Permit Fact Sheet

1 General Information

Permit Number:	WI-0020427-10-0	
Permittee Name:	CITY OF PORTAGE	
Mailing Address:	115 W. Pleasant Street, Portage, WI 53901	
Discharge Location:	1600 East Wisconsin Street, Portage, Wisconsin (SE ¼ of SW1/4 of Section 9, T12N-R9E – Lat: 43.5266 / Lon: -89.4393)	
Receiving Water:	Wisconsin River (Lower Baraboo River Watershed, LW21 – Lower Wisconsin River Basin) in Columbia County	
Stream Flow ($Q_{7,10}$):	1,790 cfs	
Stream Classification:	Warm Water Sport Fish (WWSF)	
Design Flow(s)	Daily Maximum	2.887 MGD
	Weekly Maximum	2.535 MGD
	Monthly Maximum	2.414 MGD
	Annual Average	2.102 MGD
Significant Industrial Loading?	Yes. AMPI, Cardinal Glass, Dawns Food, Spectrum, Polyone	
Operator at Proper Grade?	Two operators are currently at proper grade. Biological Treatment: Suspended Growth Processes – Advanced A1; Biological Treatment: Attached Growth Processes – Advanced A2; Solids Separation – Advanced B; Biological Solids/Sludge Handling, Processing & Reuse – Advanced C; Disinfection – Advanced D; Laboratory – Advanced L; Nutrient Removal: Total Phosphorus – Advanced P.	
Pretreatment Program Approval:	No local pretreatment program as the designflow is less than 5 MGD.	

2 Facility Description

The City of Portage owns and operates a wastewater treatment facility providing secondary treatment and phosphorus removal for a combination of domestic, commercial and industrial wastewater. The current average annual design flow is 2.102 MGD. Actual flow is averaging approximately 1.5 MGD. Industrial wastewater is less than 10% of the total flow. The system provides wastewater treatment for about 11,150 people. Portage is in substantial compliance with their current permit. Portage is not expected to grow significantly in the next five years.

Treatment units include mechanical raw wastewater screening and aerated grit removal, primary clarification, rotating biological contactors (RBCs) secondary treatment, chemical phosphorus removal, final clarification, seasonal chlorine contact disinfection and dechlorination and effluent cascade aeration prior to discharge to the Wisconsin River. Treated solids are land applied in the spring and fall on approved DNR spreading sites at agronomic rates. The collection system for the City of Portage is a separate sewer system with no constructed overflow points. The City is also covered under a "no exposure certification" for storm water.

3 Proposed Permit Reissuance

The Department anticipates an effective date of October 1, 2016 for the proposed permit. Therefore, to allow a full permit term of five years, the proposed permit's expiration date is September 30, 2021. If the permit reissuance process takes more or less time than anticipated, the permit's dates of effectiveness and expiration may be changed accordingly.

4 Sample Points

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	Influent flow measurement is not required	Representative influent samples shall be collected from the influent wet well.
001	1.54 MGD (Avg. Calendar Years 2013-14)	Representative effluent samples shall be collected prior to the chlorine contact tank for composite samples and after the chlorine contact tank for grab samples, prior to discharge to the Wisconsin River.
003	309 dry U.S. tons (Calendar Year 2014)	Anaerobically digested, Cake, Class B. Representative sludge samples shall be collected from the sludge storage facility.
101	N/A	Collect at least one mercury field blank for each day a mercury sample is collected at Sample Point 001- Effluent using the sample handling procedures as specified in s. NR 106.145(9), Wis. Adm. Code.

5 Influent - Proposed Monitoring

5.1 Sample Point Number: 701- INFLUENT

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
BOD5, Total		mg/L	5/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total		mg/L	5/Week	24-Hr Flow Prop Comp	
Mercury, Total Recoverable		ng/L	Quarterly	24-Hr Flow Prop Comp	See subsection 1.2.1.1 in the permit for mercury sampling and analysis requirements.

5.1.1 Changes from Previous Permit:

There are no changes to influent monitoring parameters or sample frequency from prevous permit. Influent monitoring parameters and frequencies are consistent with other major municipal WWTF of this size. Per s. NR 106.145(3)(a)2., Wis. Adm. Code, mercury influent monitoring is required because actual annual flow is greater than 1.0 MGD. Influent BOD_5 and Suspended Solids results are used to calculate percent removal requirements.

6 Inplant - Proposed Monitoring and Limitations

6.1 Sample Point Number: 101- EFFLUENT FIELD BLANK

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Mercury, Total Recoverable		ng/L	Quarterly	Blank	See subsection 2.2.1.1 in the permit for mercury sampling and analysis requirements.

6.1.1 Explanation of Limits and Monitoring Requirements

There have been no changes to in-plant monitoring requirements. Mercury field blank requirements are found in s. NR 106.145(9)(c), Wis. Adm. Code. Field blank frequency is consistent with mercury influent and effluent monitoring frequencies (quarterly). The purpose of the field blank is to determine whether the field or sample transporting procedures and environment have contaminated the mercury sample.

7 Surface Water - Proposed Monitoring and Limitations

7.1 Sample Point Number: 001- EFFLUENT

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Continuous	Continuous	
CBOD5	Monthly Avg	25 mg/L	5/Week	24-Hr Flow Prop Comp	
CBOD5	Weekly Avg	40 mg/L	5/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total	Monthly Avg	30 mg/L	5/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total	Weekly Avg	45 mg/L	5/Week	24-Hr Flow Prop Comp	
Chlorine, Total Residual	Daily Max	38 ug/L	5/Week	Grab	Effective May 1 through September 30 annually.
Fecal Coliform	Geometric Mean	400 #/100 ml	2/Week	Grab	Effective May 1 through September 30 annually.
pH Field	Daily Max	9.0 su	5/Week	Grab	
pH Field	Daily Min	6.0 su	5/Week	Grab	
Phosphorus, Total	Monthly Avg	1.0 mg/L	5/Week	24-Hr Flow Prop Comp	

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Phosphorus, Total	Monthly Avg	17.5 lbs/day	5/Week	24-Hr Flow Prop Comp	Calculate the daily mass discharge of phosphorus in lbs/day on the same days phosphorus sampling occurs. Daily mass (lbs/day) = daily concentration (mg/L) × daily flow (MGD) × 8.34.
Mercury, Total Recoverable	Daily Max	3.1 ng/L	Quarterly	Grab	This is an Alternative Mercury Effluent Limit. See subsection 3.2.1.2 in the permit for mercury sampling and analysis requirements and subsection 9.1 below for the mercury compliance schedule.
Acute WET		TUa	See Listed Qtr(s)	24-Hr Flow Prop Comp	See subsection 3.2.1.3 in the permit for whole effluent toxicity (WET) testing monitoring dates and WET requirements.
Nitrogen, Ammonia (NH3-N) Total		mg/L	Weekly	24-Hr Flow Prop Comp	Monitor Only
Nitrogen, Total Kjeldahl		mg/L	Quarterly	24-Hr Flow Prop Comp	Monitor Only
Nitrogen, Nitrite + Nitrate Total		mg/L	Quarterly	24-Hr Flow Prop Comp	Monitor Only
Nitrogen, Total		mg/L	Quarterly	Calculated	Monitor Only

7.1.1 Changes from Previous Permit

New phosphorus rules (ss. NR 102.06 and NR 217 Subchapter III, Wis. Adm. Code) became effective December 1, 2010 that require the Department to evaluate the need for water quality based effluent limitations (WQBELs) for phosphorus. Portage will not get a phosphorus WQBEL, the 1.0 mg/L monthly average phosphorus technology based limit in Portage's current permit will be retained and a phosphorus mass discharge limit of 17.5 lbs/day monthly average will be included for the first time. A mercury limit is also being recommended for the first time. The recommended mercury limit is 1.3 ng/L as a monthly average; however, Portage has applied for a variance from the mercury water quality standard used to establish that limit and if approved by EPA, an Alternative Mercury Effluent Limit of 3.1 ng/L as a daily maximum will apply on the effective date of the permit and Portage will be required to continue to implement a mercury pollutant minimization program. Total residual chlorine monitoring frequency reduced from Daily to 5/Week. Annual acute whole effluent toxicity (WET) testing will be required in the reissued permit (five tests total) whereas the current permit required four WET tests. Quarterly effluent monitoring for Total Nitrogen parameters (nitrite/nitrate + total Kjeldahl nitrogen = total nitrogen) is now required.

7.1.2 Explanation of Limits and Monitoring Requirements

Refer to the Water Quality Based Effluents Limits (WQBEL) memos for the detailed calculations, one prepared by Nasrin Mohajerani dated May 21, 2015 and a WQBEL Addendum - Mercury prepared by Phillip Spranger dated March 11, 2016 used for this reissuance.

Notes: All code citations below [e.g., s. NR 210.05(1)(d)] reference current Wisconsin Administrative Code.

P99 refers to the 99th Upper Percentile of effluent results calculated using the procedures in s. NR 106.05(5) over 1-day (acute), 4-day (chronic) and 30-day (monthly) time periods.

$CBOD_5$, TSS, Chlorine, Fecal Coliform and pH

No changes are recommended in the permit limitations for $CBOD_5$, Total Suspended Solids, Chlorine, Fecal Coliform and pH. Because the 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.

Water Quality Based Limits, WET Requirements and Disinfection

$CBOD_5$ – The $CBOD_5$ limits in Portage's reissued permit were carried over from the previous permit. For receiving waters classified as fish and aquatic life, s. NR 210.05(1)(d), allows $CBOD_5$ limits to be substituted for BOD_5 limits at the request of the permittee, pursuant to s. NR 210.07(4). Portage's request for $CBOD_5$ limits was previously approved by the Department and s. NR 210.05(1)(d), establishes the limits at 25 mg/L as a monthly average and 40 mg/L as a weekly average.

Total Suspended Solids (TSS) – The TSS concentration limits in Portage's reissued permit are the categorical limits specified in s. NR 210.05(1)(b), for facilities discharging to receiving waters classified as fish and aquatic life and are the same as in the previous permit.

Disinfection/Chlorine – Requirements for disinfection can be found at s. NR 210.06(1). At the Portage plant chlorine (Sodium hydrochloride) is added to the effluent for seasonal disinfection during the months of May through September, and chlorine effluent limits are recommended to assure proper operation of the dechlorination (Sodium bisulfite) system. The daily maximum total residual chlorine limit is 38 ug/L, which is the same as in the current permit. Since chlorine addition is automatic the monitoring frequency for total residual chlorine was reduced from daily to five times per week. Due to the amount of available dilution a chronic (weekly average) limit is not necessary.

Fecal Coliforms – Per s. NR 210.06(2), where disinfection is required (as is the case here) the geometric mean of the fecal coliform bacteria for effluent samples collected in a period of 30 consecutive days may not exceed 400 #/100 ml. This limit is in effect May 1 to September 30 annually.

Dissolved Oxygen (DO) – Due to the amount of available dilution dissolved oxygen limits are not needed.

pH – Existing ch. NR 210, limitations will remain—9.0 s.u. (standard pH units) daily maximum and 6.0 s.u. daily minimum.

Phosphorus – Details regarding the administrative rules for phosphorus discharges may be found at: http://dnr.wi.gov/topic/surfacewater/phosphorus.html. The new phosphorus rules are contained in s. NR 102.06 and ch. NR 217, Subchapter III. The calculated water quality based effluent limit for phosphorus for the permittee is much higher than the technology based phosphorus limit of 1.0 mg/L as a monthly average in Portage's current permit and due to water quality antidegradation rules (ch. NR 207) the phosphorus limit may only be increased under very limited circumstances, none of which would apply to Portage's discharge. A total phosphorus concentration limit of 1.0 mg/L will apply on the permit's effective date. Since the technology based phosphorus limit in Portage's current permit is more stringent than the water quality based limit calculated under s. NR 217.13, s. NR 217.12(2), requires that a mass discharge limit be included in the permit because this discharge is to that portion of the Wisconsin River that is classified as an exceptional resource water [see s. NR 217.14 (1)(a)2]. The mass discharge limit in pounds per day (lbs/day) is calculated by multiplying the concentration limit of 1.0 mg/L by the facility annual average design flow of 2.102 MGD times a conversion factor of 8.34 (1.0 mg/L x 2.102 MGD x 8.34 = 17.5 lbs/day, rounded). The mass discharge limit of 17.5 lbs/day will also apply on the permit effective date.

Mercury – Actual flow is greater than 1.0 MGD so the mercury influent, effluent and field blank monitoring requirements for Major WWTFs in Subchapter III, NR 106.145, apply. Mercury effluent and field blank data generated

during the current permit term was evaluated for sampling and analysis requirements in accordance with ss. NR 106.145 (9) and (10). The 30-day P99 of effluent results calculated using the procedures in s. NR 106.05(5), was 1.51 ng/L, which is greater than the water quality standard for the protection of wildlife of 1.3 ng/L (the most stringent criterion for this substance), so a limit is necessary (WQBEL). However, s. NR 106.145(4), provides for a variance from water quality standards for this substance in light of its presence in the environment and the City of Portage has requested this variance. The Department anticipates EPA approval and an Alternative Mercury Effluent Limit (AMEL) of 3.1 ng/L has been included in the proposed permit. The AMEL was established at the calculated 1-day P99 of 3.1 ng/L (3.06 ng/L, rounded). The permit requires Portage to continue quarterly influent, field blank and effluent monitoring, maintain mercury discharge concentrations at or below 3.1 ng/L as a daily maximum and implement a Mercury Pollutant Minimization Program designed to minimize mercury influent to the plant with the ultimate goal of meeting the unvaried mercury effluent limit. See the "Mercury Pollutant Minimization Program" compliance schedule at subsection 9.1 below.

Whole Effluent Toxicity (WET) Testing – The permit requires annual acute WET tests (five total). The WET Guidance Document was used to determine appropriate test frequencies. (A completed checklist for Outfall 001 is provided in the Department's WQBEL memo dated May 21, 2015 and the website http://dnr.wi.gov/topic/wastewater/WETChecklist.html provides the WET checklist and instructions for its use.). Chronic WET testing is not recommended where the ratio of the stream flow ($Q_{7,10}$) to the effluent flow exceeds 100:1. For the City of Portage that ratio is approximately 550:1. Acute WET tests are scheduled in the following rotating quarters: January 1–March 31, 2017; April 1–June 30, 2018; July 1–September 30, 2019; October 1–December 31, 2020; and January 1–March 31, 2021 (five tests total). WET testing is to be continued past the permit expiration date if reissuance is not completed in a timely manner.

Nitrogen Ammonia – The need for nitrogen ammonia limits are evaluated using the procedures in Subchapter IV of NR 106. Daily maximum (acute) ammonia limits are based on effluent pH at the time of discharge. Effluent pH data generated by Portage during the previous permit term were evaluated in the May 21, 2015 WQBEL memo. The computed daily maximum limit is 29 mg/L (rounded). Since there are no daily maximum ammonia limits in Portage's current permit, the need for a limit is determined by comparing the calculated limit to the comparable P99 values. The calculated acute (daily maximum) ammonia limit of 29 mg/L is higher than the calculated 1-day P99 of 9.68 mg/L and therefore a limit is not included in the proposed permit. The weekly and monthly average ammonia limits calculated for the current permit reissuance process were all well in excess of 29 mg/L and as a result no other limits are included in the proposed permit. Weekly ammonia monitoring, year-round, will still be required and a standard requirement at subsection 6.2.9 of the permit requires the permittee to continue to optimize removal of ammonia.

Chloride – Acute and chronic chloride toxicity criteria for the protection of aquatic life are included in Tables 1 and 5 of ch. NR 105. The calculated 1-day P99 of Portage's reported chloride effluent concentrations is less than the acute (daily maximum) chloride limit and the calculated 4-day P99 is less than the chronic (weekly average) chloride limit, so chloride limits are not needed (WQBEL). Due to the amount of dilution available the calculated chloride WQBELs are far in excess of effluent chloride concentrations so additional chloride monitoring is unnecessary.

Total Nitrogen Monitoring (Nitrite + Nitrate, Total Kjehldahl Nitrogen & Total Nitrogen) - Based on the "Guidance for Total Nitrogen Monitoring in WPDES Permits" dated October 2012, quarterly effluent monitoring for Total Nitrogen is required for municipal majors discharging to the Mississippi River Basin.

Toxics/Metals – Subsection NR 200.06(1)(a), Table 1, establishes minimum application monitoring requirements for discharges to surface waters. For a major municipal discharger that monitoring includes a Priority Pollutant scan for toxic parameters, including metals. These data were reviewed in the WQBEL memo dated May 21, 2015. Many substances were below levels of detection. No additional limitations are proposed in the reissued permit.

Wisconsin River Total Maximum Daily Load (TMDL)

There is a major effort underway to improve water quality in the Wisconsin River Basin. The framework for this effort is a Total Maximum Daily Load (TMDL), which is the maximum amount of a pollutant that a body of water can receive while still meeting water quality standards. The Wisconsin River TMDL project area spans Wisconsin's central corridor from the headwaters in Vilas County to Lake Wisconsin in Columbia County, covering 9,156 square miles–approximately 15 percent of the state. The TMDL will set phosphorus allocations for facilities throughout the project area, and total suspended solids (TSS) allocations in sub-basins that drain to TSS impaired waterways. Allocations established by the TMDL will be included in WPDES permits, which may result in limits different than those calculated in the WQBEL

memo used for this reissuance. TMDL-derived limits may be included in lieu of or in addition to the calculated limits upon permit reissuance or modification once the TMDL has been approved by U.S. EPA, according to s. NR 217.16, Wis. Adm. Code. For more information see the Department's web site http://dnr.wi.gov/topic/TMDLs/WisconsinRiver/. Use this link to Subscribe to receive a quarterly newsletter by email with updates about the Wisconsin River TMDL.

8 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	Cake	Anaerobic Digestion	Volatile Solids Reduction & Incorporation	Land Application	309 dry U.S. tons (2014)
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 If yes, special monitoring and recycling conditions will be included in the permit to track any potential problems in landapplying sludge from this facility						
Is a priority pollutant scan required? No – Design flow < 5 MGD 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.						

8.1 Sample Point Number: 003- BIOSOLIDS

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
PCB Total Dry Wt	Ceiling	50 mg/kg	Once	Composite	Jan 1, 2017 - Dec 31, 2017
PCB Total Dry Wt	High Quality	10 mg/kg	Once	Composite	Jan 1, 2017 - Dec 31, 2017
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	

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
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	
Zinc Dry Wt	Ceiling	7,500 mg/kg	Annual	Composite	
Zinc Dry Wt	High Quality	2,800 mg/kg	Annual	Composite	
Nitrogen, Total Kjeldahl		Percent	Annual	Composite	
Nitrogen, Ammonium (NH4-N) Total		Percent	Annual	Composite	
Phosphorus, Total		Percent	Annual	Composite	
Phosphorus, Water Extractable		% of Tot P	Annual	Composite	
Potassium, Total Recoverable		Percent	Annual	Composite	

8.1.1 Changes from Previous Permit:

New time frame for PCB testing is proposed for calendar year 2017.

8.1.2 Explanation of Limits and Monitoring Requirements

Requirements for land application of 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). Requirements for pathogens are specified in s. NR 204.07(6) and in s. NR 204.07 (7) for vector attraction requirements. Limitations for PCBs are addressed in s. NR 204.07(3)(k).

9 Compliance Schedules

9.1 Mercury Pollutant Minimization Program

The permittee shall implement the approved pollutant minimization program as defined in s. NR 106.145(7), Wis. Adm. Code.

Required Action	Due Date
Implement the Mercury Pollutant Minimization Program: The permittee shall continue to implement the Mercury PMP initially submitted to the Department in December 2009 and as subsequently updated by the Annual Status Reports with the agreement of the permittee and the Department.	10/01/2016

Submit Annual Status Reports: The permittee shall submit to the Department an annual status report to summarize and evaluate mercury monitoring data and other relevant information collected to document background and effluent levels of mercury. The report shall also document any continuing reasonable cost effective efforts to identify and reduce potential sources of mercury in the influent. The first annual report covering the period from January 1, 2016 to December 31, 2016 shall be due on the date specified.	03/31/2017
Submit Annual Status Report #2: The permittee shall submit to the Department an annual status report to summarize and evaluate mercury monitoring data and other relevant information collected to document background and effluent levels of mercury. The report shall also document any continuing reasonable cost effective efforts to identify and reduce potential sources of mercury in the influent. The second annual report covering the period from January 1, 2017 to December 31, 2017 shall be due on the date specified.	03/31/2018
Submit Annual Status Report #3: The permittee shall submit to the Department an annual status report to summarize and evaluate mercury monitoring data and other relevant information collected to document background and effluent levels of mercury. The report shall also document any continuing reasonable cost effective efforts to identify and reduce potential sources of mercury in the influent. The third annual report covering the period from January 1, 2018 to December 31, 2018 shall be due on the date specified.	03/31/2019
Submit Annual Status Report #4: The permittee shall submit to the Department an annual status report to summarize and evaluate mercury monitoring data and other relevant information collected to document background and effluent levels of mercury. The report shall also document any continuing reasonable cost effective efforts to identify and reduce potential sources of mercury in the influent. The fourth annual report covering the period from January 1, 2019 to December 31, 2019 shall be due on the date specified.	03/31/2020
Submit Annual Status Report #5: The permittee shall submit to the Department an annual status report to summarize and evaluate mercury monitoring data and other relevant information collected to document background and effluent levels of mercury. The report shall also document any continuing reasonable cost effective efforts to identify and reduce potential sources of mercury in the influent. The fifth annual report covering the period from January 1, 2020 to December 31, 2020 shall be due on the date specified. Note: If the permittee wishes to apply for an alternative mercury effluent limitation in the next permit, that application is due with the application for permit reissuance by 180 days prior to permit expiration. The permittee should submit or reference the PMP plan as updated by the Annual Status Report or more recent developments as part of that application.	03/31/2021
Submittal of Annual PMP Status Reports After Permit Expiration: In the event that this permit is not reissued on time for an October 1, 2020 effective date, the permittee shall continue to submit annual PMP status reports by March 31 each year that summarize and evaluate mercury monitoring data and other relevant information collected to document background and effluent levels of mercury. The report shall also document any continuing reasonable cost effective efforts to identify and reduce potential sources of mercury in the influent. For example, a PMP status report covering the period from January 1, 2021 through December 31, 2021 would be due March 31, 2022.	

9.1.1 Explanation of Mercury Pollutant Minimization Program Compliance Schedules

The City of Portage has applied for a variance from the mercury water quality criterion for the protection of wildlife (1.3 ng/L). As a condition of receiving a mercury variance, s.NR 106.145(7), Wis. Adm. Code, requires the City to implement the Mercury Pollutant Minimization Program (PMP) plan that has been approved by the Department. The City submitted

a Mercury PMP to the Department in March 2009. The compliance schedule requires the City to implement the Mercury PMP and submit annual status reports on PMP activities. Annual status reports are required to be submitted by March 31st of the year following the reporting year, regardless of whether or not the permit expires without being reissued.

9.2 Municipal Land Application Management Plan

Required Action	Due Date
Management Plan: Submit a management plan to optimize the land application system performance and demonstrate compliance with ch. NR 204, Wis. Adm. Code, prior to land application in the spring. This management plan shall address: 1) specify information on pretreatment processes (if any), 2) land application site identification, 3) description of site limitations, 4) vegetative cover management and removal, 5) availability of storage, 6) type of transporting and spreading vehicle, 7) monitoring procedures, 8) tracking of site loading, 9) contingency plans for adverse weather or odor/nuisance abatement, and 10) any other pertinent information. Once approved, all landspreading activity must be completed in accordance with the plan.	08/01/2016

9.2.1 Explanation of Municipal Land Application Management Plan Compliance Schedule

A land application management plan is being required to assure that land application activities are consistent with the requirements of this permit, and ss. NR 204.07 and NR 204.11, Wis. Adm. Code.

10 Attachments:

Water Quality Based Effluent Limits (WQBEL) – May 21, 2015 and March 11, 2016 Mercury Addendum

WET Checklist Summary – May 21, 2015 WQBEL, Page 11

Map – May 21, 2015 WQBEL, Page 12

Substantial Compliance Determination – August 6, 2015

Public Notice –

11 Proposed Expiration Date:

September 30, 2021

Prepared By:

Phillip Spranger, Wastewater Specialist

Date: March 18, 2016

cc: Doris Thiele – SCR/Horicon

CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: May 21, 2015 FILE REF: 3200

TO: Phillip Spranger – SCR

FROM: Nasrin Mohajerani – SCR *N. Mohajerani*

SUBJECT: Water Quality-Based Effluent Limitations for the City of Portage WPDES Permit No. WI-0020427 in Columbia County

This is in response to your request for an evaluation of the need for water quality-based effluent limitations using Chapters NR 102, 105, 106, 207, 210 and 217 of the Wisconsin Administrative Code (where applicable), for the discharge from the City Portage wastewater treatment facility in Columbia County. The City of Portage municipal wastewater treatment plant (WWTP) discharges up to 2.0 mgd of treated effluent via outfall 001 to the Wisconsin River in the Lower Baraboo River Watershed (LW21) of the Lower Wisconsin River basin.

Based on our review, no changes are recommended for any permit limitations for $CBOD_5$, TSS, DO, pH, Chlorine and Fecal Coliform and should remain the same as in the existing WPDES permit for the City of Portage.

Based on our review, the following recommendations are made on a chemical-specific basis.

Recommended Effluent Limitations				
Substances	Daily max./min	Weekly Avg.	Monthly Avg.	Monitoring Only
$CBOD_5$		40 mg/L	25 mg/L	
TSS		45 mg/L	30 mg/L	
Ammonia Nitrogen [2]:				X
pH	6.0 s.u. min. 9.0 s.u. max.			
Total Phosphorus			1.0 mg/L	
Chlorine (May 1–Sept. 30)	38 ug/L - max.			
Fecal Coliform (May – September)			400 #/100 ml (geomean)	
Mercury [1]			1.3 ng/L	
Chloride [2]				Monthly
Temperature	See the recommendations on page 9			

Footnotes:

1. Portage WWTF has requested a mercury variance. If sufficient supporting documentation is submitted to the Department an alternative mercury limitation of 3.1 ng/L may be warranted.

2. Ammonia and chloride limits are not needed at this time based on current effluent data however, monitoring is recommended.

Along with the chemical-specific recommendations mentioned above, the need for acute and chronic whole effluent toxicity testing is also evaluated for the discharge from the City of Portage. Following the guidance provided in the Department's January 27, 2014 *Whole Effluent Toxicity Program Guidance Document - Revision #* 10, **annual acute whole effluent toxicity test batteries are recommended.**

Please consult the attached report for details regarding the above recommendations. If there are any questions or comments, please contact Nasrin Mohajerani by email at nasrindoknt.mohajerani@wisconsin.gov. or by telephone at (608) 275-3239.

Attachments (1) – Map

Attachments (2) – Thermal calculations

PREPARED BY:

N. Mohajerani

Nasrin Mohajerani
Water Resources Engineer, P.E.

CC:

Doris Thiele – SCR/Horicon
Diane Figiel – WY/3

Water Quality-Based Effluent Limitations for
The City of Portage WWTF

Prepared by: Nasrin Mohajerani - SCR

PART 1 – BACKGROUND INFORMATION

Facility Description: The City of Portage owns and operates a wastewater treatment facility providing secondary treatment and phosphorus removal for a combination of domestic, commercial and industrial wastewater. Industrial wastewater is less than 10% of the total flow. The system provides wastewater treatment for about 10,800 people. Portage is in substantial compliance with their current permit. Portage is not expected to grow significantly in the next five years. Treated wastewater is discharged to the Wisconsin River. Treatment units include mechanical raw wastewater screening and aerated grit removal, primary clarification, rotating biological contactor (RBC) secondary treatment, chemical phosphorus removal, final clarification, seasonal chlorine contact disinfection and dechlorination and effluent cascade aeration prior to discharge to the Wisconsin River. Portage completed modifications to the grit chamber and sludge digester in 2005 and 2006. The facility also began an upgrade in 2009 to replace the 16 RBC units and install other needed new equipment. The current average annual design flow is 2.102 MGD. Actual flow is averaging 1.53 MGD.

Portage wastewater treatment plant receives industrial discharge from the following companies:
Cardinal Glass, Encapsys(Appleton Papers), ST. Gobain, Spectrum, Portage Casting & Mold, Meigs, Davis Construction, Flex Foam Products, Labbeemint, Matrex Mold and Tool, Wisconsin Bearing, Wieser Concrete, Contech Construction, Polyone.

Existing Permit Limitations: : The current permit, expired on March 31, 2015, includes the following effluent limitations.

Existing Permit Limitations				
Substances	Daily max./min	Weekly Avg.	Monthly Avg.	Monitoring Only
$CBOD_5$:		40 mg/L	25 mg/L	
TSS		45 mg/L	30 mg/L	
Ammonia Nitrogen (NH3N)Total				Weekly monitoring
pH	6.0 s.u. min. 9.0 s.u. max.			
Total Phosphorus			1.0 mg/L	
Chlorine (May 1–Sept. 30)	38 ug/L - max.			
Fecal Coliform (May – September)			400 /100 ml (geomean)	
Mercury				Quarterly
Chloride				Monthly

Receiving Water Information

- Name: Wisconsin River
- Classification: Warm Water Sport Fish, Wisconsin River is not classified as a public water supply at the point of discharge

- 7-Q_{10} = 1790 cfs (cubic feet per second);
  7-Q_2 = 2750 cfs
  90-Q10 = 2380 cfs
  Harmonic Mean Flow = 4830 cfs
- Hardness = 71.5 mg/L as CaCO3, this value represents the geometric mean of data from Wisconsin River

- % of Flow used to calculate limits: 25%

The receiving water flows used in establishing effluent limitations were obtained from the U.S. Geological Survey based on updated flow information obtained at Wisconsin Dells in 1993.

Effluent Information

- Flow: Average Design Flow = 2.1MGD,

Daily Maximum	2.887 MGD
Weekly Maximum	2.535 MGD
Monthly Maximum	2.414 MGD
Annual Average	2.102 MGD

- Hardness = 345 mg/L as $CaCO_3$. This value represent the geometric mean of data from application.
- Effluent characterization: This facility is categorized as a major municipality so the permit application required effluent sample analysis for the entire priority pollutant scan.
- Monitoring data: Data submitted by the facility to the department during the current permit was used in this evaluation
- Additives: Sodium Hypochlorite, and Sodium Bisulfite for chlorination/dechlorination
- Water Source: Portage Water Utility and private wells

Statistical Analysis	Mercury ng/L	Chloride mg/L
	1/02/10 - 01/21/15	1/09/13 - 12/04/13
1-day p99	3.080	783.86
4-day p99	2.11	575.81
30-day p99	1.61	465.06
Mean	1.36	409.16
Std	0.54	124.93
Sample Size	20	12
Range	0.58 - 2.7	240 - 580

"P99" refers to the 99th upper percentile value that was calculated using the procedures in s. NR 106.05(5), Wis. Adm. Code. P99 values are only calculated when 11 or more detected results are available for a particular pollutant.

Effluent data for substances for which a single sample was analyzed is shown in the tables in Part 3, in the column titled "MEAN EFFL. CONC.".

PART 2- WATER QUALITY BASED- EFFLUENT LIMITATIONS FOR AMMONIA NITROGEN

Current permit has no ammonia limitations. Acute criteria for ammonia are dependent on the classification of the receiving water and on the pH of the discharge.

In the most recent permit term, pH data are still being collected to determine compliance with the 6-9 daily range limits. During this permit term a total of 1,916 sample results were reported from December 2009 through February 2015. The maximum reported value was 7.9 su (Standard pH Units), and a pH of greater than 7.7 was reported seven times. More than 99.9% of the time the pH was 7.7 or less. The one-day P_{99}, calculated in accordance with s. NR 106.05(5), is 7.6 su. A value of 7.6 is believed to represent the maximum reasonably expected pH, and therefore most appropriate for determining daily maximum limitations for ammonia nitrogen. As a result, a daily maximum limit is 29 mg/L. The following table evaluates the statistics based upon pH data reported from 2009 – 2015.

Statistical Analysis	Effluent pH s.u.
1-day p99	7.63
4-day p99	7.46
30-day p99	7.35
Mean	7.29
Std	0.141
Sample Size	1916
Range	6.8 - 7.9

The following table evaluates the statistics based upon ammonia data reported from 2010 – 2015.

Statistical Analysis	Ammonia (mg/L)
1-day p99	9.68
4-day p99	5.23
30-day p99	2.72
Mean	1.69
Std	2.01
Sample Size	1793
Range	0.01-14.4

The need for a limit is determined by calculating 99th upper percentile (or P99) values for ammonia during periods of discharge and comparing the daily maximum values to the daily maximum limit of 29 mg/L. Based on this evaluation since the maximum reported ammonia concentration of 14.4 mg/L during the current permit term does not exceed the daily limit of 29 mg/L the need for limit is not demonstrated.

Since the effluent flow is so small compared to the Wisconsin River low flow, the calculated weekly and monthly average ammonia limits are well in excess of 29 mg/L as a result, no other limits are recommended.

Conclusions and Recommendations: Based on this evaluation no ammonia limits are recommended.

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

The following tables list the water quality-based effluent limitations for this discharge along with the results of testing effluent samples. These tables include only those substances which were measured above the level of detection. All concentrations are expressed in term of micrograms per Liter (µg/L), except for the Hardness and Chloride which are in mg/L. Following the tables, permit recommendations are made where appropriate, based on a comparison between the effluent concentrations and the calculated limits pursuant to ss. NR 106.04 and 106.05.

EFFLUENT LIMIT CALCULATIONS FOR:			**Portage**		
RECEIVING WATER :			**Wisconsin**	River	
RECEIVING WATER INFORMATION:			WWSF		Harmonic
FLOWS:		7Q10	7Q2	90Q10	Mean
		1790	2750	2380	4830
% USED FOR MIXING	=	25			
HARDNESS	=	71.5	PPM	From WET report	
EFFLUENT INFORMATION:		DAILY FLOW			
OUTFALL NUMBER	f	(mgd)	(cfs)		
001		2.102	3.25		
EFFLUENT HARDNESS	=	345	PPM	From application	

CALCULATION OF EFFLUENT LIMITATIONS BASED ON ATC (ug/L)							
	REF.			MAX.	1/5 OF	MEAN	
	HARD.*			EFFL.	EFFL.	EFFL.	1-day
SUBSTANCE	or pH	ATC		LIMIT	LIMIT	CONC.	P99
Chlorine		19.03		38.06	7.61		
Copper	345	49.92		99.84	19.97	4.12	
Lead	345	353.76		707.52	141.50	1.9	
Mercury		0.83		1.66			0.00308
Nickel	268	1048.88		2097.76	419.55	1.7	
Zinc	333	344.68		689.36	137.87	11	
Chloride (mg/L)		757		1514			783.86

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

CALCULATION OF EFFLUENT LIMITATIONS BASED ON CTC (ug/L)							
RECEIVING WATER FLOW =			447.5 cfs				
	REF.		MEAN***	WEEKLY	1/5 OF	MEAN	
	HARD.		BACK-	AVE.	EFFL.	EFFL.	4-day
SUBSTANCE	or pH	CTC	GRD.	LIMIT	LIMIT	CONC.	P99
Chlorine		7.28		1008.95	201.79		
Copper	71.5	7.77	1.23	907.62	181.52		
Lead	71.5	20.25	0.626	2720.36	544.07	1.9	
Mercury		0.44	0.004718	60.33			0.00211
Nickel	71.5	39.30		5446.68	1089.34	1.7	
Selenium		5.00		692.96	138.59	2.3	
Zinc	71.5	89.77	2.06	12158.00	2431.60	11	

Chlorides(mg/L)		395		5.47E+07			575.81

CALCULATION OF EFFLUENT LIMITATIONS BASED ON WC (ug/L)							
RECEIVING WATER FLOW				595	cfs		
			MEAN***	MO'LY	1/5 OF	MEAN	
			BACK-	AVE.	EFFL.	EFFL.	30-day
SUBSTANCE		WC	GRD.	LIMIT	LIMIT	CONC.	P99
Mercury		0.0013	0.004718	0.0013**			0.00161

** In accordance with s. NR 106.06(6)(a), when the background concentration of a toxicant exceeds the criterion, and the source of at least 90% of the wastewater is from groundwater, the effluent limitation is equal to the lowest criterion; or in the case of mercury, 1.3 ng/l, monthly average. Virtually all rivers in Wisconsin exceed the 1.3 ng/l criterion.

CALCULATION OF EFFLUENT LIMITATIONS BASED ON HTC (ug/L)							
RECEIVING WATER FLOW =				1207.5	cfs		
			MEAN ***	MO'LY	1/5 OF	MEAN	
			BACK-	AVE.	EFFL.	EFFL.	30-day
SUBSTANCE		HTC	GRD.	LIMIT	LIMIT	CONC.	P99
Lead		140	0.626	51885	10377	1.9	
Mercury		0.0015	0.004718	0.0015**			0.00161
Nickel		43000		16007563	3201513	1.7	
Selenium		2600		967899	193580	2.3	

** In accordance with s. NR 106.06(6)(a), when the background concentration of a toxicant exceeds the criterion, and the source of at least 90% of the wastewater is from groundwater, the effluent limitation is equal to the lowest criterion; or in the case of mercury, 1.5 ng/l, monthly average. Virtually all rivers in Wisconsin exceed the 1.5 ng/l criterion.
*** The background metals concentrations given in the tables above are based on low-level metals data collected by the Department within the Black Earth Creek (@ Black Earth Creek) .

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

1. Maximum effluent concentration exceeds the limit (only applies to daily maximum unless there are at least 4 consecutive days with data, which isn't the case here.
2. If 11 or more detected results are available in the effluent, the 99th upper percentile (or P99) value exceeds the comparable calculated limit.
3. If fewer than 11 detected results are available, the mean effluent concentration exceeds 1/5 of the calculated limit.

With that in mind, the following permit limits are recommended.

Total Residual Chlorine – Because chlorine is added as a disinfectant, effluent limitations are recommended to assure proper operation of the dechlorination system. Section NR 210.06(2)(b) states, "When chlorine is used for disinfection, the daily maximum total residual chlorine concentration of the discharge may not exceed 0.10 mg/L." But since the water quality-based effluent limitations are more restrictive, the water quality-based limits are recommended instead. **Specifically, a daily maximum limit of 38 µg/L (38.06, rounded to two significant figures) is recommended**. Due to revisions to s. NR 106.07(2) mass limitations are no longer required.

Mercury: Based on a comparison of the effluent data and calculated effluent limitations, effluent limitations are apparently needed for Mercury. The permittee collected 20 valid test results for mercury from January 2010 through January 2015. The upper 99th percentile of 30 day average discharge concentrations, as determined by the procedure specified in NR 106.05(5)(a), is 1.61 ng/L, which exceeds a potential limit of 1.3 ng/L based on wildlife and limit of 1.5 ng/L based on human threshold criteria. Therefore, a limit for mercury is recommended.

Section NR 106.145(4) allows for eligibility for an alternative mercury effluent limitation if the permittee submits an application for an alternative mercury limit, which includes the submittal of a pollutant minimization plan. Section NR 106.145(5) specifies that an alternative limitation shall equal the 1-day P99 of the effluent data, and shall be expressed as a daily maximum concentration. Using this approach, Portage WWTF may be eligible for an alternative mercury limitation of 3.1 ng/L if these documents are submitted.

PART 4 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR PHOSPHORUS

Technology Based Limits (TBL) – Phosphorus

The City of Portage WPDES permit currently has a total phosphorus limit of 1.0 mg/L as a monthly average in their current permit. This limit remains applicable unless a more stringent water quality concentration limit is given.

Water Quality Based Limit – Phosphorus

Revisions to the administrative rules for phosphorus discharges took effect on December 1, 2010. These rule revisions include additions to ch. NR 102 (s. NR 102.05), which establish phosphorus standards for surface waters. Revisions to ch. NR 217 (s. NR 217, Subchapter III) establish procedures for determining water quality based effluent limits for phosphorus, based on the applicable standards in ch. NR 102.

Section NR 102.06(3)(a) specifically names reaches of rivers for which a phosphorus criterion of 0.1 mg/l applies. For other stream segments that are not specified in s. NR 102.06(3)(a), s. NR 102.06(3)(b) specifies a phosphorus criterion of 0.075 mg/l. The phosphorus criterion of 0.1 mg/l applies for Wisconsin River.

Ambient phosphorus data is from Wisconsin River Station # 113152 (at Sth 33 at Portage) sample date 6/2003 - 10/2003. The rolling median total phosphorus concentrations (Cs) is 0.075 mg/L.

Water quality-based effluent limitations are evaluated in this report for phosphorus using the procedures in s. NR 217.13. For discharges of phosphorus to flowing streams and rivers, the water quality based effluent limitation shall be calculated using the following conservation of mass equation:

Limitation = [(WQC) (Qs+ (1-f) Qe) - (Qs- fQe) (Cs)] / Qe
Where:
Limitation = Water quality based effluent limitation (in ug/L)

WQC = The applicable water quality criterion (0.1 mg/L)
Qs = Receiving water flow (Q7,2) = 2750 cfs
Qe = Effluent flow = 2.102 mgd /3.25 cfs
f = Fraction of the effluent flow that is withdrawn from the receiving water (zero)
Cs = Background concentration of the substance (0.075 mg/L)

Limitation = [(0.1) (2750+ (1-0) 3.25) - (2750- 0) (0.075)] / 3.25 = 21.20 mg/L

The calculated water quality based effluent limit is very large, due to high dilution factor the calculated limit is 21.20 mg/L. This number is far in excess of the technology-based limit of 1 mg/L from ch. NR 217 which is already in Portage's permit. As a result of this, no water quality-based limit is needed in Portage's permit.

However, it should be noted that Wisconsin River is on the state's Impaired Waters List for total phosphorus. As a result, the Department is in the process of developing a total maximum daily load (TMDL) for phosphorus which may affect both point and non-point source dischargers to the Wisconsin River and the basin. Given the scope of the project, it is likely that the development of the TMDL is years away, but it is worth mentioning potential future impacts even if those impacts may not be implemented in this permit reissuance for Portage.

Phosphorus Recommendation:
It is recommended that the current TBL of 1.0 mg/L as a monthly average carried over in the reissued permit. Mass limit is recommended for phosphorus discharges to a impaired waters on 303(d) list.

An evaluation of effluent monitoring data that were collected during the permit term are shown in the following table. Those data indicated that the calculated 30-day p99 (0.716 mg/L) does not exceed the calculated water quality based limitation.

Statistical Analysis	Phosphorus mg/L
Date	12/01/09-2/28/15
1-day p99	1.55
4-day p99	0.99
30-day p99	0.716
Mean	0.58
Std	0.288
Sample Size	1916
Range	0.13 – 2.62

Phosphorus Limit:
The current TBL of 1.0 mg/L as a monthly average is suggested to retain in the reissued permit.

PART 5 - THERMAL

New surface water quality standards for temperature took effect on October 1, 2010. These new regulations are detailed in chs. NR 102 (Subchapter II – Water Quality Standards for Temperature) and NR 106 (Subchapter V – Effluent Limitations for Temperature) of the Wisconsin Administrative Code. The following table is used to screen the need to calculate limitations for temperature:

Warm Water and Limited Forage Fish designated Waters	Effluent Temperature Limitation
$Q_s:Q_e \geq 20:1$	120^o F (no calculation needed)
$20:1 > Q_s:Q_e > 2:1$	120^o F or the sub-lethal WQBEL (calculation needed), whichever is lower
$Q_s:Q_e \leq 2:1$	Sub-Lethal and Acute WQBELs (calculation needed)

In accordance with s. NR 106.53(2)(b), the highest daily maximum flow rate for a calendar month is used to determine the acute (daily maximum) effluent limitation. In accordance with s. NR 106.53(2)(c), the highest 7-day rolling average flow rate for a calendar month is used to determine the sub-lethal (weekly average) effluent limitation. However, according to the above table, since the $Q_s:Q_e \geq 20:1$ (138:1) the only applicable effluent temperature is the daily maximum limit of 120 ºF.

At temperatures above ~103 ºF, conventional biological treatment systems stop functioning properly and experience upsets. There is no indication that this has ever occurred at this treatment system. This information, coupled with the lack of significant industrial heat load, lead to the conclusion that there is no reasonable potential for a 120 ºF limitation to be exceeded. **No limit is recommended to be included in the reissued permit. Due to the high calculated limits, no monitoring is needed during the next permit term.**

PART 6 – WHOLE EFFLUENT TOXICITY

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.

- Acute tests predict the concentration that causes lethality of aquatic organisms during a 48 to 96-hour exposure. In order to assure that a discharge is not acutely toxic to organisms in the receiving water, WET tests must produce a statistically valid LC_{50} (Lethal Concentration to 50% of the test organisms) greater than 100% effluent.

- Chronic tests predict the concentration that interferes with the growth or reproduction of test organisms during a seven-day exposure. In order to assure that a discharge is not chronically toxic to organisms in the receiving water, WET tests must produce a statistically valid IC_{25} (25% Inhibition Concentration) greater than the instream waste concentration (IWC). Chronic testing is not recommended where the ratio of the 7-Q_{10} to the effluent flow exceeds 100:1. For the City of Portage WWTF that ratio is approximately 550:1 (this ratio is calculated using 100% of 7Q10). With this amount of dilution, there is no need for chronic toxicity testing. **Therefore, no chronic WET testing is recommended for the City of Portage.**

- According to the *State of Wisconsin Aquatic Life Toxicity Testing Methods Manual* (referenced in s. NR 219.04, Wis. Adm. Code), the default acute dilution series is: 6.25, 12.5, 25, 50, 100%. The permittee or Department staff may choose other dilution series, but alternate dilution series must be specified in the WPDES permit. For guidance on selecting an alternate dilution series, see Chapter 2.11 of the WET Guidance Document.

- Also according to the *State of Wisconsin Aquatic Life Toxicity Testing Methods Manual*, receiving water must be used as the dilution water and primary control in WET tests, unless the use of different dilution water is approved by the Department prior to use. The dilution water used in WET tests conducted on Outfall 001 shall be a grab sample collected from the receiving water upstream/out of the influence of the mixing zone and any other known discharge. The receiving water location must be specified in the WPDES permit.

- Below is a tabulation of all available WET data for Outfall 001. Efforts are made to insure that decisions about WET monitoring and limits are made based on representative data. Data which is no longer believed to be representative of the discharge is not included in Reasonable Potential Factor (RPF) calculations.

	Acute Results LC_{50} % (% survival in 100% effluent)			
Date Initiated	C. *dubia*	*Fathead minnow*	Pass or Fail?	Use in REF?
07/06/2011	>100		Pass	Yes
10/17/2012	>100		Pass	Yes
04/30/2013	>100		Pass	Yes
01/08/2014	>100		Pass	Yes

- The WET Checklist has been developed to assist DNR staff when deciding whether WET limits and monitoring are needed. The Checklist recommends acute and chronic WET limits (as needed) based on the Reasonable Potential Factor (RPF), as required by s. NR 106.08, Wis. Adm. Code. Monitoring frequencies are based on points accumulated during the Checklist analysis. As toxicity potential increases, more points accumulate and

more monitoring is needed to insure that toxicity is not occurring. The completed WET Checklist and monitoring recommendations are summarized in the table below. (For more on the RPF and WET Checklist, see Chapter 1.3 of the WET Guidance Document, at: http://dnr.state.wi.us/org/water/wm/ww/biomon/).

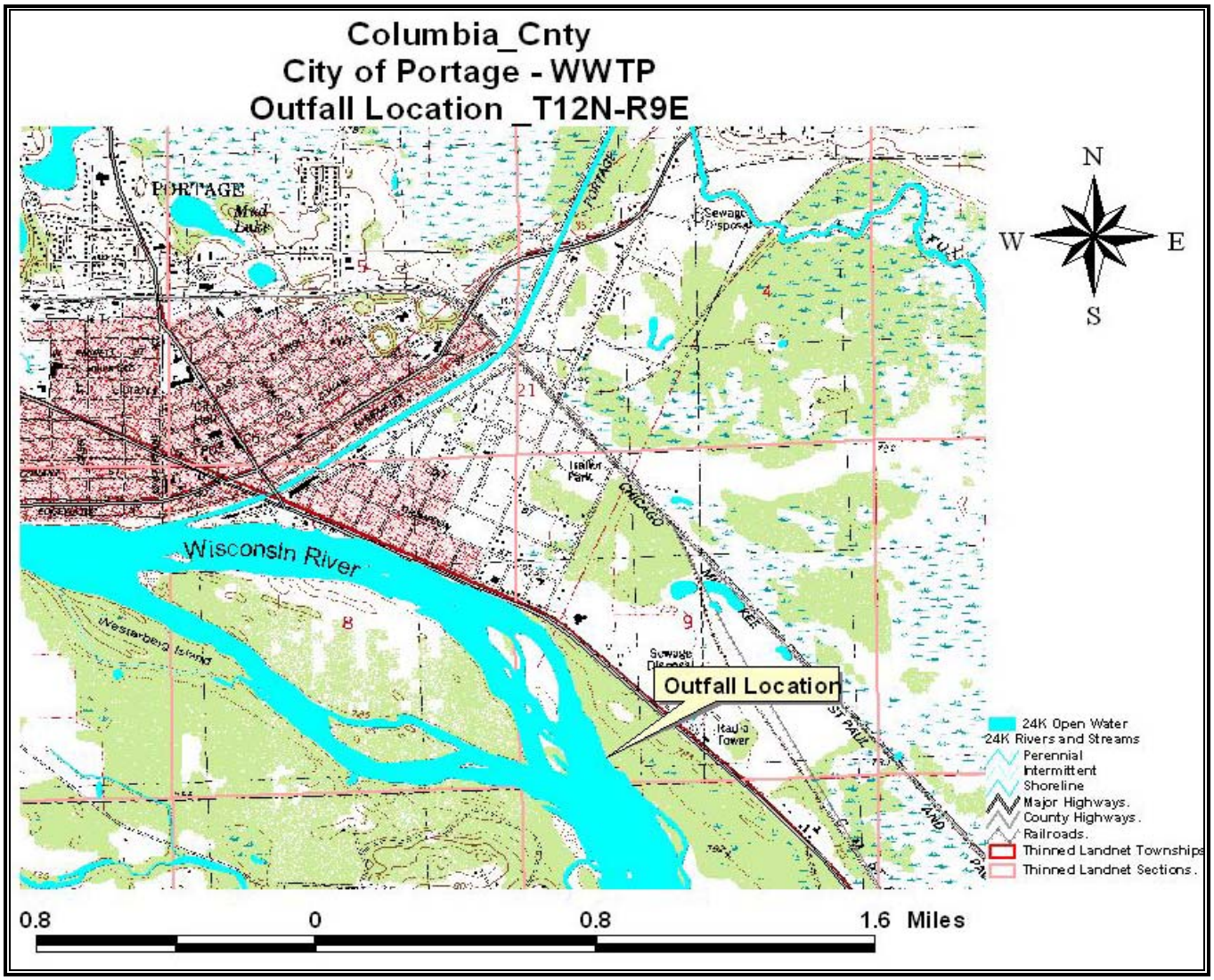
Whole Effluent Toxicity (WET) Checklist Summary

	Acute
1. IWC	Not Applicable. **0 Points**
2. Historical Data	4 tests used, RPF= 0 **0 Points**
3. Effluent Variability	Little variability, no violations or upsets, consistent WWTF operations. **0 Points**
4. Receiving Water Classification	WWSF **5 Points**
5. Chemical Specific Data	Chlorine limit, ammonia, chloride, Cu, Pb, Ni, Hg, Se & Zn detected. **8 Points**
6. Additives	Sodium hypochlorite and sodium bio sulfite. **4 Points**
7. Discharge Category	14 Industrial Contributors. **15 Points**
8. Wastewater Treatment	Secondary Treatment. **0 Points**
9. Downstream Impacts	None attributable to this discharge. **0 Points**
Total Points	**32**

Recommendations:

A minimum of annual acute monitoring is recommended because Portage is a major municipal discharger with a design flow in excess of 2.0 MGD. Therefore**, annual acute monitoring is recommended** in the permit term, so that data will be available for the next permit application. Tests should be done in rotating quarters, in order to collect seasonal information about this discharge. No chronic WET tests are required.

Attachment #1



CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: March 11, 2016 FILE REF: 20427

TO: Portage WWTF Permit Legal File

FROM: Phillip Spranger – SCR/Fitchburg

SUBJECT: Addendum to Water Quality-Based Effluent Limitations for the City of Portage WPDES Permit No. WI-0020427 in Columbia County – Updated Mercury Recommendations

This addendum to the Water Quality-Based Effluent Limitations (WQBEL) Memo for the City of Portage by Nasrin Mohajerani dated May 21, 2015 includes an updated statistical analysis of mercury effluent concentration results generated by the Portage WWTF between January 21, 2010 and January 6, 2016, including 1-day, 4-day and 30-day upper 99th percentile values (P99s) calculated using the procedures in s. NR 106.05(5)(a), Wis. Adm. Code.

The permittee provided an updated Mercury Variance Application revised March 4, 2016 with corrected and new mercury effluent results (new results were for April 8, 2015, July 22, 2015, October 6, 2015 and January 6, 2016). The results in this updated database were adjusted for field blank detects and new P99 values calculated. A summary table of recalculated mercury statistics follows:

Statistical Analysis	Mercury ng/L
	01/21/10 - 01/06/16
1-day P99	3.06
4-day P99	2.03
30-day P99	1.51
Mean	1.25
Std	0.55
Sample Size	25
Range	0.51 - 2.7

Mercury Recommendations: The recommendations for mercury in this addendum do not change the conclusion regarding mercury in the original WQBEL (see page 4 of original WQBEL for mercury statistics). The upper 99th percentile of the 30 day average discharge concentrations (1.51 ng/L) exceeds potential limits of 1.3 ng/L for the protection of wildlife (the most stringent limit for this parameter) and 1.5 ng/L based on human threshold criteria so a limit for mercury is still recommended.

Section NR 106.145(4), Wis. Adm. Code, allows for eligibility for an alternative mercury effluent limitation (AMEL) if the permittee submits an application for an alternative mercury limit that includes a pollutant minimization program (PMP) plan for mercury. Section NR 106.145(5), Wis. Adm. Code, specifies that an alternative limitation shall equal the 1-day P99 of the effluent data, and shall be expressed as a daily maximum concentration. The Portage WWTF has applied for a variance for mercury from the wildlife water quality based criteria limit of 1.3 ng/L, including an updated Mercury PMP plan. If approved by the US EPA, an AMEL of 3.1 ng/L as a daily maximum shall apply on the effective date of the reissued permit. The limitation is equal to the 1-day P99 of 3.06 ng/L, rounded to 3.1 ng/L, which, after rounding, is the same as the variance limit recommended in the original WQBEL.

If there are any questions or comments, please contact Phillip Spranger at (608) 273-5969 or by email at phillip.spranger@wisconsin.gov.

Substantial Compliance Determination

Permittee Name: CITY OF PORTAGE		Permit Number: 0020427-10-0
	Compliance?	Comments
Discharge Limits	Yes	Limits met consistently
Sampling/testing requirements	Yes	No missed samples
Groundwater standards	NA	
Reporting requirements	Yes	All forms submitted in a timely manner
Compliance schedules	Yes	
Management plan	Yes	
Other:	NA	
Enforcement Considerations	None	
In substantial compliance?	Yes Comments: Site visit completed on May 28, 2015. Permittee is deemed to be in substantial compliance. Recommend reissuance with a requirement for a landspreading plan. Signature: Doris Thiele Date: August 6, 2015 Concurrence: Date:	