

**Submittal Review for the Wisconsin Department of Natural Resources (WDNR)
Request for Approval of a Variance from Water Quality Standard for Mercury
Wisconsin Rapids Wastewater Treatment Plant
WPDES Permit Number WI-0025844-08)¹**

DATE: APR 22 2009

Summary

Submittal History:

On March 2, 2009, WDNR submitted a request to EPA for approval of a WQS variance for discharge by the Wisconsin Rapids Wastewater Treatment Plant (WRWTP), WPDES Permit Number WI-0025844-08. Documents included in this submittal:

- Transmittal letter from WDNR to EPA, dated March 2, 2009.
- Certification from DNR Chief Legal Council, dated March 2, 2009.
- Justification for Alternative Mercury Effluent Limitation, dated November 24, 2008.
- Wisconsin Rapids Environmental Impacts Evaluation, dated November 24, 2008.

Electronic documents submitted include:

- Environmental Impacts Evaluation for Mercury Variance Requests in Wisconsin (05/23/06 Draft).
- Public Notice of Intent to Reissue the Permit and Approve a Variance.
- Draft Permit and Fact Sheet.
- Water Quality Based Effluent Limitation Evaluation Document.
- Draft Notice of Final Determination.

Description of Action:

WDNR proposes to grant WRWTP a variance from Wisconsin's water quality criteria for mercury applicable to the Wisconsin River within the Upper Wisconsin River Southern Sub-Basin in Wood County of up to 11.0 ng/L as a daily maximum discharge concentration. Under the conditions of the proposed variance, the limit in the permit is set equal to 11.0 ng/L as a daily maximum. The permit limit equals the 99th percentile of the available effluent monitoring data generated using EPA method 1631 for mercury. In addition to the limit, the permittee must also implement a pollutant minimization plan to identify and eliminate sources of mercury to its wastewater treatment facility.

¹ This review is also documented and all electronic files are maintained in the Region 5 Water Quality Standards Tracking System (WQSTS) as submission number: WI2009-291.

Basis of Action:

Wisconsin's administrative rules at Wis. Admin. Code § NR 106.145 provide for "alternative mercury effluent limits" based on a determination by WDNR that, "Requiring all dischargers of mercury to remove mercury using wastewater treatment technology to achieve discharge concentrations necessary to meet WQS would result in substantial and widespread adverse social and economic impacts." (NR 106.145(1)(a)) This finding is based on, "Assessing the Economic Impacts of the Proposed Ohio EPA Water Rules on the Ohio Economy," prepared in 1997 by the Ohio Environmental Protection Agency, Foster Wheeler Environmental Corporation and DRI/McGraw-Hill in support of the multiple discharger variance adopted by the State of Ohio. The primary conclusion of this study was that the treatment technology that is necessary to remove mercury to the level of the WQS are either not available or are prohibitively expensive and would have a widespread economic and social impact. In addition, WDNR evaluated the mercury removal levels achieved by the WRWTP. The available data show that the mercury concentration in the effluent from the WRWTP is greater than the level needed to comply with the WQS and that the facility achieves approximately 96% removal in the liquid stream.

Based on this information, WDNR concluded that:

- The WRWTP does not comply currently with a 1.3 ng/L monthly average permit limit for mercury;
- The WRWTP is well-operated and achieving mercury removal rates appropriate for such a facility;
- Additional end-of-pipe treatment would be necessary to comply with a 1.3 ng/L water quality-based effluent limit; and,
- The expense of building and operating additional treatment to comply with a 1.3 ng/L water quality-based effluent limit (WQBEL) would result in widespread social and economic harm, allowing the facility to seek a variance consistent with s. 283.15, Wis. Stats., Wis. Admin. Code § NR 106.145 and Federal regulations at 40 CFR 131.10(g).

Area Affected and Environmental Impacts

Area Affected:

The area affected by this variance is the Wisconsin River of the Upper Wisconsin River Southern Sub-Basin in Wood County, Wisconsin. The annual average design flow of the discharge is 5.16 million gallons per day (MGD) which is 7.98 cubic feet per second (cfs). The 7 day, 10 year low flow (7Q10) for the Wisconsin River is 999 cfs.

Environmental Impacts:

Aquatic Life

The variance will have no effect on exposed aquatic life. The proposed effluent limitation of 11.0 ng/l, if the variance is granted, is significantly less than both the acute and chronic criteria to protect aquatic life. Wisconsin's aquatic life criteria for mercury are: Acute Mercury (+2)

Criterion = 830 ng/l and Chronic Mercury (+2) Criterion = 440 ng/l. Because the discharge concentration of mercury in the effluent will be limited by the variance to 11.0 ng/l, both the acute and chronic aquatic life criteria will be met at the point where the effluent enters the Wisconsin River.

Human Health & Wildlife

As a condition of the proposed variance, the discharge concentration is limited in the permit to 11.0 ng/L as a daily maximum effluent concentration. This concentration is substantially less than EPA’s current maximum contaminant level of 2 µ g/L for mercury in drinking water.

The City of Wisconsin Rapids has not measured upstream concentrations on mercury in the Wisconsin River but it is believed that mercury levels there are significantly above the 1.3 ng/L water quality criterion for protection of wildlife. Samples from the Wisconsin River upstream in Whiting had an average concentrations of 2.9 ng/L (n = 29). Various studies have put concentrations of rainwater in Wisconsin in the range of 10 ng/L.

Given the lack of wastewater treatment technologies capable of reducing mercury effluent concentrations to achieve a 1.3 ng/L effluent limitation, granting a variance in this situation is consistent with the protection of the public health, safety and welfare because of the substantial public health and safety benefits of providing wastewater treatment and the limited impact of the elevated effluent concentrations given the background mercury concentrations. Forcing WRWTP to comply, even if it were possible, would have little or no effect on ambient water quality.

CWA Section 303(c)/40 CFR131 Review

Regulatory Requirement:	The City of Wisconsin Rapids Variance submittal:
Use designations consistent with the provisions of section 101(a)(2) and 303(c)(2) of the Act (40 CFR 131.6(a))	The designated uses for the Wisconsin River are warm-water sport fishery and non-public water supply.
Methods used and analyses conducted to support WQS revisions (40 CFR 131.6(b))	Documents submitted by WDNR in support of this variance include all items listed above under submittal history.
Water quality criteria sufficient to protect the designated use “warm-water sport fish community” (40 CFR 131.6(c))	Under the conditions of the variance, the applicable water quality criterion is the mercury effluent concentration currently achievable, 11.0 ng/L. The criteria to protect aquatic life are 830 ng/L acute and 440 ng/L chronic.
An antidegradation policy consistent with §131.12 (40 CFR 131.6(d))	Not applicable. This variance does not affect Wisconsin’s existing antidegradation policy.
Certification by the State Attorney General or other appropriate legal authority within the State that the WQS were duly adopted pursuant to State law. (40 CFR 131.6(e))	WDNR’s General Counsel certified the variance in a letter from Michael Lutz to Tinka Hyde, dated March 2, 2009.

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General information which will aid the Agency in determining the adequacy of the scientific basis of the standards which do not include uses specified in section 101(a)(2) of the Act as well as information on general policies applicable to State standards which their application and implementation. (40 CFR 131.6(f))	The information submitted by WDNR and the WRWTP is described above. The WRWTP operates a secondary wastewater treatment facility with an average design flow of 5.16 MGD. As a condition of the variance, WRWTP is required to continue to implement a pollutant minimization program (PMP). The effect of this requirement will be to reduce levels of mercury in the influent to the treatment plant, which is expected to improve the quality of the effluent and the biosolids.
Variance not applicable to new/recommencing discharges (40 CFR 132, Appendix F, Procedure 2.A.1)	The WRWTP is an existing facility.
Variance does not jeopardize federally-listed threatened/endangered species (40 CFR 132, Appendix F, Procedure 2.A.2)	According to the USFWS, there are no aquatic federally-listed species in Wood County.
WQS cannot be attained by implementing treatment requirements of sections 301 and 306 of the CWA (40 CFR 132, Appendix F, Procedure 2.A.3)	There are no applicable treatment requirements for mercury from wastewater treatment facilities under section 301 and/or 306 of the CWA. The facility is currently meeting its secondary treatment requirements. Regarding non-point source control, there are no cost-effective and reasonable best management practices applicable to mercury, as mercury is not a constituent of agricultural run-off.
Duration of the variance is five years of the life of the permit, whichever is less (40 CFR 132, Appendix F, Procedure 2.B.)	As proposed the variance duration is the life of the permit. The life of the permit is five years.
Variance is based on one of the six conditions. (40 CFR 132, Appendix F, Procedure 2.C.)	The variance is based on substantial and widespread social and economic impacts that would occur if the facility were required to comply with WQS. In particular, there are no available treatment technologies the WRWTP could construct to reduce mercury in the discharge to 1.3 ng/L. Wisconsin's administrative rules at Wis. Admin. Code § NR 106.145 provide for "alternative mercury effluent limits" based on a determination by WDNR that, "Requiring all dischargers of mercury to remove mercury using wastewater treatment technology to achieve discharge concentrations necessary to meet WQS would result in substantial and widespread adverse social and economic impacts." (NR 106.145(1)(a)) This finding is based on, "Assessing the Economic Impacts of the Proposed Ohio EPA Water Rules on the Ohio Economy," prepared in 1997 by the Ohio Environmental Protection Agency, Foster Wheeler Environmental Corporation and DRI/McGraw-Hill in support of the multiple discharger

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	variance adopted by the State of Ohio. The primary conclusion of this study was that the treatment technology that is necessary to remove mercury to the level of the WQS are either not available or are prohibitively expensive and would have a widespread economic and social impact.
Variance conforms with State antidegradation policy. (40 CFR 132, Appendix F, Procedure 2.C.2.a.)	Granting this variance does not remove an existing use.
Any increased risk to human health or the environment is consistent with the protection of public health, safety and welfare. (40 CFR 132, Appendix F, Procedure 2.C.2.b.)	The mercury levels in the Wisconsin River upstream of the WRWTP facility likely already exceed the 1.3 ng/L criterion to prevent bioaccumulation of mercury in fish. Samples from the Wisconsin River upstream in Whiting, WI had an average concentration of 2.9 ng/L. Various studies have put concentrations of rainwater in Wisconsin in the range of 10 ng/L. A condition of the variance is for WRWTP to continue to implement a PMP. The PMP plan was submitted on July 23, 2008. The city has conducted a medical facility inventory, school and educational facility inventory, dental facility inventory, and industry. They are planning on outreach to these entities in 2009. The goal of implementing the PMP is to reduce levels of mercury in the influent to the treatment plant, which would then be expected to improve the quality of the plant effluent and in addition reduce the level in the biosolids where much of the mercury is captured. Biosolids from the facility are land applied on area farm land. It is expected PMP efforts will have a beneficial effect on concentrations of mercury in the Wisconsin River and regionally. Mercury levels in the sludge averaged 2.75 mg/kg from October 2003 through November 2007 (a total of 16 sample tests), below the high quality level of 17 mg/kg and the ceiling concentration for landspreading of 57 mg/kg. If not for the PMP requirement, there would be no regulatory incentive for WRWTP to reduce mercury levels in the biosolids. Thus, granting a variance in this situation is consistent with the protection of public health, safety, and welfare.
Submittal of a variance application by the permittee demonstrating that attaining WQS is not feasible and showing compliance with the requirements of section C.2. of procedure 2. (40 CFR 132, Appendix F, Procedure 2.D.)	The WRWTP application was submitted.
Submittal to EPA, including permittee's application, public comments and hearing records (if held),	WDNR provided all the required information, including the establishment of an alternative mercury effluent limitation, that represents the level currently achievable by the permittee, and

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<p>final decision, NPDES permit with conditions consistent with 2.F. (40 CFR 132, Appendix F, Procedure 2.I.)</p>	<p>which is no less stringent than that achieved under the previous permit. Comments were received from Midwest Environmental Advocates (MEA): 1) MEA pointed out that the total suspended solids limits were missing from the permit (see below for more information) and 2) MEA commented that although they were not able to review the mercury pollutant minimization program submitted by the permittee, they took the Department's word that one had been received and that it was adequate.</p> <p>An internal comment was received pointing out that the total suspended solids limits (45 mg/L weekly average & 30 mg/L monthly average) at Outfall 001 wasn't included in the permit in error. As a result, this error has been corrected and it has been added into the permit.</p> <p>MEA also noted that they hoped tighter mercury limits come into effect during the next permit reissuance. No changes were made to the permit as a result of the comments received by MEA.</p>

The information provided by WDNR meets the substantive requirements for a WQS submittal of 40 CFR 131.6. In addition, the information provided by WDNR demonstrates that the Wisconsin mercury criteria for the protection of wildlife and human health are neither attained nor attainable in the Wisconsin River within the Upper Wisconsin River Wisconsin River Southern Sub-Basin, consistent with 40 CFR 131.10(g). This is not to say that wildlife uses are not occurring on the Wisconsin River. Wildlife are able to use the Wisconsin River for forage and drinking water, however there may be exposure to marginally higher levels of mercury than would occur if the criterion were attained.

Endangered Species Act (ESA) Section 7 Evaluation

Consistent with section 7 of the ESA and federal regulations at 50 CFR Part 402, EPA is required to consult with U.S. Fish and Wildlife Service (FWS) on any action taken by EPA that may affect federally-listed threatened and endangered species or their designated critical habitat. Actions are considered to have the potential to affect listed species if listed species are present in the action area. In the case of this action, there are no aquatic or aquatic-dependent species present in Wood County based on FWS's Section 7 Consultation Technical Assistance website that was accessed on March 30, 2009. Therefore, EPA concludes that approval of this variance will have no effect on listed species or designated critical habitat and consultation under section 7 of the ESA is not required.