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 Burlington

B. Facility Name: Burlington Water Pollution Control

C. Submitted by: Wisconsin Department of Natural Resources

D. State: Wisconsin **Substance:** Mercury **Date completed:** 08-04-2014

E. Permit #: WI-0022926-08-0 **WQSTS #:** (EPA USE ONLY)

F. Duration of Variance **Start Date:** 01-01-2015 **End Date:** 12-31-2019

G. Date of Variance Application: 09-27-2013

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:
The previous permit contained a 5.7 ng/L variance based on the 1-day P99 of effluent data at the time, which was developed in response to an exceedance of the 1.3 ng/L limit based on the wildlife criterion (based on background concentrations in excess on the limit). If the permittee wishes to renew the variance instead (which is proposed based on the permit reissuance application), the starting point for proposing a new variance limit would be the 1-day P99 based on current data, which is 3.1 ng/L.

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
Laura Dietrich	Laura.Dietrich@wisconsin.gov	(414)263-8651	Permit Drafter
Timothy Thompson	Timothy.thompson@wisconsin.gov	(414)263-8525	Compliance Staff
Jim Schmidt	Jamesw.schmidt@wisconsin.gov	(608)267-7658	Effluent Limit Calculator

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: 1.5 ng/L Human Threshold Criterion

C. Source of Substance: Dental offices, schools, medical facilities, and vet clinics.

D. **Ambient Substance Concentration:** 4.7 ng/L ☒ **Measured** ☐ **Estimated** ☐ **Default** ☐ **Unknown**

E. If measured or estimated, what was the basis? Include citation.
A background concentration of 4.7 ng/L was used in the previous effluent limit evaluation for Burlington back in 2009. No new data are available on the Fox River since then, so the 4.7 value was used again. Actually, the specific concentration is irrelevant since any background level above the 1.3 ng/L wildlife criterion for mercury means the limit will be equal to the criterion. Other waterbodies in the area have ambient concentrations above 1.3 ng/L, so it is reasonable to assume the background level at Burlington is still above 1.3 ng/L. For example, the background mercury concentration at Waukesha was 3.4 ng/L at the time of its 2013 effluent limit evaluation. Using this upstream value, Burlington's limit would still be 1.3 ng/L.

F. Average effluent discharge rate: Peak annual average = 3.09 MGD (June 2010 – June 2011) **Maximum effluent discharge rate:** 7.433 MGD (April 2013)

G. Effluent Substance Concentration: Mean = 1.32 ng/L, 1-day upper 99th percentile value = 3.11 ng/L, 30-day 99th upper percentile value = 1.57 ng/L ☒ **Measured** ☐ **Estimated** ☐ **Default** ☐ **Unknown**

H. If measured or estimated, what was the basis? Include Citation.
Effluent data from August 2009 – October, 2013 (18 results total)

I. Level currently achievable (LCA): 3.1 ng/L (1-day P99)

J. Variance Limit: Proposed variance limit = 3.1 ng/L daily maximum based on 1-day upper 99th percentile value

K. What data were used to calculate the LCA, and how was the LCA derived? (*Immediate compliance with LCA is required.)*
See WQBEL memo dated 8/1/2014 with 1-day P99 analysis of effluent mercury data.
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, which 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: Racine, Kenosha and Walworth

B. Receiving waterbody at discharge point: Fox (IL) River in Racine County

C. Flows into which stream/river? Fox (IL) River **How many miles downstream?** NA

D. Coordinates of discharge point (UTM or Lat/Long): 42degrees 40min/88degrees 15 min

E. What are the designated uses associated with this waterbody?
Warmwater sportfish community, not designated as a 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 [µg/L]
WI-0028754	Western Racine County Sewage District	42.7/-88.2	6.0

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
113.24 to 151.34	PCBs	Contaminated fish tissue
113.24 to 151.34	Total Phosphorus	Degraded biological community

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.
NA

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)
NA

C. When were local pretreatment limits for mercury last calculated?
NA

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
NA

Section V: Public Notice

A. Has a public notice been given for this proposed variance? ☒ **Yes** ☐ **No**

B. If yes, was a public hearing held as well? ☐ **Yes** ☒ **No** ☐ **N/A**

C. What type of notice was given? ☒ **Notice of variance included in notice for permit**
☐ **Separate notice of variance**

D. Date of public notice: ~August 15 **Date of hearing:** **N/A**

E. Were comments received from the public in regards to this notice or hearing? *(If yes, please attach on a separate sheet)* ☐ **Yes** ☐ **No**

Section VI: Human Health

A. Is the receiving water designated as a Public Water Supply? ☐ **Yes** ☒ **No**

B. Applicable criteria affected by variance: 1.5 ng/L Human Threshold Criterion

C. Identify any expected impacts that the variance may have upon human health, and include any citations:

- 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 amounts 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.

Section VII: Aquatic Life and Environmental Impact

A. Aquatic life use designation of receiving water: Warmwater sportfish

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:

Not Likely to Adversely Affect

- Ambient mercury concentrations 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.
    - Hine's emerald dragonfly (Somatochlora hineana, endangered)
    - Higgins' Eye mussel (Lampsilis higgnsii, endangered)
    - Winged Mapleleaf mussel (Quadrula fragosa, endangered)
    - Spectaclecase (Cumberlandia monodonta, candidate)
    - Sheepnose (Plethobasus cyphyus, candidate)

- Low trophic level prey where mercury in prey is unlikely to accumulate to toxic levels in the organism.
    - Piping plover (Charadrius melodus, endangered)
    - Eastern massasauga rattlesnake (Sistrurus catenatus catenatus, candidate)

May Affect, Not Likely to Adversely Affect

- Bald eagle (Haliaeetus leucocephalus, Delisted due to Recovery)
  Bald eagles consume fish and waterfowl from surface waters, which puts them at risk of exposure to toxic levels of mercury due to bioaccumulation of mercury in their prey organisms. However, despite the potential for exposure, ambient surface water data show that in recent decades, mercury levels have not increased and bald eagle populations have continued to grow. This indicates that current ambient concentrations of mercury and mercury concentrations in prey organisms do not appear to be limiting recovery of bald eagle populations in Wisconsin. 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 variances should result in a net reduction in the amount of mercury discharged to Wisconsin surface waters from permitted point sources, further reducing any risk to bald eagles. In addition, the pollutant minimization programs encourage other pollution prevention efforts, which has 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 benefit bald eagles.

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

County	Species	Status
Racine	Red knot	Proposed threatened
Racine/Kenosha/Walworth	Northern long-eared bat	Proposed endangered
Kenosha/Walworth	Whooping Crane	Experimental population non-essential
Walworth	Eastern Massasauga	Candidate

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.
Unknown but source reduction measures continue to be required via implementation of a pollutant minimization plan (PMP). 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.

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? ☐ **Yes** ☒ **No** ☐ **Unknown**
(Provide the basis for this conclusion, including citations. If treatment is technically infeasible, provide an analysis of the factors that demonstrates technical infeasibility. If treatment is economically infeasible, provide an analysis of the economic cost to ratepayers that demonstrate economic infeasibility. Attach additional sheets if necessary.)

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.

D. If treatment is possible, is it possible to comply with the limits on the substance? ☐ **Yes** ☒ **No** ☐ **Unknown**

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:
The Department considers treating these large volumes to produce effluent with even lower concentrations to be technically and economically infeasible

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 ore remote treatment technologies, planned research, etc. Include any citations.
As a condition for granting a mercury variance for the issuance of the previous permit, a pollutant minimization program (PMP) compliance schedule was included in the proposed permit in accordance with [NR 106.145(6)2 and 106.145(7)]. Quarterly monitoring for influent, effluent, and associated field blanks were required. Burlington participated in the WDNR initiated Mercury Green Tier Charter – a voluntary program by POTWs to develop and implement community mercury reduction programs in order to reduce mercury discharged into their sanitary sewer systems. The participating municipalities worked collectively, assisted by Department staff and the Municipal Environmental Group (MEG). Burlington submitted status reports on the progress of the PMP, which included information on the outcome of the outreaches done, Best Management Practices (BMP) for amalgam separation done or planned by dental offices and other mercury source reduction efforts. Mercury reduction activities conducted and still being conducted include:

- Mercury testing and community education
- Completion of medical, dental, school and other institutional inventories, and where appropriate, facilitate mercury reductions at those locations
- Installation of mercury reclamation equipment by facilities as required

Serving as a drop off location for recycling of mercury containing wastes (light bulbs, thermometers, barometers, etc.)

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.
The permit requires continuation of previous activities, especially ensuring that amalgam separators are installed in all dental facilities and that these equipment is being properly maintained. Annual status reports are also required.

Section X: Compliance with Previous Permit *(Variance Reissuances Only)*

A. Date of previous submittal: 09-25-2008 **Date of EPA Approval:** 06-08-2009

B. Previous Permit #: WI-0022926-08 **Previous WQSTS #:** (EPA USE ONLY)

C. Effluent substance concentration: Avg. 1.3 ng/L (2009-2014) **Variance Limit:** 5.8 ng/L

D. Target Value(s): N/A **Achieved?** ☒ **Yes** ☐ **No** ☐ **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
Mercury testing and community education	☒ **Yes** ☐ **No**
Completion of medical, dental, school and other institutional inventories	☒ **Yes** ☐ **No**
Installation of mercury reclamation equipment by facilities as required	☒ **Yes** ☐ **No**
Serving as a drop off location for recycling of mercury containing wastes (light bulbs, thermometers, barometers, etc.)	☒ **Yes** ☐ **No**