16 °C, 25% of the flow is used if the Temperature < 11 °C, and 50% of the flow is used if the Temperature ≥ 11 °C but < 16 °C.

Weekly and Monthly Ammonia Nitrogen Limits – LAL

		Spring	Summer	Winter
		April & May	June – Sept.	Oct. - March
Effluent Flow	Q _e (MGD)	0.010	0.010	0.010
Background Information	7-Q ₁₀ (cfs)	0	0	0
	7-Q ₂ (cfs)	0	0	0
	Ammonia (mg/L)	0.09	0.07	0.17
	Average Temperature (°C)	12	19	4
	Maximum Temperature (°C)	14	21	10
	pH (s.u.)	8.06	8.08	7.99
	% of Flow used	50	100	25
	Reference Weekly Flow (cfs)	0	0	0
	Reference Monthly Flow (cfs)	0	0	0
Criteria mg/L	4-day Chronic	36.4	23.9	53.8
	30-day Chronic	14.6	9.55	21.5
Effluent Limits mg/L	Weekly Average	36.4	23.9	53.8
	Monthly Average	14.6	9.55	21.5

A site visit will be conducted in the future to determine if the LAL classification should continue and if ammonia limits based on downstream protection for should be included.

Effluent Data

The following table evaluates the statistics based upon ammonia data reported from 02/20/2020 – 11/03/2021, with those results being compared to the calculated limits to determine the need to include ammonia limits in Brighton Dale's permit for the respective month ranges. That need is determined by calculating 99th upper percentile (or P₉₉) values for ammonia during each of the month ranges and comparing the daily maximum values to the daily maximum limit.

Ammonia Nitrogen Effluent Data

Ammonia Nitrogen mg/L	April - May	June - September	October - March
1-day P ₉₉	3.2	7.4	4.4
4-day P ₉₉	1.8	4.2	2.4
30-day P ₉₉	0.84	2.5	1.2
Mean*	0.46	1.7	0.68
Std	0.70	1.5	0.98

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Sample size	17	35	31
Range	<0.047 – 1.9	<0.047 – 6.74	<0.047 – 3.87

*Values lower than the level of detection were substituted with a zero

Based on this comparison, daily maximum limits are required in June – September and October – March.

Expression of Limits

Revisions to ch. NR 106, Wis. Adm. Code, in September 2016 aligned Wisconsin's WQBELs with 40 CFR § 122.45(d), which specifies that effluent limits for continuous dischargers must be expressed as weekly and monthly averages for publicly owned treatment works and as daily maximums and monthly averages for all other dischargers, unless shown to be impracticable. Because a daily maximum ammonia limit is necessary for Brighton Dale Links, weekly and monthly average limits are also required under this code revision.

The methods for calculating limitations for municipal treatment facilities to conform to 40 CFR 122.45(d) are specified in s. NR 106.07(3), Wis. Adm. Code, and are as follows:

Whenever a daily maximum limitation is determined necessary to protect water quality, a weekly and monthly average limitation shall also be included in the permit and set equal to the daily maximum limit unless a more restrictive limit is already determined necessary to protect water quality.

Because a daily maximum limit is necessary for June – September and October – March, **weekly average and monthly average limits are recommended to be included set equal to the daily limit.**

The daily maximum limit can either be the single limit of 3.7 mg/L or the variable limits based on effluent pH from the daily maximums table above.

- If Brighton Dale Links chooses to have a single daily maximum limit of 3.7 mg/L the weekly and monthly average limits for June – September and October – March should also be equal to 3.7 mg/L.
- If Brighton Dale Links chooses to have a variable daily maximum limit, the weekly and monthly average limits for June – September and October – March should be equal to the calculated limits above.

Conclusions and Recommendations

In summary, after rounding to two significant figures, the following ammonia nitrogen limitations are recommended. No mass limitations are recommended in accordance with s. NR 106.32(5), Wis. Adm Code. **Monitoring only (no limits) is recommended for April & May.**

Final Ammonia Nitrogen Limits

Single Daily Max Limit	Daily Maximum mg/L	Weekly Average mg/L	Monthly Average mg/L
June – September	3.7	3.7	3.7
October – March	3.7	3.7	3.7
Variable Daily Max Limit	Daily Maximum	Weekly Average	Monthly Average

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	mg/L	mg/L	mg/L
June – September	Variable	24	9.6
October – March	Variable	54	22

PART 4 – PHOSPHORUS

Technology-Based Effluent Limit

Subchapter II of Chapter NR 217, Wis. Adm. Code, requires municipal wastewater treatment facilities that discharge greater than 150 pounds of Total Phosphorus per month to comply with a monthly average limit of 1.0 mg/L, or an approved alternative concentration limit.

Because Brighton Dale Links does not currently have an existing technology-based limit, the need for this limit in the reissued permit is evaluated. The data demonstrates that the annual monthly average phosphorus loading is less than 150 lbs/month, which is the threshold for municipalities in accordance to s. NR 217.04(1)(a)1, Wis. Adm. Code, and therefore **no technology-based limit is required**.

Annual Average Mass Total Phosphorus Loading

Month	Phosphorus Concentration (mg/L)	Total Effluent Flow (Million Gallons)	Calculated Mass (lbs/month)
Feb 2020	0.753	0.366	2.3
April 2020	0.345	0.227	0.70
Oct 2020	2.06	0.079	1.4
March 2021	0.209	0.375	0.70
Sept 2021	2.66	0.447	9.9
Oct 2021	2.91	0.130	3.2
Average	1.64	0.271	3.03

Total P (lbs/month) = Phosphorus concentration (mg/L) × total flow (MG/month) × 8.34 (lbs/gallon)
Where total flow is the sum of the actual (not design) flow (in MGD) for that month

In addition, the need for a WQBEL for phosphorus must be considered.

Water Quality-Based Effluent Limits (WQBEL)

Revisions to administrative rules regulating phosphorus took effect on December 1, 2010. These rule revisions include additions to s. NR 102.06, Wis. Adm. Code, which establish phosphorus standards for surface waters. Subchapter III of NR 217, Wis. Adm. Code, establishes procedures for determining WQBELs for phosphorus, based on the applicable standards in ch. NR 102, Wis. Adm. Code.

Phosphorus criteria in s. NR 102.06, Wis. Adm. Code, do not apply to limited aquatic life waters as described in s. NR 102.06(6)(d), Wis. Adm. Code. These waters were not included in the USGS/WDNR stream and river studies and, therefore, the Department lacked the technical basis to determine and propose applicable criteria. At some time in the future, the Department may adopt phosphorus criteria based on new studies focusing on limited aquatic life waters. The Guidance for Implementing Wisconsin's Phosphorus Water Quality Standards for Point Source Discharges (2020) suggests that during the interim, WQBELs should be based on the criteria and flow conditions for the next stream segment downstream (or downstream lake or reservoir, if appropriate), because ss. 217.12 and 217.13, Wis. Adm. Code, state that the Department must set WQBELs to protect downstream waters. The discharge location of the wastewater from is classified as limited aquatic life at the point of discharge due

to the wetland feature.

There is drain tile on the golf course property which daylight east of HWY 75 and flows into another wetland before draining to Brighton Creek. A site visit by a biologist is recommended to determine if there is a need for limits for downstream protection purposes. For this permit reissuance, **no phosphorus WQBELs are recommended.**

Effluent Data

The following table summarizes effluent total phosphorus monitoring data from 02/06/2020 – 10/13/2021.

Total Phosphorus Effluent Data

Month	Phosphorus (mg/L)
02/06/2020	0.753
04/23/2020	0.345
10/22/2020	2.06
03/31/2021	0.209
09/08/2021	2.66
10/13/2021	2.91
Average	1.64

Phosphorus monitoring is recommended to continue in the reissued permit to determine if limits are needed in the next permit.

PART 5 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR THERMAL

Surface water quality standards for temperature took effect on October 1, 2010. These regulations are detailed in Chapters NR 102 (Subchapter II – Water Quality Standards for Temperature) and NR 106 (Subchapter V – Effluent Limitations for Temperature) of the Wisconsin Administrative Code. The daily maximum effluent temperature limitation shall be 86 °F for discharges to surface waters classified as Limited Aquatic Life according to s. NR 104.02(3)(b)1, Wis. Adm. Code, except for those classified as wastewater effluent channels and wetlands regulated under ch. NR 103 and described in s. NR 106.55(2), Wis. Adm. Code, which has a daily maximum effluent temperature limitation of 120 °F. The 86° F limit applies because this receiving water is not listed as a wetland in s. NR 104 Wis. Adm. Code.

Section NR 106.59(2)(b), Wis. Adm. Code, allows the use of temperature effluent data, on a case-by-case basis, from at least two other POTWs within a 100-mile radius that utilize similar wastewater treatment technology and have a similar ratio of domestic to industrial waste stream composition, or representative data of the POTW.

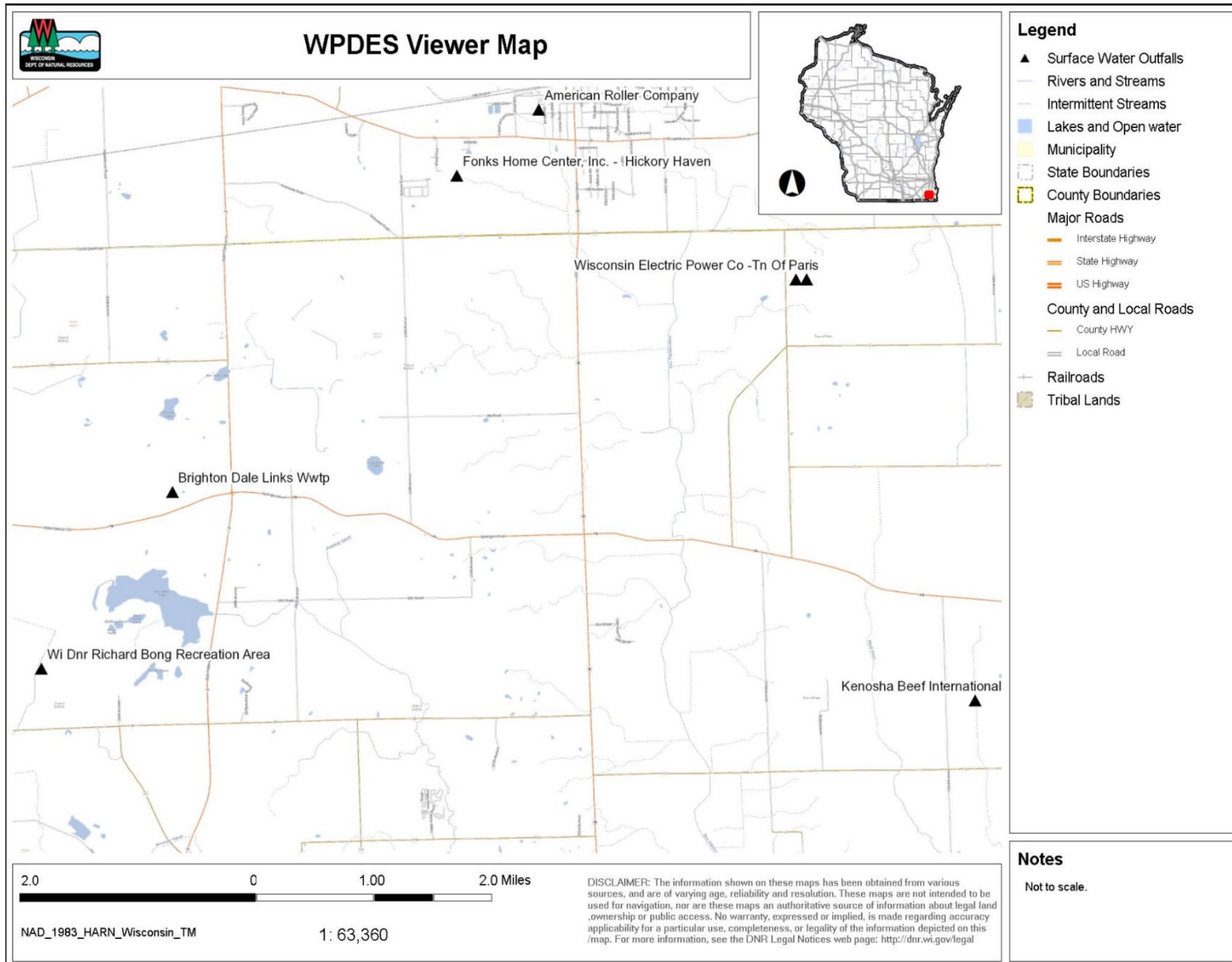
The maximum daily temperature from Wheatland Estates MHC, approximately 5 miles away, was 79° F over the previous ten years. The maximum daily temperature from Paddock Lake WWTF, approximately 4.5 miles away, was 77° over the previous ten years. Based on the available effluent data from the two similar facilities, **no effluent limits are recommended for temperature. Monitoring for one year is recommended in the reissued permit.**

PART 6 – WHOLE EFFLUENT TOXICITY (WET)

WET testing is used to measure, predict, and control the discharge of toxic materials that may be harmful to aquatic life. In WET tests, organisms are exposed to a series of effluent concentrations for a given time and effects are recorded. Decisions below related to the selection of representative data and the need for WET limits were made according to ss. NR 106.08 and 106.09, Wis. Adm. Code. WET monitoring frequency and toxicity reduction evaluation (TRE) recommendations were made using the best professional judgment of staff familiar with the discharge after consideration of the guidance in the *Whole Effluent Toxicity (WET) Program Guidance Document (October 29, 2019)*.

Guidance in Chapter 1.11 of the WET Guidance Document (WET Testing of Minor Municipal Discharges) was consulted. This is a minor municipal discharge (< 1.0 MGD) comprised solely of domestic wastewater, with no history of WET failures and no toxic compounds detected at levels of concern. **No WET testing is recommended at this time because of the low risk in effluent toxicity.**

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Brighton Dale Links WWTP