UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
WATER

JUN 25 2004

Ms. Maxine I. Lipeles, J.D.
Director, Interdisciplinary Environmental Clinic
Washington University in St. Louis
1 Brookings Drive #1120
St. Louis, MO 63130

Dear Ms. Lipeles:

Thank you for your letter of February 25, 2003, to Administrator Whitman transmitting a petition on behalf of the Ozark Chapter of the Sierra Club requesting that the U.S. Environmental Protection Agency (EPA) set consistent and adequate water quality standards for defined portions of the Mississippi and Missouri rivers. EPA has carefully considered your petition and our formal response is enclosed.

In summary, EPA agrees with the Sierra Club that the Mississippi and Missouri Rivers are valuable resources that must be protected. After evaluating the currently approved water quality standards applicable to the petition area waters, the existing scientific knowledge for each pollutant at issue, and whether the affected states are working to establish or revise water quality standards in a manner that would address potential concerns, EPA is denying the Sierra Club's specific request but committing to further action.

In our discussions with you and the Sierra Club, you specified that two of your highest priority issues are numeric criteria for nutrients and bacteria. You also indicated that if federal promulgation of numeric nutrient criteria was not an option, you would like to see more federal leadership on nutrient issues in the petition area. In response to the petitioners' request to promulgate numeric nutrient criteria, we do not believe it is appropriate to promulgate numeric criteria for these specific waters until the science and the development of numeric nutrient criteria in the big rivers are better understood. However, in response to your request for more federal leadership, in addition to the ongoing work to address hypoxia in the Gulf of Mexico, EPA is committing to convene a multi-day national workshop to bring together states and others to discuss the development and adoption of appropriate ambient water quality criteria for nutrients for the Mississippi and Missouri Rivers to protect the rivers as well as the Gulf of Mexico. Following the workshop, EPA will publish a report that will summarize the results of the workshop, identify next steps, and establish a roadmap for how EPA would work with its partners to address nutrients in the Mississippi and Missouri Rivers. EPA has identified the necessary funds and will begin planning the workshop immediately with the intent to hold the

workshop in 2005. EPA hopes that the Sierra Club and other stakeholders will actively participate in this effort to help ensure success. In the interim, EPA will continue to assist the states and invest additional resources in the development and adoption of nutrient criteria for the rivers' tributaries, with the expectation that state adoption and implementation of nutrient criteria for tributaries of the Mississippi and Missouri Rivers will lead to an overall reduction of nutrient loadings entering the petition area and thus flowing to the Gulf of Mexico.

With regard to the petitioners' request to promulgate bacteria criteria in the petition area, we are pleased to inform you that both Illinois and Missouri have sent EPA formal letters committing to adopt *E. coli* criteria for the petition area (among other waters) within their states. Missouri has committed to adopt *E.coli* criteria (as well as appropriate recreation uses) by July of 2005. Illinois has committed to initiate its rulemaking process to adopt *E. coli* criteria by September 30, 2004. The remaining six states have either adopted *E. coli* criteria or have proposed *E. coli* criteria in their state rulemaking process and are moving forward to adopt it into state regulation. If any state does not follow through on its commitment, EPA will, if necessary, promulgate water quality standards for the petition area within these states.

The Agency expects states to protect their waters consistent with the requirements of the Clean Water Act and the federal regulations. While EPA is not promulgating water quality standards for the petition area in response to the petition at this time, EPA is committed to continue to work with states and others to ensure these valuable waters are adequately protected.

We understand the Sierra Club's concern regarding the consistency, adequacy, and effective monitoring of water quality standards for the Mississippi and Missouri Rivers. I want to assure you EPA carefully considered the petition and the additional information you provided in our decision making process. If you would like to discuss your concerns further, please feel free to contact me at (202) 564-5700 or Geoffrey Grubbs, Director of the Office of Science and Technology at (202) 566-0430.

Sincerely,

[Signed by Ben Grumbles, June 25, 2004]

Benjamin H. Grumbles
Acting Assistant Administrator

Enclosure

cc. J. I. Palmer, Jr, Regional Administrator, Region 4
Bharat Mathur, Acting Regional Administrator, Region 5
Richard Greene, Regional Administrator, Region 6
James B. Gulliford, Regional Administrator, Region 7

DECISION ON PETITION FOR RULEMAKING TO PUBLISH WATER QUALITY STANDARDS FOR THE MISSISSIPPI AND MISSOURI RIVERS WITHIN ARKANSAS, ILLINOIS, IOWA, KANSAS, KENTUCKY, MISSOURI, NEBRASKA AND TENNESSEE

On February 26, 2003, the Ozark Chapter of the Sierra Club (hereafter Sierra Club or petitioner) submitted a petition to the United States Environmental Protection Agency (hereafter "EPA" or Agency) requesting that EPA publish water quality standards for the Mississippi and Missouri Rivers within the petition area. As described below, EPA has given careful consideration to the issues raised in the petition and its request but is HEREBY DENYING the petition for the reasons set forth below.

Petition for Rulemaking

On February 26, 2003, the Ozark Chapter of the Sierra Club submitted a petition requesting that EPA set consistent and adequate water quality standards for defined portions of the Mississippi and Missouri Rivers ("petition area"). The petition area includes portions of the Mississippi and Missouri Rivers in Arkansas, Illinois, Iowa, Kansas, Kentucky, Missouri, Nebraska, and Tennessee ("the petition states"). The Sierra Club submitted this petition pursuant to Paragraph 9 in the Settlement Agreement in American Canoe Ass'n v. Browner, 98-1195-CV-W and 98-482-CV-W (W.D. Mo.) (Effective date 2-27-01).

The petitioner summarizes its request as follows:

> Pursuant to the Settlement Agreement[1], the Ozark Chapter requests that, within one year of receipt of this petition, the EPA publish water quality standards for the Mississippi and Missouri Rivers within the petition area states. Such standards should be:
>
> 1) Consistent among the states on each river, such that no state impairs the ability of any other affected state (whether across-stream or downstream) to achieve its water quality standards; and
> 2) Adequate:
> a) Including numeric criteria for chlordane, atrazine, polychlorinated biphenyls, *E. coli*, enterococci, conventionals (including dissolved oxygen and ammonia), nutrients, sediments, and an index of biological integrity for the aquatic community ("the petition pollutants"), among other criteria; and
> b) Reflecting criteria sufficient to achieve and maintain fishable/swimmable water quality criteria.
> *3)* In addition, such standards should include monitoring requirements sufficient to support a uniform, statistically based method for determining whether the rivers are meeting their water quality standards. Petition at 2 – 3.

[1] Settlement Agreement. American Canoe Ass'n v. Browner, 98-1195-CV-W and 98-482-CV-W (W.D.M.o). Effective date 2-27-01. The Settlement Agreement provides that EPA will "grant or deny" the petition within a year of its receipt. On February 26, 2004, the parties to the settlement agreed to extend the date by which EPA would respond to the petition to June 25, 2004.

Statutory and Regulatory Background

The Clean Water Act (CWA) establishes a comprehensive program "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." CWA section 101(a). The interim goal of the CWA is to attain water quality that provides for the protection and propagation of fish, shellfish, and wildlife. CWA section 101(a)(2).

The CWA section 303 requires states to adopt (subject to federal approval) water quality standards. The principle components of states' water quality standards are: (a) designated uses for waters, such as water supply, recreation, fish propagation, agriculture, and navigation; (b) water quality criteria, which define the amounts of pollutants the waters may contain without impairing their designated uses; and (c) antidegradation requirements, which protect existing uses and otherwise limit degradation of waters. CWA section 303(c)(2)(A) and 303(c)(2)(B), and 40 C.F.R. §§131.3(b), 131.3(f), 131.3(i), 131.6, 131.10-.11 (uses and criteria); and 40 C.F.R. §131.12 (antidegradation).

Designated Uses

Pursuant to CWA section 303(c)(2)(A) and 40 C.F.R. §131.10(a), states must designate appropriate water uses to be achieved and protected taking into consideration the use and value of water for public water supplies, protection and propagation of fish, shellfish, and wildlife, recreation in and on the water, agricultural, industrial, and other purposes including navigation. Where existing water quality standards specify designated uses less than those that are presently being attained, the state shall revise its standards to reflect the uses actually being attained. 40 C.F.R. §131.10(i). A state must conduct a use attainability analysis (UAA) where a state designates or has designated uses that do not include uses specified in section 101(a)(2) (sometimes referred to as "fishable/swimmable"), or where the state wishes to remove designated uses specified in section 101(a)(2), or to adopt subcategories of uses specified in section 101(a)(2) which require less stringent criteria. 40 C.F.R. §131.10(j).

Water Quality Criteria

The CWA section 304(a)(1) provides that EPA shall develop (and from time to time thereafter, revise) recommended water quality criteria based on current data and scientific judgment regarding the relationship between pollutant concentrations and environmental and human health effects. EPA's recommended section 304(a) criteria serve as guidance for states to use in deriving criteria to protect states' adopted designated uses.

EPA currently derives its section 304(a) water quality criteria for the protection of aquatic life using EPA's *Guidelines for the Derivation of Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses* ("Guidelines") (Stephan et al. 1986. NTIS: PB85-227049). The Guidelines provide that each criterion is derived from the

evaluation of toxicological data from a representative universe of species, allows for the inclusion of site-specific considerations, and results in a chemical concentration expected to be protective of aquatic life and their uses.

EPA currently derives its section 304(a) water quality criteria for the protection of human health using the *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health (2000)* ("Methodology") (EPA-822-B-00-004, www.epa.gov/waterscience/humanhealth/method). The Methodology details the necessary components of the risk assessment: hazard (cancer and non-cancer effects), exposure (from drinking water and fish consumption rates), and bioaccumulation (from measured or calculated bioaccumulation factors). The exposure component of criteria is based on consumption of contaminated aquatic organisms and drinking water. Many of the hazard identification and dose response assessments can be found in EPA's Integrated Risk Information System (IRIS)[2], a database that summarizes available toxicity data and contains EPA's assessment of the data. EPA establishes criteria at a recommended risk level for carcinogens; however, selection of a specific risk level is a risk management decision and EPA believes adoption of either a 10^{-6} or a 10^{-5} risk level represents an acceptable range of discretion for states and tribes[3].

The scientific efforts that lead to the publication of a final ambient water quality criterion for protection of either aquatic life or human health typically need 18 months or more to complete. EPA follows the procedures described in EPA's *Guidelines for the Derivation of Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses* and the *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health (2000)*, as well as Agency policy and procedures governing the development of scientific data and documents. This process includes an extensive search of peer reviewed literature, data quality evaluation, criterion and supporting documentation derivation, public scientific input, and peer review. Both the derivation process and the public and peer participation are critical to ensuring that the final section 304(a) criteria meet the clarity, transparency, and scientific rigor standards of the Agency. These steps ensure that the final criteria are scientifically defensible and that risk management decisions based on the criteria are legally defensible.

Ultimately, water quality criteria provide a basis for controlling discharges or releases of pollutants into surface waters. In establishing criteria, EPA's regulations require states to adopt water quality criteria to protect designated uses by adopting EPA's section 304(a) criteria recommendations, modifying EPA's section 304(a) criteria recommendation to reflect site-specific conditions, or deriving and adopting criteria based on other scientifically defensible methods. 40 C.F.R.§131.11. In addition, states may establish narrative criteria where numeric criteria cannot be established or to supplement numeric criteria.

---

[2] U.S. Environmental Protection Agency. Integrated Risk Information System. < http://www.epa.gov/iriswebp/iris/index.html>

[3] U.S. Environmental Protection Agency. *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health (2000).* Office of Water, Washington D.C., EPA-822-B-00-004. October 2000.

Under the regulations[4], narrative criteria have the same force and effect as numeric criteria. The National Pollutant Discharge Elimination System (NPDES) regulations require that the permitting authority establish water quality-based effluent limits for any parameters in the discharge of a point source that the permitting authority determines are or may be discharged at a level which will cause, have reasonable potential to cause, or contribute to an excursion above any applicable state water quality standards, including narrative criteria. 40 C.F.R. §122.44(d)(1)(i). EPA regulations specify three options for deriving a numeric effluent limitation for a particular parameter designed to implement a narrative criterion: (1) use a calculated numeric water quality criterion; (2) use EPA's section 304(a) water quality criteria on a case-by-case basis, supplemented by other relevant information; or (3) use an indicator parameter (see 40 C.F.R. §122.44(d)(1)(vi)). CWA section 303(d) requires states to identify water quality limited segments (i.e. impaired waters) that do not meet applicable water quality standards. For those water quality limited segments identified under 40 C.F.R. § 130.7, the CWA and EPA's regulations require states to develop Total Maximum Daily Loads (TMDLs) which specify the maximum pollution loads the water body can assimilate and still meet water quality standards. TMDLs also allocate these loads among the various pollution sources. For the purposes of CWA section 303(d), "applicable water quality standards refers to water quality standards established under CWA section 303 "…including numeric criteria, narrative criteria, [and] water body uses…" 40 C.F.R. §130.7(b)(3).

Protection of Downstream Uses

The federal regulations state, "In designating uses of a water body and the appropriate criteria for those uses, the State shall take into consideration the water quality standards of downstream waters and shall ensure that its water quality standards provide for the attainment and maintenance of the water quality standards of downstream waters." 40 C.F.R. §131.10(b). The regulations do not compel states to adopt the same criteria and uses, nor do they suggest that this is the only way a state can meet these requirements. The water quality program is structured to provide states with flexibility to determine the best way to meet their obligations under § 131.10(b).

Under the NPDES permitting regulations, no permit may be issued "when the imposition of conditions cannot ensure compliance with applicable water quality requirements of all affected States[.]" 40 C.F.R. §122.4(d). To obtain approval of a state NPDES program, the CWA requires the state to have the authority to notify other affected states of applications for permits and provide an opportunity for a hearing. CWA section 402(b)(3). Further, the state must allow any state whose waters may be affected by the discharge to submit recommendations. If the permitting state rejects the recommendations, it must notify the affected state and EPA Administrator. CWA section 402(b)(5). Where EPA determines the permitting state rejected the recommendations for inadequate reasons, EPA may exercise its discretionary authority to object to the permit. If the objection is not resolved, EPA may issue a federal permit. 40 C.F.R. §123.44 (c)(2).

[4] 40 C.F.R. §122 and 40 C.F.R. §130

EPA's Authority and Role

Whenever a state adopts new or revised water quality standards, the state is required under the CWA section 303(c) to submit such standards to EPA for review and approval or disapproval. EPA reviews and approves or disapproves the water quality standards based on whether the standards meet the requirements of the CWA and federal regulations as discussed above.

If EPA determines that a new or revised water quality standard submitted for its review is consistent with the CWA's requirements, the standards "shall thereafter be the water quality standard for the applicable waters" of the state. If EPA determines that a new or revised water quality standard is inconsistent with the CWA's requirements, EPA is to notify the state of the relevant shortcomings (i.e. EPA will "disapprove" the state's water quality standards) and specify the changes needed to meet the CWA's requirements. The state then has ninety days to adopt the changes specified. CWA Section 303(c)(3). If such changes are not adopted, EPA is then required to promulgate a federal standard. In doing so, EPA shall "promptly prepare and publish proposed regulations setting forth a revised or new water quality standard for the navigable waters involved" and promulgate ninety days thereafter if the state still has not adopted water quality standards in accordance with the CWA. CWA Section 303(c)(4).

In addition to EPA's authority to review and approve new and revised water quality standards, EPA also has a separate, discretionary authority to promulgate federal water quality standards for a state if the Administrator determines that new or revised water quality standards are necessary to meet the requirements of the CWA. CWA Section 303(c)(4)(B), 40 C.F.R. §§131.5(b), 131.22(b). In its petition to EPA, the Sierra Club asks that the EPA Administrator exercise his discretionary authority under the Clean Water Act to correct the perceived deficiencies identified by the Sierra Club in its petition. Therefore, in deciding if promulgation of water quality standards is "necessary to meet the requirements of the CWA," EPA has evaluated whether the minimum requirements of the Act and the federal regulations (i.e., designated uses consistent with sections 101(a)(2) and 303(c)(2)(A) and criteria protective of those uses), are satisfied by the existing state water quality standards. Below, each of the specific issues raised by the Sierra Club are reviewed against this standard.

The structure of the Water Quality Standards program, as described, reflects Congress' intent to "recognize, preserve, and protect the primary responsibilities and rights of states to prevent, reduce, and eliminate pollution [and] to plan the development and use (including restoration, preservation and enhancement) of … water resources[.]" CWA Section 101(b). Accordingly, the CWA confers to the states primary authority for setting water quality standards. EPA's role is largely one of oversight, in which it reviews a state's new or revised water quality standards as they are adopted by the states and submitted to EPA. CWA Section 303(c). EPA exercises its discretionary authority under CWA section 303(c)(4)(B) only when the Administrator has determined that the

existing state water quality standards are insufficient to meet the requirements of the CWA.

EPA's approach to evaluating the petition, state standards, and the need for Federally promulgated water quality standards

In determining how to respond to the petition, EPA considered the following:

(1) What are the currently approved water quality standards that apply to the petition area and what are the apparent differences in state water quality standards that the petitioner identifies?

EPA reviewed the petition and the addenda in the petition, which contain multiple tables comparing uses and criteria within the petition area. After reviewing this information, EPA conducted its own independent analysis of the currently approved state water quality standards.[5, 6]

(2) Are the water quality standards of the petition states inconsistent with the CWA? Do any differences in water quality standards among the petition states indicate the standards are inconsistent with the CWA?

As discussed earlier, the federal regulations do not compel states to adopt the same criteria and uses to meet the requirements of the Act. Therefore, differing water quality standards do not necessarily indicate that the water quality standards are inconsistent with the CWA. Where differences in water quality standards were confirmed in EPA's analysis, EPA examined whether the various state water quality standards nonetheless provided protection for the petition area waters. Such protection could be afforded in a number of ways. EPA looked to see if a state applies ambient water quality criteria, either as part of general standards that apply to all waters or criteria to protect another designated use that would protect the designated uses applicable to the petition area. EPA looked to see if a state might have implementation procedures outside of EPA approved water quality standards (e.g., procedures to derive numeric criteria) that would further describe how the state implements its water quality standards and whether this information would resolve any apparent inconsistencies/inadequacies. EPA also reexamined the state water quality standards to determine why the differences might exist. To do so, EPA compared state water quality criteria to EPA's previous section 304(a) criteria recommendations and looked at the assumptions/policy decisions that states used to determine if the criteria were derived using scientifically defensible methods.

(3) Are the differences in water quality standards a basis for environmental concern?

[5] See Attachment A
[6] See Attachment B

Where EPA confirmed states have different designated uses and/or criteria for the petition area, EPA evaluated the degree of environmental concern linked to those specific differences. EPA evaluated the petition data to determine whether the petitioner identified any specific information to indicate where the differences were causing an environmental problem of concern. EPA then reviewed states' section 303(d) impaired waters lists for 2002 to see whether the states themselves identified segments within the petition area to be impaired by the petition pollutants. If a state identified the pollutant on the section 303(d) list, EPA then investigated whether any documented evidence exists to show that water from an upstream state or across stream state was the leading cause of the impairment even if that water body was meeting the upstream or across stream states' water quality standards.

(4) Is the current level of scientific knowledge sufficient to determine the criteria appropriate to adequately protect designated uses?

EPA investigated the current status of scientific knowledge for each pollutant identified by the petitioner. EPA first identified its most current section 304(a) criteria recommendation. EPA then considered where it is in the process to either revise its section 304(a) criteria recommendations or to derive a section 304(a) criteria recommendation for pollutants where one does not exist. EPA also evaluated the scientific understanding of these pollutants to determine whether the science is sufficient at this time to support federal or state development of numeric ambient water quality criteria for the petition area.

(5) Are the states working to revise their water quality standards in a way that would address the concerns of this petition?

Development and implementation of water quality standards to protect state waters are primarily the state's responsibilities. CWA section 101(b). EPA identified the instances where adjacent states adopted different ambient water quality criteria for pollutants that EPA has provided section 304(a) criteria recommendations and determined if these differences have the potential to cause adverse effects. In these cases, EPA evaluated whether the states are making a good faith effort to revise their water quality standards to address these concerns and incorporate the latest scientific knowledge.

Issues Identified by Petitioner and EPA's Response

1) Designated Uses

Petitioner's Position - The Sierra Club claims that while variations in designated uses are acceptable in some circumstances, states have designated uses throughout the petition area that vary inappropriately. The petitioner maintains that as a result of these inconsistencies, "when downstream states designate these interstate rivers for uses such as drinking water, fishing, and

contact recreation, but upstream states do not protect for those uses, downstream states may be unable to achieve their water quality standards." Petition at 12. In the petition, the Sierra Club specifically identifies that, unlike their surrounding states, Kentucky does not designate the Mississippi River for drinking water, Iowa does not designate the Mississippi or Missouri Rivers for a fishing use, and Missouri does not designate the Mississippi or Missouri Rivers for primary contact recreation. The Sierra Club also claims that Iowa designates one portion of the Missouri River for non-contact recreation whereas stretches above and below that portion of the river are classified for primary contact recreation. Petition at 10 – 11. The petitioner requests that EPA use its authority under the CWA section 303(c)(4) to promulgate water quality standards applicable to the Mississippi and Missouri Rivers in the eight state region around the rivers' confluence. Such standards should be consistent among the states on each river, such that no state impairs the ability of any other affected state (whether across-stream or downstream) to achieve its water quality standards. Petition at 1 and 3.

EPA Response – For the reasons provided below, EPA concludes that it is unnecessary to federally promulgate, at this time, any designated uses for the petition area to meet the requirements of the CWA section 303(c) or the federal water quality standards regulations at 40 C.F.R. Part 131.

a) Aquatic life Use

In the petition, the Sierra Club did not discuss any specific concerns regarding the designated aquatic life uses within the petition area. However, tables contained in the petition's addenda (see addenda 6 and 7), showed that some petition states designate aquatic life uses for the petition area differently from their neighboring states.

The Sierra Club's addenda show that all states within the petition area designate an aquatic life use to these waters but label the uses differently. To understand the significance of these differences, EPA evaluated the currently approved state water quality standards to determine whether the petition states' water quality standards are inconsistent with the CWA and federal regulations at 40 C.F.R. Part 131 such that a federal promulgation of aquatic life uses is necessary. EPA found that while the specific terms used by each state may differ (e.g., Significant Resource Warm Water (IA), Warm Water Aquatic Habitat (KY), Perennial Delta Fishery (AR))[7], each state designates uses to protect aquatic life consistent with the CWA and federal regulations. Based on this information, EPA determined that each state designates a use to provide for the protection and propagation of fish, shellfish, and wildlife. Therefore, EPA does not believe it is necessary to federally promulgate, at this time, aquatic life uses for the petition area to meet the requirements of the CWA under CWA section 303(c)(4)(B).

b) Drinking water supply

The Sierra Club points out in the designated use section of the petition that Kentucky does not designate the Mississippi River for drinking water uses whereas surrounding states have

[7] See Attachment B

made such a designation. Petition at 10. Addendum 6 of the petition also indicates that Tennessee does not designate a drinking water use for the segment of Mississippi River from the upstream end of the Loosahatchie Bar to the Mississippi/Tennessee state line. The petitioner did not provide any specific evidence of adverse impacts on drinking water uses resulting from these differences. EPA evaluated the information contained in the petition and the currently approved state water quality standards to determine if the petition states' water quality standards are inconsistent with the CWA and federal regulations at 40 C.F.R. Part 131 such that a federal promulgation of drinking water uses is necessary. To assess the potential for human health impacts, EPA also identified the drinking water intake locations and assessed whether there is any evidence that the drinking water use at these intakes is impaired as a result of different water quality standards within the petition area.

EPA found that where segments of the Mississippi and Missouri Rivers in the petition area are used for drinking water (i.e., drinking water intakes exist) states have designated those segments for a drinking water use. Kentucky does not designate its portion of the Mississippi River for drinking water supply because the state does not use the Mississippi River as a source of drinking water. Tennessee does not designate the segment of the Mississippi River from the upstream end of Loosahatchie Bar to the Mississippi/Tennessee state line as drinking water because they do not use this segment for drinking water. This Tennessee segment, however, while identified in addendum 6, is not within this petition area as defined in the petition. Therefore, EPA will not address this segment further in its response.

Since Kentucky does not designate the Mississippi River for a drinking water source, EPA evaluated whether an across stream or downstream state's drinking water uses are impaired by Kentucky's lack of designated drinking water use. While it is true that Missouri and Tennessee designate the Mississippi River located within the petition area for a drinking water use, EPA confirmed that Missouri does not have any drinking water intakes along the Mississippi River located across from Kentucky (Cape Girardeau south to Kentucky/Tennessee border) and Tennessee (which is downstream of Kentucky) does not have any drinking water intakes at all along the Mississippi River. In addition, neither Missouri nor Tennessee lists the drinking water uses on the Mississippi River within their jurisdiction as impaired. Therefore, EPA concludes that Kentucky's lack of a drinking water use is not preventing a downstream or across stream state from attaining and maintaining a drinking water use since there are no drinking water intakes or drinking water use impairments downstream or across stream from Kentucky. Therefore, Kentucky's lack of a public water supply designated use is consistent with the CWA and federal regulations at 40 C.F.R. §131.10(b). EPA concludes it is unnecessary to federally promulgate, at this time, drinking water uses for Kentucky within the petition area to meet the requirements of the CWA under CWA section 303(c)(4)(B).

c) Fish Consumption

The Sierra Club asserts that Iowa does not designate the Mississippi and Missouri Rivers for fish consumption although its waters are adjacent to Illinois, which the Sierra Club indicates has designated a fish consumption use. Petition at 10 – 11. Addenda 6 and 7, however, show that Illinois does not designate the Mississippi River for fishing. EPA evaluated this information

and the currently approved state water quality standards to determine if the petition states' water quality standards are inconsistent with the CWA and federal regulations at 40 C.F.R. Part 131 such that a federal promulgation of fish consumption uses is necessary.[8] EPA first looked to see which states explicitly designate fish consumption as a use applicable to the petition area. For those states that do not, EPA evaluated the states' water quality standards to determine whether the criteria applicable to the petition area protect fish consumption uses in the petition area.

Missouri's aquatic life use is labeled Warm Water and Human Health Fish Consumption. Kansas designates the Missouri River for Food Procurement which is defined as "the use of surface waters other than stream segments for obtaining edible forms of aquatic or semiaquatic life for human consumption"[9], thus protecting human health for fish consumption. The remaining six states (Kentucky, Tennessee, Iowa, Nebraska, Illinois and Arkansas) do not explicitly designate fish consumption as a use within the petition area; however, all six of these states apply ambient water quality criteria to the petition area applicable to all surface waters or to protect another designated use that were derived to protect humans from possible risks posed by fish consumption. For example, Kentucky's minimum criteria applicable to all surface waters includes water quality criteria for the protection of human health from the consumption of fish tissue (See 401 KAR 5:031 Surface Water Standards, Section 2 Minimum Criteria Applicable to Surface Waters, Table 1 Water Quality Criteria for the Protection of Human Health from the Consumption of Fish Tissue).[10]

With regard to the Sierra Club's specific concern that Iowa lacks a fish consumption use, Iowa's Class B (WW) or Warm Water Aquatic Life use, which applies to both the Mississippi and Missouri Rivers within the petition area, includes a narrative provision (see Iowa State Standards at 567 IAC 61.3(1)(b)(4)) to prohibit the contamination of fish tissue which would present a hazard to human health as well as numeric water quality criteria for specific pollutants intended to protect human health from possible risks posed by fish consumption (See Iowa State Standards, 567 IAC 61.3(3) Table 1).

EPA concludes that while all the petition states do not specifically designate the petition area for fish consumption, all petition states apply human health criteria to protect humans from possible risks posed by fish consumption and therefore effectively protect fish consumption uses consistent with the CWA and federal regulations at 40 C.F.R. Part 131. Therefore, it is unnecessary for EPA to federally promulgate, at this time, a fish consumption use for any state within the petition area to meet the requirements of the CWA under CWA section 303(c)(4)(B).

d) Recreation

The Sierra Club points out that Missouri designates the Mississippi and Missouri Rivers for secondary contact recreation use while surrounding states designate the waters for primary contact recreation use. The petition further states that one portion of the Missouri River in Iowa's jurisdiction is designated for non-contact recreation instead of primary contact recreation

[8] See Attachment B
[9] See Attachment A
[10] See Attachment A

uses. Petition at 10 – 11. Addenda 6 and 7 reiterate this information. EPA evaluated this information and the currently approved state water quality standards to determine if the petition states' water quality standards are inconsistent with the CWA and federal regulations at 40 C.F.R. Part 131 such that a federal promulgation of recreation uses is necessary.[11] EPA first reviewed each state's water quality standards to determine what recreation uses and associated criteria apply to protect these uses. Where EPA found a primary contact recreation use and/or the associated ambient water quality criteria absent, EPA discussed its findings with the state to determine whether the state intended to revise its water quality standards in the near future, and if that revision would resolve the issue identified in this petition.

EPA's analysis shows that Illinois, Kentucky, Tennessee, Arkansas, Nebraska, Kansas, and Iowa have all adopted primary contact recreation uses and the water quality criteria to protect a primary contact recreation use for all segments of the Mississippi and/or Missouri Rivers within the petition area. While the petitioner identifies Iowa as not applying a primary contact use to one segment along the Missouri River, EPA's analysis showed that Iowa has designated all portions of the Missouri River within the petition area for primary contact recreation. The stretch of the Missouri River within Iowa's jurisdiction flows from the confluence with the Big Sioux River to the Iowa/Missouri state line. Iowa's water quality standards specifically state that the Missouri River from the Iowa/Missouri state line to the confluence with the Big Sioux River is designated for Class A (waters "to be protected for primary contact recreation"), among other uses (See Iowa State Standards, 567 IAC 61.3(5)(e)).

On October 14, 2003, the Missouri Coalition for the Environment filed a lawsuit against EPA alleging that EPA has a duty to promulgate water quality standards for Missouri. One of the issues raised in the lawsuit is Missouri's lack of primary contact recreation uses. The state of Missouri has provided EPA a letter committing to adopt a primary contact use (labeled "whole body contact" by the state of Missouri) for the waters within the petition area (among others in the state). Missouri has committed to completing its rulemaking process to adopt such uses by July of 2005.

To summarize, seven of the eight petition states have adopted primary contact recreation uses for the petition area consistent with the CWA and federal regulations at 40 C.F.R. Part 131 and Missouri has initiated a rulemaking process to adopt primary contact uses for the petition area by January 2005, for the petition area. For this reason, EPA concludes that it is unnecessary for EPA to federally promulgate, at this time, a primary contact use for Missouri or Iowa within the petition area to meet the requirements of the CWA under CWA section 303(c)(4)(B) in response to this petition.

e) ***Agriculture, Aesthetics, Irrigation, Livestock & Wildlife watering, Navigation, Industrial uses***

In the petition, the Sierra Club did not identify any specific instances where states designated agriculture, aesthetic, irrigation, livestock and watering, navigation or industrial uses to the petition area differently. However, tables contained in the petition's

[11] See Attachment B

addenda (see addenda 6 and 7), showed some differences in how petition states designate these uses for the petition area.

The addenda show differences among the states' designations for agriculture, aesthetics, irrigation, livestock and wildlife watering, navigation, and industrial uses. For example, while Iowa, Illinois, Arkansas and Tennessee designate the Mississippi River within the petition area for agricultural uses, Missouri does not. To understand the significance of these differences, EPA evaluated the currently approved state water quality standards to determine whether the petition states' water quality standards are inconsistent with the CWA and federal regulations at 40 C.F.R. Part 131 such that a federal promulgation of any of these uses is necessary. Based on a review of the petition states' approved water quality standards[12], the criteria adopted to protect aquatic life uses are more stringent than the criteria that are or would be applied to protect agriculture, aesthetics, irrigation, livestock and wildlife watering, navigation, or industrial uses within the petition area. Therefore, EPA concludes that the most stringent criteria that the states apply to the petition area to protect aquatic life will also protect agriculture, aesthetics, irrigation, livestock and wildlife watering, navigation and industrial uses wherever they have been designated in the petition area. Accordingly, it is not necessary for EPA to promulgate, at this time, any of these uses for the petition area to meet the requirements of the CWA under CWA section 303(c)(4)(B).

2) Water Quality Criteria

Petitioner's Position – In addition to the concerns regarding designated uses, the Sierra Club asserts that the problems in the petition area are compounded by states applying different criteria or no criteria to protect designated uses even in the situations where the underlying designated uses are equivalent. The Sierra Club specifically identifies the following pollutants at issue: chlordane, atrazine, polychlorinated biphenyls, *E. coli*, enterococci, dissolved oxygen, ammonia, nutrients, and sediments. They also identify the need for an index of biological integrity for the aquatic community. Petition at 3. The petitioner requests that EPA exercise its authority under section 303(c)(4) of the CWA to promulgate water quality standards applicable to the Mississippi and Missouri Rivers in an eight state region around the rivers' confluence. EPA should set standards that are adequate to achieve the CWA's fishable/swimmable requirements.

EPA's Response – EPA evaluated the currently approved water quality criteria within the petition area for chlordane, atrazine, polychlorinated biphenyls, *E. coli*, enterococci, dissolved oxygen, ammonia, nutrients, sediments, and an index of biological integrity for the aquatic community to determine if the criteria are consistent with the requirements of the CWA section 303(c) and the federal water quality standards regulations at 40 C.F.R. Part 131. These criteria were identified in Paragraph 9 of the Settlement Agreement in American Canoe Ass'n v. Browner, 98-1195-CV-W (W.D. Mo.) (effective date 2-27-01), as well as in the Sierra Club's petition. EPA finds that the petitioner has not demonstrated that a federal promulgation of new or revised water quality criteria for the

[12] See Attachment A

petition area is needed to meet the requirements of the CWA and the federal regulations. Therefore, EPA denies the petitioner's request to promulgate any numeric water quality criteria, at this time, for the pollutants specifically identified by the petitioner, to apply to the petition area. EPA's detailed rationale for its conclusions regarding each of the pollutants is discussed in greater detail in the following paragraphs.

a) Atrazine

Aquatic Life Protection. The petition does not identify any specific concerns with the petition states' atrazine criteria for the protection of aquatic life. Addendum 8 of the petition describes the atrazine criteria that the states have adopted for the Mississippi River. It shows that none of the states along the Mississippi River have adopted numeric atrazine criteria to protect aquatic life uses (or any other use, except drinking water, as discussed below). Neither the petition nor the addenda contain any information or discussion of atrazine criteria to protect aquatic life uses on the Missouri River.

EPA evaluated this information as well as the currently approved state water quality standards to determine if the state water quality standards are inconsistent with the CWA and federal regulations at 40 C.F.R. Part 131 such that a federal promulgation of numeric atrazine criteria for the protection of aquatic life is necessary for the petition area. EPA first reviewed the states' currently adopted and approved water quality standards to validate the petitioner's findings. Specifically, EPA looked to see whether any states have adopted numeric or narrative atrazine criteria to protect aquatic life. EPA also reviewed the petition states' 2002 section 303(d) lists[13] to determine if any state identified atrazine as a pollutant responsible for impairing an aquatic life use. Finally, EPA evaluated the scientific understanding of atrazine to determine if the science is sufficient at this time to support EPA or state development of numeric ambient water quality criteria for the protection of aquatic life.

According to EPA's evaluation of the states' water quality standards, all eight of the petition states currently have narrative criteria related to toxic pollutants that may be used for establishing NPDES permits, listing waters as impaired by atrazine on section 303(d) lists and developing TMDLs, if necessary. As discussed earlier in the "Statutory and Regulatory Background" section, narrative criteria may form the regulatory basis for these purposes. While the petition's addendum 8 indicates that no state has adopted numeric atrazine criteria, EPA found that three states, Illinois, Nebraska and Kansas, have numeric aquatic life criteria for atrazine.[14] Illinois has an EPA approved procedure for implementing their narrative criteria at Title 35, Subtitle C, Chapter 1, Section 302.210 in Illinois' water quality standards. This procedure derives numeric values to be used as ambient water quality criteria for toxic pollutants, including atrazine.[15] Nebraska

[13] See Attachment G
[14] See Attachment B
[15] Derived Water Quality Criteria, Illinois Environmental Protection Agency <http://www.epa.state.il.us/water/water-quality-standards/water-quality-criteria.html>

and Kansas have explicitly adopted ambient water quality criteria for atrazine.[16] However, these states adopted criteria at the state's own initiative without the benefit of a final EPA CWA section 304(a) criteria recommendation. These states exercised their discretion to adopt a numeric criterion for atrazine based on other scientifically defensible methods. None of the petition states identified (nor has EPA proposed to identify) atrazine as an impairing pollutant within the petition area on their 2002 section 303(d) impaired waters list.[17]

On November 7, 2003, EPA released and requested scientific views on a revised draft ambient water quality criteria document for atrazine to protect aquatic life. This document provides EPA's draft acute and chronic criteria recommendations for atrazine designed to protect aquatic life in both freshwater and saltwater. The revised draft criteria incorporate toxicity information for atrazine that had not been available at the time EPA published its 2001 draft recommendations (see EPA's website at http://www.epa.gov/waterscience/criteria/atrazine/). In addition to revising the 2001 draft criteria recommendations to reflect scientific views EPA received from the public during the comment period, the Office of Water has been closely coordinating with the Office of Pesticide Programs (OPP) to ensure that the draft ambient water quality criteria recommendation is consistent with OPP's ecological risk assessment. OPP used its ecological risk assessment for atrazine to ensure that its decision to reregister atrazine did not result in unreasonable adverse effects.

Since EPA is currently in the process of developing a final numeric atrazine water quality criterion to protect aquatic life and atrazine may be controlled, if necessary, in all petition states based on narrative criteria where numeric atrazine criteria to protect aquatic life uses do not exist, EPA concludes that it is not necessary for EPA to promulgate numeric atrazine criteria to protect aquatic life for the petition area, at this time, to meet the requirements of the CWA under CWA section 303(c)(4)(B). Once EPA's recommendations are finalized, it is EPA's policy to allow states an appropriate amount of time to incorporate EPA's newest recommendations into their water quality standards. When EPA's section 304(a) atrazine criterion to protect aquatic life is final and states have had appropriate time to incorporate the updated science into their water quality standards, EPA will evaluate the need for a federal promulgation where it is determined that atrazine criteria are necessary to protect designated uses in the petition area.

Human Health Protection. The Sierra Club's addendum 8 shows that Iowa, Missouri and Tennessee have adopted an ambient water quality criterion for atrazine of 3 µg/L to protect drinking water supplies along the Mississippi River while Arkansas, Illinois and Kentucky have not adopted numeric criteria for atrazine. In the petition's water quality criteria section, the Sierra Club specifically expresses a concern that Kentucky, the only state that does not designate the Mississippi River for a drinking water use, does not have a numeric criterion for atrazine to protect public health. The petition does not discuss atrazine criteria to protect human health on the Missouri River.

[16] See Attachment B
[17] See Attachment G

EPA evaluated this information as well as the currently approved state water quality standards to determine if the state water quality standards are inconsistent with the CWA and federal regulations at 40 C.F.R. Part 131 such that a federal promulgation of numeric atrazine criteria for the protection of human health is necessary for the petition area. EPA first reviewed the states' currently adopted and approved water quality standards to validate the petitioner's findings. Specifically, EPA looked to see if any states have adopted numeric atrazine criteria to protect human health. EPA also reviewed the 2002 section 303(d) lists[18] to determine if any state identified atrazine as a pollutant responsible for impairing human health uses. Finally, EPA evaluated the scientific understanding of atrazine to determine if the science is sufficient at this time to support EPA or state development of numeric ambient water quality criteria to protect human health.

According to EPA's evaluation of the states' water quality standards, all of the petition area states along the Missouri River (Iowa, Nebraska, Missouri, and Kansas) apply 3 µg/l to protect public water supplies. Iowa, Missouri, and Tennessee have adopted 3 µg/l into their water quality standards to protect public water supplies on the Mississippi River. Kentucky, Illinois, and Arkansas have not adopted numeric water quality criteria for atrazine to protect human health. All eight of the petition states currently have narrative criteria related to toxic pollutants that may be used for establishing NPDES permits and TMDLs, if necessary. As discussed earlier in the "Statutory and Regulatory Background" section, narrative criteria can form the regulatory basis for these purposes. No state within the petition area has included atrazine as a pollutant on their section 303(d) impaired waters list nor did the petitioner raise any specific instances of concern in the petition.

The ambient water quality criterion of 3 µg/l that five of the eight petition area states have adopted to protect public water supplies is based on EPA's maximum contaminant level (MCL) published under § 1412(b)(4) of the Safe Drinking Water Act that applies to treated drinking water, not to ambient surface waters. EPA has not yet developed ambient water quality criteria recommendations for atrazine to protect human health under section 304(a) of the CWA because the science necessary to develop appropriate criteria for surface waters is not yet complete. Currently, the Agency is reassessing the available toxicity information on atrazine (OPP recently conducted a human health risk assessment for atrazine and concluded that there was a reasonable certainty of no harm from the reregistration of atrazine). Once this scientific evaluation is completed, EPA will consider developing ambient water quality criteria for atrazine. In the interim, states continue to have the discretion to adopt a numeric criterion for surface waters to protect human health based on other information, such as MCLs.[19]

In response to the petitioner's specific concern with respect to Kentucky, EPA concludes that since Kentucky does not use the Mississippi River as a drinking water

[18] See Attachment G

[19] U.S. Environmental Protection Agency. 1994. *Water Quality Standards Handbook: Second Edition.* Office of Water, Washington, D.C. EPA-823-B-94-005a.

source, there are no drinking water intakes across or immediately downstream from Kentucky, and Kentucky could use narrative criteria to control atrazine if necessary, Kentucky's water quality standards are consistent with the CWA and federal regulations. Therefore, it is unnecessary for EPA to federally promulgate numeric atrazine criteria for Kentucky to protect human health uses, at this time, to meet the requirements of the CWA under CWA section 303(c)(4)(B).

With regard to Illinois and Arkansas, EPA concludes that a federal promulgation is unnecessary, at this time, to meet the requirements of the CWA CWA section 303(c)(4)(B). This conclusion is based on the following facts: The science is currently under review in preparation for criteria development; the states have not specifically identified atrazine as a pollutant impairing human health uses on their impaired waters list; the petitioner has not identified any specific concerns; and the petition states' current narrative criteria provide a basis for pollutant control in the absence of numeric criteria to protect local and downstream water quality standards (40 C.F.R. §131.10(b)), if necessary. However, once EPA issues section 304(a) criteria recommendations for atrazine for the protection of human health and EPA has provided states appropriate time to incorporate the latest science into water quality standards, EPA will reevaluate the need for a federal promulgation where it is determined that atrazine criteria are necessary to protect designated uses in the petition area.

b) PCBs

The Sierra Club identifies a specific concern regarding PCB criteria for two states, Iowa and Nebraska, both of which are upstream of Missouri on the Mississippi River and the Missouri River, respectively. The Sierra Club points out that Iowa's and Nebraska's PCB criteria are nearly ten times less stringent than Missouri's PCB criteria. Petition at 13 - 14. Addenda 10 and 11 of the petition provide tables describing the PCB criterion that each petition state applies to the petition area, as evaluated by the Sierra Club, and shows that the petition states have adopted varying criteria to protect their designated uses.

EPA evaluated the information provided by the petitioner as well as the currently approved state water quality standards for all petition states to determine if the PCB criteria in the petition states' water quality standards are inconsistent with the CWA and federal regulations at 40 C.F.R. Part 131 such that a federal promulgation of numeric PCB criteria is necessary. EPA first reviewed the states' currently adopted and approved water quality standards to validate the petitioner's findings. Specifically, EPA identified exactly what numeric and/or narrative PCB criteria states have currently adopted to apply to the petition area.[20] EPA then investigated the basis for these criteria to determine if the states had adopted criteria based on EPA's recommendations or on other scientifically defensible methods. Finally, EPA looked for any documented evidence that may suggest the differences in criteria are preventing a downstream or across stream state from attaining and maintaining its water quality standards.

[20] See Attachment B

Adverse human health effects are expected at much lower concentrations of PCBs than in aquatic life. As a result, EPA's CWA section 304(a) criteria recommendations for PCB to protect human health have generally been more stringent than those to protect aquatic life. In the case where states have adopted PCB criteria to protect both human health and aquatic life, the criteria to protect human health are more likely to drive regulatory decisions. Therefore, in its evaluation of currently approved PCB criteria, EPA focused on whether the states have adopted numeric criteria for PCBs to protect human health-related designated uses. EPA acknowledges there are variations in the numeric PCB criteria adopted by the petition states. There are four legitimate reasons why the numeric PCB criteria vary within the petition area:

(1) EPA published section 304(a) criteria recommendations several times over the past 20 years. EPA's revised section 304(a) criteria recommendations reflect the most current scientific knowledge but do not always result in more stringent criteria recommendations (e.g., EPA's 1999 section 304(a) recommendations for PCB were less stringent than its 1986 section 304(a) recommendations.)[21,22] States have adopted and revised PCB criteria at different points in time. The criteria the petition states adopted depended on the recommendations and information available at that time. For example, Kentucky and Kansas adopted human health criteria based on EPA's 1986 section 304(a) criteria recommendation while Nebraska (which evaluates the aquatic life and human health criteria and adopts whichever one is most stringent) adopted human health criteria based on EPA's 1992 National Toxics Rule (See 40 C.F.R. §131.36). These values were also published as section 304(a) criteria in 1999. On the Missouri River, even though Kansas' human health criterion for PCB is more stringent than Nebraska's (the upstream state), Nebraska's criterion is in fact based on more recent science. Therefore, comparing stringency of criteria is not an adequate method of determining whether states have appropriate criteria to protect the designated uses or whether they are providing for the attainment and maintenance of downstream water quality standards as required under 40 C.F.R. §131.10(b).

(2) While EPA did not publish revised section 304(a) criteria for PCBs between 1986 and 1999, EPA updated toxicity information for PCBs in EPA's IRIS[23] database in 1989. As a result, Iowa, Missouri, Arkansas, and Tennessee took EPA's 1986 section 304(a) criteria recommendations and incorporated the new toxicity information from IRIS to derive a revised ambient water quality criterion for PCBs. States have the discretion to derive criteria based on other scientifically defensible

[21] U.S. Environmental Protection Agency. *Quality Criteria for Water*. Office of Water, Washington, D.C. < http://www.epa.gov/waterscience/criteria/goldbook.pdf > EPA 440/5-86-001. May 1986
[22] U.S. Environmental Protection Agency. *National Recommended Water Quality Criteria – Correction*. Office of Water, Washington, D.C. < http://www.epa.gov/waterscience/pc/1999table.pdf> EPA 822-Z-99-001. April 1999
[23] [23] U.S. Environmental Protection Agency . Integrated Risk Information System. < http://www.epa.gov/iriswebp/iris/index.html>

methods (40 C.F.R. §131.11). These states used EPA's method to derive criteria but used more recent toxicity information to ensure their criteria incorporated the latest scientific information at the time of adoption.

(3) As discussed in the "Statutory and Regulatory Background" section, EPA publishes section 304(a) criteria based on a 10^{-6} risk level for carcinogens; states may select a specific risk level based on their own risk management decisions. EPA believes that adoption of criteria within a risk level of 10^{-6} (one in a million incremental risk for cancer) or 10^{-5} (one in one hundred thousand incremental risk for cancer) represents an acceptable range of risk management discretion for states and tribes.[24] Within the petition states, each state adopts criteria to protect human health based on risk management decisions. Iowa, Arkansas, Tennessee, and Nebraska have adopted PCB criteria based on a 10^{-5} risk level; Illinois, Kentucky and Missouri have adopted PCB criteria based on a 10^{-6} risk level; and Kansas chose to adopt a PCB criterion to protect human health at a 10^{-7} risk level.

(4) EPA's regulations provide that states may adopt EPA's section 304(a) criteria recommendations, modify EPA's section 304(a) criteria to reflect site-specific conditions, or derive and adopt criteria based on other scientifically defensible methods. (40 C.F.R. §131.11 (b)). Illinois developed a procedure to translate its narrative criteria and derive numeric values for certain pollutants. EPA determined that this procedure is scientifically defensible and considers the numeric values derived using this procedure to be within the acceptable range to protect designated uses. Illinois uses this procedure to derive numeric values for PCBs that may be used to issue NPDES permits, to determine if a waterbody is impaired for PCBs and thus listed under CWA section 303(d) listings, and/or to develop a TMDL.

As discussed above, Iowa and Missouri adopted a numeric PCB criterion to protect human health based on the toxicity information available in IRIS that was updated in 1989. With regard to the Sierra Club's specific concern about Iowa's PCB criterion as compared to Missouri's criterion, EPA found that Iowa's criterion is an order of magnitude greater than Missouri's because Iowa has chosen to protect human health at a 10^{-5} risk level while Missouri protects human health at a 10^{-6} risk level. With regard to the Sierra Club's specific concern about Nebraska's PCB criterion as compared to Missouri, EPA found that Nebraska adopted a numeric PCB criterion to protect human health based on EPA's section 304(a) criteria recommendations published in 1999 (Missouri used the updated 1999 IRIS data), but chose a 10^{-5} risk level. As a result, Nebraska's PCB criterion is greater than Missouri's criterion.

[24] U.S. Environmental Protection Agency. *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health (2000).* Office of Water. Washington, D.C. EPA-822-B-00-004. <http://www.epa.gov/waterscience/humanhealth/method > October 2000.

As described in the "Statutory and Regulatory Background" section, the regulations do not compel states to adopt the same criteria and uses in order to provide for attainment and maintenance of downstream water quality standards (40 C.F.R. §131.10(b)), nor do the regulations suggest that this is the only way a state can meet the requirements under § 131.10(b). The water quality program is structured to provide states with flexibility to determine the best way to protect their designated uses and meet their obligations under § 131.10(b). The petitioner has not provided any specific instances where the differences in PCB criteria are preventing a downstream or across stream state from attaining its designated uses as required by 40 C.F.R. §131.10(b).

The PCB criteria adopted by the petition states vary due to any one or a combination of the above reasons. EPA found that the petition states adopted criteria based on an EPA section 304(a) criteria recommendation or another scientifically defensible method and these criteria are within the scientifically acceptable range to protect designated uses consistent with 40 C.F.R. §131.11. In addition, since the production of PCBs have been banned in the United States, EPA believes it is unlikely that any differences in criteria will lead to future increases in the discharge of PCBs. While the petition states do apply different numeric PCB criteria to the petition area and some states have listed certain segments of the petition area waters as impaired for PCBs, EPA is unaware of any evidence that indicates the impairments are a result of anything but local water quality or sediment quality issues. Therefore, EPA has no reason to believe that an upstream or across stream state is causing the impairments. For example, on the Missouri River, while Missouri lists the Missouri River as impaired at the Iowa/Missouri state line due to PCBs, Iowa does not. EPA has no reason to believe that the mere listing of the Missouri River for PCBs is due to the different PCB criterion in Iowa instead of water quality issues wholly within the state of Missouri. Since the petition states have adopted PCB criteria based on EPA recommendations or other scientifically defensible methods, states have mechanisms available to them to ensure downstream water quality standards are attained and maintained, if necessary, and because the petitioner has not provided any specific instances (nor has EPA identified) where the differences in PCB criteria are preventing a downstream or across stream state from attaining its designated uses (40 C.F.R. §131.10(b)), EPA concludes that it is unnecessary for EPA to federally promulgate numeric PCB criteria for the petition states at this time, to meet the requirements of the CWA under CWA section 303(c)(4)(B).

c) Chlordane

The Sierra Club identifies a specific concern regarding chlordane criteria for two states, Iowa and Nebraska. The Sierra Club specifically points out that Iowa's and Nebraska's chlordane criteria are nearly ten times less stringent than Missouri's chlordane criteria. Petition at 13 – 14. Addenda 12 and 13 of the petition provide tables describing the chlordane criteria that each petition state applies to the petition area, as evaluated by the Sierra Club, and shows that the petition states have adopted varying criteria to protect their designated uses.

EPA evaluated the information provided by the petitioner as well as the currently approved state water quality standards for all petition states to determine if any of the chlordane criteria in the petition states' water quality standards are inconsistent with the CWA and federal regulations at 40 C.F.R. Part 131 such that a federal promulgation of numeric chlordane criteria is necessary. EPA first reviewed the states' currently adopted and approved water quality standards to validate the petitioner's findings. Specifically, EPA identified exactly what numeric and/or narrative chlordane criteria states have adopted to apply to the petition area.[25] Then EPA investigated the basis for these criteria to determine if states had adopted criteria based on EPA's recommendations or on other scientifically defensible methods. Finally, EPA looked for any documented evidence that may suggest the differences in criteria are preventing a downstream or across stream state from attaining and maintaining its water quality standards.

Adverse human health effects are expected at much lower concentrations of chlordane than in aquatic life. As a result, EPA's criteria recommendation for chlordane to protect human health is generally more stringent than those to protect aquatic life. In the case where states have adopted chlordane criteria to protect both human health and aquatic life, the criteria to protect human health are more likely to drive regulatory decisions. Therefore, in its evaluation of currently approved chlordane criteria, EPA focused on whether states have adopted numeric criteria for chlordane to protect human health-related designated uses. EPA acknowledges that there are variations in the numeric chlordane criteria adopted by the petition states. There are three legitimate reasons why the numeric chlordane criteria vary within the petition area:

(1) EPA published section 304(a) criteria recommendations several times over the past 20 years. EPA's revised section 304(a) criteria reflects the current scientific knowledge but does not always result in more stringent criteria recommendations (e.g., EPA's 1999 section 304(a) recommendations for chlordane were less stringent than its 1986 section 304(a) recommendations.)[26,27] States have adopted and revised chlordane criteria into their water quality standards at different points in time. The criteria the petition states adopted depended on the recommendations and information available at that time. For example, Missouri, Kansas, and Nebraska (Nebraska evaluates the aquatic life and human health criteria and adopt whichever one is most stringent) adopted human health criteria based on EPA's 1986 section 304(a) criteria recommendation while Iowa and Kentucky adopted human health criteria consistent with EPA's 1992 National Toxics Rule (see 40 C.F.R. §131.36). On the Mississippi River, even though Missouri's human health criterion for chlordane is more stringent than Kentucky's (the across stream state), Kentucky's criterion is, in fact, based on more recent science. Therefore, comparing stringency

[25] See Attachment B

[26] U.S. Environmental Protection Agency. *Quality Criteria for Water*. Office of Water, Washington, D.C. < http://www.epa.gov/waterscience/criteria/goldbook.pdf > EPA 440/5-86-001. May 1986

[27] U.S. Environmental Protection Agency. *National Recommended Water Quality Criteria – Correction*. Office of Water, Washington, D.C. < http://www.epa.gov/waterscience/pc/1999table.pdf> EPA 822-Z-99-001. April 1999.

of criteria is not always an adequate method of determining whether states have appropriate criteria to protect the designated uses or whether they are providing for the attainment and maintenance of downstream water quality standards as required under 40 C.F.R. §131.10(b).

(2) As discussed in the "Statutory and Regulatory Background" section, EPA publishes section 304(a) criteria based on a 10^{-6} risk level for carcinogens; states may select a specific risk level based on their own risk management decisions. EPA believes that adoption of criteria within the risk level of 10^{-6} (one in a million incremental risk for cancer) or 10^{-5} (one in one hundred thousand incremental risk for cancer) represents an acceptable range of discretion for states and tribes.[28] Within the petition states, each state adopts criteria to protect human health based on different risk management decisions. Iowa, Arkansas, Tennessee, and Nebraska have adopted chlordane criteria based on a 10^{-5} risk level while Illinois, Kentucky, Kansas and Missouri have adopted chlordane criteria based on a 10^{-6} risk level.

(3) EPA's regulations provide that states may adopt EPA's section 304(a) criteria recommendations, modify EPA's section 304(a) criteria to reflect site-specific conditions, or derive and adopt criteria based on other scientifically defensible methods. (40 C.F.R. §131.11 (b)). Illinois developed a procedure to translate its narrative criteria and derive numeric values for certain pollutants. EPA determined that this procedure is scientifically defensible and considers the numeric values derived using this procedure to be within the acceptable range to protect designated uses. Illinois uses this procedure to derive numeric values for chlordane that may be used to issue NPDES permits, to determine if a waterbody is impaired for chlordane and thus listed under CWA section 303(d) listings, and/or to develop a TMDL.

With regard to the Sierra Club's specific concern about Iowa's chlordane criterion as compared to Missouri's criterion, EPA found that Missouri adopted a numeric chlordane criterion to protect human health based on EPA's 1986 section 304(a) criteria recommendation, while Iowa adopted human health criterion consistent with EPA's National Toxics Rule. Iowa's chlordane criterion is an order of magnitude greater than Missouri's because Iowa has chosen to protect human health at a 10^{-5} risk level while Missouri protects human health at a 10^{-6} risk level. With regard to the Sierra Club's specific concern about Nebraska's chlordane criterion as compared to Missouri's criterion, EPA found that both Missouri and Nebraska adopted chlordane criteria based on EPA's 1986 section 304(a) criteria, however, Nebraska's policy is to evaluate the aquatic life and human health criteria and to adopt whichever is most stringent to protect both aquatic life and human health. In 1986, EPA's section 304(a) criteria

[28] U.S. Environmental Protection Agency. *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health (2000).* Office of Water, Washington, D.C. EPA-822-B-00-004. <http://www.epa.gov/waterscience/humanhealth/method > October 2000.

recommendation to protect aquatic life was slightly more stringent than the 10^{-5} human health recommendations. Nebraska adopted one criterion to protect for both aquatic life and human health by adjusting EPA's recommended human health criterion for chlordane to protect human health at a 10^{-5} risk level. Therefore, the magnitude of Nebraska's chlordane criteria is close to an order of magnitude greater than Missouri's criterion because while Nebraska has chosen to protect human health at a 10^{-5} level, Missouri protects human health at a 10^{-6} risk level.

As discussed earlier, **t**he regulations do not compel states to adopt the same criteria and uses in order to provide for attainment and maintenance of downstream water quality standards (40 C.F.R. §131.10(b)), nor do the regulations suggest that this is the only way a state can meet the requirements under § 131.10(b). The water quality program is structured to provide states with flexibility to determine the best way to protect their designated uses and meet their obligations under § 131.10(b). The petitioner has not provided any specific instances where the differences in chlordane criteria are preventing a downstream or across stream state from attaining its designated uses (40 C.F.R. §131.10(b)).

The chlordane criteria adopted by the petition states vary due to any one or a combination of the above reasons. EPA found that the petition states adopted criteria based on an EPA section 304(a) criteria recommendation or another scientifically defensible method and these criteria are within the scientifically acceptable range to protect designated uses consistent with 40 C.F.R. §131.11. In addition, since the use of chlordane has been banned in the United States, EPA believes it is unlikely that any differences in states' criteria will lead to a future increase in discharge of the pollutants. While the petition states do apply different numeric chlordane criteria to the petition area and some states have listed certain segments of the petition area waters as impaired for chlordane, EPA is unaware of any evidence that indicates the impairments are a result of anything but local water quality or sediment quality issues. Therefore, EPA has no reason to believe that an upstream or across stream state is causing the impairments. For example, on the Missouri River, while Missouri lists the Missouri River as impaired at the Iowa/Missouri state line due to chlordane, Iowa does not. EPA has no reason to believe that the mere listing of the Missouri River for chlordane is due to the different chlordane criterion in Iowa instead of water quality issues wholly within the state of Missouri. Since the petition states have adopted chlordane criteria based on EPA recommendations or other scientifically defensible methods, states have mechanisms available to them ensure downstream water quality standards are attained and maintained, if necessary, and because the petitioner has not provided any specific instances (nor has EPA identified) where the differences in chlordane criteria are preventing a downstream or across stream state from attaining its designated uses (40 C.F.R. §131.10(b))**,** EPA concludes that it is unnecessary for EPA to federally promulgate numeric chlordane criteria for the petition states, at this time, to meet the requirements of the CWA under CWA section 303(c)(4)(B).

d) *E. coli*/enterococci

The Sierra Club requests that EPA ensure water quality standards are adequate in the petition area by publishing water quality standards that include numeric criteria for *E. coli* and enterococci. Further, the Sierra Club illustrates its assertion that states protect their designated uses inconsistently by pointing out that Missouri's narrative criteria (i.e. lack of numeric criteria) for fecal coliform may be less protective than the numeric fecal coliform criteria that Nebraska and Kansas apply to the Missouri River. (See also discussion in "Recreation" section.) The Sierra Club concludes that this apparent inconsistency causes Nebraska and Kansas to violate water quality standards where they share a border with Missouri. Petition at 14. Addendum 14 of the petition describes which states have adopted fecal coliform criteria for the Missouri River and shows that Missouri is the only state along the Missouri River within the petition area that has not adopted a fecal coliform criterion of 200 organisms per 100 milliliters. The petition's addendum also shows that no state along the Missouri River in the petition area has adopted *E. coli* or enterococci criteria. Neither the petition nor its addenda include any information regarding the applicability of fecal coliform, *E. coli*, or enterococci criteria for the Mississippi River.

EPA evaluated the information submitted by the petitioner as well as the currently approved state water quality standards to determine if the petition states' water quality standards are inconsistent with the CWA and federal regulations at 40 C.F.R. Part 131 such that a federal promulgation of numeric bacteria criteria is necessary. EPA first reviewed the states' currently adopted and approved water quality standards to validate the petitioner's findings. Specifically, EPA evaluated state adopted numeric bacteria criteria to protect recreational uses and whether these are consistent with EPA's latest scientific recommendation.[29] EPA then sought to understand where various states were in their water quality standards review process to determine if any state is in the process of revising its bacteria criteria or is planning to in the near future.

EPA published its latest recommendation for bacteria criteria in 1986.[30] This 1986 criterion recommended that states adopt *E. coli* or enterococci as indicators for gastrointestinal illness in fresh recreation waters instead of fecal coliform, as previously recommended. Of the eight states in the petition area, Kansas, Nebraska, Iowa and Tennessee have adopted and EPA has approved *E. coli* criteria to protect a primary contact recreation use in the Mississippi and/or Missouri Rivers. Arkansas has adopted *E. coli* criteria and EPA expects Arkansas to submit revised water quality standards to EPA in June 2004. Kentucky has proposed adopting *E. coli* in its state rulemaking process and EPA expects Kentucky to submit revised water quality standards to EPA in the fall of 2004. On November 7, 2003, Missouri sent EPA a formal letter committing to adopt *E. coli* criteria for the petition area by July 2005. On March 23, 2004, Illinois sent EPA a formal letter committing to initiate adoption of *E. coli* criteria into water quality standards by September 30, 2004.

---

[29] See Attachment B

[30] U.S. Environmental Protection Agency. *Ambient Water Quality Criteria for Bacteria – 1986*. Office of Water, Washington, D.C. EPA 440/5-84-002. < http://www.epa.gov/waterscience/beaches/1986crit.pdf> January 1986.

In its 1986 guidance, EPA recommended that states adopt *E. coli* or enterococci criteria in order to protect contact recreation uses in freshwaters, including those within the petition area, and enterococci in marine waters. Congress endorsed EPA's recommendation in 2000 with respect to coastal waters when it amended the CWA by enacting the Beaches Environmental Assessment and Coastal Health Act of 2000 (BEACH Act). The newly added CWA section 303(i) requires, by April 2004, that states "…adopt and submit to the Administrator water quality criteria and standards for the coastal recreation waters of the state for those pathogens and pathogen indicators for which the Administrator has published criteria under section 304(a)." (Coastal waters are defined in section 502(21) to include waters of the Great Lakes and marine coastal waters designated for use for swimming, boating, surfing, and similar water contact activities.) Further, section 303(i) directs EPA to propose and promulgate standards as protective as the 1986 criteria recommendations for states that fail to comply with section 303(i).

Based on the current scientific knowledge, EPA continues to recommend that states adopt *E. coli* or enterococci criteria to protect recreation waters. As described earlier, the CWA provides EPA the discretionary authority to set a new or revised standard for a state if the Administrator determines that new or revised water quality standards are necessary to meet the requirements of the CWA. However, with regard to the petition area, EPA concludes that it is unnecessary to initiate a rulemaking to promulgate federal *E. coli* or enterococci criteria for the petition area at this time to meet the requirements of the CWA under CWA section 303(c)(4)(B) since all eight states have either adopted *E. coli* or enterococci criteria, proposed adoption, or have committed to adopting such criteria to protect recreation uses in the petition area within a reasonable timeframe. EPA's decision is consistent with Congress' intent to "recognize, preserve, and protect the primary responsibilities and rights of states to prevent, reduce, and eliminate pollution…of … water resources." CWA Section 101(b).

Further, EPA believes the BEACH Act expresses Congress's intent for EPA to address the nation's coastal recreation waters as a first priority to ensure appropriate bacteria criteria are in place to protect beachgoers. As a result, EPA is focusing its efforts to assist states in adopting bacteria criteria consistent with the requirements under CWA section 303(i) and intends to promulgate bacteria criteria for coastal recreation waters, where necessary. If, however, Kentucky, Arkansas, Missouri or Illinois fail to follow through on their commitment to adopt appropriate bacteria criteria for the petition area, EPA will, if necessary, initiate a federal rulemaking to establish *E. coli* or enterococci criteria for the petition area within these states.

e) Dissolved Oxygen

While listed as one of the pollutants at issue, neither the petition nor the addenda to the petition discuss any specific issues/concerns related to numeric dissolved oxygen criteria in the petition area. Nonetheless, in the absence of any information from the petitioner, EPA analyzed currently approved state water quality standards, in conjunction

with implementation procedures that further describe how the state implements its water quality standards, and found that all of the petition states apply a dissolved oxygen criterion of 5 mg/l to protect aquatic life consistent with the CWA.[31] Therefore, it is unnecessary for EPA to federally promulgate numeric dissolved oxygen criteria for the petition area, at this time, to meet the requirements of the CWA under CWA section 303(c)(4)(B

f) Ammonia

While listed as one of the pollutants at issue, neither the petition nor the addenda to the petition discuss any specific issues/concerns related to numeric ammonia criteria in the petition area. Nonetheless, in the absence of any information from the petitioner, EPA evaluated the petition states' currently approved water quality standards to determine if the petition states' water quality standards are inconsistent with the CWA and federal regulations at 40 C.F.R. Part 131 such that a federal promulgation of numeric ammonia criteria is necessary. EPA first reviewed the states' currently adopted and approved water quality standards to validate the petitioner's findings. Specifically, EPA looked to see whether any states have adopted numeric and/or narrative ammonia criteria to protect aquatic life consistent with EPA's recommendations.[32] If the criteria varied state to state, EPA looked to see why the criteria varied and whether the variation was within the states' scientific discretion and whether the resulting criteria were protective of the designated use. Finally, EPA looked at the petition states' 2002 section 303(d) impaired waters lists[33] to determine if any petition state identified ammonia as an impairing pollutant responsible for impairing aquatic life uses.

All eight of the petition states have adopted numeric ammonia criteria applicable to the portions of the Mississippi and Missouri Rivers within their jurisdiction. Kansas, Iowa, Nebraska and Tennessee adopted numeric ammonia criteria identical to EPA's most recent section 304(a) criteria recommendation published in 1999. Missouri, Illinois, and Kentucky have adopted criteria based on EPA's section 304(a) recommendations published before 1999. Arkansas adopted numeric ammonia criteria on April 23, 2004 and is expected to submit their revised water quality standards for EPA review and approval in June 2004. In the interim, Arkansas's narrative criterion may be used to control ammonia levels, if necessary, through water quality-based NPDES limits or TMDLs.[34] In EPA's review of the petition states' section 303(d) lists[35], no state within the petition area included (nor did EPA propose to include) ammonia as a pollutant impairing designated uses.

In developing its 304(a) criteria recommendations, EPA took into account the fact that ammonia is a complex pollutant with its effect on aquatic life dependent on several

[31] See Attachment B
[32] See Attachment B
[33] See Attachment G
[34] See Attachment A
[35] See Attachment G

factors, including temperature and pH. EPA's most recent recommended criteria reflect these complexities by providing numeric calculation approaches that consider these two variables. Further, states may modify EPA's section 304(a) criteria recommendations based on their own analysis of the available toxicity data taking into account local characteristics. In addition, EPA has not recommended a specific method to determine the appropriate temperature and pH to use when deriving numeric ammonia criteria. As a result, states may use temperature and pH differently leading to variations in the derived state numeric ammonia criteria. EPA evaluated these states' currently adopted and approved numeric ammonia criteria taking into account these variations and determined that all of the numeric ammonia criteria values applied by the petition states to the petition area are within the scientifically reasonable range and are expected to protect the designated uses consistent with the federal regulations at 40 C.F.R. §131.11. EPA continues to work with all states to ensure the latest scientific knowledge regarding ammonia is incorporated into state water quality standards.

Since ammonia criteria will generally vary with pH and temperature, any comparison of stringency among the state criteria depends on the pH and temperature used for the comparison. Scientifically, it is unclear what the most relevant pH and temperature conditions would be for making such comparisons. Therefore, it is not possible to rank, with confidence, state ammonia criteria by stringency. As mentioned earlier, the petition did not identify any specific instances of concern related to numeric ammonia criteria in the petition states nor do any of the petition states identify ammonia as an impairing pollutant on their section 303(d) list. Taking this into consideration as well as the fact that seven of the eight states' currently approved ammonia criteria are within the scientifically reasonable range and are expected to protect the designated uses consistent with the federal regulations at 40 C.F.R. §131.11 and the remaining state (Arkansas) has adopted a numeric ammonia criterion, EPA concludes it is unnecessary to federally promulgate numeric ammonia criteria for the petition area, at this time, to meet the requirements of the CWA under CWA section 303(c)(4)(B).

g) Nutrients

The Sierra Club raises several concerns regarding nutrients in the petition. They assert that states inconsistently apply numeric criteria for nitrogen and phosphorus to the Mississippi and Missouri and that inadequate nutrient criteria in the petition area contributes to the hypoxic zone in the Gulf of Mexico. Petition at 17. Regarding the petitioner's concern of inconsistent nutrient criteria, the Sierra Club specifically indicates that Kentucky has a narrative criterion while neighboring Missouri has a numeric nitrogen criterion and that Arkansas is the only state in the petition area to apply a numeric phosphorus criterion to the Mississippi River. Petition at 13 – 14. Addenda 9 and 15 appear to support these examples of inconsistent criterion on the Mississippi River and offer additional information, but only describe the criteria applicable to the Mississippi River and not the Missouri River within the petition area.

To support their request that EPA publish numeric criteria for nutrients in the petition area, the Sierra Club referred to a recent General Accounting Office (GAO) report that stated "sediments, nutrients and pathogens (including *E. coli* and enterococci) - account for fifty percent [sic] of the impaired waters nationwide." The petitioner goes on to state that despite this statistic, EPA has not developed recommendations for numeric water quality criteria for nutrients. Petition at 15 – 16. The GAO report indicates that EPA is in the process of developing numeric criteria for nutrients.[36]

EPA evaluated the petition information as well as the currently approved state water quality standards to determine if the petition states' water quality standards are inconsistent with the CWA and federal regulations at 40 C.F.R. Part 131 such that a federal promulgation of numeric nutrient criteria is necessary. EPA first looked to see which states have adopted numeric nitrogen or phosphorus criteria to protect designated uses. Second, EPA looked to see if the petition states have adopted narrative criteria for nutrients and whether there are accompanying procedures to derive numeric criteria. Third, EPA identified the current state efforts and where the petition states are in their process to adopt numeric criteria based on the latest scientific information. Finally, EPA collected information regarding the scientific understanding of nutrients and designated uses (in local waters and the effect on the Gulf of Mexico) to determine if the science is sufficient, at this time, to support EPA or state development of numeric ambient water quality criteria for the Mississippi and Missouri Rivers.

Based on its evaluation, EPA found that Tennessee recently adopted, and EPA approved, narrative criteria for nutrients along with a procedure to derive numeric nutrient criteria applicable to free flowing streams to protect designated uses from the effects of excessive algal growth. Kansas applies numeric criterion for elemental phosphorus for the petition area. Iowa, Illinois, Missouri, Nebraska, and Kansas apply a numeric criterion for nitrates and/or nitrites to the petition area to protect human health. Arkansas has recently adopted narrative criteria for nutrients in place of previous numeric phosphorus guidelines (which is not considered to be a criterion). However, through its implementation procedures approved by EPA, Arkansas does establish point source discharge limits for nitrate-nitrogen to protect drinking water uses in surface waters.[37] EPA is currently working with these states to determine if additional criteria or procedures are necessary for nitrogen and phosphorus to protect surface waters from adverse effects due to nutrient overenrichment. All eight petition states have narrative criteria applicable to nutrients that may be used for establishing NPDES permits, listing waters as impaired by nutrients on section 303(d) lists and developing TMDLs, if necessary.

As indicated earlier, the petitioner further expresses its concern regarding nutrients in the Mississippi and Missouri Rivers by referencing the hypoxic zone in the

---

[36] General Accounting Office. *Water Quality: Improved EPA Guidance and Support Can Help States Develop Standards that Better Target Cleanup Efforts*. GAO-03-308 < http://www.gao.gov/new.items/d03308.pdf> (January 2003). p 37.

[37] Arkansas Department of Environmental Quality. *Arkansas Water Quality Planning and Management: State Continuing Planning Process*. Little Rock, Arkansas. 1999.

northern Gulf of Mexico as "a graphic demonstration of the inadequacy of current water quality standards in the vicinity of the petition area." Petition at 16. While the Sierra Club specifically quotes the discussion contained in The Mississippi River/Gulf of Mexico Watershed Nutrient Task Force's *Action Plan for Reducing, Mitigating, and Controlling Hypoxia in the Northern Gulf of Mexico* regarding the significant impact of nutrients carried to the Gulf (from the Mississippi River basin) on the Hypoxic zone, the *Action Plan* also states that "There are no simple solutions that will reduce hypoxia in the Gulf. An optimal approach would take advantage of the full range of possible actions to reduce nutrient loads and increase nitrogen retention and denitrification."[38]

According to the *Action Plan*, 56% of the nitrate load enters the Mississippi River above the Ohio River and the Ohio River basin itself adds 34% of the nitrate load. About 90% of the total nitrate load to the Gulf comes from nonpoint sources. Modeling by Alexander et al (2000)[39] indicates that more than 90% of the nitrate reaching the Mississippi River will be transported downstream to the Gulf of Mexico. This implies that the Mississippi River primarily transports nutrients downstream with little or no processing or removal of nitrogen occurring.[40,41] Battaglin et al (2001) believe that the ability of the Mississippi River to process nitrate normally is being overwhelmed by the nitrate loads from upstream sources. As a result, the Mississippi River is unable to achieve the net decrease in nitrate amounts that normally would occur. USGS studies show that denitrification could be optimized in the Upper Mississippi River (source of Mississippi River to confluence with Illinois River) by diverting water from the river to off-channel "backwater" areas that have conditions to promote nitrogen removal during non-flooding periods. However, even optimal denitrification in the Upper Mississippi River would only result in 5-10% reduction in load to the Gulf of Mexico.[42] The ability to use this method to achieve optimal denitrification in the middle and lower Mississippi Rivers is very small since the River is essentially disconnected from the carbon-rich floodplain ecosystem that could help process nitrogen, by flood control levees.[43] In other words, even if the Mississippi River could optimally process nitrogen like many other waters, the amount of nitrogen being loaded into the river prevents the river from reducing total nitrogen loadings into the Gulf more than 10%. These studies emphasize how complex the nutrients problem is in the Mississippi River basin and the need for states to control nutrients at the source.

In 2001, EPA began providing states with waterbody specific technical guidance manuals and numeric nutrient criteria recommendations for states to use as starting points

---

[38] Mississippi River/Gulf of Mexico Watershed Nutrient Task Force. *Action Plan for Reducing, Mitigating, and Controlling Hypoxia in the Northern Gulf of Mexico.* http://www.epa.gov/msbasin/actionplan.htm. January 2001.
[39] Alexander, R.B., Smith, R.A., and Schwarz, G.E. 2000. *Effect of stream channel size on the delivery of nitrogen to the Gulf of Mexico*. Nature 403: 758-761.
[40] Richardson, W.B., Strauss, E.A., Bartsch, L.A., Monroe, E.M., Cavanaugh, J.C., Vingum, L., and Soballe, D.M. *Denitrification in the Upper Mississippi River: rates, controls, and contribution to the nitrate flux.* (in press).
[41] Battaglin, W.A., Kendall, C., Chang, C.C.Y., Silva, S.R., and Campbell, D.H. 2001. Chemical and isotopic evidence of nitrogen transformation in the Mississippi River, 1997-1998. Hydrol. Process. 15: 1285-1300.
[42] Richardson, W.B., Strauss, E.A., Bartsch, L.A., Monroe, E.M., Cavanaugh, J.C., Vingum, L., and Soballe, D.M. *Denitrification in the Upper Mississippi River: rates, controls, and contribution to the nitrate flux.* (in press).
[43] U.S. Geological Survey. *Nutrients in the Upper Mississippi River: Scientific Information to Support Management Decision, The Upper Mississippi River – Values and Vulnerability*. USGS Fact Sheet 105-03. July 2003.

to protect aquatic life from eutrophication resulting from excessive nutrients, not just toxic effects. EPA has provided nutrient criteria recommendations for most of the freshwater in the nation, excluding wetlands (see http://www.epa.gov/ost/standards/nutrient.html).

States throughout the United States have been working with EPA to develop appropriate nutrient criteria plans to quantitatively address nutrients in their waters. EPA expects these plans to be developed collaboratively with EPA and to include descriptions of the approach the state will use to develop criteria, the relative priorities of waterbodies or waterbody type, data collection plans, and a schedule describing the major milestones for developing and adopting nutrient criteria. EPA's policy was described to the states in a November 14, 2001, memo available at http://www.epa.gov/waterscience/criteria/nutrientswqsmemo.pdf. Since data are more readily available and the science is better understood for lakes, reservoirs and tributaries to the Mississippi and Missouri Rivers, states have generally indicated in their plans that they are focusing on developing nutrient criteria for these waters prior to adopting quantitative nutrient criteria specifically for the Mississippi and Missouri Rivers.

EPA believes that it is important that states establish quantitative nutrient criteria, where necessary to protect designated uses, for all waters where criteria can be developed based on sound science. The studies discussed above support EPA's position that state adoption and implementation of nutrient criteria for tributaries of the Mississippi and Missouri Rivers will lead to an overall reduction of nutrient loadings in the Mississippi and Missouri River basin. These reductions will improve water quality and help protect the designated uses of these rivers as well as the Gulf of Mexico, in the near term. Therefore, while states are not currently focused on adopting quantitative nutrient criteria specifically for the Mississippi and Missouri Rivers, EPA believes that the states in the petition area are appropriately focusing attention and resources on the smaller waterbodies that flow into these rivers before addressing these two large rivers themselves. EPA intends to work with the states to establish quantitative nutrient criteria for these waters. As a result, EPA also expects, as the *Action Plan* states, that "…. actions taken to address local water quality problems in the basin will frequently also contribute to reductions in nitrogen loadings to the Gulf."[44]

EPA will work closely in the petition area with the five states that have not yet provided EPA with draft nutrient criteria plans to ensure that an appropriate approach and timeframe to develop nutrient criteria is established consistent with its November 2001 policy memo. EPA will work with the other states in the petition area that have developed nutrient criteria plans to ensure successful implementation. Whether a state has developed a nutrient criteria plan or not, EPA expects states to adopt nutrient criteria for the tributaries to the petition area in a timeframe consistent with EPA's guidance in the November 2001 policy memo and will evaluate the need to promulgate federal nutrient criteria, as necessary, if a state fails to do so. In the interim, petition states'

[44] Mississippi River/Gulf of Mexico Watershed Nutrient Task Force. *Action Plan for Reducing, Mitigating, and Controlling Hypoxia in the Northern Gulf of Mexico.* http://www.epa.gov/msbasin/actionplan.htm. January 2001.

narrative criteria may serve as the basis for NPDES permits, section 303(d) listings and TMDLs, if necessary.

Although EPA has provided nutrient criteria recommendations for the ecoregions that encompass the Mississippi and Missouri Rivers, EPA's water quality criteria recommendations for nutrients are based on a reference condition approach (a reference condition reflects minimally impacted water quality conditions). In deriving the criteria recommendations, EPA incorporated data from the Mississippi and Missouri Rivers, however, since EPA's recommendations are based on reference conditions and are statistically derived to generally protect the designated uses of specific waterbody types in a specific ecoregion, it is not likely that EPA's approach which takes the 25th percentile of data from all flowing waterbodies in the ecoregions containing the Mississippi and Missouri Rivers will generate a reference condition value appropriate to base development of a nutrient criterion for these rivers. The Mississippi and Missouri Rivers have unique qualities (i.e., flow, depth, temperature and nutrient-algal response relationships) in their respective ecoregions, and EPA believes further consideration of historical data and water quality conditions are necessary before establishing nutrient criteria specifically for these rivers. Until more monitoring and research have been conducted to better understand how these large and complex rivers respond to nutrient enrichment, establishing numeric nutrient criteria for the petition area, today, would be less meaningful and effective than ensuring that quantitative nutrient criteria are adopted for waters where the linkage between nutrient concentrations and biological response are better understood and where the sources of nutrient loadings can be adequately controlled.

The *Action Plan* acknowledges the complex nature of nutrient cycling in the Mississippi and Atchafalya River basins as well as the Gulf of Mexico. As a result, it is "…difficult to predict specific improvements in water quality that will occur both in the Gulf as well as the entire Mississippi River basin for a given course of action….Further, …while the current understanding of the causes and consequences of Gulf of Mexico hypoxia is drawn from a massive amount of direct and indirect evidence collected and reported over many years of scientific inquiry, significant uncertainties remain. Further monitoring, modeling, and research are needed to reduce those uncertainties in future assessments and to aid decision making in an adaptive management framework." The Mississippi River/Gulf of Mexico Watershed Nutrient Federal, State, and Tribal Task Force (Nutrient Task Force) was chartered in 1998 to understand the causes and effects of eutrophication in the Gulf of Mexico and to coordinate activities to reduce the size, severity and duration of the Hypoxic zone and its effects. To combat the issues identified in the *Action Plan*, the Nutrient Task Force is developing the document *A Strategy for Monitoring, Modeling, and Research in Support of Managing Excess Nutrients in the Mississippi River Basin and Hypoxia in the Northern Gulf of Mexico*, that is intended to describe a framework for implementing monitoring, modeling, and research activities. This framework will provide a sound basis of scientific information to support implementation of a management plan to address nutrient over-enrichment in the Mississippi River basin and Hypoxia in the northern Gulf of Mexico. Scientific information will be provided in an adaptive-management framework through monitoring

and periodic interpretation, model analysis, and continual improvement in knowledge and methods by supporting research. The Task Force is also investigating ways to track how existing federal, state, and local efforts are likely to decrease the size of the hypoxic zone.

Once the complex effects of nutrients unique to the Mississippi River basin and their affect on the hypoxic zone in the Gulf of Mexico are better understood, EPA will be able to confidently evaluate whether states have adopted nutrient criteria into water quality standards that adequately protect designated uses in the Mississippi and Missouri Rivers and the Gulf of Mexico, and ascertain whether federally promulgated nutrient criteria are needed. EPA has taken a strong leadership role in the Nutrient Task Force's efforts to establish a strategy to reduce the size of the hypoxic zone and is working with federal and state partners to investigate remaining scientific uncertainties. EPA agrees with the petitioner that it is important that states establish quantitative nutrient criteria for the Mississippi and Missouri Rivers to protect designated uses and serve as appropriate benchmarks for nutrient controls. Yet, EPA also believes that nutrient criteria must be based on sound science. Therefore, EPA intends to continue its leadership role on nutrients and facilitate federal and state collaborative efforts that will support the development and adoption of quantitative nutrient criteria into water quality standards that will not only protect against local effects of nutrients within the Mississippi River basin, but also help to reduce the size of the hypoxic zone in the Gulf of Mexico. EPA will work with key partners to determine the appropriate ambient water quality criteria for nutrients necessary to protect the unique ecosystems of the Mississippi and Missouri Rivers based on a sound scientific understanding of the relationship between nutrient concentrations and the biological response in these rivers.

EPA believes the most effective way to begin to address ambient water quality criteria for nutrients in the Mississippi and Missouri Rivers is to reach a consensus with the affected entities on a coordinated approach on addressing nutrients in the basin. Therefore, EPA will convene key partners at a multi-day national workshop to discuss the development and adoption of appropriate ambient water quality criteria for nutrients into water quality standards for the Mississippi and Missouri Rivers that will protect the rivers and the Gulf of Mexico. The workshop will include invitees from various federal agencies (e.g., U.S. EPA's Office of Water and Office of Research and Development, U.S. Geological Survey, and U.S. Department of Agriculture), states and other stakeholders with the objective of identifying the existing federal and state nutrients efforts along the Mississippi River, the Missouri River and the Gulf of Mexico; understanding the current state of the science and the barriers states are facing; determining additional research needs and priorities; and how federal and state agencies and stakeholders can work together to develop quantitative nutrient criteria for the Mississippi and Missouri Rivers. Following the workshop, EPA will publish a report to summarize the results of the workshop and identify next steps. This report will establish a roadmap for how EPA intends to work with its partners to address nutrients in the Mississippi and Missouri Rivers. This effort will also be closely linked with the Task Force to ensure that all related nutrient work is effectively coordinated. EPA has identified the needed funds and will begin planning the workshop immediately with the intent to hold the workshop in 2005. EPA agrees with the petitioner that the Mississippi

and Missouri Rivers and the Gulf of Mexico are valuable resources and hopes that the Sierra Club and other stakeholders will actively participate in this effort to help ensure success.

Since EPA's current criteria recommendations may not be appropriate to promulgate for the Mississippi and Missouri Rivers, EPA intends to convene a national workshop that will initiate discussions on a collaborative approach to determining the appropriate ambient water quality nutrient criteria for the Mississippi and Missouri Rivers (taking into account the effects on the Gulf of Mexico). In order for EPA to promulgate nutrient criteria for the petition area based on sound science, EPA must first address the scientific uncertainties that remain regarding ambient water quality criteria for nutrients for the Mississippi and Missouri Rivers. In the interim, however, the states are actively working with EPA to develop and adopt quantitative nutrient criteria for tributaries to these rivers that will lead to an overall reduction of nutrients within the basin. Therefore, in the absence of scientifically sound criteria appropriate for these rivers, EPA concludes that it is unnecessary for EPA to federally promulgate numeric nutrient criteria for the petition area, at this time, to meet the requirements of the CWA under CWA section 303(c)(4)(B).

h) Sediments

In section IV of the petition titled "Existing water quality standards for the Mississippi and Missouri Rivers in the Petition area are inadequate", the Sierra Club discusses the January 2003 GAO report stating that EPA has not yet developed national numeric criteria for sedimentation despite the fact that "sediments, nutrients and pathogens (including *E. coli* and enterococci) - account for fifty percent [sic] of the impaired waters nationwide,". Neither the petition nor the addenda to the petition discuss any specific issues of concern related to numeric sedimentation criteria in the petition area. In the absence of any information from the petitioner, EPA evaluated the petition states' currently approved water quality standards to determine if they are inconsistent with the CWA and federal regulations at 40 C.F.R. Part 131 such that a federal promulgation of numeric sedimentation criteria is necessary. EPA first looked to see whether any states have adopted numeric and/or narrative criteria related to sedimentation to protect designated uses. Then EPA evaluated the scientific understanding about sedimentation and designated uses to determine if the science is sufficient at this time to support EPA or state development of ambient water quality criteria.

All eight of the petition states currently have narrative criteria related to sedimentation that may be used for establishing NPDES permit limits, listing waters as impaired by sediments on section 303(d) impaired waters lists, and developing TMDLs, if necessary. Arkansas applies a numeric criterion for turbidity to the petition area.

EPA has not yet published numeric criteria recommendations under section 304(a) of the CWA for sediments (suspended and bedded sediments (i.e. sediments accumulated on the bottom of a stream bed)) because the science is not yet fully

understood regarding how to appropriately establish criteria for sedimentation in surface waters. As part of the Water Quality Standards and Criteria Strategy, finalized in August 2003 (see EPA's website at http://www.epa.gov/waterscience/standards/strategy/), EPA committed to developing a Suspended and Bedded Sediment Criteria Strategy after consulting with EPA's Science Advisory Board. This strategy will inform EPA's development of guidance on controlling excess sediments. The suspended and bedded sediment strategy is expected to identify methods for developing numeric suspended and bedded sediment criteria and lead to recommendations that states can use to adopt their own numeric criteria for suspended and bedded sediments. These recommendations will also provide a benchmark for EPA to evaluate the effectiveness of state water quality standards programs. Since the Agency is currently developing a Suspended and Bedded Sediment Criteria Strategy to inform EPA's criteria recommendations for suspended and bedded sediment criteria and all the petition states have narrative criteria to provide a basis for controlling suspended and bedded sediments in the interim, if necessary, EPA concludes that it is unnecessary for the Administrator to federally promulgate numeric sedimentation criteria for the petition states, at this time, to meet the requirements of the CWA under CWA section 303(c)(4)(B), at this time. However, once EPA has published section 304(a) criteria recommendations for suspended and bedded sediments and has provided states appropriate time to incorporate the latest science into water quality standards, EPA will reevaluate the need for the Administrator to determine that a federal promulgation of numeric suspended and bedded sediment criteria is necessary to meet the requirements of the CWA.

i) IBI

Neither the petition nor the addenda to the petition discuss any specific concerns related to an index of biological integrity (IBI) in the petition area beyond their request that EPA publish numeric criteria. An index of biological integrity adopted as a water quality criterion in water quality standards is known as "biocriteria". EPA does not require that states adopt biocriteria into water quality standards to protect designated uses, however EPA believes that biocriteria and bioassessments are desired elements of a robust water quality program, which help to achieve the objectives of the CWA under section 101(a).

The CWA section 304(a)(8) provides that EPA shall publish "…methods for establishing and measuring water quality criteria for toxic pollutants on other bases than pollutant-by-pollutant criteria, including biological monitoring and assessment methods." Since numeric biocriteria (response criteria based on water body condition) must be developed on a regional or water body-specific basis using bioassessment monitoring data gathered from those water bodies, EPA does not publish national recommended biocriteria. Instead, states use EPA's recommended methods to develop and adopt biocriteria to protect their designated uses, as needed.

EPA has published biocriteria methods for streams, small rivers, lakes, reservoirs, wetlands, and estuaries and continues to develop methods for all other water body types. (see http://www.epa.gov/waterscience/biocriteria/). EPA's 10 Regional Offices have developed biocriteria implementation strategies for their individual states and the Agency provides technical support through grants, contracts and training. As of 2001, all states and some Tribes and territories had bioassessment programs for streams and small rivers and most are in the process of developing quantitative biocriteria. In the petition area, Nebraska and Missouri have adopted narrative biocriteria into water quality standards. Arkansas, Kentucky, and Tennessee have adopted narrative biocriteria into water quality standards and have also developed a quantitative implementation procedure or translator to interpret this narrative for wadeable streams. Missouri is currently working to develop a procedure for wadeable streams to interpret their narrative, while Iowa is actively working to develop narrative and numeric biocriteria for wadeable streams.[45] Since EPA has not yet provided biocriteria methods for large rivers, it is unlikely that the procedures adopted by the petition states are applicable to the Mississippi and Missouri Rivers. However, it is clear the states are making substantial progress toward developing and adopting biocriteria for other water bodies, statewide. Further, CWA section 106(e)(1) includes biological monitoring in the description of a monitoring program necessary to receive a grant from the Administrator. Since 40 C.F.R. §130.7(b)(5) requires states to "assemble and evaluate all existing and readily available water quality-related data and information," any available biological information will continue to be a part of the state assessment process.

While EPA has not yet developed biocriteria methods for large rivers, EPA is developing large river indicators of biological and physical habitat condition to help states and tribes assess the water quality conditions and identify impairments in large rivers. Two guidance manuals have been produced to date. One of these manuals details the differences between the methods used by various agencies to assess small and large rivers in the U.S. (see http://www.epa.gov/nerleerd/MCD_nocover.pdf); the second manual is a logistical guide for conducting ecological assessments in large rivers (http://www.epa.gov/nerleerd/logistics_nocover.pdf). New methods specifically designed to adequately sample large rivers are being tested currently. The results from this research will provide additional information to enable states and tribes to make informed decisions about the selection of scientifically robust and efficient methods to assess the biological conditions of large rivers using various relevant endpoints.

EPA is promoting state collection of biological data in large rivers in several other ways. For example, two classes addressing large river bioassessment and monitoring were taught at the first National Biocriteria Workshop at Coeur d'Alene, Idaho in 2003. The workshop was very well attended by states, including those along the Mississippi and Missouri Rivers. In addition, EPA scientists are working with the Kentucky Department of Natural Resources (DNR) in their implementation of the large river monitoring component of a Conservation Reserve Enhancement Program (CREP). This work is serving as the first step in Kentucky DNR's effort to initiate a state-wide large river bioassessment and monitoring program, and it may serve as an

[45] U.S. Environmental Protection Agency. *States and Tribes Embrace Bioassessment and Biocriteria for Protecting Streams and Small Rivers*. EPA - 822-F-03-005. June 2003.

example for other states to follow. Also, a team of scientists composed of national and regional large river experts is using the findings of completed research to develop a scientifically sound and logistically feasible large river bioassessment program for the Mississippi DNR.

For the reasons discussed above, EPA concludes that it is unnecessary for EPA to federally promulgate water quality standards that include an index of biological integrity for the petition area to meet the requirements of the CWA under CWA section 303(c)(4)(B). However, EPA believes that biocriteria and biomonitoring are important tools to support the state water quality programs and will continue to work with and encourage states to incorporate biological conditions/criteria into state water quality programs.

3) Monitoring

Petitioner's Position – The Sierra Club believes that limited and inconsistent water quality monitoring by states in the petition area is "a weak link in this system." Petition at 17. They assert that most of the states in the petition area do not routinely monitor water quality and that very little funding is devoted to ambient water quality monitoring. The Sierra Club also asserts that state monitoring approaches and methodologies lack consistency across the area leading to inconsistent and unreliable conclusions about waters meeting the applicable water quality standards, waters being listed as impaired under CWA section 303(d), and in identifying causes of impairment. The petitioner requests that EPA promulgate water quality standards that include monitoring provisions to support uniform, statistically based method for determining whether the rivers are actually meeting applicable water quality standards.

EPA's Response – EPA denies the petitioner's request that EPA promulgate monitoring requirements as part of state water quality standards for the petition area. The "Statutory and Regulatory Background" section of this response describes the requirements for state water quality standards programs. Neither the CWA nor the implementing regulations require that water quality standards include monitoring provisions. EPA agrees with the petitioner that addressing shortcomings in state monitoring programs is a priority but believes that EPA's non-regulatory approaches planned and underway will achieve the outcome of strengthened and more consistent monitoring and assessment activity in the petition states.

Background

CWA section 305(b) requires a comprehensive biennial report on water quality and CWA section 303(d) requires states to assess waters and develop lists of impaired waters that do not meet water quality standards, even after point sources of pollution have installed the required levels of pollution control technology. States have flexibility to devise various approaches to assess waters and determine which waters are impaired and should be listed under section 303(d). EPA does not approve or disapprove a state's assessment and listing methodology but does approve or disapprove a state's section 303(d) list and may raise any issues about the state

assessment methodology during this process. When developing the list of impaired waters, the CWA and EPA's implementing regulations require that states "…assemble and evaluate all existing and readily available water quality-related data and information." 40 C.F.R. §130.7(b)(5).

The CWA and implementing regulations confer broad latitude on states and provide for state flexibility in assigning priorities and employing different assessment and water quality management methods. Assessment and listing of interstate waters can pose challenges because of differences among methodologies and priorities in state water quality management programs. As the petition demonstrates, different state approaches on shared waterbodies can also create public concern and confusion. Major contributors to uncertainty about the water quality status of many waters, including shared waters, are gaps in monitoring and assessment.

EPA Efforts to Improve State Monitoring and Assessment Overall

Improving the rigor and consistency of state monitoring and assessment programs is a top priority for EPA because the Agency recognizes these programs are an essential foundation for effective water quality management. EPA is devoting substantial resources and attention to this issue. In fiscal year (FY) 2004, EPA received $4 million to improve our ability to answer questions about water quality on a national basis. The President's FY 2005 Budget Request seeks $20 million to help states and tribes develop and implement statistically representative water quality monitoring programs. A key objective of this effort is greater consistency in monitoring across state programs.

In addition, EPA issued *The Consolidated Assessment and Listing Methodology (CALM) (July 2002)*[46]. CALM provides a framework for states to document how they collect and use water quality data and information for environmental decision-making, in particular for determining whether waters are attaining water quality standards, identifying waters that are impaired and need to be included in the section 303(d) lists, and identifying waters that are meeting standards so that they can be removed from the list.

In March 2003, EPA provided guidance to states on the elements needed to strengthen state monitoring and assessment programs, *Elements of a State Water Monitoring and Assessment Program.*[47] The guidance calls for states to develop or commit to develop a Comprehensive State Monitoring Strategy in FY04. This strategy should be a long-term implementation plan for improving monitoring and assessment and emphasize a comprehensive approach to assessing all waterbody types over time through the use of multiple tools.

In a related effort, EPA is encouraging states to adopt a consistent format for categorizing and reporting the status of waters according to whether they have met water quality standards, require more data, or require a Total Maximum Daily Load (TMDL). This "integrated reporting" guidance emphasizes the importance for states to clearly articulate their methodology

[46] U.S. Environmental Protection Agency. Consolidated and Assessment Listing Methodology.: Toward a Compendium of Best Practices. 2002. <http://www.epa.gov/owow/monitoring/calm.html>
[47] U.S. Environmental Protection Agency. Elements of a State Water Monitoring and Assessment Program. 2003. < http://www.epa.gov/owow/monitoring/elements/elements03_14_03.pdf> EPA 841-B-03-003.

for assessing waters and provide the public an opportunity to comment on both the methodology and proposed list of impaired waters. See *EPA's Guidance for 2004 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d) and 305(b) of the Clean Water Act, July 2003 (*www.epa.gov/owow/tmdl/tmdl0103/index.html). The guidance also emphasizes that, where waters are shared among states, states should work together to collect, assemble, solicit, and assess all readily available data and information relevant to shared waters so that assessments are as consistent as possible. This coordination on shared waters is especially important for waters that are to be listed as impaired under CWA section 303(d) which then requires developing a TMDL.[48]

EPA expects that, through targeted funding and greater implementation of recent agency guidance, the quality and consistency of state monitoring and assessment programs will improve.

EPA and State Efforts to Improve Monitoring and Assessment in the Mississippi and Missouri Rivers

The challenge of improving water quality monitoring programs is even more daunting for large rivers such as the Mississippi and Missouri Rivers. The size and complexity of these rivers make representative data collection more difficult. Due to dilution in rivers of this size, localized water quality impairments may go undetected without intensive monitoring. Further, variability in river conditions means there is limited ability to extrapolate site-specific data where it does exist. To address the assessment challenges specific to large rivers, EPA's Office of Research and Development is preparing The Great Waters Initiative, a framework for state-based monitoring programs to assess the ecological condition of the Mississippi, Missouri and Ohio Rivers (see http://www.epa.gov/emap/greatriver/FactSheet.pdf). The framework is expected to include a probability-based design and indicators that could be used to assess the ecological condition of the three great rivers.

In the Upper Mississippi River basin, EPA Regions 5 and 7 are working directly with states to improve coordination on water quality management issues. The Upper Mississippi River Basin Association (UMRBA) is a regional interstate organization formed by the governors of Illinois, Iowa, Minnesota, Missouri, and Wisconsin to help coordinate the states' water quality issues related to the Mississippi River. UMRBA implemented a Water Quality Coordination Project that aimed to discern underlying reasons for state inconsistencies in assessment and listing and to initiate actions to address inconsistencies (www.umrba.org/wq/wq2002rpt.pdf). For example, one outcome of the project is a Memorandum of Understanding among the five UMRBA states to use a minimum number of common water reaches for purposes of characterizing water quality under CWA section 305(b) and identifying water quality impairments under section 303(d).

Over time, these efforts in the Upper Mississippi River basin should lead to improved consistency in state section 305(b) assessments and section 303(d) listings throughout Mississippi and Missouri basins. In addition to these ongoing efforts, EPA will work with the

[48] U.S. Environmental Protection Agency. 2003. *EPA's Guidance for 2004 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d) and 305(b) of the Clean Water Act, July 2003.* http://www.epa.gov/owow/monitoring/repguid.html).

petition states during the 2006 reporting and listing cycle (now underway) to resolve or explain, where possible, inconsistencies in the listing of impaired waters on the Mississippi and Missouri Rivers. Examples cited by the petitioner, including the fact that Arkansas and Kentucky did not include the Mississippi River on their 1998 section 303(d) list and that Kansas did not list the Missouri River in 1998, will be given particular consideration. EPA will continue through successive listing cycles to use any new sources of water quality data for the affected river segments, such as data generated through the Great Waters Initiative, to work with states in refining their impaired water lists. Therefore, EPA concludes it is unnecessary for EPA to federally promulgate monitoring requirements in water quality standards for the petition area to meet the requirements of the CWA under CWA section 303(c)(4)(B).

Conclusion

For the foregoing reasons, EPA denies the petition's request for EPA to publish water quality standards for the petition area, at this time.

ATTACHMENT A – WATER QUALITY STANDARDS FOR PETITION STATES: LIST AND CITATIONS

State	State Regulation Information
Arkansas	Arkansas Pollution Control and Ecology Commission; Regulation 2 - Regulation Establishing Water Quality Standards for Surface Waters of the State of Arkansas; (October 28, 2002); Effective under Clean Water Act - January 23, 2003. http://www.epa.gov/ost/standards/wqslibrary/ar/ar.html
Illinois	Title 35: Environmental Protection; Subtitle C: Water Pollution; Chapter 1: Pollution Control Board Parts 301 Introductions & Park 302 Water Quality Standards (August 26, 1999) http://www.epa.gov/ost/standards/wqslibrary/il/il.html
Iowa	567 Iowa Administrative Code Chapter 61 – Water Quality Standards Effective under Clean Water Act – June 16, 2004 http://www.epa.gov/ost/standards/wqslibrary/ia/ia.html
Kansas	Kansas Department of Health and Environment; Division of Environment; Bureau of Environmental Field Services Kansas Surface Water Register (December 15, 2003) Effective Under Clean Water Act–To be acted upon June 2004 Kansas Administrative Regulations Title 28, Article 16 – Surface Water Quality Standards (September 25, 2003) Effective Under the Clean Water Act – November 3, 2003 http://www.epa.gov/ost/standards/wqslibrary/ks/ks.html
Kentucky	Natural Resources and Environmental Protection Cabinet; Department for Environmental Protection; Division of Water Kentucky Administrative Regulations, Title 401, Chapter 5 Effective Under the Clean Water Act – December 8, 1999 http://www.epa.gov/ost/standards/wqslibrary/ky/ky.html
Missouri	Code of State Regulations Title 10 - Rules of Department of Natural Resources; Division 20 – Clean Water Commission; Chapter 7 – Water Quality 10 CSR 20-7 (10/31/99) http://www.epa.gov/ost/standards/wqslibrary/mo/mo.html
Nebraska	Nebraska Department of Environmental Quality Title 117 – Nebraska Surface Water Quality Standards (12/31/02) Effective Under the Clean Water Act – August 8, 2003 http://www.epa.gov/ost/standards/wqslibrary/ne/ne.html
Tennessee	Rules of the Tennessee Department of Environment and Conservation; Division of Water Pollution Control Chapter 1200-4-3 General Water Quality Criteria (October 1999) Effective Under the Clean Water Act – October 11, 1999 http://www.epa.gov/ost/standards/wqslibrary/tn/tn.html

Attachment B -- EPA analysis of State Water Quality Standards in the Petition Area
(Mississippi River)

NOTE: ***Spreadsheet reflects applicable numeric criteria only.***
Numeric criteria reflected are most stringent criteria applicable to segment.

STATE	DESIGNATED USE											NUMERIC WATER QUALITY CRITERIA									
EPA's most recent 304(a) recommendations next to pollutant label	Outstanding State Resource Water	Primary Rec	Secondary Rec	Aquatic Life	Aesthetics	Fish Consumption	Drinking Water/Domestic Water Supply	Agriculture	Irrigation	Livestock & Wildlife watering	Navigation	Industrial	chlordane (CCC = .0043 µg/l, water + organism = .00080 µg/l, organism only = .00081 µg/l) MCL = 0.02mg/L or 2 µg/l	atrazine 1500 µg/l freshwater, 760 µg/l saltwater, MCL = 3 ppb or 3 µg/l	Total PCBs (CCC = .014 µg/l, HH = .000064 µg/l updated) MCL = .5 ppb or .5 µg/l	e.coli (126 / 100 ml)	enterococci (33 per 100 ml)	DO (5 mg/l 1 day minimum)	Ammonia (1999 update, pH/temp. dependent)	Phosphorus (ecoregional based)	Nitrogen (ecoregional based)	Sediments (narrative. Sedimentation criteria in development)
IA (effective 6/16/04)																					
Skunk River to Iowa River		X		Significant Resource Warm Water (Class B(WW))				X	X	X		X	C = .004 µg/l* A = 2.5 µg/l* HH (fish consumption) = .006 µg/l *		C = .014 µg/l * A = 2 µg/l * HH (fish consumption) = .0004 µg/l *	E. coli = 126/100 ml* (geometric) Mar 15 - Nov 15, 235/100 ml* (single sample max)		no less than 5 mg/l (at any time)				Turbidity shall not be increased by more than 25 NTU by any point source discharge
IA-MO state line to confluence w/ Skunk R.		X		Significant Resource Warm Water (Class B(WW))				X	X	X		X	C = .004 µg/l* A = 2.5 µg/l* HH (fish consumption) = .006 µg/l *		C = .014 µg/l * A = 2 µg/l * HH (fish consumption) = .0004 µg/l *	E. coli = 126/100 ml* (geometric) Mar 15 - Nov 15, 235/100 ml* (single sample max)		no less than 5 mg/l (at any time)				Turbidity shall not be increased by more than 25 NTU by any point source discharge
Burlington Water works							X	X	X	X		X	PWS = .021 µg/l *	PWS = 3 µg/l *	PWS = .0017 µg/l*						Nitrate as N = 10 mg/l Nitrate + Nitrite as N = 10 mg/l Nitrite as N = 1 mg/l	Turbidity shall not be increased by more than 25 NTU by any point source discharge
Koekuk Municipal Water Works Intake							X	X	X	X		X	PWS = .021 µg/l *	PWS = 3 µg/l *	PWS = .0017 µg/l*						Nitrate as N = 10 mg/l Nitrate + Nitrite as N = 10 mg/l Nitrite as N = 1 mg/l	Turbidity shall not be increased by more than 25 NTU by any point source discharge
Fort Madison Municipal Water Works Intake							X	X	X	X		X	PWS = .021 µg/l *	PWS = 3 µg/l *	PWS = .0017 µg/l*						Nitrate as N = 10 mg/l Nitrate + Nitrite as N = 10 mg/l Nitrite as N = 1 mg/l	Turbidity shall not be increased by more than 25 NTU by any point source discharge
IL(effective 8/26/99)	Designated General Use Water (protects for multiple uses)																				
Mississippi River		X^	X	X	X			X		X		X	Narrative w/Translator A = 2.4 µg/l C = .0043 µg/l noncancer = .72 ng/l	A = 280 µg/l ## C = 12 µg/l ##	HH = .015 ng/L	Fecal = 200 (geometric)* nor 400* in 10% of 30 day samples		no less than 5 mg/l (at any time) or less than 6 mg/l 16 of 24 hours		.05 mg/l* in reservoir/lake 8.1 hectares (or entering stream)		
Mississippi R. at Drinking Water/Food Processing Intakes		X^	X	X	X		Public and Food Processing Water Supply	X		X		X	.003 mg/l*	A = 280 µg/l ## C = 12 µg/l ##	HH = .015 ng/L (fish consumption only)	Fecal = 2000 (geometric)*		no less than 5 mg/l (at any time) or less than 6 mg/l 16 of 24 hours		.05 mg/l* in reservoir/lake 8.1 hectares (or entering stream)	Nitrate-Nitrogen = 10 mg/l*	
MO (effective 10/31/99)																					
State Line to Ohio R.			X	WW & HH fish consumption		X	X		X	X		X	HH (fish consumption) = .00048 µg/l* PWS = 2 µg/l*	PWS = 3 µg/l*	HH = .000045 µg/l*			5 mg/l (no less than)			PWS Nitrate-Nitrogen = 10 mg/L	
Ohio R. to Missouri R.			X	WW & HH fish consumption		X	X		X	X		X	HH (fish consumption) = .00048 µg/l* PWS = 2 µg/l*	PWS = 3 µg/l*	HH = .000045 µg/l*			5 mg/l (no less than)			PWS Nitrate-Nitrogen = 10 mg/L	
Missouri R. to Des Moines R.		X	X	WW & HH fish consumption		X	X			X		X	HH (fish consumption) = .00048 µg/l* PWS = 2 µg/l*	PWS = 3 µg/l*	HH = .000045 µg/l*	Fecal = 200*		5 mg/l (no less than)			PWS Nitrate-Nitrogen = 10 mg/L	
KY (12/8/99)																					
Mississippi R. - Confluence w/ Ohio R. to River Mile 947.0		X	X	Warm Water Aquatic Habitat									(Proposing to adopt 2002 EPA HH recommendations) C = .0043 µg/l*		C = .0014µg/l*	Fecal = 200 (geometric, not less than 5 samples/month)* nor <400* in more 20% or more of all samples in month		Daily average = 5.0 mg/l (no less than)** Minimum = 4.0 mg/l(no less than)*	un-ionized = 0.05 mg/l*			
													A = 2.4 µg/l*		A = LC1* or 1/3 LC50* or .3 acute toxicity units*							
													HH (fish consumption) = 0.0022 µg/l*		HH (fish consumption) = .000079 µg/l*							
Mississippi R. - River mile 947.0 to 945.0	X	X	X	Warm Water Aquatic Habitat									"		"	"	"	"	"			
Mississippi R. - River mile 945.0 to KY/TN state line		X	X	Warm Water Aquatic Habitat									"		"	"	"	"	"			

Attachment B -- EPA analysis of State Water Quality Standards in the Petition Area
(Mississippi River)

STATE		DESIGNATED USE											NUMERIC WATER QUALITY CRITERIA										
EPA's most recent 304(a) recommendations next to pollutant label	Outstanding State Resource Water	Primary Rec	Secondary Rec	Aquatic Life	Aesthetics	Fish Consumption	Drinking Water/Domestic Water Supply	Agriculture	Irrigation	Livestock & Wildlife watering	Naviagation	Industrial	chlordane (CCC = .0043 µg/l, water + organism = .00080 µg/l, organism only = .00081 µg/l) MCL=.002mg/L or 2 µg/l	atrazine 1500 µg/l freshwater, 760 µg/l saltwater, MCL = 3 ppb or 3 µg/l	Total PCBs (CCC = .014 µg/l, HH = .000064 µg/l updated) MCL = .5 ppb or .5 µg/l	e.coli (126 / 100 ml)	enterococci (33 per 100 ml)	DO (5 mg/l 1 day minimum)	Ammonia (1999 update, pH/temp. dependent)	Phosphorus (ecoregional based)	Nitrogen (ecoregional based)	Sediments (narrative. Sedimentation criteria in development)
AR (effective 1/23/03)																							
Mississippi River		X	X	Perrenial Delta Fishery			X		X			X	C = .0043 µg/l** A = 2.4 µg/l* HH = 5 ng/l		C = .0140 µg/l** HH = .4 ng/l	fecal = 200* (geometric) nor 400* in more than 10% of 30 day samples		5 mg/l (no less than)		TP = 100 µg/l***	10 mg/l effluent limit for dischargers near domestic water supply uses #	Turbidity = 50 NTU
TN (effective 10//11/99)																							
Mississippi R. Mile 741.0 to 820.0		X		X			X		X	X	X	X	(Adopted 2002 EPA HH recommendations, pending approval) C = .0043 µg/l A = 2.4 µg/l 2 µg/l* (PWS) water+organism = .0057 µg/l, organism only = .0059 µg/l	3 µg/l* (PWS)	C = .014 µg/l (each aroclor) 0.5 µg/l* (PWS) water+organism = .00044 µg/l total, organism only = .00045 µg/l total	Fecal = 200* , E.coli = 126 *(geometric based on 10 samples)		5 mg/l (no less than)				
Mississippi R. Mile 820.0 to TN/KY state line (Mile 905.0)		X		X			X		X	X	X	X	(Adopted 2002 EPA HH recommendations, pending approval) C = .0043 µg/l A = 2.4 µg/l 2 µg/l* (PWS) water+organism = .0057 µg/l, organism only = .0059 µg/l	3 µg/l* (PWS)	C = .014 µg/l (each aroclor) 0.5 µg/l* (PWS) water+organism = .00044 µg/l , organism only = .00045 µg/l	Fecal = 200* , E.coli = 126 *(geometric based on 10 samples)		5 mg/l (no less than)				

* Shall not exceed
** 24 hour average
*** As a guideline, shall not exceed
^Protects for Primary "for all General Use waters whose physical configuration permits
Based on Arkansas Water Quality Planning and Management: State Continuing Planning Process (1999)
Based on Narrative Procedure to derive Numeric Criteria

Attachment B -- EPA Analysis of State Water Quality Standards in the Petition Area
(Missouri River)

NOTE: ***Spreadsheet reflects applicable numeric criteria only.***
Numeric criteria reflected are most stringent criteria applicable to segment.

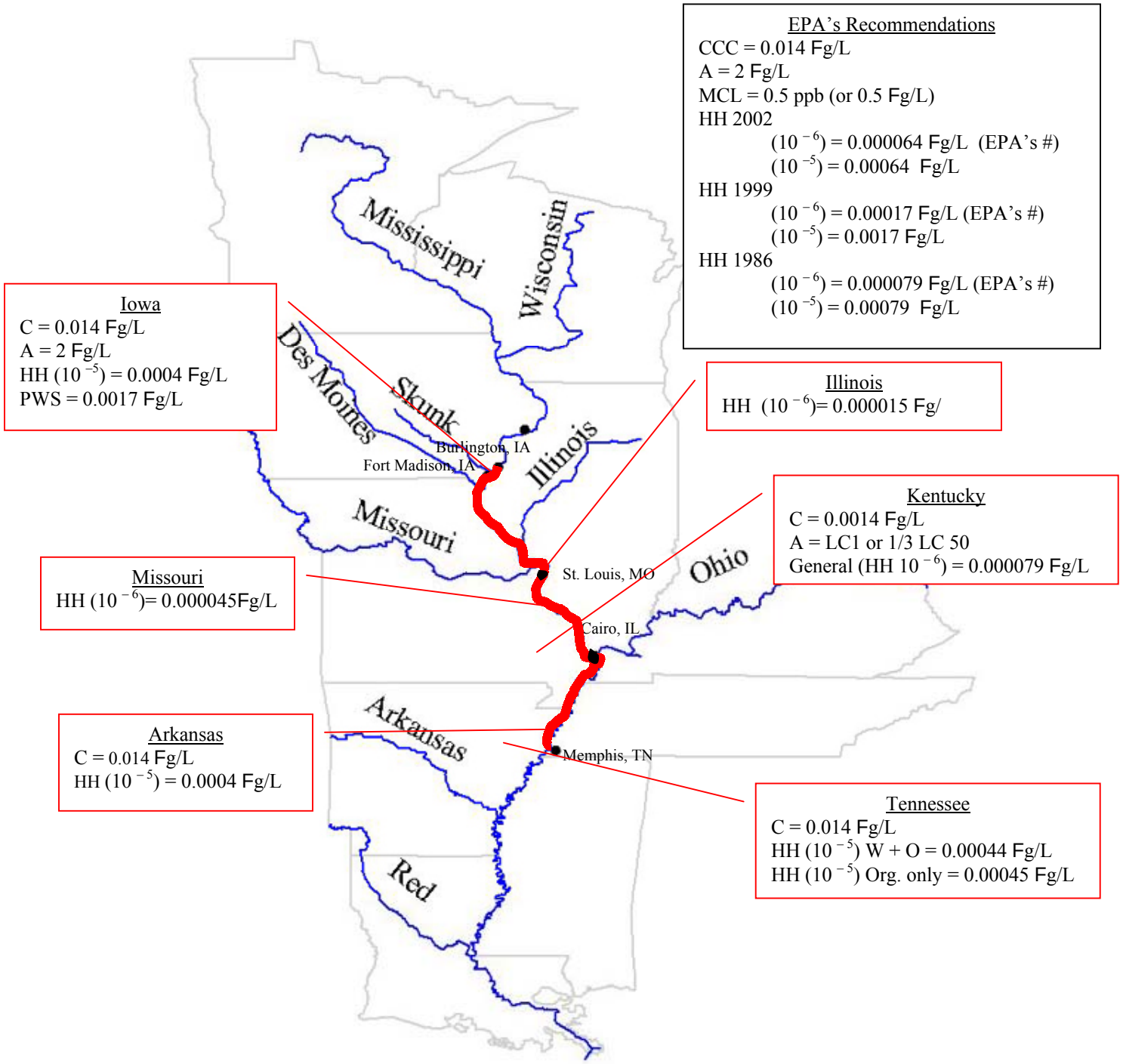
STATE	DESIGNATED USE										NUMERIC WATER QUALITY CRITERIA									
	Primary Rec	Secondary Rec	Aquatic Life	Aesthetics	Food Procurement/ Fish consumption	Public/Domestic Water Supply	Agricultural	Irrigation	Livestock & Wildlife watering	Industrial	chlordane (CCC = .0043 µg/l, water + organism = .00080 µg/l, organism only = .00081 µg/l) MCL=.002mg/L or 2 µg/l	atrazine 1500 µg/l freshwater, 760 µg/l saltwater, MCL = 3 ppb or 3 µg/l	Total PCBs (CCC = .014 µg/l, CMC = 2 µg/l, HH = .000064 µg/l updated) MCL = .5 ppb or .5 µg/l	e.coli (126 per 100 ml)	enterococci (33 per 100 ml)	DO (5 mg/l 1 day minimum)	Ammonia (1999 update, pH/temp. dependent)	Phosphorus (ecoregional based)	Nitrogen (ecoregional based)	Sediments (narrative. Sedimentation criteria in development)
IA (effective 6/16/04)																				
IA-MO state line to confluence w/ Big Sioux R.	X		Significant Resource Warm Water (Class B(WW))				X	X	X	X	C = .004 µg/l * A = 2.5 µg/l* HH = .006 µg/l*		C = .014 µg/l* A = 2 µg/l* HH = .0004 µg/l*	E. coli = 126/100 ml* (geometric) Mar 15 - Nov 15, 235/100 ml* (single sample max)		no less than 5 mg/l (at any time)				Turbidity shall not be increased by more than 25 NTU by any point source discharge
City of Council Bluffs Water Works Intake						X	X	X	X	X	PWS = .021 µg/l*	PWS = 3µg/l*	PWS = .0017µg/l*						Nitrate as N = 10 mg/l Nitrate + Nitrite as N = 10 mg/l Nitrite as N = 1 mg/l	Turbidity shall not be increased by more than 25 NTU by any point source discharge
NE (effective 8/8/03)	Water quality criteria to protect downstream beneficial uses shall be applicable to all surface waters, whether or not those beneficial uses are assigned to a given water body.																			
Platte R. to NE-KS border	X		Class A Warm Water	X		X	X			X	C = .0043 µg/l** A = 2.4 µg/l* PWS = 2 µg/l*	C = 12 µg/l (4 day average) A = 330 µg/l (1 hr average) PWS = 3 µg/l*	C = .0017 µg/l** A = 2 µg/l* PWS = .5 µg/l*	fecal = 200 (geometric mean)* or 400 (no more than 10% of samples shall equal or exceed) E.coli = 126/100ml* (5 samples, 30-day period)		1 day min no less than 5 mg/l (April 1 - Sep. 30 - early life stages) 1 day min no less than 3 mg/l (Oct. 1 - Mar. 31)			(AG) Nitrate + Nitrite = 100 mg/l* (PWS) Nitrate-nitrogen = 10 mg/L* (PWS) Nitrite-Nitrogen = 1 mg/L*	
Big Sioux R. to Platte R.	X		Class A Warm Water	X		X	X			X	C = .0043 µg/l** A = 2.4 µg/l* PWS = 2 µg/l*	C = 12 µg/l (4 day average) A = 330 µg/l (1 hr average) PWS = 3 µg/l*	C = .0017 µg/l** A = 2 µg/l* PWS = .5 µg/l*	fecal = 200 (geometric mean)* or 400 (no more than 10% of samples shall equal or exceed) E.coli = 126/100ml* (5 samples, 30-day period)		1 day min no less than 5 mg/l (April 1 - Sep. 30 - early life stages) 1 day min no less than 3 mg/l (Oct. 1 - Mar. 31)			(AG) Nitrate + Nitrite = 100 mg/l* (PWS) Nitrate-nitrogen = 10 mg/L* (PWS) Nitrite-Nitrogen = 1 mg/L*	
MO (10/31/99)																				
Mouth to Gasconade R.		X	WW & HH fish consumption			X		X	X	X	HH = .00048 µg/l* PWS = 2 µg/l*	PWS = 3 µg/l*	C = .000045 µg/l*			5 mg/l (no less than)			PWS Nitrate-Nitrogen = 10 mg/L	
Gasconade R. to Chariton R.		X	WW & HH fish consumption			X		X	X	X	HH = .00048 µg/l* PWS = 2 µg/l*	PWS = 3 µg/l*	C = .000045 µg/l*			5 mg/l (no less than)			PWS Nitrate-Nitrogen = 10 mg/L	
Chariton R. to Kansas R.		X	WW & HH fish consumption			X		X	X	X	HH = .00048 µg/l* PWS = 2 µg/l*	PWS = 3 µg/l*	C = .000045 µg/l*			5 mg/l (no less than)			PWS Nitrate-Nitrogen = 10 mg/L	
Kansas R. to State Line		X	WW & HH fish consumption			X		X	X	X	HH = .00048 µg/l* PWS = 2 µg/l*	PWS = 3 µg/l*	C = .000045 µg/l*			5 mg/l (no less than)			PWS Nitrate-Nitrogen = 10 mg/L	

Attachment B -- EPA Analysis of State Water Quality Standards in the Petition Area
(Missouri River)

STATE	DESIGNATED USE										NUMERIC WATER QUALITY CRITERIA									
	Primary Rec	Secondary Rec	Aquatic Life	Aesthetics	Food Procurement/ Fish consumption	Public/Domestic Water Supply	Agricultural	Irrigation	Livestock & Wildlife watering	Industrial	chlordane (CCC = .0043 µg/l, water + organism = .00080 µg/l, organism only = .00081 µg/l) MCL=.002mg/L or 2 µg/l	atrazine 1500 µg/l freshwater, 760 µg/l saltwater, MCL = 3 ppb or 3 µg/l	Total PCBs (CCC = .014 µg/l, CMC = 2 µg/l, HH = .000064 µg/l updated) MCL = .5 ppb or .5 µg/l	e.coli (126 per 100 ml)	enterococci (33 per 100 ml)	DO (5 mg/l 1 day minimum)	Ammonia (1999 update, pH/temp. dependent)	Phosphorus (ecoregional based)	Nitrogen (ecoregional based)	Sediments (narrative. Sedimentation criteria in development)
KS (effective 11/3/03)																				
Missouri R. (HUC 10240005, Seg. 1)	Class B	X	Special Aquatic Life Use (applicable criteria same for all aquatic life use designations. Only use name differs)		X	X		X	X	X	C = .0043 µg/l* A = 2.4 µg/l* HH (fish consumption) = .00048 µg/l* (3 µg/l for LWW) PWS = .00057 µg/l (EPA)	C = 3 µg/l* A = 170 µg/l* PWS = 3 µg/l*	C = .014 µg/l* A = 2 µg/l* HH (fish consumption) = .0000079 µg/l* PWS = .00017 µg/l (EPA)	E.coli (geometric mean)* = 262/100 mL		not less than 5 mg/l		Elemental P = .1 µg/l	Nitrate as N = 10 mg/l (PWS) Nitrite + Nitrate as N = 10 mg/l (PWS) or 100 mg/l (LWW)	
Missouri R. (HUC 10240005, Seg. 19)	"	X	Special Aquatic Life Use		X	X		X	X	X	"	"	"	"	"	"		"	"	
Missouri R. (HUC 10240005, Seg. 2)	"	X	Special Aquatic Life Use		X	X		X	X	X	"	"	"	"	"	"		"	"	
Missouri R. (HUC 10240005, Seg. 21)	"	X	Special Aquatic Life Use		X	X		X	X	X	"	"	"	"	"	"		"	"	
Missouri R. (HUC 10240011, Seg. 1)	"	X	Special Aquatic Life Use		X	X		X	X	X	"	"	"	"	"	"		"	"	
Missouri R. (HUC 10240011, Seg. 11)	"	X	Special Aquatic Life Use		X	X		X	X	X	"	"	"	"	"	"		"	"	
Missouri R. (HUC 10240011, Seg. 13)	"	X	Special Aquatic Life Use		X	X		X	X	X	"	"	"	"	"	"		"	"	
Missouri R. (HUC 10240011, Seg. 15)	"	X	Special Aquatic Life Use		X	X		X	X	X	"	"	"	"	"	"		"	"	
Missouri R. (HUC 10240011, Seg. 19)	"	X	Special Aquatic Life Use		X	X		X	X	X	"	"	"	"	"	"		"	"	
Missouri R. (HUC 10240011, Seg. 2)	"	X	Special Aquatic Life Use		X	X		X	X	X	"	"	"	"	"	"		"	"	
Missouri R. (HUC 10240011, Seg. 4)	"	X	Special Aquatic Life Use		X	X		X	X	X	"	"	"	"	"	"		"	"	
Missouri R. (HUC 10240011, Seg. 5)	"	X	Special Aquatic Life Use		X	X		X	X	X	"	"	"	"	"	"		"	"	
Missouri R. (HUC 10240011, Seg. 7)	"	X	Special Aquatic Life Use		X	X		X	X	X	"	"	"	"	"	"		"	"	
Missouri R. (HUC 10240011, Seg. 9)	"	X	Special Aquatic Life Use		X	X		X	X	X	"	"	"	"	"	"		"	"	
Missouri R. (HUC 10240011, Seg. 9099)	"	X	Expected Aquatic Life Use		X	X	X	X	X	X	"	"	"	"	"	"		"	"	

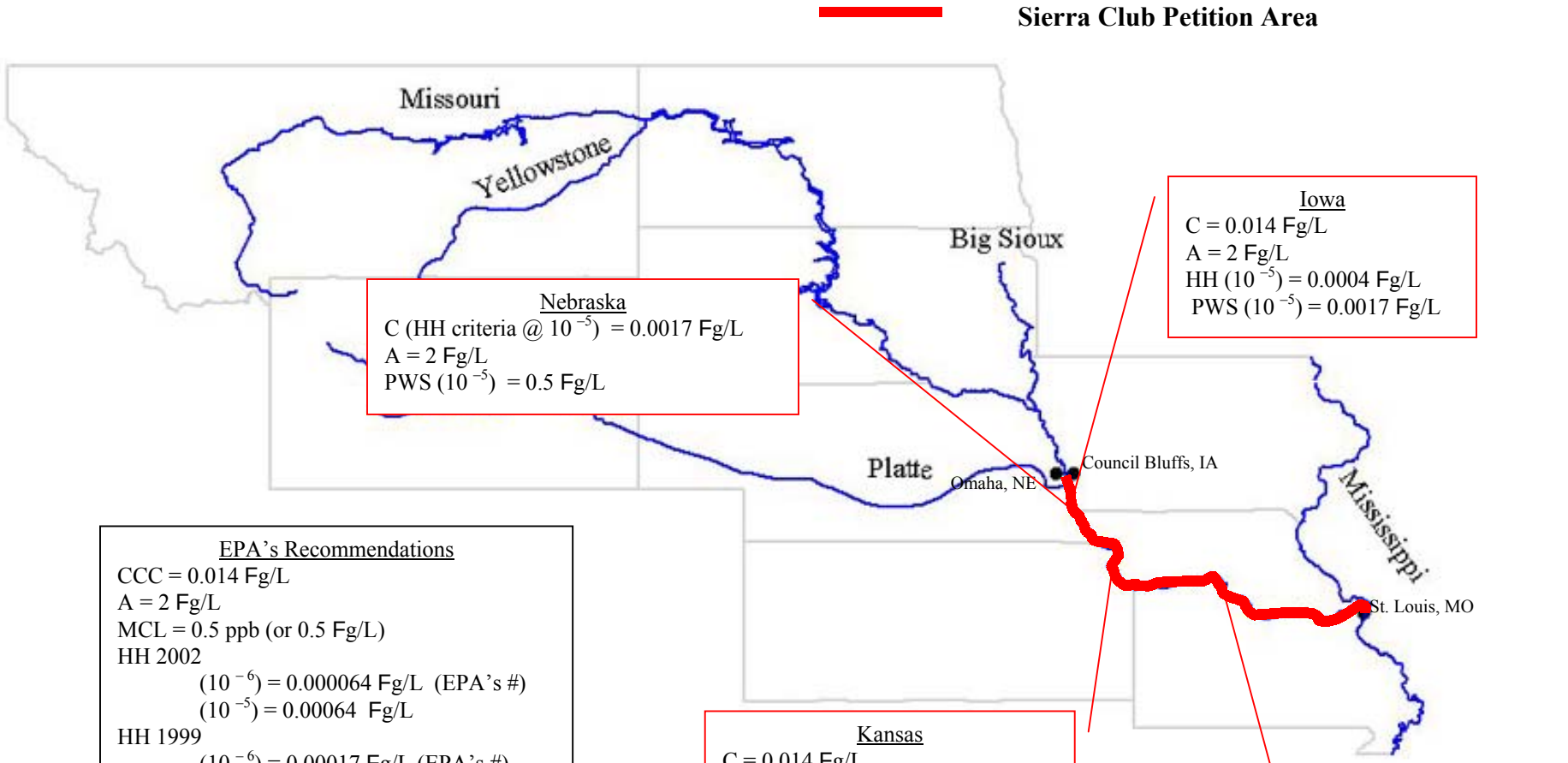
* Shall not exceed
** 24 hour average

ATTACHMENT C
PCB CRITERIA ON MISSISSIPPI RIVER



Sierra Club Petition Area

ATTACHMENT D
PCB CRITERIA ON MISSOURI RIVER



ATTACHMENT E
CHLORDANE CRITERIA ON MISSISSIPPI RIVER

EPA's Recommendations

CCC = 0.0043 Fg/L
A = 2.4 Fg/L
MCL = 2 Fg/L
HH 2002
(10^{-6}) water + organism = 0.00080 Fg/L (EPA's #)
(10^{-6}) organism only = 0.00081 Fg/L (EPA's #)
(10^{-5}) = 0.0080 Fg/L (w + o) & 0.0081 Fg/L (org.)
HH 1999
(10^{-6}) water + organism = 0.0021 Fg/L (EPA's #)
(10^{-6}) organism only = 0.0022 Fg/L (EPA's #)
(10^{-5}) = 0.021 Fg/L (w + o) & 0.022 Fg/L (org)
1992 NTR
(10^{-6}) water + organism = 0.00057 Fg/L (EPA's #)
(10^{-6}) organism only = 0.00059 Fg/L (EPA's #)
(10^{-5}) = 0.0057 Fg/L (w + o) & 0.0059 Fg/L (org)
HH 1986
(10^{-6}) water + organism = 0.00046 Fg/L (EPA's #)
(10^{-6}) organism only = 0.00048 Fg/L (EPA's #)
(10^{-5}) = 0.0046 Fg/L (w + o) & 0.0048 Fg/L (org)

Iowa
C = 0.004 Fg/L
A = 2.5 Fg/L
HH (10^{-5}) = 0..006 Fg/L
PWS = 0.021 Fg/L

Missouri
HH (10^{-6})= 0.00048 Fg/L
PWS = 2 Fg/L

Arkansas
C = 0.0043 Fg/L
A = 2.4 Fg/L
HH (10^{-5}) = 0.005 Fg/L

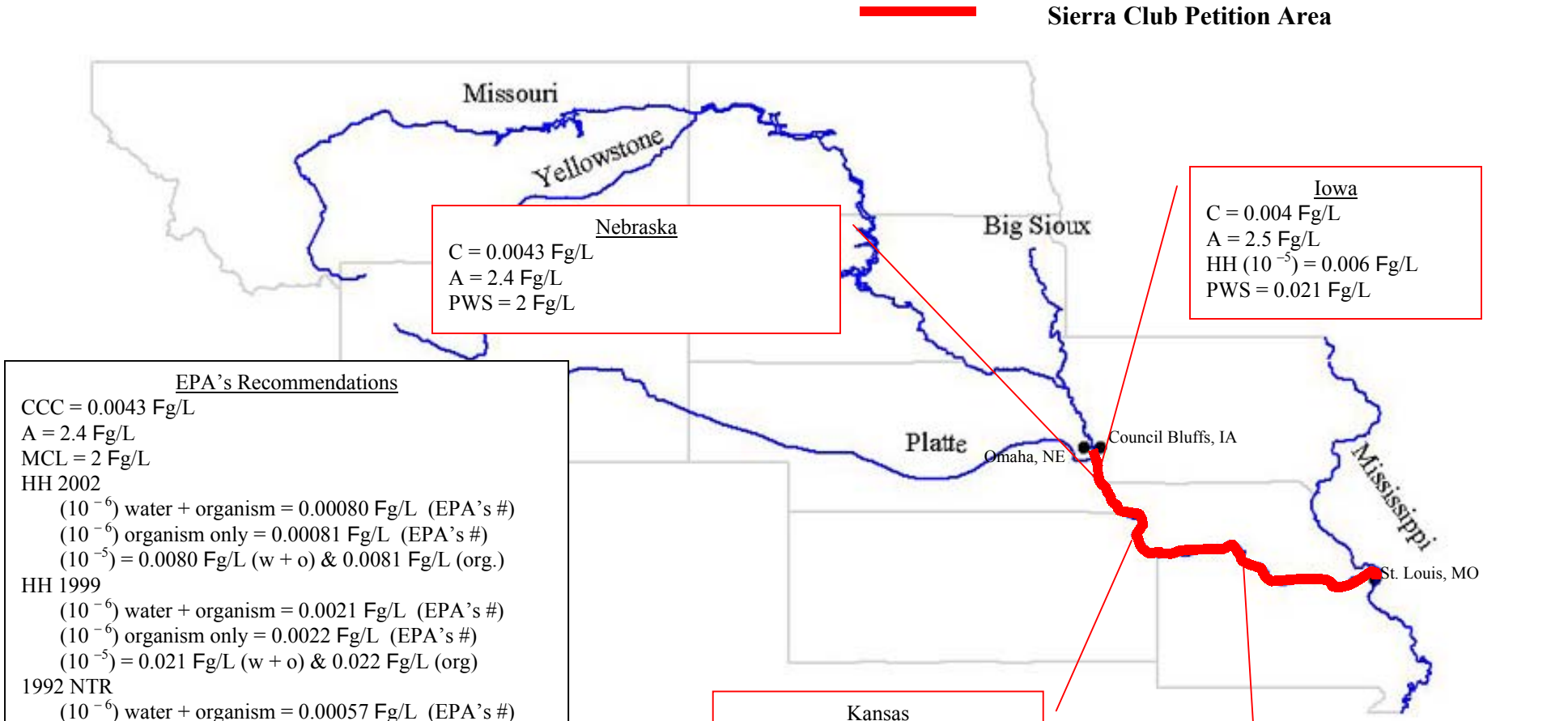
Illinois
C = .0043Fg/L
A = 2.4 Fg/L
HH (10^{-6})= 0.00072 Fg/
PWS = 3 Fg/L

Kentucky
C = 0.0043 Fg/L
A = 2.4 Fg/L
General (HH 10^{-6}) = 0.0022 Fg/L

Tennessee
C = 0.0043 Fg/L
A = 2.4 Fg/L
HH (10^{-5}) W + O = 0.0057 Fg/L
HH (10^{-5}) Org. only = 0.0059 Fg/L
PWS = 2 Fg/L

Sierra Club Petition Area

ATTACHMENT F
CHLORDANE CRITERIA ON MISSOURI RIVER



Nebraska
C = 0.0043 Fg/L
A = 2.4 Fg/L
PWS = 2 Fg/L

Iowa
C = 0.004 Fg/L
A = 2.5 Fg/L
HH (10^{-5}) = 0.006 Fg/L
PWS = 0.021 Fg/L

EPA's Recommendations
CCC = 0.0043 Fg/L
A = 2.4 Fg/L
MCL = 2 Fg/L
HH 2002
- (10^{-6}) water + organism = 0.00080 Fg/L (EPA's #)
- (10^{-6}) organism only = 0.00081 Fg/L (EPA's #)
- (10^{-5}) = 0.0080 Fg/L (w + o) & 0.0081 Fg/L (org.)

HH 1999
- (10^{-6}) water + organism = 0.0021 Fg/L (EPA's #)
- (10^{-6}) organism only = 0.0022 Fg/L (EPA's #)
- (10^{-5}) = 0.021 Fg/L (w + o) & 0.022 Fg/L (org)

1992 NTR
- (10^{-6}) water + organism = 0.00057 Fg/L (EPA's #)
- (10^{-6}) organism only = 0.00059 Fg/L (EPA's #)
- (10^{-5}) = 0.0057 Fg/L (w + o) & 0.0059 Fg/L (org)

HH 1986
- (10^{-6}) water + organism = 0.00046 Fg/L (EPA's #)
- (10^{-6}) organism only = 0.00048 Fg/L (EPA's #)
- (10^{-5}) = 0.0046 Fg/L (w + o) & 0.0048 Fg/L (org)

Kansas
C = 0.0043 Fg/L
A = 2.4 Fg/L
HH fish (10^{-6}) = 0.00048 Fg/L
PWS (10^{-6}) = 0.00057 Fg/L
(EPA promulgation)

Missouri
HH (10^{-6})= 0.00048 Fg/L
PWS = 2 Fg/L

ATTACHMENT G
PETITION STATES' CWA SECTION 303(D) IMPAIRED WATERS LISTINGS FOR MISSISSIPPI AND MISSOURI RIVER
(As Of March 2004)

Mississippi River

	Segment	Location	Impairment	Use impaired
Iowa				
	IA-1-NEM-0010_2	L&D 15 to L&D 14	arsenic	Drinking water
	IA01-NEM-0010_4	Wapsipinicon R. to L&D 13	organic enrichment	Aquatic life
	IA-03-SKM-0010_1	MO state line to outfall of Ft. Madison WWTP	arsenic	Drinking water
Illinois				
	ILI01_I 05	Mississippi River South	PCBs	Overall use, drinking water supply, fish consumption, aquatic life, primary contact (swimming)
	ILJ81_J 01		PCBs	Overall use, drinking water supply, fish consumption, aquatic life
	ILJ83_J 05		PCBs, Siltation, Suspended Solids, Metals, Nutrients, Phosphorus, Total Ammonia-N, Nitrates	Overall use, fish consumption, aquatic life, primary contact (swimming)
	ILJ83_J 06		PCB siltation, flow alterations, habitat, nutrients	Overall use, fish consumption, aquatic life

	Segment	Location	Impairment	Use impaired
	ILJ03_J 11		Nonpriority Organics, Siltation, Habitat Alteration, Suspended Solids, Priority Organics	Overall use, drinking water supply, fish consumption, aquatic life
	ILK04_K 22		PCBs, Pathogens, Organic Enrichment, Priority Organics	Overall u7se, drinking water supply, fish consumption, aquatic life, primary contact (swimming)
	ILK03_K 17		PCBs, Organic Enrichment, Priority Organics	Overall use, drinking water supply, fish consumption, aquatic life
	ILK06_K 21		PCBs, Organic Enrichment, Priority Organics	Overall use, fish consumption, aquatic life
	ILM02_M 06		PCBs	Overall use, fish consumption, aquatic life
	ILM03_M 03		PCBs	Overall use, fish consumption, aquatic life
	ILM04_M 04		PCBs	Overall use, fish consumption, aquatic life, primary contact (swimming)
	ILM05_M 05		PCBs	Overall use, drinking water supply, fish consumption, aquatic life

	Segment	Location	Impairment	Use impaired
	ILM10_M 10		PCBs	Overall use, fish consumption, aquatic life, primary contact (swimming)
	ILI84_I 84		PCBs	Overall use, fish consumption, aquatic life, primary contact (swimming)
Missouri				
	WBID 1707	Ohio R to Missouri R. @ Herculaneum (5 mi)	lead, zinc	Aquatic life
	WBID 3152	Ohio R. to state line	chlordane, PCBs	Aquatic life (fish consumption)
	WBID 1707	Missouri R. to Ohio R.	chlordane, PCBs	Aquatic life (fish consumption)
	WBID 1	Des Moines R. to Missouri R.	chlordane, PCBs	Aquatic life (fish consumption)
Kentucky	No 303(d) listings			
Tennessee				
	TN08010100001 - 0200	BLUE BANK BAYOU	Nutrients. siltation	Fish and aquatic life use
	TN08010100001 –1000	MISSISSIPPI RIVER	PCBs, dioxin, chlordane, nitrate, siltation, other habitat alterations	Fishing advisory originally due to chlordane

	Segment	Location	Impairment	Use impaired
	TN08010100001 - 1100	MCKELLAR LAKE	PCBs, chlordane, dioxin, siltation, organic enrichment/low DO, pathogens	Fishing advisory originally due to chlordane.
	TN08010100001 - 2000	MISSISSIPPI RIVER	PCBs, dioxin, chlordane, nitrate, siltation, other habitat alterations	Fish and aquatic life use.
	TN08010100001 - 3000	MISSISSIPPI RIVER	PCBs, dioxin, chlordane, nitrate, siltation, other habitat alterations	Fish and aquatic life use
	TN08010100001 - 4000	MISSISSIPPI RIVER	PCBs, dioxin, chlordane, nitrate, siltation, other habitat alterations	Documented habitat for a federally listed fish: the pallid sturgeon (Scaphirhynchus albus).
	TN08010100001 - 5000	MISSISSIPPI RIVER	PCBs, dioxin, chlordane, nitrate, siltation, other habitat alterations	Fish and aquatic life use.
	TN08010100POPLARTLK	POPLAR TREE LAKE	Nutrients	No recent data on this 125 acre lake.
Arkansas	No 303(d) listings			

Missouri River

	Segment	Location	Impairment	Use impaired
Iowa				
	IA06-WEM-0020_2	Council Bluffs water supply intake to Boyer R.	arsenic	Drinking water
	IA06-WEM-0020_2	Council Bluffs water supply intake to Boyer R.	bacteria	Primary contact recreation
Nebraska				
	MT1-10000	Big Sioux R. to Platte R.	fecal coliform	Primary contact recreation
	NE1-10000	Platte R. to Kansas border	fecal coliform	Primary contact recreation
Kansas	No 303(d) listings			
Missouri				
	WBID 1604	Gasconade R. to mouth	chlordane, PCBs	Aquatic life (fish consumption)
	WBID 701	Chariton R. to Gasconade R.	chlordane, PCBs	Aquatic life (fish consumption)
	WBID 356	Kansas R. to Chariton R.	chlordane, PCBs	Aquatic life (fish consumption)
	WBID 226	Iowa sate line to Kansas R.	chlordane, PCBs	Aquatic life (fish consumption)
	WBID 356	Kansas R. to Chariton R.	mercury	Aquatic life (fish consumption)
	WBID 226	Kansas R. to Iowa State line	mercury	Aquatic life (fish consumption)