Missouri
Department of
Natural Resources

Recommendation Regarding Whole Body Contact Recreation Use Designation for the Mississippi River (Water Body ID: 1707)

North Riverfront Park to Confluence with Meramec River

Missouri Department of Natural Resources
Division of Environmental Quality
Water Protection Program

Date: March 10, 2011

Executive Summary

In an October 29, 2009 letter to the department, the United States Environmental Protection Agency (EPA) determined that new or revised standards (i.e., standards supporting whole body contact recreation) are necessary to meet the requirements of the federal Clean Water Act (CWA) for the 28.6-mile segment of the Mississippi River from North Riverfront Park to the confluence with the Meramec River. In its January 22, 2010 response to EPA, the department indicated its preference for Missouri to adopt new or revised regulations for this water body in lieu of EPA preparing and publishing regulations at the federal level under Section 303(c)(4) of the CWA.

In order to make a recommendation regarding whether new or revised standards are needed for this segment of the Mississippi River, the department reviewed all readily available and applicable data and information. The centerpiece of the department's review included two whole body contact recreation (WBCR) use attainability analysis (UAA) studies submitted to the department in July 2005 and October 2007 by MEC Water Resources (now Geosyntec Consultants) on behalf of the Metropolitan St. Louis Sewer District (MSD). Additional supplemental data and information included reports entitled "Mississippi River Data" prepared by Tetra Tech, Inc. (October and December 2007); a 2010 report by the United States Geological Survey (USGS) investigating occurrence and sources of *E. coli* in St. Louis streams; EPA's October 2009 letter of determination to the department; as well as a number of supporting documents supplied by EPA, and by Geosyntec on behalf of MSD.

After reviewing the central and supplemental information and data, the department concludes that the sum of the available information does not sufficiently demonstrate that the WBCR, or swimming, use is not attainable on the 28.6-mile segment of the Mississippi River under review. As a result, the department is recommending that either: 1) WBCR be designated for the 28.6-mile segment of the Mississippi River from North Riverfront Park to the confluence with the Meramec River, or 2) Secondary Contact Recreation (SCR) remain as the designated use for the 28.6-mile segment of the Mississippi River from North Riverfront Park to the confluence with the Meramec River, with the added provision in rule that bacteria criteria sufficient to support the WBCR-Category B use be applied to the water body. The department believes that either of the above recommendations will satisfy the requirements of Section 101(a)(2) of the federal CWA and address EPA's determination that new or revised standards are necessary for this segment.[1]

Although the department is making these findings and recommendations at this time, it will consider any additional and relevant data and information, consistent with 40 CFR § 131.10(g), that demonstrates why WBCR is not attainable on this segment or why criteria that do not protect for WBCR would comply with applicable requirements of the CWA and associated federal regulations. The department notes, in particular, that a compelling case may be made consistent with 40 CFR § 131.10(g)(6) that the establishment of water quality criteria necessary to support WBCR may result in substantial and widespread economic and social impact. If such a demonstration is made through a UAA, the department will review any information and data provided and, if appropriate, will revise its recommendations.

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[1] The rationale for Option 2 is outlined in Section 2.1.3 of EPA's Water Quality Standards Handbook, http://water.epa.gov/scitech/swguidance/waterquality/standards/handbook/chapter02.cfm#section1

Statutory and Regulatory Background

Section 101(a)(2) of the federal CWA establishes that *"it is the national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water be achieved by July 1, 1983"*. This section of the CWA effectively establishes the goal that all waters of the United States shall be designated as "fishable/swimmable", unless otherwise demonstrated that these uses can not be attained. Section 303(c)(2)(A) of the CWA requires that water quality standards *"protect the public health or welfare, enhance the quality of water and serve the purposes of this Act"*. EPA's regulations at 40 CFR § 131 interprets and implements these provisions through a requirement that state water quality standards protect Section 101(a)(2) uses (i.e., "fishable/swimmable") unless those uses have been shown to be unattainable. In this way, the CWA and supporting regulations create a rebuttable presumption of attainability. Unless the state can demonstrate that a Section 101(a)(2) use is not attainable on a water body, the water body must be designated for "fishable/swimmable" uses. The concept of a rebuttable presumption as it relates to whole body contact recreation has also been codified in Missouri's Water Quality Standards regulations at 10 CSR 20-7.031(1)(C)8.

Federal regulations contain additional provisions that provide direction on the state's role and responsibility in establishing – and removing – designated uses. In particular, 40 CFR § 131.10(i) indicates that *"where existing water quality standards specify designated uses less than those which are presently being attained, the State shall revise its standards to reflect the uses actually being attained"*. In seeking to determine whether or not uses are "*actually being attained*" on a particular water body, it is not necessary that such uses be common place nor that they necessarily meet the threshold of being considered an 'existing use'. Rather, according to guidance outlined in EPA's Water Quality Standards Handbook, "States need to give consideration to the incidental uses that may be made of a water body notwithstanding the use designation…the States and EPA must recognize that swimming and/or wading may, in fact, occur. To protect public health States must set criteria to reflect swimming if it appears that primary contact recreation will, in fact, occur in the stream".[2]

Furthermore, Clean Water Act regulations preclude the removal of a use if that use is existing or if the use can be attained by establishing water quality necessary to achieve the designated use. 40 CFR § 131.10(d) states that *"At a minimum, uses are deemed attainable if they can be achieved by the imposition of effluent limits required under sections 301(b) and 306 of the Act and cost-effective and reasonable best management practices for nonpoint source control"* and it is noted in Section 131.10(h) that "*States may not remove designated uses if…Such uses will be attained by implementing effluent limits…and reasonable best management practices for nonpoint source control"*.

Federal regulations at 40 CFR § 131.10(j) require that a Use Attainability Analysis (UAA) be conducted where a state designates or has designated uses that do not include the CWA Section 101(a)(2) "fishable/swimmable" uses, when the state wishes to remove CWA Section 101(a)(2)

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[2] U.S. Environmental Protection Agency. 1994. Water Quality Standards Handbook: Second Edition (Chapter 6.1.5 Evaluation of Designated Uses). U.S. EPA Office of Water, Washington D.C. EPA 823-B-94-005a. http://water.epa.gov/scitech/swguidance/waterquality/standards/handbook/chapter06.cfm

uses, or when the state adopts subcategories of CWA Section 101(a)(2) uses that require less stringent criteria. A use attainability analysis, which is defined at 40 CFR 131.3(g), is a *"structured scientific assessment of the factors affecting the attainment of the use which may include physical, chemical, biological, and economic factors as described in § 131.10(g)"*.

As noted in the UAA definition, 40 CFR § 131.10(g) establishes the factors that states must consider when seeking to remove a designated use from a water body *"which is not an existing use or establish subcategories if the State can demonstrate that attaining the designated use is not feasible because:*

> *(1) Naturally occurring pollutant concentrations prevent the attainment of the use; or*
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> *(2) Natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges without violating State water conservation requirements to enable uses to be met; or*
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> *(3) Human caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place; or*
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> *(4) Dams, diversions or other types of hydrologic modifications preclude the attainment of the use, and it is not feasible to restore the water body to its original condition or to operate such modification in a way that would result in the attainment of the use; or*
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> *(5) Physical conditions related to the natural features of the water body, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality, preclude attainment of aquatic life protection uses; or*
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> *(6) Controls more stringent than those required by sections 301(b) and 306 of the Act would result in substantial and widespread economic and social impact"*.

In a UAA, the physical, chemical, biological, and economic factors affecting the attainment of a use are evaluated through a water body survey and assessment process. Guidance on water body surveys and assessment techniques can be found in EPA's Technical Support Manual, Volumes I – III: Water Body Surveys and Assessments for Conducting Use Attainability Analyses (Volumes I – II, November 1983; Volume III, November 1984). Additional guidance is provided in EPA's Water Quality Standards Handbook: Second Edition (EPA-823-B-94-005, August 1994). Guidance on economic factors affecting the attainment of a use is contained in EPA's Interim Economic Guidance for Water Quality Standards: Workbook (EPA-823-B-95-002, March 1995).

Pursuant to federal regulation at 40 CFR § 131.20(a), states shall "*from time to time, but at least once every three years, hold public hearings for the purpose of reviewing applicable water quality standards and, as appropriate, modifying and adopting standards. Any water body segment with water quality standards that do not include the uses specified in section 101(a)(2)*

of the Act shall be re-examined every three years to determine if any new information has become available. If such new information indicates that the uses specified in section 101(a)(2) of the Act are attainable, the State shall revise its standards accordingly." Given the regulatory requirement to review designated uses and UAA information and data every three years, and considering EPA's determination in its October 29, 2009 letter to the department that new or revised water quality standards are needed for the 28.6-mile segment of the Mississippi River from North Riverfront Park to the confluence with the Meramec River, the department is addressing this matter in the state's current triennial review of water quality standards. As noted in its January 22, 2010 response to EPA's determination, the department indicated its preference for Missouri to adopt new or revised regulations for this water body in lieu of EPA preparing and publishing regulations at the federal level under Section 303(c)(4) of the CWA. New UAA information provided to the department by Geosyntec Consultants (Geosyntec), on behalf of the Metropolitan St. Louis Sewer District, as well as supplemental information and data supplied by EPA, provide additional rationale for the department to review and determine whether "*recreation in and on the water*" is an attainable use for the 28.6-mile segment of the Mississippi River from North Riverfront Park to the confluence with the Meramec River.

Mississippi River UAA Review – Methodology

In order to make a recommendation regarding whether new or revised standards are needed for this segment of the Mississippi River, the department reviewed all readily available and applicable data and information. The centerpiece of the department's review included two whole body contact recreation (WBCR) use attainability analysis (UAA) studies submitted to the department in July 2005 and October 2007 by MEC Water Resources (now Geosyntec Consultants) on behalf of the Metropolitan St. Louis Sewer District (MSD). Additional supplemental data and information included reports entitled "Mississippi River Data" prepared by Tetra Tech, Inc. (October and December 2007); a 2010 report by the United States Geological Survey (USGS) investigating occurrence and sources of *E. coli* in St. Louis streams; EPA's October 2009 letter of determination to the department; as well as a number of supporting documents supplied by EPA, and by Geosyntec on behalf of MSD.

In addition to considering the UAAs and other information provided by Geosyntec and EPA, the department conducted a comprehensive review of all applicable state and federal statutes, regulations and guidance. The review included applicable sections of the federal Clean Water Act and associated federal water quality standards regulations, along with EPA guidance with respect to their interpretation and implementation. The department also identified key sections of Missouri's Water Quality Standards (WQS) at 10 CSR 20-7.031 that may be applicable. The department's review of these statutes, regulations and guidance includes an analysis of states' roles and responsibilities in establishing water quality standards, as well as a brief assessment of how each serves to support the department's recommendation.

The department's recommendation will ultimately be based upon an assessment of the six factors established in 40 CFR § 131.10(g) that provide states with a means for removing designated uses, and whether or not the UAAs and supporting data effectively use these factors to build a case for not establishing a default use of WBCR on this segment of the Mississippi River. This review and recommendation considers all six factors, paying special attention to an assessment

of the UAAs' treatment of 40 CFR § 131.10(g)(3) and (4), which are the factors upon which the UAAs are based. In the course of the review, the department also made every attempt to address the key concerns laid out in EPA's October 29, 2009 determination letter. In addition, the department reviewed UAAs and water quality standards provided by Geosyntec and MSD that reflect cases where primary contact recreation was successfully removed from other states' water quality standards using the UAA factors cited above.

Mississippi River UAA Review – 40 CFR § 131.10(g) Factors and Existing Use

The July 2005 "Mississippi River Whole Body Contact Recreation Use Attainability Analysis" prepared by MEC Water Resources (Geosyntec) for MSD addressed 40 CFR § 131.10(g) factors (4) and (6), hydrologic modifications and economic and social impact, respectively, as factors that prevent the attainment of the whole body contact recreation (WBCR) use. The department's review committee at the time determined this UAA to be inconclusive and recommended that further studies be conducted to support the claim that these factors prevent WBCR use in this segment of the Mississippi River. MSD submitted a new UAA in October 2007 titled "Mississippi River Whole Body Contact Recreational Use Attainability Analysis" for the 28.6-mile segment currently at issue that sought to address 40 CFR § 131.10(g) factors (3) and (4), human-caused conditions and hydrologic modifications, respectively.

This current review and recommendation will consider all six factors, paying special attention to 40 CFR § 131.10(g) factors (3) and (4) as addressed in the October 2007 UAA. In the process, the department will address the concerns articulated by EPA in its October 29, 2009 letter of determination to the department. These concerns, primarily, are that the available information does not demonstrate that water quality necessary to support whole body contact recreation is not attainable in this segment of the Mississippi River, and that the criteria associated with the current secondary contact recreation designated use will not "*provide for the attainment and maintenance of water quality standards of downstream waters*", as noted in federal regulations at 40 CFR § 131.10(b). EPA has indicated that it is not persuaded by claims made in the UAA that shoreline features, access, near-shore water velocities and density of barge traffic all prevent attainment of WBCR use, noting that swimming and water skiing (among other uses) are currently occurring in much of the water body segment. It should be noted that EPA's letter appears to address only the 2005 UAA, and does not appear to take into account data and analysis presented in the 2007 UAA.

As noted in the reference to 40 CFR § 131.10(g), states may only remove a designated use *"which is not an existing use"*. Prior to demonstrating that WBCR is not an attainable use and may be removed, the UAA needs to first demonstrate that it is not an existing use. Chapter 9.1 of the October 2007 UAA addresses the issue of existing use by quoting EPA in an advanced notice of proposed rulemaking to the Water Quality Standards Regulation that was published in the Federal Register on July 7, 1998. The language in the proposed rule states, in part:

> *A somewhat common existing use question applies to primary contact recreation: if a few people on a few occasions "swim" in a water body that does not have the quality or physical characteristics to support swimming, is this an existing use, even if the water body is posted "no swimming" due to bacterial contamination and lacks the physical*

features to actually support swimming? The straightforward answer to this question is that "swimming" is not an existing use because the present (or past) condition does not support that use. This conclusion is based on the very limited actual "use" and, more importantly, the lack of suitable water quality and physical characteristics that would support a recreational swimming use now or in the future (as determined by the water quality requirements and recreational swimming considerations, including safety considerations, in the State or Tribal classification system for primary contact recreation).[3]

While evidence is presented within the October 2007 UAA (Appendix C) that shows that WBCR activities, such as swimming and water skiing, do in fact occur on this segment, the department agrees that the evidence presented does appear to indicate that the use is relatively infrequent and limited. However, it is noted in the rulemaking language above that EPA considers a lack of suitable water quality and physical characteristics to support swimming to be more important considerations in determining existing use than the actual frequency of use. As noted in the responses to 40 CFR § 131.10(g) factors (1) through (5) below, the UAA does not demonstrate that water quality in this segment is unsuitable for supporting a WBCR use throughout the segment and, in fact, does not address the issue of water quality at all. In addition, the October 2007 UAA does not conclusively demonstrate that this segment of the Mississippi River lacks the physical characteristics throughout to support swimming or water skiing now or in the future. While the UAA does show that shoreline access to the river may be limited, even very limited in many locations, the UAA does not demonstrate that access is nonexistent throughout the segment. Nor does the UAA demonstrate that this segment exhibits a lack of depth suitable for swimming or water skiing and, in fact, presents evidence to the contrary. The UAA does provide evidence to show that safety is a significant factor that may limit WBCR in some parts of this segment. However, EPA's guidance is unclear as to whether or not considerations of safety, combined with limited use, are enough to make the determination that a use is not existing.

Therefore, for the purposes of this review and recommendation, the department will withhold judgment on a decision of whether or not WBCR is an existing use on this segment. Rather, the department's decision is based on an assessment of whether or not the UAAs and supporting data affirmatively demonstrate that WBCR is not an attainable use. As noted above, in seeking to determine whether or not uses are actually being attained on a particular water body it is not necessary that such uses be commonplace nor that they necessarily meet the threshold of being considered an existing use. Rather, according to guidance found in EPA's Water Quality Handbook, *"States need to give consideration to the incidental uses that may be made of a water body notwithstanding the use designation…the States and EPA must recognize that swimming and/or wading may, in fact, occur. To protect public health States must set criteria to reflect swimming if it appears that primary contact recreation will, in fact, occur in the stream".*[4] To that end, the department again notes that the October 2007 UAA provides evidence to show that

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[3] 63 FR 36752-36753 (July 7, 1998)

[4] U.S. Environmental Protection Agency. 1994. Water Quality Standards Handbook: Second Edition (Chapter 6.1.5 Evaluation of Designated Uses). U.S. EPA Office of Water, Washington D.C. EPA 823-B-94-005a. http://water.epa.gov/scitech/swguidance/waterquality/standards/handbook/chapter06.cfm

WBCR, however limited, is, in fact, occurring on this segment in the form of swimming and water skiing.

(1) Naturally occurring pollutant concentrations prevent the attainment of the use;

The primary pollutant of concern for recreational uses is pathogens. Where natural sources of bacteria, such as from wildlife, cause noncompliance with the water quality standards and can not be prevented or controlled, then it could be concluded through the UAA process that WBCR is not attainable. To date, no evidence has been presented by MSD in either of their UAAs to show that naturally occurring pollutants are causing noncompliance with the water quality standards and preventing the attainment of the WBCR-Category B use. Water quality data submitted as part of the 2005 UAA were collected far outside of the water body segment being considered and, although these data generally appear to indicate compliance with criteria necessary to support WBCR-Category B, they may not be representative of conditions in the segment currently being considered. The October 2007 UAA did not address pollutant concentrations and did not include water quality data.

A recent study published by the United States Geological Survey[5] (USGS) concludes that approximately one-third of the *E. coli* bacteria identified in streams (including the Mississippi River) in the metropolitan St. Louis area come from human sources, another one-third come from unknown sources, and approximately 20 percent and 10 percent come from geese and dogs, respectively. Unknown sources of *E. coli* include urban wildlife (excepting geese), in addition to a percentage of human, dog and geese samples that did not meet the criteria necessary to be positively identified. In addition, the department's analysis of bacteria data collected for this study shows that out of eleven recreational season geometric means calculated from data collected from within and just downstream of the segment in question, only one of these geometric means exceeds the state water quality standards criteria of 206 colonies of *E. coli* bacteria per 100 mL of water for WBCR-Category B. The department does not believe that these data conclusively demonstrate that bacteria in this segment of the Mississippi River are naturally occurring, and therefore not controllable, at a level that would prevent the attainment of the WBCR use. Given these data and assuming that naturally occurring bacteria are not preventing attainment, the fact that the geometric means for ten out of eleven recreational season studies do currently meet the criteria for WBCR-Category B would appear to indicate that water quality necessary to support this use is, at the very least, potentially attainable with effluent limitations and nonpoint source controls.

(2) Natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges without violating State water conservation requirements to enable uses to be met;

The Mississippi River is designated in Missouri's WQS as a Class P water body that will "*maintain permanent flow even in drought periods*" [10 CSR 20-7.031(1)(F)4]. The "Missouri Recreational Use Attainability Analyses: Water Body Survey and Assessment Protocol"

[5] Wilkison, D.H., Davis, J.V., 2010, Occurrence and sources of *Escherichia coli* in metropolitan St. Louis streams, October 2004 through September 2007; U.S. Geological Survey Scientific Investigations Report 2010-5150, 57 p.

(December 2007) establishes that in order for a water body to support WBCR, a maximum depth of at least one meter or a median depth of at least one-half meter must be maintained during base flow conditions. Neither of the UAAs submitted by MSD specifically address depth as a factor to consider in removing WBCR use. However, sufficient data does exist in both UAAs, and elsewhere, to demonstrate that the Mississippi River meets these criteria, and that naturally occurring ephemeral, intermittent or low-flow conditions will not prevent attainment of the WBCR use on this segment.

(3) Human caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place;

MSD asserts within the October 2007 UAA that industrialization and other modifications of the shoreline, along with dangerous human-caused hydraulic conditions and very heavy barge traffic, limit access to WBCR and make conditions too dangerous for swimming, thereby preventing attainment of the WBCR use. No assertion is made within the UAA, nor is any evidence presented, to demonstrate that human-caused sources of pollution prevent the attainment of WBCR use.

In regard to the assertions made under this factor, the October 2007 UAA failed to demonstrate that limited shoreline access prevents attainment of the use. As noted previously, the UAA and other documented evidence shows that swimming and water skiing do occur on this segment, with potential access from both the shoreline and from the upstream and downstream segments of the river that do currently support WBCR. Three public locations on the Missouri side of the river with known access to the water include North Riverfront Park, Laclede's Landing/Jefferson National Expansion Memorial and Cliff Cave Park. In addition, photographs taken during a July 2007 site visit by Tetra Tech, Inc. appear to show that, while segments of the shoreline are indeed industrialized and have steep rocky banks that may prohibit swimming, there are areas where the shoreline is sandy and sloped more gently. Other photographs of a houseboat, a homeless camp and people fishing along the shoreline appear to indicate that access to the shoreline is also possible from areas other than public parks.

The department notes that this water body segment is accessible by boat, thereby negating the argument that limited shoreline access prevents attainment of WBCR use. Boats may potentially provide access to shoreline areas not accessible by land and evidence is presented in the UAA of water skiing within the segment, as well as swimming originating off of recreational boats in the downtown area. In addition to the public boat ramp within the segment at North Riverfront Park, boats are known to access this segment from upstream, as well as downstream. In particular, there is evidence of boats entering the segment from the Meramec River, leading to accounts of both swimming and water skiing in the lower portion of the segment. Although not documented, it is also possible for boats to access this segment from the Illinois side of the river. The department also notes the existence of the Mississippi River Water Trail, a planned 300 mile water trail being developed with the support of numerous state and federal agencies for the purpose of recreational paddling on the river. At its completion, the trail is to extend from Saverton, Missouri to Cairo, Illinois. While not explicitly promoting WBCR, the purpose of this water trail and the goal of its supporters is to promote and increase recreational boat traffic on

the river, along with associated recreational shoreline activities such as picnicking and camping.[6] Such officially sanctioned activities in and adjacent to the river will almost certainly increase the opportunities for WBCR within this segment of the Mississippi River.

The MSD Mississippi River UAAs also failed to conclusively demonstrate that barge and commercial boat traffic on the river create conditions that prevent attainment of the use. While the department acknowledges that there is a tremendous volume of barge and commercial boat traffic in the St. Louis area that may create dangerous conditions that impede WBCR in certain locations much of the time, it is far from clear that these conditions prevent WBCR at all locations at all times. As noted previously, WBCR recreation is occurring on the river, and EPA makes it clear that looking at the safety factor without a consideration of water quality is not sufficient justification to remove a use. In its final rule establishing water quality standards for Puerto Rico in 2004, EPA states that it is:

> "*aware from other sources in the record that primary contact recreation activities occur in portions of these waters at least on a limited basis. While this information does not automatically compel the Agency to require primary contact recreation, in this case there is no information to support that it is not feasible to attain water quality commensurate with primary contact recreation protection.*"[7]

EPA's rationale appears to be based on Clean Water Act regulations that preclude the removal of a use if that use is existing or if the use can be attained by establishing water quality necessary to achieve the designated use. 40 CFR § 131.10(d) states that *"At a minimum, uses are deemed attainable if they can be achieved by the imposition of effluent limits required under sections 301(b) and 306 of the Act and cost-effective and reasonable best management practices for nonpoint source control"*. It is also noted in Section 131.10(h) that "*States may not remove designated uses if…Such uses will be attained by implementing effluent limits…and reasonable best management practices for nonpoint source control"*.

EPA continues in the Puerto Rico administrative record to determine that "*in some cases, it may not make sense to encourage use of a water body for swimming use due to safety issues; however, swimming may occur anyway and, therefore, states establish water quality criteria sufficient to protect primary contact recreation throughout the water body and for any incidental contact recreation that may occur.*"

Furthermore, while the department acknowledges that St. Louis is a very active and important commercial inland port that is vital to the regional economy, the Mississippi River UAAs fail to demonstrate that any human-caused conditions that may limit or prevent WBCR use can not be remedied, or that doing so would cause more environmental damage to correct than to leave in place. It is claimed in Section 9.2 of the 2007 UAA that over 32 million tons of freight worth over $5 billion moves through the port each year, and that transferring this tonnage away from the river to land-based transport would result in a dramatic increase in traffic, noise and pollution. However, no data has been presented to support this claim. In fact, no evidence has been presented to demonstrate that it would even be necessary to move all or, for that matter,

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[6] http://www.greatriverwatertrail.org/Home_Page.php
[7] 69 FR 3519 (January 26, 2004)

any, of this freight away from the port in order to accommodate WBCR. It may well be sufficient to make potentially minimal operational changes of the port area in a manner that would allow for WBCR. For example, place, time or manner restrictions could be placed on barge and commercial boat traffic, with complimentary restrictions on recreational use.

Lastly, the Mississippi River UAAs did not demonstrate that human-caused hydraulic conditions prevent attainment of WBCR use and can not be remedied. It is noted within the October 2007 UAA that maintenance of the Mississippi River navigation channel by dredging and the use of regulating works such as chevrons and wingdams exacerbates dangerous flow conditions in the river, and that these flow conditions prevent WBCR. While the UAA does demonstrate that dangerous flow conditions for swimming exist in the river, the UAA fails to conclusively demonstrate that such conditions exist everywhere in this segment of the river, and at all times, at levels that prevent attainment of the WBCR use. The department notes that near-shore velocities were measured by MEC Water Resources at a minimum depth of 5 to 6 feet (deeper than the 1 meter required for swimming in state regulations) and even then, several measurements of mean velocity were at or below the maximum safe level, and most were below the level considered marginal for swimming. This information, combined with documented evidence of WBCR occurring on the river, demonstrates that, while swimming may not always be optimal, it is also not completely prevented by flow conditions. And as noted above, EPA has established that even when it may not make sense to encourage swimming in a particular area, if evidence suggests that the use will occur anyway, states must establish criteria sufficient to protect that use. Furthermore, the UAA fails to demonstrate that hydraulic conditions in this segment of the river are any different than in the upstream and downstream segments of the river that do support WBCR, thereby failing to demonstrate that this segment is worthy of a lesser recreational use designation than the other segments.

(4) Dams, diversions or other types of hydrologic modifications preclude the attainment of the use, and it is not feasible to restore the water body to its original condition or to operate such modification in a way that would result in the attainment of the use;

It is asserted within the October 2007 UAA that chevrons, wingdams and channelization designed to facilitate commercial boat and barge traffic all create dangerous currents and flow conditions that prevent the attainment of WBCR. However, as noted in the department's analysis of 40 CFR § 131.10(g) factor (3) above, while these structures do modify the hydrology of the river in ways that may make it infeasible or dangerous to swim or water ski in certain locations, no evidence has been provided to demonstrate that these structures completely prevent attainment of these uses on the entire segment. To the contrary, there is evidence to show that these uses are currently being attained. It is further asserted within the October 2007 UAA that it is not feasible to restore the Mississippi River to its original condition, or to operate these modifications in a way that would result in the attainment of WBCR use. The department agrees that, given the importance of these structures to facilitating the large volume of commercial boat and barge traffic bound for the St. Louis area, it may not be feasible to restore the river to its original condition. However, no evidence has been provided to demonstrate that it is necessary to restore the water body to its original condition in order to provide for WBCR, nor has it been demonstrated that it is infeasible to operate these modifications in such a way that would further support attainment of the WBCR use.

(5) Physical conditions related to the natural features of the water body, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality, preclude attainment of aquatic life protection uses;

This factor applies specifically to the attainment of aquatic life protection uses and may not be used to justify the removal of designated recreational uses. Physical conditions as described here must be associated with one or more of the other 40 CFR § 131.10(g) factors in order to remove the WBCR use.

The October 2007 UAA provides evidence apparently designed to support a claim that the river is endowed with certain physical features, not caused by humans, that prevent WBCR use attainment. These features include poor or dangerous substrate, logs and other floating debris, low transparency of the water, steep and irregular bank slopes and drop-offs in the water, and steep cliffs along the banks that prevent access in some places. Not only are these factors not appropriate to consider when determining whether or not WBCR is an attainable use, the UAA does not conclusively demonstrate that such physical features in this segment are markedly different than those that exist in upstream and downstream segments of the river that do currently support the WBCR use.

(6) Controls more stringent than those required by sections 301(b) and 306 of the Act would result in substantial and widespread economic and social impact".

The department acknowledges that a reasonable argument may be made that effluent controls at levels sufficient to meet criteria for WBCR-Category B may not be practicable and may result in substantial and widespread economic and social impact within the MSD service area. Although publicly owned treatment works in the MSD service area are upgrading to support disinfection, the criteria for WBCR-Category B are more stringent than the Secondary Contact Recreation (SCR) criteria currently being implemented. The WBCR-Category B criterion is a recreational season geometric mean of 206 colonies of *E. coli* bacteria per 100 mL of water, as opposed to the current SCR criterion of 1,134 colonies per 100 mL of water. The additional expense of disinfection to the WBCR-Category B criterion may result in widespread economic and social impact for the population within the MSD service area, especially when current and future costs for compliance with combined sewer overflow (CSO) and sanitary sewer overflow (SSO) upgrades are considered.

Although the July 2005 UAA submitted by MSD does mention 40 CFR § 131.10(g)(6) as one of the factors to be considered, it does not provide evidence to support such a claim. The UAA instead explains that MSD was, at the time, in the process of developing a CSO Long-Term Control Plan (LTCP) that would, in part, evaluate the financial impacts of different CSO control options. The October 2007 UAA does not include any mention of economic and social impacts as a factor to consider in removing WBCR. The LTCP was completed by MSD in August 2009 and does contain an assessment of financial capability. However, at the present time, no evidence has been presented to the department to indicate that effluent controls sufficient to meet criteria for WBCR-Category B may result in substantial and widespread economic and social impact. Should MSD wish to formally submit a UAA to the department that includes an analysis

of 40 CFR § 131.10(g)(6), the department would review the UAA and take any information contained therein into consideration during the current review of state water quality standards.

EPA-approved UAAs and State Water Quality Standards:
In addition to considering 40 CFR § 131.10(g) factors (3) and (4) as rationale for not designating WBCR to this segment, the department was presented with examples of EPA-approved UAAs and water quality standards from other states that reflect removal of full-body, or primary contact, recreation (equivalent to WBCR). While, on the face of it, these examples may seem to provide a precedent in support of the current Mississippi River UAA's goal of WBCR use removal, a closer assessment by the department reveals that none of these other examples is readily comparable to the situation in the Mississippi River.

UAAs from New York Harbor and the Delaware River successfully advocated removal of primary contact recreation based on a demonstration that water quality necessary to support this use is not attainable.[8, 9] However, the Mississippi River UAA does not present, nor supply evidence to support, such a rationale. A UAA from the Los Angeles region that advocates use removal based on the physical characteristics of the water body reflects a situation with highly engineered, concrete channels, where the use is only temporarily removed for safety reasons following certain rainfall events.[10] Another UAA from Pennsylvania reflects a situation where the primary contact use was retained throughout much of the water body, however the use was removed for safety reasons only within a very small, limited area, defined primarily as a narrow shipping channel with essentially no shoreline access.[11] None of these situations are reflective of the Mississippi River or its UAAs.

Several examples were provided by MSD to show state water quality standards that do not provide for primary contact recreation on certain water bodies. Pennsylvania's water quality standards do not provide for primary contact recreation in a segment of the Delaware River, noted above, even though the UAA explicitly establishes that swimming and water skiing are existing uses on this water body. Water quality standards for the Mobile River in Alabama were established based upon a UAA that appears to present very little, if any, supporting data, and which does not seem to meet the definition of a UAA as "*a structured scientific assessment of the factors affecting the attainment of uses*" specified in the Clean Water Act.[12] And several examples presented to the department represent state water quality standards from both Texas and Illinois where primary contact recreation was removed from a water body with no UAA having been conducted at all.[13, 14] Given that these examples appear to run counter to federal

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[8] Delaware River Basin Commission. 1988. Delaware Estuary Use Attainability Project: Report on the Attainability of Swimmable Water Quality.
[9] New York State Department of Environmental Conservation, Division of Water. 1985. Use Attainability Analysis of the New York Harbor Complex.
[10] California Regional Water Quality Control Board, Los Angeles Region (Draft Staff Report). 2003. Amendment to the *Water Quality Control Plan for the Los Angeles Region* to Suspend Recreational Beneficial Uses in Engineered Channels during Unsafe Wet Weather Conditions.
[11] Pennsylvania Department of Environmental Resources, Bureau of Water Quality Management. 1986. Priority Water Body Survey Report, Water Quality Standards Review: Presque Isle Bay and Outer Erie Harbor.
[12] Alabama Department of Environmental Management. 2001. Use Attainability Analysis: Mobile River.
[13] Hamilton, Lori, Water Quality Standards Group, Texas Commission on Environmental Quality. Email February 14, 2011 (Subject: Re: Information Request – Houston Ship Channel UAA).

water quality statutes and regulations, the department does not feel that it is appropriate or useful to consider these cases as precedent in its decision.

Finally, the UAA and water quality standards for the Chicago Area Waterway System reflects an attempt by a state, similar to Missouri's current situation, to establish water quality standards that do not provide for recreation in the water (including WBCR), based upon 40 CFR § 131.10(g) factors (3) and (4). It is notable that EPA recently questioned this UAA and its associated water quality standards, and has instructed the state of Illinois to revise its standards to provide for recreation in and on the water for the water body segments in question. In making its determination, EPA notes that the human-caused conditions outlined in the UAA are not present in all locations on the water bodies, and the extent to which they may impact recreation may vary greatly. In addition, EPA points out that the UAA provides no demonstration that some or all of these conditions can not be remedied or operated in such a manner that would allow for recreation in the water. EPA also notes that the recreational activities at issue have in fact been occurring, as demonstrated by the UAA and by public comments, suggesting that human-caused conditions and hydrologic modifications do not prevent attainment of the use.[15] All of these arguments are similar to ones made by the department with regard to Missouri's Water Quality Standards and the Mississippi River UAAs.

Downstream Uses - 40 CFR § 131.10(b):
In its October 29, 2009 letter of determination to the department, EPA states that in order to adopt a Secondary Contact Recreation (SCR) designated use on this segment in lieu of WBCR, the department would need to demonstrate that such standards would "*provide for the attainment and maintenance of the water quality standards of downstream waters*", as outlined in 40 CFR § 131.10(b). While the department does not dispute the need to consider the water quality standards of downstream uses when establishing designated uses upstream, the department here provides two reasons why it does not believe that this particular issue provides a solid rationale for disapproving the UAA and the SCR use designation in this circumstance.

The best available bacteria data, collected as part of the 2010 investigation of *E. coli* in St. Louis area streams by the USGS, indicates that water quality commensurate with WBCR is currently being met in the water body segment just downstream of the segment in question. Three geometric means, calculated for the 2005, 2006 and 2007 recreational seasons from data collected at river mile 157 (about 3.5 miles downstream of the lower end of the segment), all indicate bacteria concentrations that are below the maximum allowable criteria of 206 colonies/100 mL required for WBCR-Category B. In fact, two of the geometric means meet the criteria for WBCR-Category A of 126 colonies/100 mL. The segment appears to be attaining water quality standards at a time when the CSO LTCP has not yet been fully implemented and wastewater treatment facilities operated by MSD have yet to begin disinfection to meet bacteria criteria established for SCR. The department believes that as these scheduled improvements are implemented, downstream water quality will only continue to improve. Therefore, since the

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[14] Park, James B. Bureau of Water, Illinois Environmental Protection Agency, letter to George Schillinger, American Bottoms Regional Wastewater Treatment Facility. October 23, 1995.
[15] Holst, Linda, Chief of Water Quality Branch, U.S. EPA Region 5, letter to Illinois Pollution Control Board. April 15, 2010.

current water quality standards in the Mississippi River segment around St. Louis have already been demonstrated to provide for the attainment and maintenance of the water quality standards of downstream waters, the department does not feel that this is a justified rationale for disapproving the SCR use designation on this segment.

Even so, EPA guidance established in its Water Quality Standards Handbook notes that the Clean Water Act provides means to address situations where downstream standards may not be met owing to an upstream pollutant source. In addition to providing for public participation for new or revised water quality standards, the handbook points out that Sections 401 and 402 of the CWA establish that the National Pollutant Discharge Elimination System (NPDES) program sets permit limits that are required to comply with applicable water quality standards, including those downstream.[16] The department interprets this guidance to mean that upstream water quality standards need not be the same as downstream water quality standards, provided that NPDES permit conditions can be modified to address any downstream exceedances of the standards that may occur. It should be noted that the majority of identified bacteria pollutant sources in this segment of the Mississippi River are from regulated facilities permitted through the Missouri State Operating Permit program, Missouri's program for administering the NPDES program. The department believes this serves as adequate demonstration that the attainment and maintenance of downstream water quality standards can be met through regulation, and asserts that concerns about downstream water quality are not an appropriate rationale for disapproving the SCR use designation on this segment.

Conclusion

After reviewing the central and supplemental information and data, the department concludes that the sum of the available information does not sufficiently demonstrate that the WBCR, or swimming, use is not attainable on the 28.6-mile segment of the Mississippi River under review. As a result, the department is recommending that either: 1) WBCR be designated for the 28.6-mile segment of the Mississippi River from North Riverfront Park to the confluence with the Meramec River, or 2) Secondary Contact Recreation (SCR) remain as the designated use for the 28.6-mile segment of the Mississippi River from North Riverfront Park to the confluence with the Meramec River, with the added provision in rule that bacteria criteria sufficient to support the WBCR-Category B use be applied to the water body. The department believes that either of the above recommendations will satisfy the requirements of Section 101(a)(2) of the federal CWA and address EPA's determination that new or revised standards are necessary for this segment.[17]

With this recommendation, the department is not making a determination that swimming and water skiing are necessarily safe or desirable activities on this water body segment. Nor does this decision imply that the State of Missouri officially sanctions and endorses swimming and water skiing in this location. Rather, the department is making the determination that the Mississippi River UAAs submitted by Geosyntec Consultants on behalf of MSD do not

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[16] U.S. Environmental Protection Agency. 1994. Water Quality Standards Handbook: Second Edition (Chapter 2.2 Consider Downstream Uses). U.S. EPA Office of Water, Washington D.C. EPA 823-B-94-005a. http://water.epa.gov/scitech/swguidance/waterquality/standards/handbook/chapter06.cfm

[17] The rationale for Option 2 is outlined in Section 2.1.3 of EPA's Water Quality Standards Handbook, http://water.epa.gov/scitech/swguidance/waterquality/standards/handbook/chapter02.cfm#section1

conclusively demonstrate that WBCR uses are unattainable on this water body segment. As a result, the department feels that the default "fishable/swimmable" goal established in Section 101(a)(2) of the federal Clean Water Act should apply to this water body segment or, if SCR is to remain the designated use, criteria sufficient to protect the WBCR-Category B use must be applied to the water body.

While the department does not believe that the WBCR use designation is necessary in order to be protective of downstream uses, it should be noted that the entire length of the Mississippi River across from the 28.6-mile segment, on the Illinois side, is currently designated for primary contact recreation (same as WBCR) in Illinois' Water Quality Standards.[18] Establishing WBCR as a designated use on this segment will provide consistency of use not only with upstream and downstream segments of the river on the Missouri side, but will also provide consistency with the water quality standards of a neighboring state. Citizens engaging in WBCR on the Mississippi River in the St. Louis area can be assured that water quality criteria protective of WBCR have been established, regardless of the water body segment or regulatory agency.

Along with seeking to establish WBCR designated use protection, the department also wishes to reaffirm SCR as an existing use on this 28.6 mile water body segment. Overwhelming evidence documenting fishing, wading, and commercial and recreational boating has been presented in both the 2005 and 2007 UAAs submitted on behalf of MSD, and in the "Mississippi River Data" reports prepared by Tetra Tech, Inc. In addition, comments submitted by members of the public during previous water quality standards reviews also confirm that SCR uses are existing and common on this segment of the Mississippi River.

Although the department is making these findings and recommendations at this time, it will consider any additional and relevant data and information, consistent with 40 CFR § 131.10(g), that demonstrates why WBCR is not attainable on this segment or why criteria that do not protect for WBCR would comply with applicable requirements of the CWA and associated federal regulations. The department notes, in particular, that a compelling case may be made consistent with 40 CFR § 131.10(g)(6) that the establishment of water quality criteria necessary to support WBCR would result in substantial and widespread economic and social impact. If such a demonstration is made through a UAA, the department will review any information and data provided and, if appropriate, will revise its recommendations.

[18] Illinois, 2009. "Title 35: Environmental Protection Subtitle C: Water Pollution Chapter I: Pollution Control Board Part 302 Water Quality Standards". http://www.epa.gov/waterscience/standards/wqslibrary/il/il_5_c302.pdf