

Facility Specific Standard Variance Data Sheet

Directions: Please complete this form electronically. Record information in the space provided. Select checkboxes by double clicking on them. Do not delete or alter any fields. For citations, include page number and section if applicable. Please ensure that all data requested are included and as complete as possible. Attach additional sheets if needed.

Section I: General Information

A. Name of Permittee: City of Portage

B. Facility Name: Portage Wastewater Treatment Facility

C. Submitted by: Wisconsin Department of Natural Resources

D. State: Wisconsin **Substance:** Mercury **Date completed:** 04/04/2016

E. Permit #: WI-0020427-10-0 **WQSTS #:** (EPA USE ONLY)

F. Duration of Variance **Start Date:** October 1, 2016 **End Date:** September 30, 2021

G. Date of Variance Application: December 18, 2013 (Revised March 4, 2016)

H. Is this permit a: **First time submittal for variance**
 Renewal of a previous submittal for variance (Complete Section X)

I. Description of proposed variance:
 Variance for Mercury from the wildlife water quality based criteria limit of 1.3 ng/L to an interim limit of 3.1 ng/L. The permittee has submitted an application for an alternative mercury effluent limitation (AMEL). The application included a pollutant minimization program (PMP) plan for mercury as required under s. NR 106.145(8), Wis. Adm. Code.
Citation: An alternative mercury effluent limitation under s. 106.145, Wis. Adm. Code represents a variance to water quality standards authorized by s. 283.15, Wis. Stats.

J. List of all who assisted in the compilation of data for this form

Name	Email	Phone	Contribution
Phillip Spranger	phillip.spranger@wisconsin.gov	(608) 273-5969	Sec. I; Sec. II C-H & J; Sec. III-VIII
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Section II: Criteria and Variance Information

A. Water Quality Standard from which variance is sought: 1.3 ng/L Wildlife Criterion

B. List other criteria likely to be affected by variance: None

C. Source of Substance: The DNR assumes that the primary source of mercury in wastewater is dental facilities with significant contributions from medical and educational facilities and legacy contamination. Inflow and Infiltration of rain water into sewer system may also be a source of mercury. Various studies have put concentrations of rainwater in Wisconsin in the range of 10 ng/L. It is noteworthy that approximately three miles south of the wastewater treatment plant is a coal powered electricity generating facility. It is assumed that the mercury content of the air around the treatment plant is in excess of 1.3 ng/L. Much of the treatment plant is not covered, and mercury deposition is likely to be occurring.

D. Ambient Substance Concentration: 3.29 ng/L **Measured** **Estimated**
 Default **Unknown**

E. If measured or estimated, what was the basis? Include citation. Mercury samples (n = 13) collected at the Department's long-term trend river monitoring site at the Wisconsin River below the Kilbourne Dam in Wisconsin Dells from December 2005 through July 2015 had mercury concentration results that ranged from 1.03 ng/L to 7.03 ng/L with a mean concentration of 3.29 ng/L. This monitoring site is approximately 22 river miles upstream from the Portage WWTF outfall and is believed to be representative of ambient conditions in the Wisconsin River at the City of Portage. Results are from the Department's Surface Water Integrated Monitoring System (SWIMS) Database at SWIMS Station ID No. 573052.

F. Average effluent discharge rate: 1.53 MGD **Maximum effluent discharge rate:** 2.09 MGD
 1/1/13 - 12/31/15 4/10/2013

G. Effluent Substance Concentration: 1.25 ng/L **Measured** **Estimated**
 Default **Unknown**

H. If measured or estimated, what was the basis? Include Citation.
 Samples taken during January 2010 through January 2016 (n=25) as part of the current permit were averaged.

Effluent samples are collected quarterly by the permittee and reported on their discharge monitoring reports as part of their WPDES permit. Results are stored in the Wisconsin Department of Natural Resources WPDES database.

I. Level currently achievable (LCA): 3.1 ng/L

J. Variance Limit: 3.1 ng/L

K. What data were used to calculate the LCA, and how was the LCA derived? (Immediate compliance with LCA is required.)
 The permittee collected 25 valid test results for mercury from January 2010 through January 2016. The upper 99th percentile of 30 day average discharge concentrations, as determined by the procedure specified in NR 106.05(5)(a), is 1.51 ng/L, which exceeds potential limits of 1.3 ng/L (based on wildlife criteria) and 1.5 ng/L (based on Human threshold criteria). The 1-day P99 calculation of the effluent data was 3.1 ng/L. See "Portage WQBEL Addendum – Mercury – March 11, 2016" (provided electronically to EPA).
Citation: s. NR 106.145(5), Wis. Adm. Code.

L. Explain the basis used to determine the variance limit (which must be ≤ LCA). Include citation.
 The variance limit = 1 Day P99. The limit is established in accordance with s. NR 106.145(5), Wis. Adm. Code.

M. Select all factors applicable as the basis for the variance provided under 40 CFR 131.10(g). Summarize justification below: 1 2 3 4 5 6

Section NR 106.145(1), Wis. Adm. Code, outlines several findings that justify variances for mercury. The Department intended that this provision be generally applicable to all dischargers of mercury that produce large volumes of effluent with already extremely low mercury concentrations. The Department considers treating these large volumes to produce effluent with even lower concentrations to be technically and economically infeasible.
Citation: Assessing the Economic Impacts of the Proposed Ohio EPA Water Rules on the Ohio Economy, April 24, 1997, Ohio Environmental Protection Agency, Division of Surface Water and Foster Wheeler Environmental Corporation and DRI/McGraw-Hill in support of Amended and New Rules in OAC Chapters 3745-1, -2, and -33.

Section III: Location Information

A. Counties in which water quality is potentially impacted: Columbia, Crawford, Dane, Grant, Iowa, Richland and Sauk

B. Receiving waterbody at discharge point: Wisconsin River

C. Flows into which stream/river? Mississippi River **How many miles downstream?** ~115 mi

D. Coordinates of discharge point (UTM or Lat/Long): Lat/Lon (DD) 43.5268 / -89.4394

E. What are the designated uses associated with this waterbody?
 Designated use: Default Fish and Aquatic Life. Current use: Warm Water Sport Fish, non-public water supply.

F. What is the distance from the point of discharge to the point downstream where the concentration of the substance falls to less than or equal to the chronic criterion of the substance for aquatic life protection?
 The ambient condition is above the wildlife criterion of 1.3 ng/L, so it is not expected that the limit will be achievable at or near the discharge point.

G. Provide the equation used to calculate that distance (Include definitions of all variables, identify the values used for the clarification, and include citation):
 See above.

H. Identify all other variance permittees for the same substance which discharge to the same stream, river, or waterbody in a location where the effects of the combined variances would have an additive effect on the waterbody:

Permit Number	Facility Name	Facility Location	Variance Limit (ng/L)
WI-0031402-06	WI DELLS LK DELTON SEWERAGE COMMISSION WWTF	City of Wisconsin Dells, WI	12 ng/L

Please attach a map, photographs, or a simple schematic showing the location of the discharge point as well as all variances for the substance currently draining to this waterbody on a separate sheet

I. Is the receiving waterbody on the CWA 303(d) list? If yes, please list the impairments below. Yes No Unknown

River Mile	Pollutant	Impairment
Mile 90.94 to Mile 116.16	PCBs & Mercury	Contaminated Fish Tissue
Section IV: Pretreatment (complete this section only for POTWs with DNR-Approved Pretreatment Programs. See w:\Variances\Templates and Guidance\Pretreatment Programs.docx)		
A. Are there any industrial users contributing mercury to the POTW? If so, please list. N/A – No Local Pretreatment Program		
B. Are all industrial users in compliance with local pretreatment limits for mercury? If not, please include a list of industrial users that are not complying with local limits and include any relevant correspondence between the POTW and the industry (NOVs, industrial SRM updates and timeframe, etc) N/A – No Local Pretreatment Program		
C. When were local pretreatment limits for mercury last calculated? N/A – No Local Pretreatment Program		
D. Please provide information on specific SRM activities that will be implemented during the permit term to reduce the industry's discharge of the variance pollutant to the POTW N/A – No Local Pretreatment Program		
Section V: Public Notice – Planned for April 2016; Hearing in May 2016		
A. Has a public notice been given for this proposed variance? <i>Pending</i> <input type="checkbox"/> Yes <input type="checkbox"/> No		
B. If yes, was a public hearing held as well? <i>Pending</i> <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		
C. What type of notice was given? <i>Notice will include</i> <input checked="" type="checkbox"/> Notice of variance included in notice for permit <input type="checkbox"/> Separate notice of variance		
D. Date of public notice: <i>Pending</i> Date of hearing: <i>Pending</i>		
E. Were comments received from the public in regards to this notice or hearing? (If yes, please attach on a separate sheet) <i>Unknown – Public Hearing Pending</i> <input type="checkbox"/> Yes <input type="checkbox"/> No		
Section VI: Human Health		
A. Is the receiving water designated as a Public Water Supply? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
B. Applicable criteria affected by variance: 1.5 ng/L Human Threshold Criteria		
C. Identify any expected impacts that the variance may have upon human health, and include any citations: <ul style="list-style-type: none"> The proposed variance will not adversely affect human health directly through the drinking water. Wisconsin's fish consumption advisory program is designed to mitigate the effect of any ambient mercury concentration above the 1.5 ng/L water quality criterion for the protection of the fish-consuming human population by providing advice to the public to guide them on the amount of fish that may be consumed safely. Given the lack of wastewater treatment technologies capable of reducing mercury concentrations to achieve a 1.3 ng/L effluent limit, granting a variance in this situation is consistent with protecting the public health, safety and welfare because of the substantial public health and safety benefits of providing wastewater treatment, the continued commitment towards further mercury pollutant minimization, the Wisconsin fish advisory program, and the limited impact of the elevated effluent concentrations given the background mercury concentrations. DNR's findings suggest that Hg in walleye from Wisconsin lakes changed in the range of -0.5% to 0.8% per year depending on geographical position in the state during the period of 1982–2005. These trends may reflect geographically differing temporal trends in the amount of Hg deposited to Wisconsin lakes. However, long-term changes in other factors, such as water chemistry, fish growth rates, and lake levels, known to impact Hg bioavailability and accumulation may also be important. (Temporal trends of mercury concentrations in Wisconsin walleye (<i>Sander vitreus</i>), 1982–2005, Paul W. Rasmussen, Candy S. Schrank, Patrick A. Campfield. <i>Ecotoxicology</i> (2007) 16:541–550) 		
Section VII: Aquatic Life and Environmental Impact		
A. Aquatic life use designation of receiving water: Warm Water Sport Fish (WWSF)		
B. Applicable criteria affected by variance: 1.3 ng/L Wildlife Criterion		

C. Identify any environmental impacts to aquatic life expected to occur with this variance, and include any citations:

Ambient mercury concentrations in surface water resulting from the variance will be substantially less than levels that result in direct toxicity to aquatic organisms. EPA's current chronic aquatic life criterion for mercury is 0.9081 µg/L, which is approximately three orders of magnitude greater than the wildlife criteria (0.0013 µg/L). Wisconsin's criteria are 0.44 µg/L and 0.83 µg/L for chronic and acute toxicity, respectively.

Other environmental impacts might occur to non-aquatic species through more indirect exposure pathways (i.e., diet). For some species, like the bald eagle (*Haliaeetus leucocephalus*), recent trends indicate that mercury exposure is decreasing. Bald eagles consume fish and waterfowl from surface waters, which puts them at risk of exposure to toxic levels of mercury due to bioaccumulation from their prey organisms. However, ambient surface water data has shown that mercury levels have not increased in recent decades and bald eagle populations have continued to grow. In fact, the Bald eagle has been delisted from federal status due to recovery. We believe that the bald eagle is representative of other species that are located at higher trophic levels. The consistent environmental levels of mercury and recovery of the bald eagle populations in Wisconsin suggest that the potential impact of mercury resulting from the variance on higher trophic level organisms is minimal.

Although this variance will allow permitted dischargers additional time to identify and control sources of mercury in their discharges, the pollutant minimization component of the variance should result in a net reduction in the amount of mercury discharged to Wisconsin surface waters from permitted point sources further reducing risk to bald eagles and other wildlife. In addition, the pollutant minimization programs for mercury typically result in other pollution prevention efforts that have a beneficial indirect effect of reducing the use and production of products and processes that use or contribute mercury to the environment. These efforts will also reduce any potential for negative impacts.

For other species at lower trophic levels, the amount of mercury that they are likely to be exposed to via their diet is much lower than species in the higher trophic levels. Therefore, the mercury concentrations resulting from the variance are not expected to negatively impact these species. This would include species like Piping plover, Eastern massasauga rattlesnake and freshwater mussels.

D. List any Endangered or Threatened species known or likely to occur within the affected area, and include any citations:

Because mercury is pervasive, persistent and bio accumulating in the environment we considered all species listed for the entire state of Wisconsin. The following is Federally Endangered, Threatened, Proposed, and Candidate Species in Wisconsin From U.S. Fish and Wildlife Service, Region 3, April 2015

MAMMALS

Canada lynx (T)
Gray wolf (E)
Northern long-eared bat (T)

BIRDS

Kirtland's warbler (E)
Piping plover (E and CH)
Red Knot (T)
Whooping crane - (NEP)

REPTILE

Eastern massasauga rattlesnake (C)

INSECTS

Hine's emerald dragonfly (E)
Karner blue butterfly (E)
Poweshiek skipperling (E and PCH)

CLAMS (Freshwater mussels, Unionids)

Higgins' eye pearlymussel (E)
Sheepnose mussel (E)
Snuffbox (E)
Spectaclecase mussel (E)
Winged mapleleaf mussel (E)

Citation: U.S. Fish & Wildlife Service – Environmental Conservation Online System (<http://www.fws.gov/endangered/>) and National Heritage Index (<http://dnr.wi.gov/topic/nhi/>)

Section VIII: Economic Impact and Feasibility	
A. What modifications would be necessary to comply with the current limits? Include any citations.	<p>The Department did not evaluate what actions or modifications or other changes would be needed to meet limits based on the water quality standard. As discussed below, the Department considers treating to produce effluent at concentrations to meet the limit to be technically and economically infeasible.</p> <p>Citation: Assessing the Economic Impacts of the Proposed Ohio EPA Water Rules on the Ohio Economy, April 24, 1997, Ohio Environmental Protection Agency, Division of Surface Water and Foster Wheeler Environmental Corporation and DRI/McGraw-Hill in support of Amended and New Rules in OAC Chapters 3745-1, -2, and -33.</p>
B. Identify any expected environmental impacts that would result from further treatment, and include any citations:	See above.
C. Is it technically and economically feasible for this permittee to modify the treatment process to reduce the level of the substance in the discharge?	<p style="text-align: right;"><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Unknown</p> <p>The Department considers treating these large volumes to produce effluent with even lower concentrations to be technically and economically infeasible.</p> <p>Citation: Assessing the Economic Impacts of the Proposed Ohio EPA Water Rules on the Ohio Economy, April 24, 1997, Ohio Environmental Protection Agency, Division of Surface Water and Foster Wheeler Environmental Corporation and DRI/McGraw-Hill in support of Amended and New Rules in OAC Chapters 3745-1, -2, and -33.</p>
D. If treatment is possible, is it possible to comply with the limits on the substance?	<p style="text-align: right;"><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Unknown</p>
E. If yes, what prevents this from being done? Include any citations.	See above.
F. List any alternatives to current practices that have been considered, and why they have been rejected as a course of action, including any citations:	<p>On October 10, 2009 Portage began implementing a community mercury reduction program with a primary goal being the reduction of mercury influent to the Portage WWTF. Portage submitted a Mercury Pollutant Minimization Program (PMP) plan that was received by the Department on December 7, 2009 and approved by the Department in a correspondence dated January 7, 2010. The Mercury PMP was updated March 20, 2014 as part of the permit reissuance process.</p>
Section IX: Compliance with Water Quality Standards	
A. Describe all activities that have been, and are being, conducted to reduce the discharge of the substance into the receiving stream. This may include existing treatments and controls, consumer education, promising centralized or remote treatment technologies, planned research, etc. Include any citations.	<p>The reissued permit will include the first imposition of a mercury limitation. The only existing treatment to remove mercury would be through typical solids separation resulting in mercury accumulating in the biosolids. As part of the permit application, the City has prepared an updated Mercury Pollutant Minimization Program (PMP) Plan that has been approved by the Department. Over the last five years, the City has initiated contact with potential sources of mercury (e.g., dentist offices, hospitals, schools and industries) and has disseminated material regarding Best Management Practices for reducing discharges of mercury. Portage's Wastewater Department continues to work with the Columbia County Recycling Center during their annual clean sweep program where products containing mercury are disposed of properly. Portage may conduct a study of mercury in rainwater to determine the extent to which infiltration and inflow (I/I) of clear water to the collection system contributes mercury influent to the plant. The study would also attempt to determine whether air emissions from a coal powered electric generating facility located approximately three miles south of the wastewater treatment plant is causing mercury deposition in the Portage WWTF service area and at the Portage plant when the wind is coming from the south.</p>
B. Describe all actions that the permit requires the permittee to complete during the variance period to ensure reasonable progress towards attainment of the water quality standard. Include any citations.	<p>The reissued permit will require documentation of implementation of the updated Mercury PMP Plan. Annual reports will be required to document steps taken to further reduce the amount of mercury discharged by the</p>

Portage wastewater treatment facility. See "Portage Mercury PMP 3-20-14" as updated by the 2014 and 2015 Mercury PMP Updates and the "Mercury Pollutant Minimization Program" compliance schedule in Portage's draft WPDES permit (all submitted electronically to EPA).

Section X: Compliance with Previous Permit (<i>Variance Reissuances Only</i>)	
A. Date of previous submittal: N/A First Mercury Variance Request	Date of EPA Approval: _____
B. Previous Permit #: N/A	Previous WQSTS #: _____ (EPA USE ONLY)
C. Effluent substance concentration: N/A	Variance Limit: N/A
D. Target Value(s): N/A	Achieved? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Partial
E. For renewals, list previous steps that were to be completed. Show whether these steps have been completed in compliance with the terms of the previous variance permit. Attach additional sheets if necessary.	
Condition of Previous Variance	Compliance
N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No