

Fact Sheets/Briefing Memo
Wisconsin Public Service Corporation, Weston 3 & 4
WI-0042765-07
October 14, 2009

General Description. The WPS Weston coal fired, steam electric power generation facilities are located on the eastern shore of the Wisconsin River near Rothschild, about 7 miles south of Wausau, Wisconsin. Currently, WPDES permit WI-0042765-07 authorizes wastewater discharges from WPS Weston units 3&4, and WI-0003131-06 covers wastewater discharges from Weston units 1&2. Weston units 1 & 2 have completely separate water intake structures, wastewater treatment facilities and wastewater discharge outfalls from Weston units 3&4. WPDES permit WI-0003131-6 for wastewater discharges from Weston units 1 & 2 was reissued in 2006. The focus of this document is the wastewater discharges from Weston units 3 & 4.

The WPS Weston Unit 3 steam electric power plant burns western coal to generate a maximum of 365 MW of electricity and Weston unit 4 has a maximum capacity to generate an additional 595 MW of electricity. Wet cooling towers are used to reduce the temperature of the Weston 3&4 condenser cooling waters. At maximum load, the Weston units 3&4 would take in 12.5 million gallons per day (MGD) of Wisconsin River water. At maximum load, approximately 11 MGD of the intake water would not be returned to the river. The vast majority of this water would be changed into water vapor and transferred into the air from the condenser water cooling towers and the flue gas desulfurization system. The cooling towers greatly reduce the river water intake volume and the discharge of heat into the Wisconsin River. A river water intake clarification system, added in 2008, has allowed the water recycle rate to be increased in the cooling towers. This has resulted in a higher thermal efficiency for unit 4 and a lower cooling tower blowdown rate for both Weston 3 and 4. Due to less river turbidity in the winter, the intake clarification system is not currently operated from November through April, each year.

Intake Evaluation. The WPS Weston 3&4 intake structure takes in an annual average of 6.7 MGD of Wisconsin River water through a concrete intake structure (with two redundant cells) located on the river eastern shore. The bottom of each intake opening is located approximately 9 feet below the 100-year reoccurrence low water level of the river. The intake is configured parallel to the shoreline. More than 90% of the intake river water is used for cooling of the steam condensers. The intake water is passed through trash rack with 2 inch spacing between the bars and then through 3/8 inch square, wire mesh traveling screens. The intake screen system is followed by alum/polymer coagulation and clarification of the river water. The intake screen was installed in the mid 1980's. The intake traveling screens have a 9.8 foot square average water flow through area (96 sq. ft) and can be rotated upwards for backwashing. The intake screen velocity is approximately 0.28 feet per second at the average river intake flow (6.7 MGD = 10.4 cubic ft/sec) and 0.48 feet per second at the maximum river intake flow (12.5 MGD = 19.3 cubic ft/sec). The intake traveling screens are backwashed as needed, with more frequent cleaning needed in the spring and fall to remove leaves and other debris. Wisconsin Public Service Corporation indicates that little fish mortality has been observed when cleaning the intake backwash screen basket. Based on EPA guidance for cooling water intake screens for power generation facilities of this size and the record of little noticeable aquatic life impacts for WPS Weston 3&4 intake screen operation, the Department accepts that the intake treatment system for this facility meets the best treatment available (BTA) standard. This facility meets the 0.5

foot/sec intake velocity standard previously proposed by EPA to prevent excessive impingement mortality on aquatic life. Also, the facility utilizes wet cooling towers which greatly reduce the negative impacts from entrainment of aquatic life because the river water intake and discharge amounts are tremendously reduced. The maximum intake volume for this facility is less than 1% of the Wisconsin River mean annual flow (3677 cfs).

Discharge Outfalls. Some of the water withdrawn from the Wisconsin River for Weston units 3&4 is returned to the river through the following permitted outfalls.

Outfall	Discharge Flow	Description
002	1.3 mgd, average	Steam electric generation wastewater sampled prior to discharge to the Wisconsin River
003	2.0–4.8 mgd	Intake de-icing water, source is the heated effluent from Weston 1&2, cold weather use only
004	0.01-0.04 mgd	Intake screen backwash water, primarily spring & fall
005	0.1-1.4 mgd	Noncontact cooling water, overflow of water not needed for cooling tower make-up, and storm water runoff

During dry weather periods, the **outfall 002** wastewater discharge consists of approximately 65% cooling tower blowdown, 30% treated bottom ash sluice water, and 10% treated low volume process wastewaters. Following rain events treated runoff from the coal pile would also be discharged through outfall 002. Sealed equalization ponds are used to capture bottom ash sluice wastewater, coal pile runoff, metal cleaning wastewaters, and regeneration wastewater from deionization of the boiler make-up well water. These “low volume” wastewaters are treated by sedimentation, coagulation, precipitation, neutralization and sand filtering prior to discharge. After treatment, the low volume wastewaters are mixed with the cooling tower blowdown and then discharged to the Wisconsin River through outfall 002.

Outfall 003 is for heated condenser cooling water (from Weston units 1&2) that is re-directed into the Weston 3&4 intake to prevent screen icing in the winter. This permit authorizes this warmed river water to be sprayed on roads within the Weston site for dust suppression. Dust suppression water is sprayed by tanker trucks as needed during the warmer weather.

Outfall 004 is for river water redirected to clear the intake screens. The traveling screens (3/8 inch square openings) are pulled upwards out of the river for cleaning. Normally, only low amounts of solids are impinged on the intake screens. The bar screen excludes items larger than 2 inches wide and the submerged intake ports exclude trash floating on the river surface. During much of the year, a small amount (10,000 gal/day) of screen backwash water is discharged. However, during spring (mid March to mid April) and fall (October), the screens have to be backwashed regularly to remove tree leaf debris from the river. During these time periods, the screen backwash discharge flow to the river ranges from 30,000 to 40,000 gallons per day. The material captured on the intake screens is removed by a high pressure backwash stream. A wire mesh basket is used to collect the coarse solids from the backwash stream and keep these materials from being discharged back into the river.

The **Outfall 005** discharge is non-contact cooling water from miscellaneous uses in the power plant, such as air conditioning, pump cooling, air compressor cooling, etc. Normally these uses are cooled by

the circulating water that passes through the cooling towers. However, when the cooling towers are not available for cooling these devices, clarified river water is pumped from storage tank, through the cooling tower make-up line, through the unit heat exchangers, and to the river via outfall 005. The clarified river water tank (used for cooling tower make-up water) is continuously chlorinated to prevent bio-fouling of the cooling system. The discharge of noncontact cooling water through outfall 005 is de-chlorinated to meet the discharge permit limit. This permit authorizes noncontact cooling water that could be discharged via outfall 005 to be sprayed on roads within the Weston site for dust suppression. Dust suppression water is sprayed by tanker trucks as needed during the warmer weather.

Categorical, Treatment-Based Limitations. The permit contains treatment technology based (categorical) requirements that reflect the application of NR 290, Wis. Adm. Code, "Steam Electric Power Generation". No treatment technology based limits are imposed at the main outfall (002); limits are instead imposed at the individual sampling points (112, 102, 103, 104, 105 and 106) as allowed in NR 290. Categorical limits for total residual chlorine, total suspended solids, oil and grease, iron and copper are retained from the previous permit. Ch. NR 290, Wisconsin Adm. Code restricts chlorine discharge to 2 hours per day per generating unit (a total of 4 hours for this permit) with a limit of 200 ug/l total residual chlorine. A Wisconsin water quality limit of 38 ug/L is also included for discharges lasting greater than 160 minutes. The chlorine limitations and monitoring requirements are included in the permit for the cooling tower blowdown discharges (sample points 104, 105, and 106). As specified in NR 290, the discharge of PCB's from power plant operations is prohibited, but permit recognizes that the discharge may contain low background levels of PCBs taken into the plant from the Wisconsin River. The chlorine treatment based requirements are also included for outfall 005 because the water is chlorinated and the source is cooling tower make-up water.

Internal Sample Points. The sample points that contribute to the outfall 002 discharge and a brief description of the individual waste streams are identified in the table below.

Sample Point #	Discharge Flow	Description
112	0-0.2 mgd	Treated wastewater from coal pile runoff/detention basin
102	0.05-0.16 mgd	Treated low volume wastewaters including those from ion exchange acid/base regeneration & metal surface cleaning
103	0.2-1.4 mgd	Treated water discharge from the bottom ash sluice water & RO reject water storage/recycle pond
104	0.8-1.4 mgd	Cooling tower blowdown, unit 3
105	0.1-0.6 mgd	Cooling tower blowdown, unit 4
106	0.9-2 mgd	Cooling tower blowdown, combined 3 & 4

Separate, lined ponds are used to store coal pile runoff and metal treatment wastewater. A common pump station is used to draw water from either pond for batch treatment to remove of metals and suspended solids. The wastewater treatment system is designed to remove iron, copper and suspended solids. The wastewater treatment system consists of hydroxide precipitation of metals at pH 10.8 followed by solids separation in two solids contact clarifiers. The clarified effluent is polished by sand filtration to capture any remaining metallic hydroxide precipitates, and then pH (acid) adjusted prior to discharge to the outfall 002 piping system. Effluent that does not meet the iron, copper, total suspended solids, oil and grease, and pH national discharge standards for this industrial category can be recycled (with the sand filter backwash) back to the metal treatment pond. WPS has capped a by-pass pipe

installed to allow effluent from the WWT clarifiers to be diverted around the dual media filters. Department approval is required prior to utilization of the filter by-pass pipe. WPS would have to demonstrate that the wastewater treatment effluent quality (without final filtering) would comply with the limitations at the 102 and 112 sample points and the outfall 002 discharge to the river (i.e. 63 ug/L total recoverable copper). WPS would also have to demonstrate that the by-pass of wastewater around the dual media filters would not increase the mercury discharge to the river.

Sample Point 112. The coal for the Weston power generation facilities is kept in a clay lined storage area. Runoff from the coal storage area and the fly ash storage silo is captured and equalized in the coal pile runoff pond. When the pond fills sufficiently, the wastewater is processed through the wastewater treatment system (described above) in a batch process. Dual media filters polish the clarified effluent prior to being sampled at point 112 and discharged to the outfall 002 piping system. The pH and suspended solids limits for this sample point are based on NR 290.12(2), Wisconsin Administrative Code. Due to a record of low suspended solids levels in this discharge, the total suspended solids monitoring for sample point 112 has been reduced to 3 times per week.

Sample Point 102. Treated wastewaters meeting the NR 290 "low volume wastes" definition are monitored at sample point 102. The metal wastewater treatment storage pond collects demineralization wastewater from condensate polishing and boiler make-up water treatment, metal (non-chemical) surface cleaning, reverse osmosis membrane cleaning and miscellaneous drains from the boiler, flue gas desulfurization and smoke stack areas. Ion exchange regeneration wastewater (used acid/base solutions) from demineralization of the boiler feed water (groundwater from on-site wells) and boiler condensate polishing is discharged to the metal wastewater treatment pond. The demineralization resin first rinse and final rinse water are diverted to the bottom ash treatment pond. The boiler water acid/base demineralization waste solutions have been reduced by 90% (from the historical 25,000 gal/day) due to installation of a reverse osmosis demineralization system to remove dissolved solids from the circulating boiler water/steam fluid (which is heated to over 900 deg. F. in unit 4). The reverse osmosis system has also reduced fouling of the metal boiler and condenser heat transfer surfaces (circulating fluid side) resulting in a 90% reduction in the metal surface cleaning wastewater. Wastewater from cleaning the reverse osmosis membranes is generated about once every 6 months. WPS exceeded the sample point 102 iron limit 10 times in June/July 2007. A rebuild of the wastewater treatment system (related to the unit 4 construction) has since resolved the iron treatment problem.

Wash water from cleaning of the air preheater (estimated at 100,000 gallons/washing) and boiler tube circulating-water-side metal surfaces is produced very infrequently (once per 5-10 years). Wastewater from cleaning the condenser and cooling tower metal surfaces (cooling water side) is sent to the metal wastewater treatment pond about once per year. This condenser/cooling tower wash water mostly contains suspended solids (mud) from dirt and dust that is "stripped" from the air blown through the Weston 3 cooling tower. Several types of wastewater commonly included in the "low volume wastes" definition are not discharged to the Weston 3&4 metal treatment pond: (1) the boiler blowdown wastewater is recycled into the cooling tower circulating water, and (2) all "chemical" metal surface cleaning wastewater is segregated and handled as a hazardous waste. Also, the ion exchange regeneration first rinse and final rinse waters and the reverse osmosis reject waters are sent to the bottom ash treatment pond because they are expected to not contain significant quantities of metals.

Sample Point 103. The discharge of settled water from the bottom ash sluice water pond is monitored at sample point 103. The bottom ash treatment system (BAT) features two stage gravity settling and pH adjustment. Primary settling in sloped basins is used to settle the larger bottom ash particles. Secondary

settling basins are then used to remove most of the remaining bottom ash particles. Sand filters are available for tertiary treatment of bottom ash pond wastewater, but the filters are generally not used because to the settled wastewater total suspended solids levels are normally less than 20 mg/L. If needed, acid can be added to the BAT effluent to reduce pH to 9.0 std units or less. Boiler water ion exchange regeneration first rinse waters, final rinse waters, and the boiler water reverse osmosis reject waters (110,000 gpd) are directed to the bottom ash sluice water pond. Also, the filtrate from the sludge belt press is sent to the bottom ash treatment pond. Even though much of the treated BAT water is reused to sluice more bottom ash from the Weston 3 boiler, an average of 500,000 gal/day is sent to outfall 002 piping for discharge to the river. Weston unit 4 features a submerged scraper bottom ash handling system that does not generate wastewater during normal operation.

A sludge dewatering belt press was installed in the new river water clarification building in 2008. This dewatering press is designed to handle the solids produced from the river water treatment clarifier in addition to the sludge from the WWT clarifiers. The belt press is designed to treat clarifier underflow sludge at 3 – 8% solids and produce a minimum filter cake dryness of 20% solids. The sludge from the wastewater treatment clarifier is trucked to the sludge press located in the river water treatment building.

Sample Points 104, 105 & 106. Two large cooling towers are used to recycle the condenser cooling water for the Weston units 3 and 4. The cooling water is continuously blown down to eliminate dissolved solids that build up as water vapor is evaporated from the towers. Much of the blowdown from the unit 4 cooling tower is used for lime slurry make-up water for the unit 4 dry scrubber. Boiler blowdown is also sent to the circulating condenser cooling water system to reduce the amount of daily cooling water make-up needed. The Weston 3&4 circulating water systems are chlorinated about every 20 minutes (to achieve approximately 1- 2 mg/L of sodium hypochlorite or bromine) to control microbiological growth and heat exchange surface fouling. The residual chlorine concentration is expected to be reduced to 0.5 to 1.0 mg/L during recirculation through the cooling water system. A recently completed sodium bisulfite de-chlorination system is used to insure the continuous cooling tower blowdown meets the total residual chlorine discharge limits. Sample point 104, 105 and 106 limitations for pH and chlorine are based on the Ch. NR 290.12(2) treatment based limits and the Wisconsin water quality limitations. These requirements allow discharge of total residual chlorine up to 200 ug/L for up to 120 minutes (treatment based limit), and a maximum of 38 ug/L if the discharge is 160 minutes or more (Wisconsin water quality limit).

The monitoring data from the previous permit was evaluated to decide on a request from WPS to maintain reduced suspended solids and oil & grease monitoring from the daily frequency required in past permits. The monitoring data variability and average discharge values from sample points 102, 103 and 112 justified a TSS sample frequency reduction to 3 samples per week and an oil & grease sampling frequency reduction to weekly. The permit contains requirements for these sample points to automatically increase the sampling frequency to daily when results are available that indicate a permit limit exceedence. Iron monitoring frequency for sample point 102 is proposed to remain daily as in the last permit, due iron being a good indicator of overall treatment system performance and some limit exceedences in 2007. Daily copper sampling at sample point 102 is maintained due to the concern regarding copper levels added to the outfall 002 discharge.

NR 105/106 Water Quality Evaluation. The receiving water is the Wisconsin River in Marathon County which is classified for fish and aquatic life and has a 7Q10 of 911 cfs. The significant water quality items are described below. More detail on the receiving water and the water quality evaluation can be found in the Water Quality Based Effluent Limits Report dated August 31, 2009, which is

available by request.

Copper. Water quality based effluent limits are required for copper at 002. The requirement for copper limits is based on the categorical limit of 1.0 mg/L at sample point 102. This treatment based limit would allow copper to be discharged up to 1 mg/L which could then cause the site specific water quality based limit for the discharge to the Wisconsin River (0.063 mg/L) to be exceeded. The facility has demonstrated the ability to comply with this limitation. The copper daily maximum limit of 1.5 lbs/day is based on the 2.996 mgd maximum discharge flow recorded on August 29th, 2008. The outfall 002 monitoring frequency for copper is proposed to be changed to quarterly because there previous monitoring data indicates there is no longer any seasonal pattern in the copper discharge levels.

Total Residual Chlorine. No changes are recommended to the current treatment technology based chlorine limitations and chlorine water quality based limitations. The facility has recently installed de-chlorination sodium bi-sulfite treatment for the cooling tower blowdown discharges. Since chlorine is added to recycled condenser cooling water that can be discharged through outfall 002 and 005, the power plant categorical limits for once through cooling water are imposed. This would allow a discharge of up to 200 ug/l total residual chlorine for up to 120 minutes per unit per day. Since the permit contains an option for chlorination of more than 120 minutes for macro-invertebrate control (such as zebra mussels), the water quality standard of 38 ug/L for discharges greater than 160 minutes is also included for outfalls 002 and 005. The details of the macro-invertebrate control plan would have to be approved by the Department prior to implementing the plan.

Temperature. The Department continues to consider comments on the proposed revisions to ch. NR 102 and NR 106 relating to water quality standards for heat and associated procedures for the calculation of point source effluent limitations. As of this writing, these revisions have not been approved by the Wisconsin State Legislature and therefore are not effective. Based on the proposed rule revisions, additional thermal limits appear to be unnecessary for Weston 3&4 discharges; however continued temperature monitoring is continued. The outfall 002 discharge temperature is in the 70's to 80's F on most days. On the warmest summer days (about 5-7 days/year), the outfall 002 discharge temperature can reach 93-95 degrees F. Due to the relatively low volume of wastewater discharged (1.3 mgd), a relatively small amount of BTU's are discharged to the river from Weston units 3&4.

Phosphorus. Discharge data from the reissuance application and previous permits confirms that the facility does not add phosphorus to the discharge and the discharge is less than 60 lbs per month. As specified in NR 217 Wis. Adm. Code, a phosphorus limit is not necessary.

Mercury Variance. The Department has calculated that water quality-based effluent limitation (WQBEL) for mercury, a daily maximum 7.6 ng/L, would be required for the outfall 002 discharge based on the existing background concentration of mercury in the Wisconsin River at Weston. The permittee has submitted an application for an alternative mercury effluent limitation (AMEL) because the outfall 002 discharge level is slightly higher than the river background amounts. The slightly higher mercury level in the 002 discharge is thought to be primarily a result of mercury concentrating in the recycled condenser cooling water due to water evaporation from the cooling towers. WPS has successfully reduced the potential to discharge mercury from this facility by implementing a mercury pollutant minimization plan (PMP) under the previous permit. Some of the completed mercury PMP activities are: replacement of all mercury thermometers in the facility, a central collection point for all mercury containing items as they are taken out of service, reduction of caustic and sulfuric acid use in the plant by 90%, and utilization of membrane grade caustic for remaining needs. WPS will replace

mercury containing switches and instrumentation as systems are upgraded. The mercury variance application included a proposal to continue the pollutant minimization program for mercury as required under s. NR 106.145(8), Wis. Adm. Code.

The Department concludes that the permittee has qualified for a variance based on the information submitted, information on file and the findings provided in s. NR 106.145(1), Wis. Adm. Code. The Department and the permittee have agreed upon an AMEL of 11 ng/L, expressed as a daily maximum, continued influent and effluent monitoring, and continued implementation of the PMP. The Department proposes to grant the AMEL, which represents a variance to the water quality standard used to derive the WQBEL, as provided for under s. NR 106.145(6), Wis. Adm. Code. The designated use of the receiving water will not change as a result of the variance.

Compliance Schedule. A compliance schedule is proposed that requires the facility to continue efforts to identify and eliminate other potentially significant sources of mercury to the facility and to continue to evaluate additional feasible mercury pollutant minimization opportunities. The permit proposes that WPS conduct a study of whether wastewater treatment system changes, such as regular operation of the tertiary filters for BAT wastewater discharged through sample point 103 or diversion of the sludge belt press filtrate to the wastewater treatment system, could result in a reduction in the discharge of mercury to the Wisconsin River.

This facility is in compliance with the current discharge permit and the reissued permit is proposed to expire December 31, 2014. The following individuals participated in the permit reissuance process: Eric Donaldson - DNR Wausau watershed engineer, Pat Oldenberg - DNR Eau Claire Watershed Engineer, and WPS staff members Bruce Beaty and Mark Metcalf.

Respectfully submitted,

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Attachment I

Alternative Effluent Limitation for Mercury

Introduction: Pursuant to NR 105 & 106, Wis. Adm. Code, a water quality-based daily maximum effluent limit of 7.6 ng/L (based on the mercury amounts in the Wisconsin River intake water) is applicable to the treated process wastewater discharge via outfall 002 from the Wisconsin Public Service (WPS) Weston 3&4 facility. As part of its application for permit reissuance, however, WPS requested an alternative effluent limit. As discussed below, the Department proposes to grant an alternative effluent limit of 11 ng/L daily maximum. Such an alternative effluent limit represents a variance from water quality standards as authorized by s. 283.15, Wis. Stats.

Derivation of an Alternative Effluent Limit for Mercury: Pursuant to s. NR 106.145 (5)(a), an alternative effluent limit for the outfall 002 mercury level shall equal the upper 99th percentile of representative daily discharge concentrations of total recoverable mercury as calculated pursuant to s. NR 106.05 (4) (a). The Department's August 31, 2009 water quality-based effluent limitations memo provides such a value as the one-day P99 of 10.9 ng/L.

Granting of an Alternative Effluent Limit for Mercury: Pursuant to s. NR 106.145 (6), the Department proposes to grant Wisconsin Public Service Corp. an alternative effluent limit of 11 ng/L (the P99 value rounded to two significant figures) expressed as a daily maximum limit. The Department has reviewed the facility's application for an alternative effluent limit, including an update to the mercury pollutant minimization program (PMP), and concludes that information supplied supports the establishment of an alternative effluent limit. The Department further concludes that requiring the WPS Weston 3&4 facility to meet the water quality standard for mercury would result in substantial and widespread adverse social and economic impacts, which is consistent with the findings of s. NR 106.145 (1). The Department considers treating a large volume of effluent to meet a daily maximum water quality limit of 7.6 ng/L to be technically and economically infeasible. WPS has successfully reduced the potential to discharge mercury from this facility by implementing a mercury pollutant minimization plan (PMP) under the previous permit. Some of the completed mercury PMP activities are: replacement of all mercury thermometers in the facility, a central collection point for all mercury containing items as they are taken out of service, reduction of caustic and sulfuric acid use in the plant by 90%, and utilization of membrane grade caustic for remaining needs. WPS will replace mercury containing switches and instrumentation as systems are upgraded. The proposed permit mercury compliance schedule requires the facility to continue efforts to identify and eliminate other potentially significant sources of mercury to the facility and to continue to evaluate additional feasible mercury pollutant minimization opportunities.

Wisconsin Public Service Corp. and the Department have reached agreement on an alternative effluent limit of 11 ng/L expressed as a daily maximum and the continuation of the facility's mercury pollutant minimization program plan (PMP) as proposed in the public noticed permit. The proposed PMP meets the requirements of s. NR 106.145 (7) and the proposed permit requires the mill to report each year on the progress of the PMP. The proposed permit requires

monthly mercury monitoring of the facility's treated process wastewater discharge subject to the data quality requirements of ss. NR 106.146 (9) and (10).

Water Quality Antidegradation: The Department concludes that Wisconsin's water quality antidegradation requirements, ch. NR 207, Wis. Adm. Code, are not applicable to the proposed alternative effluent limit for mercury. Antidegradation requirements are not applicable to this initial imposition of an effluent limit and the WPS facility will not be allowed to increase the loading of mercury to the Wisconsin River.

Environmental Effects of Granting an Alternative Effluent Limit for Mercury: The Department concludes that implementing the proposed alternative effluent limit for mercury will not result in increased risk to human health or the environment. The proposed alternative effluent limit is equivalent to the WPS Weston 3&4 current discharge of mercury, which is only slightly greater than the mercury amounts currently found in the Wisconsin River at Weston. The discharge of mercury by the facility in its treated effluent (Outfall 002) has a P99 value of 11 ng/L compared to a P99 value of 7.6 ng/L for the intake water withdrawn by the mill from the Wisconsin River. (Effluent and intake mercury data can be found in the August 31, 2009 water quality-based effluent limitations recommendation memo.) The slightly higher mercury level in the 002 discharge is thought to be primarily a result of mercury concentrating in the recycled condenser cooling water due to water evaporation from the cooling towers. WPS has committed to mercury pollutant minimization activities to achieve further reduction (if possible) in the mercury discharge to the Wisconsin River. It should be noted that the amount of mercury discharged to the river through outfall 002 $[(1.3 \text{ mgd}) \cdot (4.7 \text{ ng/L Hg 30day P99}) \cdot (3.79 \text{ L/gal}) = 23 \text{ mg/day}]$ is less than the amount of mercury taken into the facility with the river water on an average day $[(6.7 \times 10^6 \text{ gal/day intake}) \cdot (2.8 \times 10^{-6} \text{ mg/L Hg 30day P99}) \cdot (3.79 \text{ L/gal}) = 71 \text{ mg/day}]$.

Approval of the proposed mercury variance limitation for the WPS Weston 3&4 treated wastewater discharge should result in no reduction in the existing use of the Wisconsin River at Weston and should not have a significant impact to bald eagles or other listed species that occur within the State of Wisconsin. The proposed permit places a daily maximum limitation on the existing discharge of mercury from the WPS facility and requires pollution prevention efforts during the permit term. The goal of mercury pollutant minimization program is to reduce the mercury discharge levels down to river water intake levels or less if possible. No significant impact to the fisheries, other aquatic life, and wildlife in the immediate area of the discharge from Outfall 002 is expected for the duration of this water quality variance (5 years).

The Department concludes that Wisconsin Public Service Corporation has met the requirements of s. NR 106.145, Wisconsin Administrative Code and s. 283.15, Wisconsin Statutes. The Department further concludes that requiring the WPS to meet the 7.6 ng/L water quality standard for mercury at this time would result in substantial and widespread adverse social and economic impacts. **The Department therefore proposes to grant the variance for mercury.**