Missouri Clean Water Commission
Lewis and Clark State Office Building
LaCharrette/Nightingale Creek Conference Room
1101 Riverside Drive
Jefferson City, Missouri 65102

September 7, 2011

Request a Finding of Necessity for the Proposed Amendment
10 CSR 20-7.031 – Water Quality Standards

Issue: The Department recently public noticed a Regulatory Impact Report (RIR) on the proposed amendment, Water Quality Standards. The Water Protection Program anticipates filing this proposed amendment.

Background: The purpose of the rulemaking is to update Missouri's water quality standards, making them functionally equivalent to federal standards and at the same time improving their clarity, specificity and effectiveness. Several revisions are development priorities, Department responses U.S. Environmental Protection Agency (EPA) decisions and, revisions based on petitions presented to the Commission. In support of the rulemaking, the Department is providing comments and responses to the Regulatory Impact Report (RIR) public noticed from June 3 through August 12, 2011.

There is considerable outside interest from state and federal regulatory agencies, environmental groups, and public/private entities affected by the rulemaking. The Department is committed to working with these stakeholders to promote wide-spread acceptance for the amended rulemaking. Commissioners may be added to the stakeholder list to receive updates on the progress of the rule upon request.

The Finding of Necessity does not commit the Commission to any particular outcome on the rulemaking, but is a legal requirement for the Department to begin the rule making process. This rulemaking will be presented for public hearing and adoption before the Commission.

Recommended Action: Staff recommends the Commission approve a Finding of Necessity for this proposed amendment.

Suggested Motion Language: "The Commission approves the Finding of Necessity for the proposed amendment, 10 CSR 20-7.031."

List of Attachments:

- Signed Regulatory Impact Report
- Comments on Regulatory Impact Report

Note: Additional material will be posted on the Commission Web page, provided to Commission, and notification sent to Commission ListServ as it becomes available.

Missouri
Department of
Natural Resources

Missouri Department of Natural Resources
Regulatory Impact Report
In Preparation for Proposing
An Amendment to 10 CSR 20-7.031, Missouri Water Quality Standards

Division/Program: Division of Environmental Quality, Water Protection Program

Rule number: 10 CSR 20-7.031 **Rule title:** Water Quality Standards

Type of rule action: *Amendment to Existing Rule*

Nature of the rulemaking: *Affects environmental conditions, prescribes environmental standards, administrative, and other conditions*

Approval of the Completed Regulatory Impact Report:

John Madras — 5/23/11
Program Director — Date

Missouri Department of Natural Resources
Regulatory Impact Report
In Preparation for Proposing
An Amendment to 10 CSR 20-7.031 Missouri Water Quality Standards

Applicability: Pursuant to Section 640.015 RSMo, "all rulemakings that prescribe environmental conditions or standards promulgated by the Department of Natural Resources...shall... be based on the Regulatory Impact Report...." This requirement shall not apply to emergency rulemakings pursuant to Section 536.025 or to rules of other applicable federal agencies adopted by the Department "without variance."

Determination: The Department has determined this rulemaking prescribes environmental conditions or standards and verifies that this rulemaking is not a simple unvarying adoption of rules from other federal agencies. Accordingly, the Department has produced this Regulatory Impact Report (RIR) which will be made publicly available for comment for a period of at least 60 days. Upon completion of the comment period, official responses will be developed and made available on the agency web page prior to filing the proposed rulemaking with the Secretary of State (SOS). Contact information is at the end of this RIR.

1. Description of the environmental conditions or standards being prescribed

This rulemaking includes revisions that ensure that state water quality standards (WQS) are functionally equivalent to federal standards and that improve the clarity, specificity and effectiveness of the WQS. In summary, the revisions include the following:

a) **Clean Water Act Section 101(a) use designations [10 CSR 20-7.031(2)(A) – (J)]:** With this rulemaking, the Department is proposing to apply "fishable/swimmable" use designations to currently unclassified waters as required by Section 101(a) of the federal Clean Water Act (CWA). This action is in response to a September 8, 2000 letter from the U.S. Environmental Protection Agency (EPA) notifying the Department of the deficiency. This action also addresses a Missouri Coalition for the Environment lawsuit against EPA to establish "fishable/swimmable" use designations in the state. The centerpiece of the proposal is to designate all perennial rivers and streams and intermittent streams with permanent pools, and all waters spatially represented by the 1:100,000 scale National Hydrography Dataset (NHD) extent, for warm-water aquatic community, human health protection, whole body contact recreation (WBCR) category B, secondary contact recreation (SCR), livestock and wildlife protection, irrigation and aesthetic uses. The Department will maintain a geospatial dataset and associated list of water bodies that receive these designations and work with stakeholders to develop an aquatic life use attainability analysis (UAA) protocol to move waters into and out of aquatic community designations. Due to the addition of a new Section (2) "Designation of Uses" to the rule, subsequent sections and references in the rule were updated. The definition of "waters of the state" at 10 CSR 20-7.031(1)(AA) was also revised to clarify that manmade treatment systems and structures are not included in the definition.

b) **CWA Section 101(a) use designation definitions [10 CSR 20-7.031(1)(G)]:**
Designated use definitions are proposed to be revised to more accurately protect aquatic communities (fish and invertebrates) rather than fisheries, to better reflect the intent and purposes of the federal CWA. Additional clarification was made to the cold-water aquatic community designations to allow for protection of naturally reproducing salmonids (trout) populations in the state and to take advantage of the proposed expanded dissolved oxygen (DO) criteria. Additional clarification was also made to the previously named "limited warm water fishery", now named "modified aquatic community", to more closely tie the use designation to aquatic community attainability through UAA rather than geology and physiography. New use designations are added to the rule at the request of Missouri Department of Conservation (MDC) for exceptional aquatic community protection (e.g., threatened and endangered species) and by the Department for aesthetics which will allow for better implementation of the general criteria found in rule.

c) **Clarification of "Early Life Stages" definition [10 CSR 20-7.031(1)(H)]:**
Minor revisions are proposed to the rule language to better clarify the early life stages of aquatic organisms. The Department is collaborating with MDC to develop an aquatic community approach to determine when early life stages are present and absent when applying numeric water quality criteria for DO (Table A3) and chronic ammonia (Tables B2 and B3).

d) **Addition of variance authorizing provisions [10 CSR 20-7.031(12)]:**
Rule language is proposed to be added to the WQS that provide the basis for recommending variances to WQS when standards are not achievable through traditional regulatory approaches. These changes should streamline and improve the efficiency and effectiveness of the variance process.

e) **New or revised CWA Section 304(a) numeric water quality criteria [10 CSR 20-7.031, Tables A1, A2, and A3]:**
The Department reviewed and incorporated the latest version of federally developed water quality criteria, as required by Section 304(a) of the federal CWA. These revisions result in the addition of new criteria for the protection of aquatic life, human health protection, and drinking water supply. Changes in the layout and format of the existing water quality criteria table (Table A) are needed in order to accommodate the Section 304(a) criteria revisions.

f) **Revised numeric water quality criteria for phenol [10 CSR 20-7.031, Table A1]:**
The Department is proposing revised numeric water quality criteria for phenol, in response to an October 12, 2010 petition to the Missouri Clean Water Commission (MCWC) by Associated Industries of Missouri. The new phenol criteria are based upon established toxicity and criteria development methodologies developed by EPA in "Revised National Recommended Water Quality Criteria for the Protection of Human Health: Final Criteria for Acrolein and Phenol" (EPA 822-F-09-001) and "Quality Criteria for Water – 1986" (EPA 440-5-86-001). The new phenol criteria can be found in Table A1 of the proposed rule and should satisfactorily address the petition before the MCWC.

g) **Revised numeric water quality criteria for sulfate and chloride [10 CSR 20-7.031, Table A2]:**
The Department is proposing revised numeric water quality criteria for sulfate and chloride, in response to a February 5, 2010 petition to the MCWC by the Missouri Agribusiness Association. The new sulfate and chloride criteria are based upon new toxicity and criteria development methodologies as promulgated and approved in the State of Iowa by EPA. The new sulfate and chloride criteria can be found in Table A2 of the proposed rule and should satisfactorily address the petition before the MCWC.

h) **Revised numeric water quality criteria for DO [10 CSR 20-7.031, Table A3]:**
The Department is proposing additional DO criteria for the protection of aquatic communities. The new DO criteria are based upon established criteria and methodologies developed by EPA and found in the federal Section 304(a) guidance "Ambient Water Quality Criteria for Dissolved Oxygen" (EPA 440-5-86-003). The criteria being proposed are similar to those promulgated in other states and will provide the Department flexibility in implementing and assessing the criteria for protection of aquatic communities. The new DO criteria can be found in Table A3 of the proposed rule.

i) **Designation of LaBarque Creek, Jefferson County as an Outstanding State Resource Water [10 CSR 20-7.031, Table E]:**
The Department reviewed all readily available data and information to determine whether LaBarque Creek in Jefferson County qualifies for designation as an Outstanding State Resource Water (OSRW) per 10 CSR 20-7.031(8), in response to a November 3, 2010 presentation by Friends of LaBarque Creek before the MCWC. The Department has determined that LaBarque Creek in Jefferson County qualifies for the OSRW designation and has proposed a 5.5-mile segment for inclusion in Table E of the rule. A public meeting regarding the OSRW designation will be held within the LaBarque Creek watershed during the rulemaking process to gather comments on the proposal.

j) **Addition of MDC and Other Lakes [10 CSR 20-7.031, Table G]:**
Eight lakes managed by MDC are proposed to be added to the classified lakes table (Table G) in rule, at the request of MDC. The addition of these lakes to Table G will ensure appropriate protection of these waters. In addition to the eight lakes managed by MDC, 38 other lakes with existing uses are also being added to Table G.

k) **Changes to the designation of WBC and SCR as a result of UAA [10 CSR 20-7.031, Table H]:**
These proposed changes will make the use designations consistent with the waters' ability (or inability) to support WBC or SCR as determined through the review of UAAs. This action includes adding WBC use to 23 stream segments where this use is attainable, designating SCR to 221 stream segments where existing SCR uses were observed, and removing the WBC use on 111 stream segments where this use is unattainable. For a summary of the Department's findings from the UAA reviews, see "Results of Recreational Use Attainability Analyses, May 4, 2011" referenced in Appendix A.

l) **Responding to EPA's October 29, 2009 decision on the Mississippi River [10 CSR 20-7.031, Table H]:**
With this rulemaking, the Department is responding to EPA's October 29, 2009 decision that new or revised standards (i.e., standards supporting WBCR) are necessary to meet the requirements of the federal CWA for the 28.6-mile segment of the Mississippi River from North Riverfront Park to the confluence with the Meramec River. The Department reviewed all readily available and applicable data and information, including UAA, water quality studies, and the EPA and Department administrative records on the subject. After reviewing the central and supplemental information and data, the Department is recommending that 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 above recommendation is captured at 10 CSR 20-7.031(5)(C) and Table H in rule and should satisfactorily address EPA's decision on the issue. Additional details and rationale on this decision can be found in the document "Recommendation Regarding WBCR 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, March 10, 2011" found in Appendix A.

m) **Revised delineation and mileages of water body segments [10 CSR 20-7.031, Table G and Table H]:**
Further improvements in the delineation of the start and end points of water body segments using more accurate geographic information system (GIS) data is proposed to be incorporated in Tables G and H of the WQS. These improvements will ensure accurate information and data are applied to existing water body segments and those proposed as part of the CWA Section 101(a) use designations.

n) **Correction of Typographical Errors:**
These changes correct several typographical errors discovered after the effective date of the last revisions to the WQS in 2009.

2. **<u>Report on the peer-reviewed scientific data used to commence the rulemaking process</u>**

a) **CWA Section 101(a) use designations [10 CSR 20-7.031(2)(A) – (J)]:**
Through Missouri's Water Protection Forum, the Department convened a stakeholder group to gather input and ideas regarding application of CWA Section 101(a) use designations to currently unclassified waters. The Water Classification Workgroup convened in September 2009 and held five workgroup meetings through April 2010. The workgroup considered all readily available and applicable peer-reviewed scientific data and posted results and information to the website listed below. The centerpiece of the current use designation proposal (i.e., all perennial rivers and streams and intermittent streams with permanent pools and those waters spatially represented by the 1:100,000 scale NHD) arose from the Water Protection Forum and other stakeholder discussions that included agricultural, industry and municipal representatives. The draft rule language presented at the citation for this action was developed in cooperation with these stakeholders as well as state and federal wildlife and regulatory agencies. Information on the Water Classification Workgroup can be found on the web at the link below.

http://www.dnr.mo.gov/env/wpp/cwforum/adv-uncl-waters-wetlands.htm

b) **CWA Section 101(a) use designation definitions [10 CSR 20-7.031(1)(G)]:**
Through the Water Protection Forum, the Department convened a stakeholder group to gather input and ideas regarding revisions to use designation definitions found in rule. The current use designation definition proposal arose from the Water Protection Forum and other stakeholder discussions that included agricultural, industry and municipal representatives. Examples from other state WQS were used as reference when drafting the use designation definitions being proposed. The draft rule language presented at the citation for this action was developed in cooperation with these stakeholders as well as state and federal wildlife and regulatory agencies. Information on the Water Classification Workgroup can be found on the web at the link in 2a above.

c) **Clarification of "Early Life Stages" definition [10 CSR 20-7.031(1)(H)]:**
The clarifying revisions to the "Early Life Stages" definition at the citation above were drafted in cooperation with MDC, the wildlife management and conservation agency in the state. The expertise, experience and insight of MDC's fisheries staff in assisting the Department with drafting clarifying revisions to the rule can be considered peer-reviewed as MDC staff are experts in the field of aquatic biology and species life stages. MDC will also be assisting the Department with developing an aquatic community approach to determine when early life stages are present and absent when applying numeric water quality criteria for DO (Table A3) and chronic ammonia (Tables B2 and B3). The sources of information to develop this approach will include examples from other states and peer reviewed studies, information and data relevant to Missouri (e.g., MDC fishery and aquatic databases, "Fishes of Missouri" by Pflieger, W.L., "Missouri Naiades: A Guide to the Mussels of Missouri" by Oesch, R.D., etc).

d) **Addition of variance authorizing provisions [10 CSR 20-7.031(12)]:**
The proposed variance authorizing provision rule language was developed following review and analysis of similar rule language from other state WQS. In addition, procedural guidelines provided by EPA for establishing variances from WQS were considered during the review. These documents are available in the appendices to this report.

e) **New or revised CWA Section 304(a) numeric water quality criteria [10 CSR 20-7.031, Tables A1, A2, and A3]:**
Recommended revisions to federally developed Section 304(a) criteria are supported by "National Recommended Water Quality Criteria, EPA, Office of Water (4304T), 2009" and "2011 Edition of the Drinking Water Standards and Health Advisories, EPA 820-R-11-002, EPA, Office of Water, January 2011". These documents, which contain or reference supporting peer-reviewed information and science, are available from the web at the links below.

http://water.epa.gov/scitech/swguidance/standards/current/upload/nrwqc-2009.pdf

http://water.epa.gov/action/advisories/drinking/upload/dwstandards2011.pdf

f) **Revised numeric water quality criteria for phenol [10 CSR 20-7.031, Table A1]:**
Recommended revisions to water quality criteria for phenol are supported by "National Recommended Water Quality Criteria, EPA, Office of Water (4304T), 2009" and "2011 Edition of the Drinking Water Standards and Health Advisories, EPA 820-R-11-002, EPA, Office of Water, January 2011". These documents, which contain or reference supporting peer-reviewed information and science, are available from the web at the links found in response 2e above. In addition, the water quality criteria document "Quality Criteria for Water 1986, EPA 440-5-86-001, EPA, Office of Water, May 1, 1986" was used. This document, which also contains or references supporting peer-reviewed information and science, is available from the web at the link below.

http://www.epa.gov/waterscience/criteria/library/goldbook.pdf

g) **Revised numeric water quality criteria for sulfate and chloride [10 CSR 20-7.031, Table A2]:**
Recommended revisions to water quality criteria for sulfate and chloride are supported by information and science reviewed by the Iowa Department of Natural Resources (DNR) and EPA as part of the State of Iowa's WQS review. The document from Iowa DNR, "Water Quality Standards Review: Chloride, Sulfate and Total Dissolved Solids, February 2009" was used to develop the proposed sulfate and chloride revisions to 10 CSR 20-7.031, Table A2. This document, which contains or references supporting peer-reviewed information and science, and an informational document on the criteria revisions are available from the web at the links below.

http://www.iowadnr.gov/water/standards/files/ws_review.pdf

http://www.iowadnr.gov/water/standards/files/ws_fact.pdf

h) **Revised numeric water quality criteria for DO [10 CSR 20-7.031, Table A3]:**
Recommended revisions to water quality criteria for DO are supported by "Ambient Water Quality Criteria for DO, EPA 440-5-86-003, EPA, Office of Water, April 1986". This document, which contains or references supporting peer-reviewed information and science, is available from the web at the link below.

http://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=00001MSS.txt

i) **Designation of LaBarque Creek, Jefferson County as an OSRW [10 CSR 20-7.031, Table E]:**
The recommendation to designate LaBarque Creek in Jefferson County as an OSRW is supported by information and data supplied by Friends of LaBarque Creek during the November 3, 2010 MCWC Meeting in Jefferson City, Mo. The recommendation is also supported by water quality, land use/land cover, geographic, and other peer-reviewed information and data found in the Department's water quality and GIS databases. Information and data used to support the OSRW designation are available in the appendices to this report and the rulemaking administrative record.

j) Addition of Missouri Department of Conservation and Other Lakes [10 CSR 20-7.031, Table G]:

The recommendation to add eight MDC Lakes to Table G is supported by information and data from MDC and the Department. The recommendation to add 38 other lakes to Table G is supported by information and data from the Department. The location and size of these lakes was derived from GIS and other peer-reviewed data as found in MDC and Department water quality and GIS web sites, databases and publications.

k) Changes to the designation of WBCR and SCR as a result of UAA [10 CSR 20-7.031, Table H]:

A UAA is a structured scientific assessment of the factors affecting the attainment of the use, which may include physical, chemical, biological and economic factors. Each UAA contains information for assessing attainability of the WBCR or SCR use. Relevant information included evidence of an existing WBCR or SCR use and/or the measured depths of the water in accordance with the *Missouri Recreational Use Attainability Analyses: Water Body Survey and Assessment Protocol* dated December 19, 2007. The data were evaluated through an Internal Review Committee. The collective recommendation of the committee was documented in an Internal Review Committee Recommendation. Persons can review the data gathered during the UAAs and the Internal Review Committee Recommendations on the Department's UAA web page at the link below.

http://www.dnr.mo.gov/env/wpp/wqstandards/uaa/uaa_county.htm

l) Responding to EPA's October 29, 2009 decision on the Mississippi River [10 CSR 20-7.031, Table H]:

In order to make a recommendation regarding whether new or revised 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 reviewed all readily available and applicable data and information. The centerpiece of the Department's review included two WBCR 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 Consultants on behalf of MSD. Information and data collected for the UAAs, reports and studies were obtained using quality assurance and quality control procedures where applicable and can be considered peer-reviewed information and data. Information and data used to support the Department recommendation are available in the appendices to this report and the rulemaking administrative record.

m) Revised delineation and mileages of water body segments [10 CSR 20-7.031, Table G and Table H]:

These revisions involve the use of GIS information and data to clarify or correct water body segment identifications within the WQS. The GIS information and data used to

revise water body segment delineation and mileages is peer-reviewed prior to publication and distribution. No additional scientific analyses or data were used in making these revisions.

n) **Correction of Typographical Errors:**
No scientific analyses or data were involved in the identification or correction of typographical errors.

3. **Description of the persons who will most likely be affected by the proposed rule, including persons that will bear the costs of the proposed rule and persons that will benefit from the proposed rule**

a) **CWA Section 101(a) use designations [10 CSR 20-7.031(2)(A) – (J)]:**
Missouri's WQS currently contain approximately 25,025 miles of stream designated for CWA, Section 101(a) "fishable/swimmable" uses. The proposal to use the 1:100,000 scale NHD would apply these default use designations to an additional 84,845 miles of stream (109,870 miles total). Domestic sewage treatment facilities that discharge to stream segments where WBCR or SCR are designated may be affected by this rule. Some facilities may be exempt from disinfecting effluent because a UAA has demonstrated that the WBCR use is not attainable and the facility can achieve effluent limits protective of SCR. Other facilities will be required to disinfect because a UAA has not been conducted, a UAA has demonstrated the attainability or existence of WBCR use or the existence of SCR use in the receiving stream requires disinfection. Because current facility operating permit procedures protect aquatic communities to the chronic toxicity level, no change is anticipated or additional effluent limitations required due to default designation of aquatic community protection uses.

Nonpoint source contributions of bacteria include overland flow from wildlife and livestock production as well as from urban nonpoint sources. Nonpoint source contributions may be controlled through incentive programs that promote Best Management Practices (BMPs) and environmental awareness. The U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) and the Department's Soil and Water Conservation Program (SWCP) are major sponsors of this effort. The EPA and the Department, through Section 319 grants, can also provide funding and expertise to reduce or eliminate bacteria from wildlife, livestock, and urban sources. Because the extent and magnitude of nonpoint source driven bacteria impairments is not known, it is difficult to estimate the cost of voluntary, incentive-based BMPs that may be needed. It is also difficult to predict how much funding will be available at the state and federal level to sponsor BMPs and other projects that aim to reduce bacteria pollution from nonpoint sources.

The other principle source of nonpoint source bacteria loading is urban runoff. As with agriculture, runoff from certain urban activities is not regulated except in metropolitan areas covered by municipal separate storm sewer system (MS4) permits. Urban stormwater may contain significant amounts of bacteria from pet waste and wildlife. Educational and outreach programs work to improve pet care and wildlife management strategies that reduce bacteria loading. Stormwater runoff from urban areas is regulated by the MS4 permit. There are 152 municipalities in Missouri that are required to manage

their stormwater runoff under Phase II of the National Pollutant Discharge Elimination System (NPDES) permits. Because bacteria data for receiving streams within the permitted area of these MS4s is lacking, the extent and impact of bacteria loading on these receiving streams is unknown.

Persons benefiting from the rule amendment would be those who enjoy recreational activities in the streams on which the rule amendment designates a recreational use. The bacteria standards that would apply to these designated waters would serve to protect the health of the persons recreating in the streams.

b) **CWA Section 101(a) use designation definitions [10 CSR 20-7.031(1)(G)]:**
The proposed revisions to use designation definitions have no expected effect, monetarily (such as costs or benefits) or otherwise, on any person. The revisions to aquatic life protection uses transition the standards from a sport fishery-based to an aquatic community-based approach and allow for better definition and designation of Missouri's unique and diverse aquatic assemblages. Because water quality criteria protective of aquatic life uses are based upon aquatic community toxicity data (i.e., fish, macroinvertebrate, and mussel), no adjustments to criteria will need to be made. The addition of an exceptional waters use designation will allow for greater recognition and protection of those waters with exceptional water quality or diversity of unique, sensitive, threatened or endangered species. The addition of an aesthetics use designation provides a linkage between water body designated uses and the general criteria currently found rule. This addition will allow for clarity of use attainment during water quality assessment (i.e., 303(d) listing) and restoration (i.e., Total Maximum Daily Load) activities.

c) **Clarification of "Early Life Stages" definition [10 CSR 20-7.031(1)(H)]:**
The proposed revisions to the "early life stages" definition have no expected effect, monetarily (such as costs or benefits) or otherwise, on any person. The revisions and accompanying technical information and guidance are expected to provide more clarity regarding when early life stages of aquatic life occur. Such clarity will allow for appropriate application of the DO and ammonia criteria found in rule.

d) **Addition of variance authorizing provisions [10 CSR 20-7.031(12)]:**
A variance from WQS is a temporary modification to a WQS (i.e., designated use, criteria or condition) that would otherwise apply. Variances limit the applicability of specific components of a WQS and provide for alternative designated uses, criteria or conditions to be met during the term of the variance. The addition of variance authorizing provisions in rule will provide a more effective and efficient procedure for recommending variances to WQS when standards are not achievable through traditional regulatory approaches. Once variance authorizing provisions are included in state rule and approved by EPA, individual variances from WQS would no longer need to be submitted to EPA for review and approval. This reduction in administrative burden would benefit both the state and individual permittees that may seek these variances. Permits with variances could be issued more quickly and reasonable progress toward water quality goals would still be made. Permittees would gain additional flexibility and time to meet water quality goals without violating Section 402(a)(1) of the CWA, which states that permits must be issued to meet applicable WQS. Because variances are

time-limited and require public participation, variances from WQS would be periodically reviewed as to their applicability through the triennial review process and presented to the MCWC for approval.

e) **New or revised CWA Section 304(a) numeric water quality criteria [10 CSR 20-7.031, Tables A1, A2, and A3]:**
Facilities that treat wastewater effluent containing the Section 304(a) numeric water quality criteria being added or revised may be affected by the proposed changes. A list of the number of facilities having permits with the pollutants being added or revised can be found in Attachment A – Supporting Documents. The effect of the proposed rule on each facility depends on the type of treatment system, the levels of the pollutant in the wastewater and in the receiving stream, and the applicability of anti-backsliding requirements. Because these factors are unique to each facility and are unknown at this time, the Department is unable to determine from this list which facilities would be affected (positively or negatively) from this rule or to what extent.

The new or revised CWA Section 304(a) numeric water quality criteria being proposed were developed and promulgated at the federal level. This action seeks to make Missouri's WQS equivalent to federal standards for these criteria.

f) **Revised numeric water quality criteria for phenol [10 CSR 20-7.031, Table A1]:**
Facilities that treat wastewater effluent containing phenol may be affected by the proposed changes. Because the proposed revision will raise the water quality criteria for phenol, persons who treat their wastewater for this pollutant may see some economic relief where modifications to the treatment are allowed. A survey of the Missouri Clean Water Information System (MoCWIS) resulted in a count of 20 site-specific permits where phenol is an effluent limitation. The effect of the proposed rule on each facility depends on the type of treatment system, the levels of the pollutant in the wastewater and in the receiving stream, and the applicability of anti-backsliding requirements. Because these factors are unique to each facility and are unknown at this time, the Department is unable to determine from this list which facilities would be affected (positively or negatively) from this rule or to what extent. However, because the criteria are less stringent than currently found in rule, it is anticipated that the revisions will result in positive impacts to permitted facilities with regard to wastewater treatment and monitoring.

The revised water quality criteria for phenol being proposed were developed and promulgated at the federal level. This action seeks to make Missouri's WQS equivalent to federal standards for this pollutant.

g) **Revised numeric water quality criteria for sulfate and chloride [10 CSR 20-7.031, Table A2]:**
Facilities that treat wastewater effluent containing sulfate and chloride may be affected by the proposed changes. Because the proposed revision will raise the water quality criteria for sulfate and chloride, persons who treat their wastewater for these pollutants may see some economic relief where modifications to the treatment are allowed. A survey of MoCWIS resulted in a count of 5 site-specific permits where sulfate is an effluent limitation. No general or stormwater permits were found to be affected by the

sulfate water quality criteria revision. A separate survey of MoCWIS resulted in a count of 2 site-specific permits, 19 general permits and 30 stormwater permits where chloride is an effluent limitation. The effect of the proposed sulfate and chloride revisions on each facility depends on the type of treatment system, the levels of the pollutant in the wastewater and in the receiving stream, and the applicability of anti-backsliding requirements. Because these factors are unique to each facility and are unknown at this time, the Department is unable to determine from this list which facilities would be affected (positively or negatively) from this rule or to what extent. However, because the criteria for sulfate and chloride are less stringent than currently found in rule, it is anticipated that the revisions will result in positive impacts to permitted facilities with regard to wastewater treatment and monitoring.

The revised water quality criteria for sulfate and chloride being proposed were developed and are supported in Iowa's WQS by EPA. It is anticipated the proposed water quality criteria may, in the future, become new federal Section 304(a) criteria for these pollutants. In the interim, the proposed sulfate and chloride criteria represent the best science and information available from which to promulgate revised numeric water quality criteria in Missouri's WQS.

h) **Revised numeric water quality criteria for DO [10 CSR 20-7.031, Table A3]:**
Facilities that treat wastewater effluent containing oxygen demanding substances (e.g., biochemical oxygen demand, or BOD) may be affected by the proposed changes. A survey of MoCWIS resulted in a count of 61 site-specific permits that contain DO effluent limits. The effect of the proposed DO revisions on each facility depends on the type of treatment system, the levels of the pollutant in the wastewater and in the receiving stream, and the applicability of anti-backsliding requirements. Because these factors are unique to each facility and are unknown at this time, the Department is unable to determine from this list which facilities would be affected (positively or negatively) from this rule or to what extent. However, because the DO criteria are expanded from what is currently in rule, it is anticipated that the revisions will result in positive impacts to permitted facilities with regard to wastewater treatment and monitoring.

Additional DO criteria in rule will result in additional flexibility for the Department when assessing and establishing effluent limitations protective of DO criteria in-stream. It is also anticipated that false impairment listings for DO will decrease as additional DO criteria will be available in rule from which to better determine attainability. The water quality criteria for DO being proposed were developed and promulgated at the federal level. This action seeks to make Missouri's WQS equivalent to federal standards for this criteria.

i) **Designation of LaBarque Creek, Jefferson County as an OSRW [10 CSR 20-7.031, Table E]:**
Existing wastewater treatment and stormwater facilities in the watershed should not be affected by the proposed designation of LaBarque Creek as an OSRW. A survey of MoCWIS resulted in a count of 4 permitted facilities within the LaBarque Creek watershed: Winterwood Subdivision Wastewater Treatment Facility (WWTF) (MO-0124036), St. Joseph's Hill Infirmary (MO-0081426), Wintergreen Development (MO-R10A301) and Jefferson County MS4 (MO-R040052). Because these facilities

exist within the watershed at the time of the OSRW designation, discharges can continue as currently permitted provided these discharges do not cause the current water quality in the stream to be lowered. New or expanded discharges to the watershed may be affected by the proposed designation as these discharges will only be permitted if the requirements of 10 CSR 20-7.015(6)(B)(1) and the limitations in 10 CSR 20-7.015(8) are not exceeded. The level of treatment proposed for new or expanded facilities is difficult to determine at this time therefore impacts cannot be estimated.

Persons benefiting from the rule amendment would be those who enjoy the recreational, scientific and educational opportunities that are provided by LaBarque Creek. The proposed rule amendment to designate LaBarque Creek as an OSRW would offer an enhanced level of protection to the water body and would protect the unique biological diversity found in the stream.

j) Addition of MDC and Other Lakes [10 CSR 20-7.031, Table G]:
WWTFs that discharge nutrients (i.e., nitrogen and phosphorous) within the watersheds of the eight MDC lakes and 38 other lakes to be included in Table G may be affected by this rule. A table of the lakes to be added to Table G, and the number of WWTFs within their respective watersheds, is provided in Table 3.1 below.

Table 3.1: Lakes and number of facilities that may be affected

WBID	Water Body Name	Class	Acres	County	Facilities	MDC
7603	Bear Creek Watershed Lake X-5	L3	28.0	Scotland	0	
7620	Bee Run Lake No. 1	L3	6.0	St. Francois	0	
7621	Bee Run Lake No. 2	L3	4.0	St. Francois	0	
7622	Bee Run Lake No. 3	L3	6.0	St. Francois	0	
WBID	**Water Body Name**	**Class**	**Acres**	**County**	**Facilities**	**MDC**
7600	Boulder Lake	L3	13.0	Lewis	0	
7627	Busch W.A. No. 37 Lake	L3	30.0	St. Charles	0	
7497	Cedar Hill Lake No. 2	L3	11.2	Jefferson	0	
7554	Cedar Hill Lake No. 3	L3	1.6	Jefferson	0	
7555	Clarence Cannon Memorial Watershed Structure No. 1 Reservoir	L3	23.2	Lincoln	0	
7464	Clear Lake	L3	12.5	Jefferson	0	
7495	Cypress Lake	L3	88.0	Stoddard	0	X
7559	Deer Run Lake	L3	0.0	Madison	0	
7558	Flat Rock Lake	L3	17.2	Jefferson	0	
7604	Garfield Lake	L3	12.0	Audrain	3	
7626	Giessing Lake	L3	4.0	St. Francois	0	X
7619	Goff Spring Lake	L3	13.0	St. Francois	0	
7601	Granite Lake	L3	8.0	Lewis	0	
7623	Incline Village Lake	L3	171.0	St. Charles	34	
7496	Jerry P. Combs Lake	L3	149.0	Dunklin	0	X
7553	Jo Lee Lake	L3	8.0	St. Francois	0	
7616	Lac Benet Lake	L3	7.0	St. Francois	0	
7607	Lac Bergerac	L3	6.0	St. Francois	0	
7610	Lac Bourbon	L3	6.0	St. Francois	0	
7618	Lac Calista	L3	5.0	St. Francois	0	

7605	Lac Carmel	L3	54.0	St. Francois	0	
7615	Lac Catalina	L3	5.0	St. Francois	0	
7609	Lac Darcie	L3	4.0	St. Francois	0	
7617	Lac Lafitte	L3	34.0	St. Francois	1	
7614	Lac Marseilles	L3	44.0	St. Francois	0	
7608	Lac Michel	L3	7.0	St. Francois	0	
7611	Lac Renee	L3	4.0	St. Francois	0	
7606	Lac Shayne	L3	13.0	Washington	0	
7613	Lac Tiffany	L3	5.0	St. Francois	0	
7612	Lac Veron	L3	2.0	St. Francois	0	
7469	Lake Buteo	L3	6.9	Johnson	0	
7482	Lake Ocie	L3	61.6	Ste. Genevieve	1	
7498	Mineral Area College Quarry Pond	L3	2.0	St. Francois	0	X
7557	Mononame 846 Lake	L3	3.2	Crawford	0	
7499	Pim Lake	L3	7.0	St. Francois	0	X
7602	Quartz Lake	L3	5.0	Lewis	0	
7500	Rotary Lake	L3	5.0	Cape Girardeau	0	X
7502	Simpson Park Lake	L3	63.7	St. Louis	9	
7466	Spring Lake	L3	5.3	Jefferson	0	
7625	Thomas Lake	L3	3.0	St. Francois	0	X
7624	Tri-City Lake	L3	27.0	Boone	0	
7501	Valley Water Mills Pond	L1	14.0	Greene	34	X

Of the 46 lakes to be added, only 20 have watershed areas greater than 10 acres, the threshold for application of numeric nutrient criteria for nitrogen and phosphorous. Within this subset of lakes, only 6 lake watersheds have facilities that may discharge nutrients and be affected by the proposed rulemaking. The probability of any of these facilities receiving new limits on nutrients will depend on the trophic condition of the lakes within their watersheds, and the distance between their outfalls and the receiving lake. Because nitrogen and phosphorous water quality data are not available for any these lakes, an assessment of compliance with the nutrient criteria that would apply can not be made at this time. For this reason, the impact that classification may have on these lakes with regard to nutrient criteria cannot be estimated. One of the lakes, Busch Wildlife Area No. 37 Lake, is currently listed as impaired for mercury in fish tissue from atmospheric nonpoint sources. The change in classification for this lake will not have any impact on the impairment designation for mercury since narrative, general criteria were used to assess and list the water body. Since there are no point source discharges of mercury in the watershed, no economic impact is expected for permitted facilities.

The most widespread nonpoint source contributor to nutrient loading of lakes and reservoirs is row crop agriculture. Row cropping occurs primarily in the glaciated and Osage plains regions of the state. Processes of nutrient loading include overland flow and soil erosion. Other forms of agriculture, particularly livestock production, are likely significant contributors. The other principle source of nonpoint source nutrient loading is urban runoff. As with agriculture, runoff from certain urban activities is not regulated except in metropolitan municipalities covered by MS4 permits. Educational and outreach programs work to improve lawn care management and reduce nutrient loading.

Nonpoint source contribution may be controlled through incentive programs that promote BMPs and environmental awareness. Examples of BMPs include nutrient management plans, reduced tillage, buffer strips along streams, and crop rotations. The U.S. Department of Agriculture's NRCS and the Department's SWCP are the major sponsors of this effort. NRCS programs include the Environmental Quality Incentives Program (EQIP), and the Conservation Security Program (CSP). SWCP offers cost-share for specific conservation practices, and the Agriculture Nonpoint Source Special Area Land Treatment (AgNPS SALT) program targets selected watershed areas for land treatment. For lakes and reservoirs that may be in non-compliance with the rule, coordination with these agencies will be essential to addressing the problem. Implementation will, in many cases, be a long-term process. Landowners who participate in these programs can benefit from the BMPs by protecting the soil's productive capacity and using fewer costly chemicals.

Persons benefiting from the rule amendment would be those who enjoy recreational activities on the lakes to which the rule designates aquatic community and recreational uses. The aquatic community and bacteria standards will serve to protect the aquatic communities and the health of the persons recreating in these lakes. In direct economic terms, the greatest beneficiaries from the proposed rule may be owners of lake front property. Several studies have indicated that increased water clarity associated with nutrient reduction is a significant factor in raising the value of such property. (Michael et al., 1996; Wilson and Carpenter 1999). Steinnes (1992), found an average increased value of $235 per lakeshore lot for each 1 meter increase in water transparency as measured with Secchi disk.

Other economic beneficiaries include businesses that are reliant on tourism related lake recreation, such as restaurants, hotels, and marinas, as well as gas stations near resort areas. Several studies demonstrated relationships between lake water clarity and levels of tourist recreation (Bouwes and Schneider, 1979; Ribaudo and Epp, 1984; Smith et al, 1986; Ribaudo and Epp, 1984; Wilson and Carpenter, 1999). In more tangential terms, the public at large will benefit. Drinking water systems that use reservoirs as a source would experience fewer episodes of taste and odor problems that can occur as a consequence of excessive nutrient loading (MDNR, 2006). Furthermore, improved water quality in drinking water reservoirs would lead to a reduction in the cost of treating the water. Protected and enhanced water clarity will maintain and improve opportunities for WBCR. And, while some sport fishing potential is enhanced with higher nutrient loading, the potential for greater aquatic biodiversity tends to increase with reduced nutrient loading (Egertson and Downing, 2004).

k) Changes to the designation of WBCR and SCR as a result of UAA [10 CSR 20-7.031, Table H]:

Domestic sewage treatment facilities that discharge to stream segments where WBCR and/or SCR use were evaluated through a UAA may be affected by this rule. Some facilities will be exempt from disinfecting the effluent because the UAA demonstrated that the WBCR use is not attainable and the SCR does not exist in the receiving stream. Other facilities will be required to disinfect because the UAA demonstrated the attainability of WBCR use or the existence of SCR use in the receiving stream.

Persons benefiting from the rule amendment would be those who enjoy recreational activities in the streams on which the rule amendment designates a recreational use. The bacteria standards that would apply to these designated waters would serve to protect the health of the persons recreating in the streams.

l) **Responding to EPA's October 29, 2009 decision on the Mississippi River [10 CSR 20-7.031, Table H]:**
Domestic sewage treatment facilities and collection system operated and maintained by the Metropolitan St. Louis Sewer District (MSD) will be affected by this rule. Although both the MSD-Bissell Point WWTF (MO-0025178) and MSD-Lemay WWTF (MO-0025151) are in the process of installing disinfection systems to meet SCR bacteria effluent limitations, application of WBCR bacteria criteria to this segment will result in increased disinfection costs required to achieve lower bacteria effluent limitations at these facilities. Increased disinfection costs will be particularly evident during periods of high discharge flow when contact time with the disinfection system may be reduced. In addition, combined sewer overflow (CSO) and sanitary sewer overflow (SSO) reduction and elimination strategies found in MSD's Long Term Control Plan (LTCP) will need to be revised and adjusted for the lower WBCR bacteria target. Additional improvements would be needed to capture and treat CSO/SSO effluent during the periods these locations are discharging. Cost estimates provided by MSD to comply with WBCR bacteria criteria on this segment range from $1.5–$2 billion.

Persons benefiting from the rule amendment would be those who enjoy recreational activities on the segment of the Mississippi River from North Riverfront Park to the confluence of the Meramec River. The WBCR bacteria criteria that would apply to this segment would serve to protect the health of any persons recreating in the river.

m) **Revised delineation and mileages of water body segments [10 CSR 20-7.031, Table G and Table H]:**
The proposed rule will ensure that permits and water quality assessments are supported by an accurate water segment classification system. This accuracy reduces the potential for mistakes in the identification of applicable WQS and, consequently, for these errors to result in inappropriate permit terms and conditions or inaccurate water quality assessments. Avoiding these mistakes will save both time and resources for permit applicants and the Department when preparing and reviewing permit applications.

n) **Correction of Typographical Errors:**
The existing typographical errors could result in some misunderstanding of the standards. This amendment might prevent misunderstandings that could cause delays in decisions based on the sections of the rule affected by the typographical errors.

4. **<u>Description of the environmental and economic costs and benefits of the proposed rule</u>**

a) **CWA Section 101(a) use designations [10 CSR 20-7.031(2)(A) – (J)]:**
The proposed revision to apply "fishable/swimmable" use designations to currently unclassified waters is required by Section 101(a) of the federal CWA. Federal regulations at 40 CFR 131 interpret and implement these provisions by requiring that WQS provide for a default use designation of "fishable/swimmable" unless those uses

have been shown through a UAA to be unattainable. As a delegated state responsible for implementing federal clean water law requirements, Missouri must adopt the federal requirement for "fishable/swimmable" use designations for waters that currently do not have these uses and for which a UAA has not been conducted. The August 4, 2010 lawsuit filed by the Missouri Coalition for the Environment against EPA, the rationale contained therein, and subsequent actions by both parties to resolve the lawsuit, demonstrate the certainty of the "fishable/swimmable" use designation deficiency in state rule. Therefore, the environmental and economic costs and benefits of these revisions are being determined by actions at the federal and not the state level.

While Section 536, RSMo, does not require a cost and benefit analysis when federal requirements are adopted without modification, this RIR notes that 1,342 facilities might be affected by this revision and that the current proposal may be considered a modification of the federal requirement. As noted in Section 3a above, current facility operating permit procedures protect aquatic communities to the chronic toxicity level. No change is anticipated or additional effluent limitations required due to default designation of aquatic community protection uses. Additional effluent limitations for bacteria (i.e., *E. coli*) may be required due to default designation of recreational protection uses. A list of permitted facilities that may be required to have NPDES permits with limits for bacteria is provided in Appendix A.

Environmental Benefit: The designation of recreational uses to streams and, consequently, the application of a pathogen standard (*E. coli* as an indicator) may require disinfection of effluent before it is discharged to waters designated to this use. The application of the standard through discharge permits will provide greater protection of public health during the recreational use. Persons who recreate in streams that have elevated levels of bacteria through runoff from areas containing livestock may also benefit from this rule. The use designations may place a priority on the use of 319 grants and state/federal cost-share and incentive programs in reducing pathogen levels in streams serving recreational uses.

Environmental Cost: Environmental effects from the proposed use designations might come through the discharge of disinfection by-products when chlorination is used as the disinfection process. Some residual chlorine may enter the receiving water from the disinfection process unless dechlorination processes are required. Dechlorination may also introduce other contaminants, such as trihalomethanes, which may be carcinogenic. Where recreation does occur, the risks to human health from the by-products are less severe than the risk of infection from non-treated effluent. Where recreation does not occur, the addition of the by-products would be the greater risk to the environment.

Economic Benefit: Economic benefits can be generated by environmental improvements. For example, areas where stream water quality is good can prevent costs such as medical expenses to treat pollution-related illnesses. Streams that support recreation are sometimes an important factor in a local economy, especially where recreation-related services are needed, such as lodging or fee-based camping, canoe or tube rental and food services. An exact quantification of these benefits is not possible without more data on the number of stream users, the illnesses that relate to pathogens already present in the water and the business income that results from the users during

recreation. Because most of these streams do not show any evidence of existing recreation use and are small compared to the better known "float streams", any benefits are likely to be only occasional and confined to users who live in the vicinity of the stream.

Economic Cost: Facilities that are required to disinfect their discharges may spend between $10,000 to $26,000,000 depending on the size of their treatment system and on the type of disinfection process installed. Tables 4.1 through 4.4 demonstrate various ways to estimate the costs to comply with this rule. These costs are based on standardized rates and may be higher or lower depending on specific conditions at each facility. On the nonpoint source side, the economic cost will depend on the amount of funds directed toward conservation practices and other livestock management initiatives. These costs depend on the presence of volunteers willing to implement conservation practices on private property.

The current number of WWTFs or facilities without bacteria limits that would be affected by this rule was obtained from the Department's permits database. All cost estimates have been adjusted to reflect the cost of equipment, installation, and operation and maintenance for calendar year 2004 using the Engineering News Record Construction Cost Index (CCI). The use of either chlorination or an ultraviolet (UV) disinfection system was determined according to the size of a facility's design flow in million gallons per day (MGD).

The tables below show the estimated cost per facility for each of the four size ranges and two types of disinfection systems. Population equivalent (PE) has been presented in addition to design flow to provide supplemental information on population sizes affected should increased user rates result from the need to disinfect the effluent. Table 4.1 shows the number of facilities potentially affected by category of flow and type of disinfection system. Table 4.2 displays installation costs and Table 4.3 shows the operation and maintenance (O&M) costs for these facilities.

Table 4.1: Number of facilities that may be affected

Flow (MGD)	Public		Private		Total
	Chlorination	UV	Chlorination	UV	
Flow less than 0.05 MGD	137	48	544	336	1,065
Flow between 0.05 & 1.0 MGD	174	54	19	17	264
Flow between 1.0 & 20.0 MGD	5	7	1	0	13
Flow greater than 20.0 MGD	0	0	0	0	0
Total	316	109	564	353	1,342

Table 4.2: Installation Cost

Flow (MGD)	Public		Private		Total
	Chlorination	UV	Chlorination	UV	
Flow less than 0.05 MGD	$1,370,000	$1,983,840	$5,440,000	$13,886,880	$22,680,720
Flow between 0.05 & 1.0 MGD	$2,801,400	$6,323,724	$305,900	$1,990,802	$11,421,826
Flow between 1.0 & 20.0 MGD	$8,908,245	$6,804,000	$1,781,649	$0	$17,493,894
Flow greater than 20.0 MGD	$0	$0	$0	$0	$0
Total	$13,079,645	$15,111,564	$7,527,549	$15,877,682	$51,596,440

Table 4.3: O&M Cost per Year

Flow (MGD)	Public		Private		Total
	Chlorination	UV	Chlorination	UV	
Flow less than 0.05 MGD	$3,014,000	$84,000	$11,968,000	$588,000	$15,654,000
Flow between 0.05 & 1.0 MGD	$23,111,898	$267,624	$2,523,713	$84,252	$25,987,487
Flow between 1.0 & 20.0 MGD	$680,100	$459,116	$136,020	$0	$1,275,236
Flow greater than 20.0 MGD	$0	$0	$0	$0	$0
Total	$26,805,998	$810,740	$14,627,733	$672,252	$42,916,723

Analytical bacteria testing costs were established by averaging the cost of fecal coliform (FC) (*E. coli* testing data were not available at this time) and total residual chlorine (TRC) testing from ten (10) laboratories in Missouri and neighboring states that serve Missouri facilities. Table 4.4 shows the potential cost due to analytical testing of FC and TRC per each frequency and facility type.

Table 4.4: Total Average Testing Cost per Year

Flow (MGD)	Public		Private		Total
	FC	TRC	FC	TRC	
Flow less than 0.05 MGD	$44,014	$22,718	$172,957	$67,135	$306,823
Flow between 0.05 & 1.0 MGD	$85,880	$36,050	$28,919	$1,710	$152,559
Flow between 1.0 & 20.0 MGD	$26,821	$8,293	$172	$108	$35,394
Flow greater than 20.0 MGD	$0	$0	$0	$0	$0
Total	$156,714	$67,061	$202,047	$68,954	$494,776

These calculations assume all WWTFs not currently disinfecting will install disinfection when the discharge is within two (2) miles of a classified water body designated for recreation. These calculations do not take into account the cost to future facilities that do not presently have an operating permit. Additionally, the cost estimate calculations assume that most mechanical WWTFs will use UV disinfection while lagoon systems will use chlorination. When UV disinfection is used, dechlorination is not applicable and TRC cost is zero.

The frequency of bacteria testing is specific to each permit that would be affected by the recreational use designation and it is usually based on the facility design flow. It is assumed that facilities of similar size and type will most likely require similar monitoring frequency.

b) CWA Section 101(a) use designation definitions [10 CSR 20-7.031(1)(G)]:
No significant economic and environmental costs or benefits are expected to result from the addition or revision of use designations. These additions and revisions will result in better accuracy in the identification and designation of beneficial uses. This improved accuracy will increase the efficiency of program activities that require water use designations. The increased efficiency should reduce costs for both the applicants and the Department as water body segments will be appropriately protected through application of standards and permit limitations.

c) Clarification of "Early Life Stages" definition [10 CSR 20-7.031(1)(H)]:
No significant economic and environmental costs or benefits are expected to result from the clarification of the early life stages definition in rule. These revisions will result in

better accuracy in the identification and determination of early life stages present or absent in waters of the state. This improved accuracy will increase the efficiency of program activities that require the use of criteria that rely on early life stages to ensure protection of aquatic community use designations. The increased efficiency should reduce costs for both the applicants of discharge permits and the Department as permits for discharge are reviewed and issued. Supplemental guidance for determining early life stages, developed in cooperation with MDC, will ensure appropriate protection and propagation of aquatic communities in the state.

d) **Addition of variance authorizing provisions [10 CSR 20-7.031(12)]:**
No significant economic and environmental costs or benefits are expected to result from the addition of variance authorizing provisions in rule. The addition will increase the efficiency of program activities that may rely on variances to achieve compliance with WQS. The increased efficiency should reduce costs for both the applicants of discharge permits and the Department as permits for discharge and variances are reviewed and approved.

e) **New or revised CWA Section 304(a) numeric water quality criteria [10 CSR 20-7.031, Tables A1, A2, and A3]:**
The proposed revisions to federal 304(a) criteria are in response to changes in EPA guidance regarding establishing appropriate thresholds to prevent toxic effects on aquatic life and human health. An explanation of the basis for the changes in the federal guidance can be reviewed in the "*National Recommended Water Quality Criteria*" published in 2009 by EPA, Office of Water and "*2011 Edition of the Drinking Water Standards and Health Advisories*" published in 2011 by EPA, Office of Water. Missouri is adopting these federal criteria and therefore the environmental and economic costs and benefits are determined by the actions at the federal level and not the state. While Section 536, RSMo, does not require a cost and benefit analysis when federal requirements are adopted without modification, this RIR notes that 1,623 site-specific permits, 433 general permits and 60 stormwater permits might be affected by these revisions. A list of permitted facilities having NPDES permits with limits for federal 304(a) criteria proposed to be revised is provided in Appendix A.

f) **Revised numeric water quality criteria for phenol [10 CSR 20-7.031, Table A1]:**
The proposed revisions to water quality criteria for phenol are not expected to result in significant economic and environmental costs or benefits. Phenol removal from wastewater treatment discharges has costs that are predominantly dependent on the size of the facility and amount of phenol used or removed from the production process. The RIR has identified 20 site-specific permits that may be affected by the revisions in phenol criteria. Because the revisions result in an increase in the criteria for protection of chronic aquatic communities, it is anticipated that elimination or reduction of treatment costs will be the result of this rule. Increases in criteria result in decreased treatment costs and removal of effluent limitations where reasonable potential to cause or contribute to exceedences of WQS do not exist. The frequency of monitoring for those facilities that retain effluent limitations or monitoring may also be decreased as a result of this rule. Any economic costs or benefits that may be realized are difficult to quantify for the reasons listed in response 3f. No environmental costs or benefits are expected since the criteria are being revised to established federal criteria levels.

g) **Revised numeric water quality criteria for sulfate and chloride [10 CSR 20-7.031, Table A2]:**
The proposed revisions to water quality criteria for sulfate and chloride are not expected to result in significant economic and environmental costs or benefits. Sulfate and chloride removal from wastewater treatment discharges have costs that are predominantly dependent on the size of the facility and amount of these pollutants used or removed from the production process. The RIR has identified 5 site-specific permits that may be affected by the revisions in sulfate criteria and 2 site-specific permits, 19 general permits and 30 stormwater permits that may be affected by the revisions in chloride criteria. Because the revisions result in an increase in the criteria for protection of chronic aquatic communities, it is anticipated that elimination or reduction of treatment costs will be the result of this rule. Increases in criteria result in decreased treatment costs and removal of effluent limitations where reasonable potential to cause or contribute to exceedences of WQS do not exist. The frequency of monitoring for those facilities that retain effluent limitations or monitoring may also be decreased as a result of this rule. Any economic costs or benefits that may be realized are difficult to quantify for the reasons listed in Response 3g. No environmental costs or benefits are expected since the criteria are being revised to levels that are protective of aquatic community uses as reviewed and approved by federal and state agencies.

h) **Revised numeric water quality criteria for DO [10 CSR 20-7.031, Table A3]:**
The proposed revisions to water quality criteria for DO are not expected to result in significant economic or environmental costs. The amendment to the rule revises Table A3 of the WQS such that it is in agreement with federal 304(a) criteria for DO. This agreement will present less chance of misinterpretation and misapplication of the criteria by providing additional criteria from which to judge attainment of aquatic community uses. Economic benefits of the amendment include reductions in wastewater treatment costs for BOD where reductions are not necessary. Waters with healthy aquatic communities will have additional water quality criteria from which to assess compliance with the WQS (i.e., more criteria than an instantaneous minimum) and result in fewer impaired waters listings during 303(d) assessments. Environmental benefits of the amendment include increased protection of cold-water aquatic communities with naturally reproducing salmonid populations that currently do not receive the level of DO protection available by federal criteria.

i) **Designation of LaBarque Creek, Jefferson County as an OSRW [10 CSR 20-7.031, Table E]:**
The proposed designation of LaBarque Creek as an OSRW is not expected to result in significant economic or environmental costs at this time. The change in rule would increase the level of protection to LaBarque Creek by introducing the requirement that future discharges will not cause current water quality in the stream to be lowered. The option that new discharges could lower the water quality of LaBarque Creek, if they demonstrated a socio-economic need that surpassed environmental benefit, would be removed. The environmental benefit that will result from the OSRW designation is that existing water quality in LaBarque Creek, and the aquatic life and recreational opportunities that exist in the stream, would be maintained with the highest level of water quality protection available in rule. This improved environmental protection may contribute to economic benefits from enhanced property values and recreational

opportunities in the future. The exact extent of economic benefit cannot be determined at this time.

j) Addition of MDC and Other Lakes [10 CSR 20-7.031, Table G]:
The proposed revision to add MDC and other lakes to Table G of the WQS is not expected to result in significant economic or environmental costs. As detailed in Response 3j, the lack of available water quality data make it difficult to determine whether the lakes being added to Table G have water quality impairments related to nutrients. In the absence of an impairment determination, estimates of costs and their significance become problematic and requirements for nutrient monitoring or wastewater treatment upgrades are unknown at this time. Also, no significant economic or environmental costs are anticipated with respect to the mercury in fish tissue impairment for Busch Wildlife Area No. 37 Lake. Any economic or environmental costs for the listed impairment are a result of exceedence of narrative, general criteria for mercury in fish tissue which occurred when the water body was unclassified. Designation of aquatic community protection, and incorporation of mercury in fish tissue criteria in rule, will not impact the current assessment of the water as impaired. However, future assessments will utilize the new aquatic community use designation and mercury fish tissue criteria.

The economic and environmental benefit of these lakes being added to Table G is more apparent and expected to be positive. Greater protection for lakes and the aquatic resources they provide will result in increased economic and environmental benefit to public and private landowners, businesses and economies within the watersheds of these lakes. While it is difficult to estimate exact economic and environmental benefits, increases in property values and revenues from tourism and recreation are expected to be greater where water quality is protected.

k) Changes to the designation of WBCR and SCR as a result of UAA [10 CSR 20-7.031, Table H]:
This action adds WBCR use to 23 stream segments where the use is attainable, designates SCR to 221 stream segments where existing SCR uses were observed, and removes the WBCR use on 111 stream segments where this use is unattainable. The economic and environmental costs and benefits of recreational use designations as a result of UAAs are similar to those found in Response 4a.

For the 23 stream segments where the WBCR use is being added (i.e., designated), 8 of the stream segments are currently unclassified and will be receiving the WBCR use designation due to the application of "fishable/swimmable" use designations in rule. Potential costs and impacts for these facilities have already been accounted for in the determination of costs and impacts in Response 4a. The remaining 15 stream segments are currently classified and on or within 2 miles of the spatial extent of the 1:100,000 scale NHD. Because WBCR will be designated through "fishable/swimmable" use designations as part of this rulemaking, facilities discharging to these segments have been captured in the RIR estimates of cost for this rule. Where SCR is being designated due to evidence of existing use, the majority of waters affected currently have WBCR designated and additional costs for disinfection are not anticipated. For those waters where SCR is being designated, but WBCR is recommended to be removed, costs and impacts for disinfection were estimated in the 2005 WQS rulemaking RIR for WBCR

(RIR for Proposed Rule Amendment, 10 CSR 20-7.031, WQS, October 13, 2004). Waters where WBCR is being recommended to be removed should not incur additional costs or impacts related to disinfection.

l) **Responding to EPA's October 29, 2009 decision on the Mississippi River [10 CSR 20-7.031, Table H]:**
The proposed action retains the SCR designation on 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 at 10 CSR 20-7.031(5)(C)5 that bacteria criteria sufficient to support the WBCR-Category B use be applied to the water body. With this recommendation, the Department is not making a determination that swimming and waterskiing are necessarily safe or desirable activities on this water body segment. This decision does not imply that the State of Missouri officially sanctions and endorses swimming and waterskiing in this location. Rather, the Department is making the determination that the Mississippi River UAAs submitted for review do not conclusively demonstrate that WBCR uses are unattainable on this water body segment. The Department believes that this recommendation will satisfy the requirements of Section 101(a) of the federal CWA and address EPA's determination that new or revised standards are necessary for this segment.

Environmental Benefit: The designation of recreational uses to streams and, consequently, the application of a pathogen standard (*E. coli* as an indicator) may require disinfection of effluent before it is discharged to waters designated to this use. The application of the standard through discharge permits and improvement of combined sewer infrastructure in the MSD service area will provide greater protection of public health during the recreational use.

Environmental Cost: Environmental cost from the proposed use designations might come through the discharge of disinfection by-products when chlorination is used as the disinfection process. Some residual chlorine may enter the receiving water from the disinfection process unless dechlorination processes are required. Dechlorination may also introduce other contaminants, such as trihalomethanes, which may be carcinogenic. Where recreation does occur, the risks to human health from the by-products are less severe than the risk of infection from non-treated effluent. Where recreation does not occur, the addition of the by-products would be the greater risk to the environment.

Economic Benefit: As detailed in Response 4a, economic benefits can be generated by environmental improvements. However, the actual usage of this segment of the Mississippi River is not known with great certainty, and economic benefits are not easily quantified without detailed information and data on the number of stream users, the illnesses that relate to pathogens already present in the water and the business income that results from the users during recreation. Because the use of this segment is likely extremely small compared to better known "float streams" in the area that support conditions favorable to WBCR, any economic benefits are likely to be occasional or infrequent and confined to users who may recreate in this segment of river.

Economic Cost: It has been suggested that the above decision will result in substantial economic cost to MSD and by extension its ratepayers. MSD is currently undertaking

over $2 billion in infrastructure construction and improvement projects to meet the current SCR designation (and accompanying 1,134 col/100 mL *E. coli* bacteria criteria) for this segment of the Mississippi River. Additional improvements will be necessary at the two main WWTFs (MSD-Bissell Point WWTF and MSD-Lemay WWTF) that discharge to the segment as well as major improvements to the combined sewer infrastructure within the service area. Anecdotal cost estimates provided by MSD range from an additional $1.5–2 billion in order to meet the requirements of the above decision (John Lodderhose, MSD, personal communication). While a UAA assessing social and economic costs has not been conducted under 40 CFR 131.10(g)(6), it has been suggested that reductions in the *E. coli* bacteria criteria for this segment may result in substantial and widespread economic and social impacts to MSD and its ratepayers. Should MSD submit information and data under this factor, the Department will review any information and data provided and, if appropriate, will revise its recommendations.

m) **Revised delineation and mileages of water body segments [10 CSR 20-7.031, Table G and Table H]:**
These revisions will result in better accuracy in the identification of lakes and streams. This improved accuracy will increase the efficiency of program activities that require the use of the classification information (e.g., permits, water quality assessments, and total maximum daily loads). The increased efficiency should reduce costs for both permit applicants and the Department.

n) **Correction of Typographical Errors:**
No significant economic and environmental costs or benefits are expected to result from the correction of the typographical errors.

5. **Probable costs to the agency and to any other agency of the implementation and enforcement of the proposed rule and any anticipated effect on state revenue**

a) **CWA Section 101(a) use designations [10 CSR 20-7.031(2)(A) – (J)]:**
Missouri's WQS currently contain approximately 25,025 miles of stream designated for CWA, Section 101(a) "fishable/swimmable" uses. The proposal to use the 1:100,000 scale NHD would apply these default use designations to an additional 84,845 miles of stream (109,870 miles total). According to the 2010 Missouri Water Quality Report (Section 305(b) Report), the Department spends about $3.3 million annually on monitoring and analysis of ambient water and related media. Over a two-year water quality assessment cycle, these funds monitor approximately 60 percent of the classified waters in the state. This translates into a cost of approximately $11 million to monitor all currently classified waters over a roughly six and half year period. The 3.4-fold increase in the amount of waters to be monitored and assessed would not result in any significant economies of scale for the Department. Therefore, in order to achieve a similar percentage of waters monitored on future water quality reports, the Department's annual monitoring and analysis costs would increase to $11.2 million. Resource allocations less than this amount would necessarily result in a smaller percentage of waters being monitored and assessed over the assessment cycle.

The proposed revisions would not change the Department process for the review of permit applications. Staff would perform reasonable potential analyses and calculate

wasteload allocations for water quality-based effluent limits in the same manner as done currently. Bacteria effluent limitations will be added to permits where these limits are required, and will be documented in the permit fact sheet or statement of basis as is current practice. Therefore, no increased costs to the Department with respect to permitting are expected from this proposed rule.

b) **CWA Section 101(a) use designation definitions [10 CSR 20-7.031(1)(G)]:**
The proposed rule revision will lead to more accurate and clear delineations of aquatic community use designations. Establishing accurate use designations ensures the appropriate application of criteria and can eliminate unnecessary regulatory steps and delays in determining effluent limits for permits.

c) **Clarification of "Early Life Stages" definition [10 CSR 20-7.031(1)(H)]:**
Because this proposed revision is only a clarification, no costs are expected to be created by this action.

d) **Addition of variance authorizing provisions [10 CSR 20-7.031(12)]:**
It is unlikely that the proposed addition of variance authorizing provisions in rule will add any significant work or cost to the Department or to any other agency. The Department currently accepts and processes variance applications in a timely manner. The addition of variance authorizing provisions will increase the efficiency of the process for both the Department and permittees. Increased efficiency may translate into reduced costs to the Department once the variance authorizing process is in rule and being implemented.

e) **New or revised CWA Section 304(a) numeric water quality criteria [10 CSR 20-7.031, Tables A1, A2, and A3]:**
The proposed revisions would not change the Department process for the review of permit applications. Staff would perform reasonable potential analyses and calculate wasteload allocations for water quality-based effluent limits in the same manner as done currently. Although the results of these analyses may be different, the amount of time involved with the effort will be the same. Therefore, no increased costs to the Department are expected from this proposed rule.

f) **Revised numeric water quality criteria for phenol [10 CSR 20-7.031, Table A1]:**
The proposed revision would not change the Department process for the review of permit applications. Staff would perform reasonable potential analyses and calculate wasteload allocations for water quality-based effluent limits in the same manner as done currently. Although the results of these analyses may be different, the amount of time involved with the effort will be the same. Therefore, no increased costs to the Department are expected from this proposed rule.

g) **Revised numeric water quality criteria for sulfate and chloride [10 CSR 20-7.031, Table A2]:**
The proposed revision would not change the Department process for the review of permit applications. Staff would perform reasonable potential analyses and calculate wasteload allocations for water quality-based effluent limits in the same manner as done currently. Although the results of these analyses may be different, the amount of time involved with

the effort will be the same. Therefore, no increased costs to the Department are expected from this proposed rule.

h) **Revised numeric water quality criteria for DO [10 CSR 20-7.031, Table A3]:**
This revision would allow additional DO criteria to be considered and would not affect the Department's work during water quality assessments or permit reviews. It saves the Department from the cost of having to inappropriately place streams on an impaired waters list based on the existing criteria, and consequently, having to address the listing through a standards revision or total maximum daily load (TMDL) at a later time.

i) **Designation of LaBarque Creek, Jefferson County as an OSRW [10 CSR 20-7.031, Table E]:**
It is unlikely that the proposed classification of this stream as an OSRW will add any significant work or cost to the Department or to any other agency. Efforts to preserve the unique diversity of aquatic and terrestrial species within the watershed would continue by the Department and MDC regardless of the designation. The designation will enhance protection for the stream and ensure the appropriate application of criteria for the stream.

j) **Addition of MDC and Other Lakes [10 CSR 20-7.031, Table G]:**
It is unlikely that the proposed addition of MDC and other lakes to Table G will add any significant work or cost to the Department or to any other agency. Establishing accurate classifications and use designations will ensure appropriate application of criteria and eliminate unnecessary regulatory steps and delays in determining effluent limits for permits.

k) **Changes to the designation of WBCR and SCR as a result of UAA [10 CSR 20-7.031, Table H]:**
It is unlikely that the proposed changes to use designations will add any significant work or cost to the Department or to any other agency. Establishing accurate use designations will ensure appropriate application of criteria and eliminate unnecessary regulatory steps and delays in determining effluent limits for permits.

l) **Responding to EPA's October 29, 2009 decision on the Mississippi River [10 CSR 20-7.031, Table H]:**
It is unlikely that the proposed change to use designations on this segment will add any significant work or cost to the Department or to any other agency. Establishing accurate use designations will ensure appropriate application of criteria and eliminate unnecessary regulatory steps and delays in determining effluent limits for permits. Should MSD submit additional data or information in support of UAA, the Department will allocate sufficient resources that ensure any submittal is reviewed in a timely manner.

m) **Revised delineation and mileages of water body segments [10 CSR 20-7.031, Table G and Table H]:**
The proposed rule revisions should lead to more consistent and clear delineations of classified waters and therefore increased work efficiency and a reduction of costs for the Department.

n) **Correction of Typographical Errors:**
No costs to the Department or any other agency is expected from the correction of the typographical errors.

6. **Comparison of the probable costs and benefits of the proposed rule to the probable costs and benefits of inaction, which includes both economic and environmental costs and benefits**

One of this state's greatest natural resources is its abundant water. The WQS are designed to protect that resource. If this rulemaking does not become effective, some of those resources will not be protected to the extent required by federal law. In addition, public health might be affected due to the need for revised water quality criteria for adequate protection of aquatic life (fish consumption), recreational uses, and drinking water supplies. Many of these impacts are immeasurable in terms of costs simply because the exact effects from lack of action are incalculable. What price is good health worth? While the potential economic cost explained in Section 4 of this report may be significant for portions of the rulemaking, no comparison can be made to environmental benefits without associating a cost to lowered health of citizens and the diminished resources that this rulemaking is intended to prevent.

The state of the economy depends to some extent on the state of the environment. For example, an area that can advertise good water quality is attractive to many human activities, from tourism to industry.

a) **CWA Section 101(a) use designations [10 CSR 20-7.031(2)(A) – (J)]:**
The costs and benefits of this proposed rule are discussed in Responses 4a and 5a. Costs are generally associated with pollution control activities including disinfection systems for point sources and BMPs for nonpoint sources. The average yearly cost for operating disinfection systems at domestic wastewater treatment systems, which are the most prevalent point source for bacteria pollution, is shown in Tables 4.3 and 4.4. The cost of inaction (i.e. not requiring disinfection) would likely be seen in health care costs associated with illnesses attributable to pathogens in the wastewater that are discharged to the streams supporting recreation. This cost is difficult to ascertain. Records are not available to indicate the number of people who contract illnesses while recreating in streams receiving effluent that has not been disinfected. Therefore, this report is unable to make a comparison between this potential heath care cost and the costs associated with disinfection. However, this report does observe that the costs associated with requiring disinfection to protect streams designated to WBCR by this rule is a new cost, whereas, the health care cost that would be attributable to not designating the use, and consequently not requiring disinfection, is a current cost.

If, due to inaction, EPA takes action to promulgate "fishable/swimmable" use designations in Missouri, it is probable that the spatial extent of waters covered by the rule would be greater than what is contained in the proposed rule. An increase in the extent of classification could result in additional regulatory burden for both the Department and the regulated community, although the extent and amount is not known at this time.

b) **CWA Section 101(a) use designation definitions [10 CSR 20-7.031(1)(G)]:**
Because the proposed revisions are a clarification of the existing rule, no costs are expected to be created by this action. Some savings may be expected in that the revisions may prevent confusion in the rule's interpretation. Inaction may result in insufficient protection of aquatic communities and a lack of flexibility in designating waters to subcategories of a designated use where appropriate.

c) **Clarification of "Early Life Stages" definition [10 CSR 20-7.031(1)(H)]:**
Because this proposed revision is only a clarification of the existing rule, no costs are expected to be created by this action. Some savings may be expected in that this revision may prevent confusion in the rule's interpretation.

d) **Addition of variance authorizing provisions [10 CSR 20-7.031(12)]:**
The costs and benefits of the proposed rule are explained in Response 4d. With variance authorizing provisions in rule, applicants and the Department can seek time-limited relief from WQS while ensuring progress toward meeting water quality goals. Some savings may be realized as the variance issuance process is standardized and streamlined. Inaction in adding variance authorizing provisions in rule will slow the rate of compliance with WQS and increase enforcement activities as facilities go into noncompliance with the terms and conditions of their permits.

e) **New or revised CWA Section 304(a) numeric water quality criteria [10 CSR 20-7.031, Tables A1, A2, and A3]:**
With adequate data, a comparison could be made between the increased or decreased costs in treatment and the revisions in water quality criteria which would result from this amendment. However, data are insufficient to determine the number and the extent to which treatment systems would be affected, and consequently, to determine the probable change in pollutant concentrations in the receiving waters.

Inaction with regard to implementing CWA Section 304(a) numeric water quality criteria may compel EPA to promulgate these criteria for Missouri at the federal level. The difference in cost and impact of EPA promulgating these criteria instead of the Department is not expected to be significant.

f) **Revised numeric water quality criteria for phenol [10 CSR 20-7.031, Table A1]:**
With adequate data, a comparison could be made between the cost savings in treatment and the increase in phenol concentrations which would result from this amendment. However, data are insufficient to determine the number and the extent to which treatment systems would be affected, and consequently, to determine the probable change in phenol concentrations in the receiving waters.

Inaction with regard to revision of numeric water quality criteria for phenol would leave the existing water quality criteria at the current level. Leaving the existing water quality criteria in place would provide greater protection to water quality since the current standards are lower than the proposed standards. However, as described in Response 4f above, inaction would not afford relief to facilities that may have phenol identified as a pollutant of concern in their discharge permit.

g) **Revised numeric water quality criteria for sulfate and chloride [10 CSR 20-7.031, Table A2]:**
With adequate data, a comparison could be made between the cost savings in treatment and the increase in sulfate and chloride concentrations which would result from this amendment. However, data are insufficient to determine the number and the extent to which treatment systems would be affected, and consequently, to determine the probable change in sulfate and chloride concentrations in the receiving waters.

Inaction with regard to revision of numeric water quality criteria for sulfate and chloride would leave the existing water quality criteria at their current level. Leaving the existing water quality criteria in place would provide greater protection to water quality since the current standards are lower than the proposed standards. However, as described in Response 4g above, inaction would not afford relief to facilities that may have sulfate and/or chloride identified as a pollutant of concern in their discharge permit.

h) **Revised numeric water quality criteria for DO [10 CSR 20-7.031, Table A3]:**
With adequate data, a comparison could be made between the cost savings in treatment and the increase in BOD which would result from this amendment. However, data are insufficient to determine the number and the extent to which treatment systems would be affected, and consequently, to determine the probable change in DO concentrations in the receiving waters.

The inclusion of additional DO criteria in rule may create an economic benefit for the facilities that currently discharge oxygen-demanding pollutants. The Department would avoid having to inappropriately place streams on an impaired waters list based on the existing criteria, and consequently, having to later address the listing through a standards revision or TMDL. Inaction would preclude any of these benefits to permitted facilities and the Department.

i) **Designation of LaBarque Creek, Jefferson County as an OSRW [10 CSR 20-7.031, Table E]:**
Inaction would result in LaBarque Creek not receiving designation as an OSRW. The high level of water quality and aquatic life assemblages in the stream would not be adequately protected and the water body would not qualify for tier three protection under the antidegradation policy. Lack of the OSRW designation may result in incremental loss of high quality water and aquatic life assemblages and negatively impact the recreational, scientific and educational opportunities that the stream provides.

j) **Addition of MDC and Other Lakes [10 CSR 20-7.031, Table G]:**
Inaction would result in MDC and other lakes not receiving fundamental protections of existing and presumed "fishable/swimmable" use as required by the federal CWA. Aquatic life, recreational and other uses would not be adequately protected and the waters would not qualify for protection under the antidegradation policy.

k) **Changes to the designation of WBCR and SCR as a result of UAA [10 CSR 20-7.031, Table H]:**
The costs and benefits of this proposed rule are discussed in Responses 4k and 5k. Costs are generally associated with pollution control activities including disinfection systems

for point sources and BMPs for nonpoint sources. The average yearly cost for operating disinfection systems at domestic wastewater treatment systems, which are the most prevalent point source for bacteria pollution, is shown in Tables 4.3 and 4.4. The cost of inaction (i.e. not requiring disinfection) would likely be seen in health care costs associated with illnesses attributable to pathogens in the wastewater that are discharged to the streams supporting recreation. This cost is difficult to ascertain. Records are not available to indicate the number of people who contract illnesses while recreating in streams receiving effluent that is not disinfected. Therefore, this report is unable to make a comparison between this potential heath care cost and the costs associated with disinfection. However, this report does observe that the costs associated with requiring disinfection to protect streams designated to WBCR by this rule is a new cost, whereas, the health care cost that would be attributable to not designating the use, and consequently not requiring disinfection, is a current cost.

l) **Responding to EPA's October 29, 2009 decision on the Mississippi River [10 CSR 20-7.031, Table H]:**
The Department was notified by EPA on October 29, 2009 that new or revised standards (i.e., standards supporting WBCR) are necessary to meet the requirements of the federal CWA for the 28.6-mile segment of the Mississippi River from North Riverfront Park to the confluence with the Meramec River. Inaction on behalf of the Department to designate WBCR protection to this segment, or provide sufficient information to EPA that demonstrates that the WBCR use is not attainable, would compel EPA to prepare and publish regulations for WBCR at the federal level in accordance with Section 303(c)(4) of the federal CWA. The proposed amendment to add WBCR bacteria criteria protection to the currently SCR designated segment should satisfy the requirements of Section 101(a) of the federal CWA and address EPA's determination that new or revised standards are necessary for this segment.

Presentation of additional data and information to the Department regarding use attainability would not constitute inaction on the rule. Any new information and data that are provided would be reviewed in light of the current recommendation and used to support an alternate recommendation in rule.

m) **Revised delineation and mileages of water body segments [10 CSR 20-7.031, Table G and Table H]:**
Because the proposed revisions only clarify the existing classification system in the current rule, no costs are expected to be created by this action. Some savings may be expected to result and the revision should eliminate confusion in locating the classified segments.

n) **Correction of Typographical Errors:**
Neither action nor inaction to correct the typographical errors would result in any significant difference in the costs or benefits associated with this rulemaking.

7. **Determination of whether there are less costly or less intrusive methods for achieving the proposed rule**

Regional organizations, county governments, or municipal governments could enact laws or policies that provide similar or greater protection of water resources within their jurisdiction. This has been done in a few select areas of the state, but it does not provide adequate protection for the entire state population and resources. As a result, statewide action through rulemaking is required for these items.

a) **CWA Section 101(a) use designations [10 CSR 20-7.031(2)(A) – (J)]:**
The centerpiece of the current use designation proposal (i.e., all perennial rivers and streams and intermittent streams with permanent pools and those waters spatially represented by the 1:100,000 scale NHD) arose from the Water Protection Forum and other stakeholder discussions that included agricultural, industry and municipal representatives. The proposal was developed through the stakeholder process to be the least costly and least intrusive means for achieving compliance with the "fishable/swimmable" requirement of the federal CWA and resolve the lawsuit between EPA and the Missouri Coalition for the Environment.

b) **CWA Section 101(a) use designation definitions [10 CSR 20-7.031(1)(G)]:**
This revision does not create new requirements or any costs. The purpose of the revision is to improve the clarity of the rule. Therefore, it should not result in any change in the cost of compliance and should lessen any potential for confusion regarding the implementation of the rule.

c) **Clarification of "Early Life Stages" definition [10 CSR 20-7.031(1)(H)]:**
This revision does not create new requirements or any costs. The purpose of the revision is to improve the clarity of the rule. Therefore, it should not result in any change in the cost of compliance and should lessen any potential for confusion regarding the implementation of the rule.

d) **Addition of variance authorizing provisions [10 CSR 20-7.031(12)]:**
Alternatives to variance authorizing provisions include site-specific criteria and enforcement mechanisms such as administrative orders, settlement agreements, and consent judgments. Site-specific criteria development requires extensive research and modeling, which can be time consuming and expensive for the permittee. Enforcement mechanisms can also require extensive research and be administratively burdensome on both the permittee and the Department. Variance authoring provisions are a less costly and less intrusive means of offering time-limited relief to permitted facilities to meet WQS.

e) **New or revised CWA Section 304(a) numeric water quality criteria [10 CSR 20-7.031, Tables A1, A2, and A3]:**
Other methods for achieving the proposed rule, such as a temporary variance from the standards or the use of another method for criteria development, would likely result in more stringent criteria. The federal criteria allow for some refinement of criteria to

site-specific conditions through procedures called "species recalculation" and "water effects ratio". However, these procedures are highly site-specific and resource intensive and, as such, would not be considered less costly or less intrusive methods.

f) **Revised numeric water quality criteria for phenol [10 CSR 20-7.031, Table A1]:**
Other methods for achieving the proposed rule, such as a temporary variance from the standards or the use of another method for criteria development, may result in more stringent criteria. The federal criteria allow for some refinement of criteria to site-specific conditions through procedures called "species recalculation" and "water effects ratio". However, these procedures are highly site-specific and resource intensive and, as such, would not be considered less costly or less intrusive methods.

In the case of phenol, existing federal toxicity data and guidance were available and used to revise the numeric water quality criteria found in rule. This option was the least costly and intrusive means for achieving the proposed rule and satisfying the petition before the MCWC.

g) **Revised numeric water quality criteria for sulfate and chloride [10 CSR 20-7.031, Table A2]:**
Other methods for achieving the proposed rule, such as a temporary variance from the standards or the use of another method for criteria development, may result in more stringent criteria. The federal criteria allow for some refinement of criteria to site-specific conditions through procedures called "species recalculation" and "water effects ratio". However, these procedures are highly site-specific and resource intensive and, as such, would not be considered less costly or less intrusive methods.

In the case of sulfate and chloride, existing state (Iowa) and federal toxicity data and guidance were available and used to revise the numeric water quality criteria found in rule. This option was the least costly and intrusive means for achieving the proposed rule and satisfying the petition before the MCWC.

h) **Revised numeric water quality criteria for DO [10 CSR 20-7.031, Table A3]:**
Other methods for achieving the proposed rule, such as a temporary variance from the standards or the use of another method for criteria development, may result in more stringent criteria. The federal criteria allow for some refinement of criteria to site-specific conditions through procedures called "species recalculation" and "water effects ratio". However, these procedures are highly site-specific and resource intensive and, as such, would not be considered less costly or less intrusive methods. In addition, none of these alternatives appear to present an acceptable method for supporting criteria revisions for DO. These tests generally measure toxicity or the effects of toxic pollutants and require extensive research under laboratory settings.

In the case of DO, existing federal data and guidance were available and used to revise the numeric water quality criteria found in rule. Unlike a variance, modifying the DO criteria currently in rule offers a more permanent (as opposed to temporary) change. In addition, this option was the least costly and intrusive means for achieving the proposed rule and satisfying the petition before the MCWC.

i) **Designation of LaBarque Creek, Jefferson County as an OSRW [10 CSR 20-7.031, Table E]:**
This revision does not impose any new costs on existing dischargers nor does it require significant changes in efforts to achieve compliance. Future dischargers to LaBarque Creek will need to comply with 10 CSR 20-7.015(6)(B) of Missouri's effluent regulations. Existing water quality protections and tier three antidegradation reviews apply only to outstanding state and national resource waters. Without this rule, LaBarque Creek in Jefferson County will not be appropriately protected.

j) **Addition of MDC and Other Lakes [10 CSR 20-7.031, Table G]:**
Numeric chronic criteria and designated beneficial uses apply only to classified waters. Without this rule, these lakes will not be appropriately protected for the existing and presumed uses that may occur. Designation of "fishable/swimmable" use designations to these waters is the least costly and least intrusive means for achieving compliance with the federal CWA.

k) **Changes to the designation of WBCR and SCR as a result of UAA [10 CSR 20-7.031, Table H]:**
A UAA is required in order to rebut the presumption that WBCR can be attained in the targeted waters. Missouri currently has only one protocol for performing recreational UAAs, "Missouri Recreational Use Attainability Analyses: Water Body Survey and Assessment Protocol, Missouri Department of Natural Resources, Division of Environmental Quality, Water Protection Program, December 19, 2007." Therefore, the methods chosen are the only methods available to achieve the proposed rule. Less costly and less intrusive means for conducting UAAs may not be structurally or scientifically sufficient to meet the burden of proof necessary to comply with 40 CFR 131.10(g).

l) **Responding to EPA's October 29, 2009 decision on the Mississippi River [10 CSR 20-7.031, Table H]:**
A UAA is required in order to rebut the presumption that WBCR can be attained in the 28.6-mile segment of the Mississippi River under consideration. The methods chosen to assess WBCR use attainment on the segment are the best methods available to achieve the proposed rule. Less costly and less intrusive means for conducting UAAs may not be structurally or scientifically sufficient to meet the burden of proof necessary to comply with 40 CFR 131.10(g).

m) **Revised delineation and mileages of water body segments [10 CSR 20-7.031, Table G and Table H]:**
These revisions do not impose any new costs on dischargers nor does it require significant changes in efforts to achieve compliance. Therefore, no other less costly or intrusive option exists to achieve the objective of this revision.

n) **Correction of Typographical Errors:**
Correcting the typographical errors in this rulemaking is the only reasonable alternative for addressing the errors. No other less costly or intrusive option exists to achieve the objective of this revision.

8. **Description of any alternative method for achieving the purpose of the proposed rule that were seriously considered by the Department and the reasons why they were rejected in favor of the proposed rule**

For most of the proposed rules, EPA requires a regulatory program to ensure the effective administration of clean water standards. No other state agency has the authority or funding source to administer such a program. EPA has delegated its authority only to the Department for administering a water quality program and that delegation hinges on the program being functionally equivalent to the federal CWA.

Because the EPA guidelines offer the only current rationale for the selection of the proposed standards, the Department defers to EPA's rationale for the science used in developing the standards. In order to establish standards other than those contained in EPA's guidelines, the state would need to provide rationale that is equally pervasive. That effort would take years and enormous resources, and would not likely lead to standards any different then that developed by EPA.

a) **CWA Section 101(a) use designations [10 CSR 20-7.031(2)(A) – (J)]:**
Two alternatives were considered by the stakeholder group and Department prior to selecting the proposed extent. The first alternative proposed to apply default "fishable/swimmable" use designations to all waters of the state as defined in rule. Stakeholders from agricultural, industry and municipal groups contended that the "waters of the state" extent was too broad and would extend protections beyond the limit required by Section 101(a) of the federal CWA. From a Department perspective, no readily available GIS database exists that would allow for efficient implementation and administration of newly classified waters of the state. Without a GIS database capturing all waters of the state, the spatial extent of the designation was unknown. Also, the lack of structured, tiered aquatic community use designations in rule limits the Department's ability to set appropriate use designations and criteria to the large number of headwater and ephemeral streams that would be incorporated into rule. Appropriate use designations are necessary to ensure appropriate protection of those designated uses that exist or are attainable in headwaters and ephemeral streams.

The second alternative proposed to apply default "fishable/swimmable" use designations to the 1:24,000 scale NHD. Designation of default uses to the 1:24,000 scale NHD would add an additional 158,565 miles of stream (183,591 miles total) to the existing classified waters network. Stakeholders from agricultural, industry and municipal groups again contended that the extent of classification would be too broad and extend protections beyond the limit required. Aquatic community data from the Department and MDC appeared to substantiate this contention to some degree, where aquatic life was not as abundant on 1:24,000 scale NHD as opposed to 1:100,000 scale NHD waters. From a Department perspective, a readily available GIS database exists from which efficient implementation and administration of newly classified waters could occur. Although the 1:24,000 scale NHD database is more complete and more readily available than the 1:100,000 scale NHD layer, the uncertainty to which aquatic communities exist on 1:24,000 scale NHD waters weighed strongly against using the linework as a default designation. Because an aquatic community UAA protocol is proposed to accompany the

rulemaking, waters that do contain aquatic life, but reside on the 1:24,000 scale NHD, can easily be added to the classified network as the need arises.

From an economic perspective, all permitted facilities discharge within 2 miles of the 1:100,000 scale NHD dataset and no significant difference in cost exists for any facility between the 1:24,000 or 1:100,000 scale NHD. From an environmental perspective, protections of aquatic communities and recreational uses would be the same since all facilities are currently permitted to the chronic toxicity level and all domestic facilities would be required to disinfect. Additional burden with respect to monitoring and assessment may be incurred by the Department at the 1:24,000 scale NHD scale as it constitutes an additional 73,720 miles of stream that would need monitoring. If the current annual percentage of waters monitored is extended to the 1:24,000 scale NHD, annual monitoring costs would increase to $24.2 million.

Ultimately, the 1:100,000 scale NHD proposal was advanced through the stakeholder group into the proposed rule because of the following: 1) certainty of aquatic communities on the spatial extent of the 1:100,000 scale NHD; 2) an aquatic life UAA protocol would be available to add or remove waters from the rule; and 3) support from the regulated community that the proposal represents an appropriate extent for extending "fishable/swimmable" protections required by Section 101(a) of the federal CWA.

b) **CWA Section 101(a) use designation definitions [10 CSR 20-7.031(1)(G)]:**
The purpose of the use designation revisions is to improve the clarity of the rule, with the intention to provide greater flexibility in the designation and protection of aquatic community uses. The added flexibility to designate waters as warm, cool, cold, modified and exceptional aquatic community are alternatives not currently found in rule. The addition of an aesthetic use designation will ensure general criteria are linked to an established and implementable designated use. Any other method of making these clarifications would not directly address the problem or provide a permanent solution.

c) **Clarification of "Early Life Stages" definition [10 CSR 20-7.031(1)(H)]:**
The purpose of the revision is to improve the clarity of the rule, with an intention to lessen any potential for confusion regarding implementation of the rule. Any other method of making this clarification would not directly address the problem or provide a permanent solution.

d) **Addition of variance authorizing provisions [10 CSR 20-7.031(12)]:**
Alternatives to variances from WQS include development of site-specific criteria for individual pollutants, through species recalculation and water effects ratios, and enforcement mechanisms such as administrative orders, settlement agreements, and consent judgments. These alternatives are highly site-specific and resource intensive, especially considering the need for these alternatives is time-limited. The option chosen provides a solution that directly addresses the problem and provides a permanent solution in rule for both permittees and the Department.

e) **New or revised CWA Section 304(a) numeric water quality criteria [10 CSR 20-7.031, Tables A1, A2, and A3]:**
Alternatives to Section 304(a) numeric water quality criteria include development of site-specific criteria for individual pollutants through species recalculation and water affects ratios. The revisions proposed were preferred as the most science-based alternative that would broadly protect aquatic communities.

f) **Revised numeric water quality criteria for phenol [10 CSR 20-7.031, Table A1]:**
Alternatives to the water quality criteria for phenol include development of site-specific criteria through species recalculation and water effects ratios. The revision proposed was preferred as the most science-based alternative that would broadly protect aquatic community and human health protection uses.

g) **Revised numeric water quality criteria for sulfate and chloride [10 CSR 20-7.031, Table A2]:**
Alternatives to the water quality criteria for sulfate and chloride include development of site-specific criteria through species recalculation and water effects ratios. The revision proposed was preferred as the most science-based alternative that would broadly protect aquatic community uses.

h) **Revised numeric water quality criteria for DO [10 CSR 20-7.031, Table A3]:**
Alternatives to the water quality criteria for DO include development of site-specific criteria for individual streams. Site-specific DO determinations would be very complex and expensive as they would need to define the effects of various levels of DO exposures to resident aquatic species. The revision proposed was preferred as the most science-based alternative that would broadly protect aquatic community uses.

i) **Designation of LaBarque Creek, Jefferson County as an OSRW [10 CSR 20-7.031, Table E]:**
The alternatives to designation of LaBarque Creek as a OSRW include no action and designation of the water as an "exceptional aquatic community" under the new aquatic community use designation framework. The "no action" alternative was not chosen because inaction to implement additional protections may lead to degradation of the stream's aquatic and recreational resources. The alternative to designate LaBarque Creek as an "exceptional aquatic community" was not chosen because the criteria for determining the aquatic assemblages necessary for the use designation have yet to be established. The preferred option to designate LaBarque Creek as an OSRW was chosen because the water body meets the criteria found in rule at 10 CSR 20-7.031(8) and the alternatives noted above would not provide the water quality and antidegradation protection required.

j) **Addition of MDC and Other Lakes [10 CSR 20-7.031, Table G]:**
The only alternative to adding MDC and other identified lakes to Table G of the WQS is to take "no action". However, inaction is not a viable or allowable option given Section 101(a) of the federal CWA requires existing "fishable/swimmable" uses be protected in rule. For this reason, the MDC lakes, and other identified lakes, have been proposed for addition to Table G. There are no alternatives that would qualify these lakes for the protections they need.

k) **Changes to the designation of WBCR and SCR as a result of UAA [10 CSR 20-7.031, Table H]:**
A UAA is required in order to rebut the presumption that WBCR can be attained in the targeted waters and Missouri currently has only one protocol for performing recreational UAAs. Therefore, the methods chosen are the only methods available to achieve the proposed rule.

l) **Responding to EPA's October 29, 2009 decision on the Mississippi River [10 CSR 20-7.031, Table H]:**
A UAA is required in order to rebut the presumption that WBCR can be attained in this segment of the Mississippi River. The methods chosen to assess attainment were conducted using factors found in federal regulation at 40 CFR 131.10(g) and the only methods available to achieve the proposed rule.

m) **Revised delineation and mileages of water body segments [10 CSR 20-7.031, Table G and Table H]:**
The Department had previously extrapolated the location and extent of water bodies from paper maps and reported their boundaries in terms of legal descriptions. This method of water body delineation and measurement is not very accurate and may lead to either an under-application or over-application of the beneficial uses and criteria to classified waters. The proposed revisions will eliminate these potential problems with the tables by using more accurate GIS and field data to achieve the proposed rule.

n) **Correction of Typographical Errors:**
Correcting the typographical errors in this rulemaking is the only reasonable alternative for addressing the errors.

9. **Analysis of both short-term and long-term consequences of the proposed rule**

a) **CWA Section 101(a) use designations [10 CSR 20-7.031(2)(A) – (J)]:**
The short term consequence of the proposed rule is a change in permit terms and conditions for domestic WWTFs that discharge to, or within 2 miles of, 1:100,000 scale NHD streams. The new permit conditions will establish a regulatory requirement for achieving bacteria standards in the receiving stream. Some of these permits will contain schedules of compliance of up to eight years to design, build and operate a disinfection system. The long-term consequence is the annual O&M cost associated with wastewater treatment and the improved protection of public health during recreational use of the streams affected by this rule. From a Department perspective, the short-term and the long-term consequences of this rule are to protect the uses in these streams through regular monitoring and assessment of their water quality.

b) **CWA Section 101(a) use designation definitions [10 CSR 20-7.031(1)(G)]:**
The proposed rule amendment revises and adds use designation definitions to allow for accurate and appropriate use designations and protection. The short-term and long-term consequences of the proposed rule amendment are the same and will afford appropriate protection of aquatic community and aesthetic uses without incurring unnecessary costs to the regulated community.

c) **Clarification of "Early Life Stages" definition [10 CSR 20-7.031(1)(H)]:**
The proposed rule revision is a clarification of the early life stages definition and does not create any new requirements or costs. In the short-term and long-term, the rule revision should not result in any change in the cost of compliance. However, the proposed revision should lessen any potential for confusion regarding implementation of the early life stages provision of the rule.

d) **Addition of variance authorizing provisions [10 CSR 20-7.031(12)]:**
The proposed addition of variance authorizing provisions does not create any new requirements or costs. In the short-term and long-term, the rule revision will afford the regulated community and Department flexibility in meeting long-term water quality goals while making short-term improvements. The rule revision may reduce the cost of compliance for permitted facilities in the short-term as permit requirements to meet WQS may be implemented over longer periods of time. Because variances are time-limited, compliance with applicable WQS will be guaranteed by schedules of compliance or other means that ensure short-term and long-term milestones are met.

e) **New or revised CWA Section 304(a) numeric water quality criteria [10 CSR 20-7.031, Tables A1, A2, and A3]:**
The short-term and long-term consequences of this rule amendment are the same: the protection of aquatic communities without imposing unnecessary costs to the regulated community. Where revised Section 304(a) criteria are more stringent than currently found in rule, short-term consequences may be incurred by WWTFs. New permit conditions for these WWTFs will establish a regulatory requirement for achieving aquatic community protection standards in the receiving stream. Some of these permits will contain schedules of compliance of up to three years to design, build and operate treatment process upgrades. Depending on the level of treatment presently employed at each facility, the level of additional treatment needed may vary on a case-by-case basis. The long-term consequence is the annual O&M cost associated with wastewater treatment. Where revised Section 304(a) criteria are less stringent than currently found in rule, short-term and long-term consequences may include reduction of effluent limitation or monitoring frequency requirements found in the operating permit for the facility.

f) **Revised numeric water quality criteria for phenol [10 CSR 20-7.031, Table A1]:**
The short-term and long-term consequences of this rule amendment are the same: the protection of aquatic communities without imposing unnecessary costs to the regulated community. The revised acute and chronic toxicity criteria are less stringent than currently found in rule. For permitted facilities that may have phenol as a pollutant of concern, short-term and long-term consequences may include reduction of effluent limitation or monitoring frequency requirements found in the facility operating permit. Reductions in economic costs are also likely given the criteria are less stringent than currently found in rule and treatment costs required to comply with the new standards would be less.

g) **Revised numeric water quality criteria for sulfate and chloride [10 CSR 20-7.031, Table A2]:**
The short-term and long-term consequences of this rule amendment are the same: the protection of aquatic communities without imposing unnecessary costs to the regulated

community. The revised acute and chronic toxicity criteria are less stringent than currently found in rule. For permitted facilities that may have sulfate and/or chloride as a pollutant of concern, short-term and long-term consequences may include reduction of effluent limitation or monitoring frequency requirements found in the facility operating permit. Reductions in economic costs are also likely given the criteria are less stringent than currently found in rule and treatment costs required to comply with the new standards would be less.

h) **Revised numeric water quality criteria for DO [10 CSR 20-7.031, Table A3]:**
The short-term and long-term consequences of this rule amendment are the same: the protection of aquatic communities without imposing unnecessary costs to the regulated community. The revised criteria provide a wider range of DO conditions from which to assess compliance and attainment of aquatic community protection uses. The current one-size fits all DO minimum criterion does not work in many parts of the state where DO criteria are not routinely met, but aquatic assemblages can be considered abundant and diverse. Because the new DO criteria more closely reflect the DO levels expected to exist within natural settings, no short-term or long-term effect to aquatic life is expected. Short-term and long-term reductions in economic cost are likely given a wider range of criteria can be used for assessment and wasteload allocation derivation. WWTF discharge permits may receive less restrictive effluent limits for BOD as a result of this rule amendment. An important long-term positive consequence is that DO criteria will exist in rule upon which to develop and implement accurate discharge permits, TMDLs, and water body assessments.

i) **Designation of LaBarque Creek, Jefferson County as an OSRW [10 CSR 20-7.031, Table E]:**
The short-term and long-term consequences of this rule amendment are the same: the protection of the unique and diverse aquatic communities and recreational opportunities found in the stream. The addition of LaBarque Creek as an OSRW will provide for the protection of water quality according to the antidegradation policy. Any new discharges into the designated section of the stream or any tributaries that flow into that section of the stream will be required to first investigate if non-discharging options would be practical. This requirement would occur regardless of the OSRW designation. If found that non-discharging options would not be practical or feasible, special effluent limitations would need to be developed such that water quality is not allowed to degrade. Currently, only 4 permitted facilities are located within the LaBarque Creek watershed. Future WWTFs, industrial discharges, general permits or stormwater permits will only be permitted if level of existing water quality is maintained. Agricultural activities, except those regulated as CAFOs, and on-site wastewater treatment systems (septic systems) will not be affected since they do not fall under the Department's regulatory authority.

j) **Addition of MDC and Other Lakes [10 CSR 20-7.031, Table G]:**
The short-term and long-term consequences of this rule amendment are the same: the protection of the aquatic communities and recreational opportunities found in these lakes. WWTFs, industrial discharges, general permits and stormwater permits that are located within the watersheds of these lakes must be permitted under the Department's regulation and antidegradation policy. Agricultural activities, except those regulated as CAFOs and

on-site wastewater treatment systems (septic systems) will not be affected since they do not fall under the Department's regulatory authority.

k) Changes to the designation of WBCR and SCR as a result of UAA [10 CSR 20-7.031, Table H]:

The short-term consequence of the proposed rule is a change in permit terms and conditions for bacteria in permits discharging to the targeted streams. The new permit conditions will establish a regulatory requirement for achieving the new bacteria standards. Some of these permits will contain schedules of compliance of up to four years and 364 days to design, build and operate a disinfection system. The long-term consequence is the annual O&M cost associated with wastewater treatment and the improved protection of public health during recreational use of the streams affected by this rule.

l) Responding to EPA's October 29, 2009 decision on the Mississippi River [10 CSR 20-7.031, Table H]:

The short-term consequence of the proposed rule is a change in permit terms and conditions for bacteria in permits discharging to this segment of the Mississippi River. The new permit conditions will establish a regulatory requirement for achieving *E. coli* bacteria criteria protective of the WBCR use (i.e., 206 colonies/100 mL of water). Permitted facilities that will be affected include the MSD-Bissell Point WWTF (MO-0025178) and MSD-Lemay WWTF (MO-0025151). Operating permits for these facilities will contain schedules of compliance of up to four years and 364 days to design, build and operate a disinfection system to meet the new requirements. The long-term consequence for these permitted facilities is the annual O&M cost associated with wastewater treatment disinfection processes. An additional long-term consequence for MSD as a whole is the added cost for design, construction and operation of collection system improvements that reduce or eliminate combined sewer overflows (CSOs) discharging to this segment of the Mississippi River. A long-term corollary of disinfection requirements and CSO control are the improved protection of public health during recreational use of the stream affected by this revision.

m) Revised delineation and mileages of water body segments [10 CSR 20-7.031, Table G and Table H]:

The proposed rule amendments will improve the identification of classified water segments, making it easier to track the various types of information relative to each water body, such as the standards that apply, the status of water quality, the discharges affecting the water body, etc. These identifications are essential to decisions relating to effluent limitations, compliance determinations and water quality restoration activities.

n) Correction of Typographical Errors:

The correction of these typographical errors will avoid any confusion or delay in decisions based on the sections of the rule affected by the errors.

10. Explanation of the risks to human health, public welfare or the environment addressed by the proposed rule

Section 4 of this report explains some of the risks that may exist should water quality not be protected by the new standards proposed by this rulemaking. Because the Department is adopting federal standards for CWA Section 101(a) use designations and water quality criteria, further information on risk assessment may be obtained by reviewing the administrative record created during EPA's development of their technical guidelines.

a) **CWA Section 101(a) use designations [10 CSR 20-7.031(2)(A) – (J)]:**
The designation of aquatic community and human health protection uses to perennial rivers and streams, intermittent streams with permanent pools and streams spatially represented by the 1:100,000 scale NHD recognizes the existing or potential use of these surface waters by aquatic life and humans. The application of numeric criteria (i.e., acute and chronic toxicity criteria), general criteria and antidegradation requirements to these waters protects the aquatic environment and the species that reside there. Protection of the aquatic environment and support for aquatic protection uses enhances the environment and public welfare by providing opportunities for recreation, education, scientific research and protection and propagation of native and recreationally important fish species. A corollary of protection of the aquatic environment and recreationally important fish species is protection of human health for humans that consume fish, other aquatic life and water from these streams. The lack of aquatic community protection through appropriate use designation may irreparably damage or harm these resources to the potential detriment of human health and the environment.

The designation of recreational uses to surface waters recognizes the existing or potential contact people have with these waters. The application of pathogen criteria to these waters protects human health from the risk of gastrointestinal illness in waters designated for recreation. The presence of *E. coli* bacteria in aquatic environments indicates that the water has been contaminated with the fecal material of humans or other animals. This form of contamination may introduce pathogens or disease-producing bacteria or viruses. Some waterborne pathogenic diseases include typhoid fever, viral and bacterial gastroenteritis and hepatitis A. The presence of fecal contamination is an indicator that a potential health risk exists for individuals exposed to this water. FC bacteria may occur in ambient water as a result of the overflow of domestic sewage or nonpoint sources of human and animal waste. The protection of WBCR in these waters will significantly reduce any human health concerns due to pathogenic infection.

b) **CWA Section 101(a) use designation definitions [10 CSR 20-7.031(1)(G)]:**
The purpose of the revision is to improve the clarity of the rule with regard to use designations. Its intent is to lessen any potential for confusion regarding the implementation of the rule. It does not address any risks to public health, welfare or the environment.

c) **Clarification of "Early Life Stages" definition [10 CSR 20-7.031(1)(H)]:**
The purpose of the revision is to improve the clarity of the rule with regard to early life stages. Its intent is to lessen any potential for confusion regarding the implementation of the rule. It does not address any risks to public health, welfare or the environment.

d) Addition of variance authorizing provisions [10 CSR 20-7.031(12)]:
The purpose of the revision is to improve and streamline the issuance of variances to WQS. Its intent is to afford the regulated community and Department flexibility in meeting long-term water quality goals. It does not address any risks to public health, welfare or the environment.

e) New or revised CWA Section 304(a) numeric water quality criteria [10 CSR 20-7.031, Tables A1, A2, and A3]:
The proposed revisions to Section 304(a) water quality criteria address the toxic effects of these pollutants to aquatic life and the toxic and carcinogenic effects of these pollutants to human health. This amendment proposes to revise the state criteria to reflect the latest federal criteria as described in "*National Recommended Water Quality Criteria*" published in 2009 by EPA, Office of Water and "*2011 Edition of the Drinking Water Standards and Health Advisories*" published in 2011 by EPA, Office of Water. Further information on risk assessment may be obtained by reviewing the administrative record created during EPA's development of these documents.

f) Revised numeric water quality criteria for phenol [10 CSR 20-7.031, Table A1]:
The proposed revisions to water quality criteria for phenol address the toxic effects of phenol to aquatic life and the carcinogenic effects of phenol to human health. This amendment proposes to revise the state criteria to reflect the latest federal criteria as described in "*National Recommended Water Quality Criteria*" published in 2009 by EPA, Office of Water and "*2011 Edition of the Drinking Water Standards and Health Advisories*" published in 2011 by EPA, Office of Water. The federal water quality guidance "*Quality Criteria for Water 1986*" published in 1986 by EPA, Office of Water and "*Revised National Recommended Water Quality Criteria for the Protection of Human Health: Final Criteria for Acrolein and Phenol*" published in 2009 by EPA, Office of Water were also used to develop the proposed revisions. Further information on risk assessment may be obtained by reviewing the administrative record created during EPA's development of these documents.

g) Revised numeric water quality criteria for sulfate and chloride [10 CSR 20-7.031, Table A2]:
The proposed revisions to water quality criteria for sulfate and chloride address the toxic effects of these pollutants to aquatic life. This amendment proposes to revise the state criteria to reflect the latest state developed criteria as described in "*WQS Review: Chloride, Sulfate and Total Dissolved Solids*" published in 2009 by the Iowa DNR. Further information on risk assessment may be obtained by reviewing the administrative record created during Iowa's development of this document.

h) Revised numeric water quality criteria for DO [10 CSR 20-7.031, Table A3]:
The proposed revisions to water quality criteria for DO address the effects of DO concentrations to aquatic life. This amendment proposes to revise the state criteria to reflect the latest federal criteria as described in "*Ambient Water Quality Criteria for DO*" published in 1986 by EPA, Office of Water. Further information on risk assessment may be obtained by reviewing the administrative record created during EPA's development of this document.

i) **Designation of LaBarque Creek, Jefferson County as an OSRW [10 CSR 20-7.031, Table E]:**
The proposed revision to designate LaBarque Creek, Jefferson County as an OSRW enhances protection of the aquatic resources and recreational, scientific and educational opportunities that the stream provides. This enhanced protection addresses the effects of pollutants to aquatic life, human health and the environment.

j) **Addition of MDC and Other Lakes [10 CSR 20-7.031, Table G]:**
The proposed revision to add MDC and other lakes to Table G enhances protection of the aquatic resources and recreational opportunities these waters provide. This enhanced protection addresses the effects of pollutants to aquatic life, human health and the environment, including:

- Aquatic life is impacted by nutrient loading at several levels. It can increase the probability of fish kills due to oxygen depletion that results from excessive algae growth. It can also undermine aquatic diversity by creating conditions favorable to certain fast growing species, such as carp and benthivores, at the expense of other species (Edgertson and Downing, 2004).

- Drinking water problems are frequently attributed to specific species of algae that produce a range of toxicities. The consequences can include taste and odor problems and risks to human health as well as to livestock and wildlife. (Downing et al. 2001).

- WBCR can be impaired because of reduced water clarity associated with algae growth. This can affect the attractiveness of a water body, as well as safety concerns due to reduced water clarity.

k) **Changes to the designation of WBCR and SCR as a result of UAA [10 CSR 20-7.031, Table H]:**
The designation of recreational uses to surfaces waters recognizes the existing or potential contact people have with these waters. The application of pathogen criteria to these waters protects human health from the risk of gastrointestinal illness in water bodies designated for recreation. The presence of *E. coli* bacteria in aquatic environments indicates that the water has been contaminated with the fecal material of man or other animals. This form of contamination may introduce pathogens or disease producing bacteria or viruses. Some waterborne pathogenic diseases include typhoid fever, viral and bacterial gastroenteritis and hepatitis A. The presence of fecal contamination is an indicator that a potential health risk exists for individuals exposed to this water. FC bacteria may occur in ambient water as a result of the overflow of domestic sewage or nonpoint sources of human and animal waste.

l) **Responding to EPA's October 29, 2009 decision on the Mississippi River [10 CSR 20-7.031, Table H]:**
The designation of recreational uses to surfaces waters recognizes the existing or potential contact people have with these waters. The application of pathogen criteria to these waters protects human health from the risk of gastrointestinal illness in water bodies designated for recreation. The presence of *E. coli* bacteria in aquatic

environments indicates that the water has been contaminated with the fecal material of man or other animals. This form of contamination may introduce pathogens or disease producing bacteria or viruses. Some waterborne pathogenic diseases include typhoid fever, viral and bacterial gastroenteritis and hepatitis A. The presence of fecal contamination is an indicator that a potential health risk exists for individuals exposed to this water. Fecal coliform bacteria may occur in ambient water as a result of the overflow of domestic sewage or nonpoint sources of human and animal waste.

m) Revised delineation and mileages of water body segments [10 CSR 20-7.031, Table G and Table H]:
The purpose of the revisions is to improve the clarity of the rule. This change did not significantly affect any risks to public health, welfare or the environment.

n) Correction of Typographical Errors:
These typographical errors do not pose any human health or environmental risks.

11. Identification of the sources of scientific information used in evaluating the risk and a summary of such information

Section 2 and Appendix A of this report presents the information used in developing this proposed rule. Because the Department is adopting federal standards for CWA Section 101(a) use designations and water quality criteria, further information on risk assessment may be obtained by reviewing the administrative record created during EPA's development of their technical guidelines. In these cases, the Department defers to the science used in the national studies for evaluating the risks to aquatic life and human health.

a) CWA Section 101(a) use designations [10 CSR 20-7.031(2)(A) – (J)]:
The designation of aquatic community, human health and recreational protections as required by CWA Section 101(a) recognizes the existing or potential use of these surface waters by aquatic life and humans. Subsequent sections of the CWA provide the tools necessary to perform the risk assessments and testing necessary to ensure the goals of the CWA are met. As detailed in CWA Section 304(a)(1)(A), the CWA provides for development of water quality criteria that accurately reflects the latest scientific knowledge "on the kind and extent of all identifiable effects on health and welfare including, but not limited to, plankton, fish, shellfish, wildlife, plant life, shore lines, beaches, esthetics, and recreation which may be expected from the presence of pollutants in any body of water". In protecting waters for "fishable/swimmable" uses and developing criteria to protect those uses, the CWA promotes and provides the regulatory framework for identifying and minimizing risks to human health, public welfare and the environment.

b) CWA Section 101(a) use designation definitions [10 CSR 20-7.031(1)(G)]:
The purpose of the revision is to improve the clarity of the rule with regard to use designations. Its intent is to lessen any potential for confusion regarding the implementation of the rule. It does not affect any risks to public health, welfare or the environment.

c) **Clarification of "Early Life Stages" definition [10 CSR 20-7.031(1)(H)]:**
The purpose of the revision is to improve the clarity of the rule with regard to early life stages. Its intent is to lessen any potential for confusion regarding the implementation of the rule. It does not affect any risks to public health, welfare or the environment.

d) **Addition of variance authorizing provisions [10 CSR 20-7.031(12)]:**
The purpose of the revision is to improve and streamline the issuance of variances to WQS. Its intent is to afford the regulated community and Department flexibility in meeting long-term water quality goals. It does not affect any risks to public health, welfare or the environment.

e) **New or revised CWA Section 304(a) numeric water quality criteria [10 CSR 20-7.031, Tables A1, A2, and A3]:**
This amendment proposes to revise the state criteria to reflect the latest federal criteria as described in "*National Recommended Water Quality Criteria*" published in 2009 by EPA, Office of Water and "*2011 Edition of the Drinking Water Standards and Health Advisories*" published in 2011 by EPA, Office of Water. Scientific information used in evaluating risks to aquatic life and human health can be found in these documents.

f) **Revised numeric water quality criteria for phenol [10 CSR 20-7.031, Table A1]:**
This amendment proposes to revise the state criteria to reflect the latest federal criteria as described in "*National Recommended Water Quality Criteria*" published in 2009 by EPA, Office of Water and "*2011 Edition of the Drinking Water Standards and Health Advisories*" published in 2011 by EPA, Office of Water. The federal water quality guidance "*Quality Criteria for Water 1986*" published in 1986 by EPA, Office of Water and "*Revised National Recommended Water Quality Criteria for the Protection of Human Health: Final Criteria for Acrolein and Phenol*" published in 2009 by EPA, Office of Water were also used to develop the proposed revisions. Scientific information used in evaluating risks to aquatic life and human health can be found in these documents.

g) **Revised numeric water quality criteria for sulfate and chloride [10 CSR 20-7.031, Table A2]:**
This amendment proposes to revise the state criteria to reflect the latest state developed criteria as described in "*WQS Review: Chloride, Sulfate and Total Dissolved Solids*" published in 2009 by the Iowa Department of Natural Resources. These criteria were developed in cooperation with EPA and reviewed and approved by the agency in Iowa's state WQS. Scientific information used in evaluating risk to aquatic life can be found in this document.

h) **Revised numeric water quality criteria for DO [10 CSR 20-7.031, Table A3]:**
This amendment proposes to revise the state criteria to reflect the latest federal criteria as described in "*Ambient Water Quality Criteria for DO*" published in 1986 by EPA, Office of Water. Scientific information used in evaluating risk to aquatic life can be found in this document.

i) **Designation of LaBarque Creek, Jefferson County as an OSRW [10 CSR 20-7.031, Table E]:**
The proposed revision to designate LaBarque Creek, Jefferson County as an OSRW enhances protection of the aquatic resources and recreational, scientific and educational opportunities that the stream provides. This enhanced protection will decrease risks to public health, welfare or the environment.

j) **Addition of MDC and Other Lakes [10 CSR 20-7.031, Table G]:**
The proposed revision to add MDC and other lakes to Table G enhances protection of the aquatic resources and recreational opportunities these waters provide. This enhanced protection will decrease risks to public health, welfare or the environment as detailed in the discussion and scientific information referenced in Response 10j.

k) **Changes to the designation of WBCR and SCR as a result of UAA [10 CSR 20-7.031, Table H]:**
A number of studies have shown that public health is protected when the pathogen levels in recreational waters are controlled. Appropriate designation of WBCR and SCR through the UAA process ensures public health is protected and risk of pathogen exposure is reduced where recreational uses are existing or attainable.

l) **Responding to EPA's October 29, 2009 decision on the Mississippi River [10 CSR 20-7.031, Table H]:**
A number of studies have shown that public health is protected when the pathogen levels in recreational waters are controlled. Appropriate designation application of WBCR bacteria criteria through the UAA process ensures public health is protected and risk of pathogen exposure is reduced where recreational uses are attainable.

m) **Revised delineation and mileages of water body segments [10 CSR 20-7.031, Table G and Table H]:**
The purpose of the revisions is to improve the clarity of the rule. This change did not significantly affect any risks to public health, welfare or the environment.

n) **Correction of Typographical Errors:**
These corrections are not proposed on the basis of science or reducing risk. Therefore, this section is not relevant to this revision.

12. **Description and impact statement of any uncertainties and assumptions made in conducting the analysis on the resulting risk estimate**

Because the Department is adopting federal standards for portions of this rulemaking, further information on risk assessment may be obtained by reviewing the administrative record created during EPA's development of their technical guidelines. Providing information on uncertainties and assumptions would require an analysis of the preamble to the federal rule and it is uncertain that EPA documented all of the uncertainties and assumptions involved in their rule development. For federal criteria promulgation at the state level, the reader is referred to the federal guidance for statements on the uncertainties and assumptions made in conducting the analysis on the resulting risks.

a) **CWA Section 101(a) use designations [10 CSR 20-7.031(2)(A) – (J)]:**
In protecting waters for "fishable/swimmable" uses and developing criteria to protect those uses, the CWA promotes and provides the regulatory framework for identifying and minimizing risks to human health, public welfare and the environment. The designation of aquatic community, human health and recreational protections as required by CWA Section 101(a) recognizes the existing or potential use of these surface waters by aquatic life and humans. Under the CWA, "fishable/swimmable" uses must be extended to all waters of the United States, the extent of which has been the subject of controversy and litigation for over a decade. Supreme Court cases such as Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers (SWANCC) and Rapanos v. United States (Rapanos) have led to EPA and the U.S. Army Corps of Engineers developing guidance for CWA practitioners on interpreting the extent of waters of the United States. The document, "*Draft Guidance on Identifying Waters Protected by the CWA*" is currently out for public comment until July 1, 2011.

The EPA and U.S. Army Corps of Engineers guidance does not establish a linkage between waters of the United States and any one specific spatial extent or map scale. Rather, the guidance endeavors to be consistent with the established Supreme Court cases and supported by the agencies' scientific understanding of how water bodies and watersheds function. From the standpoint of the proposed rule's application of CWA Section 101(a) use designations to the 1:100,000 scale NHD, there is some uncertainty and an assumption that aquatic community and recreational uses are attainable at this spatial scale. Biological data and information collected by the Department and MDC suggest that aquatic communities exist on streams spatially represented by the 1:100,000 scale NHD extent and that attainability and existing use at this scale is more certain than at other scales (e.g., 1:24,000 scale NHD). However, stream morphology suggests that recreational use for WBCR is not as abundant on streams spatially represented by the 1:100,000 scale NHD extent, which may represent the upper end of attainability for that use. While there is uncertainty in the extent to which aquatic community and recreational uses extend into headwater streams, the assumption that the 1:100,000 scale NHD captures what constitutes waters of the United States under current guidance is likely sound. Waters with existing or attainable aquatic community or recreational uses that do not fall within the proposed spatial extent of the 1:100,000 scale NHD will receive those designations as existing uses. Streams and rivers that are perennially flowing or intermittently flowing with permanent pools will also receive "fishable/swimmable" use designations under the proposed rule.

b) **CWA Section 101(a) use designation definitions [10 CSR 20-7.031(1)(G)]:**
The purpose of the revision is to improve the clarity of the rule with regard to use designations. It does not affect any risks to public health, welfare or the environment. Therefore, no uncertainties exist with respect to the revision.

c) **Clarification of "Early Life Stages" definition [10 CSR 20-7.031(1)(H)]:**
The purpose of the revision is to improve the clarity of the rule with regard to early life stages. It does not affect any risks to public health, welfare or the environment. Therefore, no uncertainties exist with respect to the revision.

d) **Addition of variance authorizing provisions [10 CSR 20-7.031(12)]:**
The purpose of the revision is to improve and streamline the issuance of variances to WQS. It does not affect any risks to public health, welfare or the environment. Therefore, no uncertainties exist with respect to the revision.

e) **New or revised CWA Section 304(a) numeric water quality criteria [10 CSR 20-7.031, Tables A1, A2, and A3]:**
This amendment proposes to revise state criteria to reflect the latest federal CWA Section 304(a) criteria. Because the Department is adopting federal standards for these revisions, further information on uncertainties and assumptions made during the risk assessment may be obtained by reviewing the administrative record created during EPA's development of technical guidelines and guidance for these pollutants.

f) **Revised numeric water quality criteria for phenol [10 CSR 20-7.031, Table A1]:**
This amendment proposes to revise the state criteria for phenol to reflect the latest federal criteria. Because the Department is adopting federal standards for these revisions, further information on uncertainties and assumptions made during the risk assessment may be obtained by reviewing the administrative record created during EPA's development of technical guidelines and guidance for this pollutant.

g) **Revised numeric water quality criteria for sulfate and chloride [10 CSR 20-7.031, Table A2]:**
This amendment proposes to revise the state criteria for sulfate and chloride to reflect the latest state developed, federally approved criteria. Because the Department is adopting state and federally approved standards for these revisions, further information on uncertainties and assumptions made during the risk assessment may be obtained by reviewing the administrative record created during the Iowa DNR' development of technical guidelines and guidance for these pollutants.

h) **Revised numeric water quality criteria for DO [10 CSR 20-7.031, Table A3]:**
This amendment proposes to revise the state criteria for DO to reflect the latest federal criteria. Because the Department is adopting federal standards for these revisions, further information on uncertainties and assumptions made during the risk assessment may be obtained by reviewing the administrative record created during EPA's development of technical guidelines and guidance for this pollutant.

i) **Designation of LaBarque Creek, Jefferson County as an OSRW [10 CSR 20-7.031, Table E]:**
The enhanced protection of LaBarque Creek as an OSRW will decrease risks to public health, welfare and the environment through permitting and antidegradation requirements. No significant uncertainties or assumptions exist with respect to this revision.

j) **Addition of MDC and Other Lakes [10 CSR 20-7.031, Table G]:**
The enhanced protection of MDC and other lakes added to Table G will decrease risks to public health, welfare and the environment through permitting and antidegradation requirements. No significant uncertainties or assumptions exist with respect to these revisions.

k) **Changes to the designation of WBCR and SCR as a result of UAA [10 CSR 20-7.031, Table H]:**
Uncertainties concerning the UAA process and procedures are minimal. Intensive stream morphology measurements, interviews, and a robust public participation process ensure adequate data are collected to determine existing and/or attainable recreational uses. Any assumptions that must be made are conservative and are intended to minimize any risk to human health.

l) **Responding to EPA's October 29, 2009 decision on the Mississippi River [10 CSR 20-7.031, Table H]:**
Uncertainties concerning the UAA process and procedures are minimal. Intensive stream morphology measurements, interviews, and a robust public participation process ensure adequate data are collected to determine existing and/or attainable recreational uses. Any assumptions that must be made are conservative and are intended to minimize any risk to human health.

m) **Revised delineation and mileages of water body segments [10 CSR 20-7.031, Table G and Table H]:**
The purpose of the revisions is to improve the clarity of the rule. This change did not significantly affect any risks to public health, welfare or the environment. No uncertainties or assumptions exist with respect to these revisions.

n) **Correction of Typographical Errors:**
No uncertainties exist with respect to correcting the typographical errors.

13. **Description of any significant countervailing risks that may be caused by the proposed rule**

a) **CWA Section 101(a) use designations [10 CSR 20-7.031(2)(A) – (J)]:**
The proposed designation of CWA Section 101(a) "fishable/swimmable" uses to currently unclassified waters will require a significant number of existing domestic wastewater treatment facilities to disinfect their effluent. Disinfection through chlorination can produce other harmful byproducts, such as trihalomethanes. Trihalomethanes are harmful to human health if consumed through drinking water supplies. Because discharges of treated effluent is prohibited above public drinking water supply intakes, this risk will only be posed where discharges are to losing streams that have a hydrologic connection to private wells and where sufficient treatment of the drinking water source is not provided. The Department is unable to determine the number of instances where this risk may exist but will assess for this risk at the time a discharge permit is requested and may require alternative means to disinfection, such as UV light, to eliminate the potential for introducing trihalomethanes into groundwater or drinking waters supplies. Chlorine is also an explosive and dangerous chemical and requires safe handling and storage practices at the facility.

Disinfection of effluent through chlorination may also result in residual chlorine that is harmful and toxic to aquatic life. Dechlorination of the effluent may be required to reduce the amount of total residual chlorine to levels protective of aquatic communities.

b) **CWA Section 101(a) use designation definitions [10 CSR 20-7.031(1)(G)]:**
There are no significant countervailing risks associated with making the clarification proposed by this revision.

c) **Clarification of "Early Life Stages" definition [10 CSR 20-7.031(1)(H)]:**
There are no significant countervailing risks associated with making the clarification proposed by this revision.

d) **Addition of variance authorizing provisions [10 CSR 20-7.031(12)]:**
There are no significant countervailing risks associated with making the addition proposed by this revision.

e) **New or revised CWA Section 304(a) numeric water quality criteria [10 CSR 20-7.031, Tables A1, A2, and A3]:**
The application of new or revised CWA Section 304(a) criteria may result in an increase or decrease in pollutant concentrations within waters of the state depending on the criteria. Existing aquatic communities are not expected to be affected by the change where new or revised criteria may be less stringent than currently found in rule. Full attainment of aquatic communities is expected as the new or revised criteria were developed to be protective of the use. No significant countervailing risks are expected for the proposed revisions.

f) **Revised numeric water quality criteria for phenol [10 CSR 20-7.031, Table A1]:**
The application of revised criteria for phenol may result in an increase in pollutant concentrations within waters that currently have permitted discharges for phenol. Existing aquatic communities are not expected to be affected by the change. Full attainment of aquatic communities is expected as the new or revised criteria were developed to be protective of the use. No significant countervailing risks are expected for the proposed revision.

g) **Revised numeric water quality criteria for sulfate and chloride [10 CSR 20-7.031, Table A2]:**
The application of revised criteria for sulfate and chloride may result in an increase in pollutant concentrations within waters that currently have permitted discharges for sulfate and chloride. Existing aquatic communities are not expected to be affected by the change. Full attainment of aquatic communities is expected as the revised criteria were developed to be protective of the use. No significant countervailing risks are expected for the proposed revisions.

h) **Revised numeric water quality criteria for DO [10 CSR 20-7.031, Table A3]:**
The application of revised criteria for DO may result in an increase in pollutant concentrations within waters that currently have permitted discharges for BOD. The amount of pollutant concentration increase would depend on the aquatic community use designation and the presence or absence of early life stages. Full attainment of aquatic communities is expected as the revised criteria were developed to be protective of the use and any new effluent limitations would be protective of critical conditions. No significant countervailing risks are expected for the proposed revisions.

i) **Designation of LaBarque Creek, Jefferson County as an OSRW [10 CSR 20-7.031, Table E]:**
There are no significant countervailing risks expected from the designation of LaBarque Creek, Jefferson County as an OSRW.

j) **Addition of MDC and Other Lakes [10 CSR 20-7.031, Table G]:**
The addition of MDC and other lakes to Table G is expected to produce countervailing risks similar to those found in Response 13a. No additional significant countervailing risks are expected.

k) **Changes to the designation of WBCR and SCR as a result of UAA [10 CSR 20-7.031, Table H]:**
There are no significant countervailing risks associated with the proposed rule specific to this section. Environmental effects might come from the recommended use designations through the discharge of disinfection by-products when chlorination is used as the disinfection process. Some residual chlorine may enter the receiving water from the disinfection process unless dechlorination processes are required. Dechlorination may also introduce other contaminants, such as trihalomethanes, which may be carcinogenic. Where recreation does occur, the risks to human health from the by-products are less severe than the risk of infection from non-treated effluent. Where recreation does not occur, the addition of the by-products would be the greater risk to the environment.

l) **Responding to EPA's October 29, 2009 decision on the Mississippi River [10 CSR 20-7.031, Table H]:**
There are no significant countervailing risks associated with the proposed rule specific to this section. Environmental effects might come from the recommended use designations through the discharge of disinfection by-products when chlorination is used as the disinfection process. Some residual chlorine may enter the receiving water from the disinfection process unless dechlorination processes are required. Dechlorination may also introduce other contaminants, such as trihalomethanes, which may be carcinogenic. Where recreation does occur, the risks to human health from the by-products are less severe than the risk of infection from non-treated effluent. Where recreation does not occur, the addition of the by-products would be the greater risk to the environment.

m) **Revised delineation and mileages of water body segments [10 CSR 20-7.031, Table G and Table H]:**
There are no significant countervailing risks associated with the proposed rule specific to this section.

n) **Correction of Typographical Errors:**
No countervailing risks have been identified in association with correcting the typographical errors.

14. **<u>Identification of at least one, if any, alternative regulatory approaches that will produce comparable human health, public welfare or environmental outcomes</u>**

In most cases, the purpose of the revision or addition is to make Missouri's WQS functionally equivalent to federal standards. Because federal technical guidance was

available in most cases, and development of state specific alternatives can be resource intensive, no other approaches or alternatives were considered. However, persons who believe another approach is available, and can be supported by sufficient rationale, are encouraged to submit an explanation of the alternative approach to the Department during the public comment period on the proposed rule.

a) **CWA Section 101(a) use designations [10 CSR 20-7.031(2)(A) – (J)]:**
State WQS must be functionally equivalent to federal standards. In the case of CWA Section 101(a) use designations, "fishable/swimmable" uses must apply to all waters of the United States. Alternative regulatory approaches to the current proposal to designate "fishable/swimmable" uses to the 1:100,000 scale NHD were considered during stakeholder and Department discussions. Alternative spatial extents to apply these use designations include the 1:24,000 scale NHD as well as all waters of the state. Designation of "fishable/swimmable" uses to either of these spatial extents would produce comparable human health, public welfare and environmental outcomes. However, the attainability of "fishable/swimmable" uses using these alternative approaches is unknown and their application and implementation could potentially be resource intensive for the Department (see Response 8a). For these reasons, the current proposal to designate "fishable/swimmable" uses to the 1:100,000 scale NHD was chosen.

b) **CWA Section 101(a) use designation definitions [10 CSR 20-7.031(1)(G)]:**
The Department has not identified any alternative regulatory approaches that would produce comparable results to the clarification proposed by this revision. Inaction would lead to greater confusion and potential misapplication of the rule.

c) **Clarification of "Early Life Stages" definition [10 CSR 20-7.031(1)(H)]:**
The Department has not identified any alternative regulatory approaches that would produce comparable results to the clarification proposed by this revision. Inaction would lead to greater confusion and potential misapplication of the rule.

d) **Addition of variance authorizing provisions [10 CSR 20-7.031(12)]:**
The Department has not identified any alternative regulatory approaches that would produce comparable results to the addition proposed by this revision. Inaction would maintain the status quo regarding variance issuance and approval, rather than increase and streamline the process.

e) **New or revised CWA Section 304(a) numeric water quality criteria [10 CSR 20-7.031, Tables A1, A2, and A3]:**
State WQS must be functionally equivalent to federal standards. The Department has not identified any alternative regulatory approaches that would produce comparable results to the changes proposed by these revisions. Therefore, no other approaches or alternatives to CWA Section 304(a) numeric water quality criteria were considered.

f) **Revised numeric water quality criteria for phenol [10 CSR 20-7.031, Table A1]:**
State WQS must be functionally equivalent to federal standards. The Department has not identified any alternative regulatory approaches that would produce comparable results to the changes proposed by this revision. Therefore, no other approaches or alternatives to

phenol numeric water quality criteria as found in federal technical guidance were considered.

g) **Revised numeric water quality criteria for sulfate and chloride [10 CSR 20-7.031, Table A2]:**
State WQS must be functionally equivalent to federal standards. However, alternative regulatory approaches sanctioned by EPA can be considered. Therefore, the Department considered other state developed, and federally approved, sulfate and chloride criteria. The use of EPA approved sulfate and chloride criteria as found in the State of Iowa's WQS constitutes an alternative or approach functionally equivalent to federal standards. The only other alternative that would produce comparable human health, public welfare or environmental outcomes is the current rule, which is more stringent than the proposed one.

h) **Revised numeric water quality criteria for DO [10 CSR 20-7.031, Table A3]:**
State WQS must be functionally equivalent to federal standards. The Department has not identified any alternative regulatory approaches that would produce comparable results to the changes proposed by this revision. Therefore, no other approaches or alternatives to DO numeric water quality criteria as found in federal technical guidance were considered.

i) **Designation of LaBarque Creek, Jefferson County as an OSRW [10 CSR 20-7.031, Table E]:**
The Department has not identified any alternative regulatory approaches that would produce comparable results to the designation of OSRW proposed by this revision. The only alternative regulatory approach available would be designation as an "Exceptional Aquatic Community" water, as defined at 10 CSR 20-7.031(1)(G)1.E. However, because LaBarque Creek in Jefferson County meets the criteria for the OSRW designation as found in rule at 10 CSR 20-7.031(9), the Department did not consider the alternative regulatory approach.

j) **Addition of MDC and Other Lakes [10 CSR 20-7.031, Table G]:**
The Department has not identified any alternative regulatory approaches that would produce comparable results to the application of "fishable/swimmable" uses proposed by this revision. Because existing "fishable/swimmable" uses have been identified for these waters, the only alternative regulatory approach available, UAAs, does not apply per 40 CFR 131.10(g).

k) **Changes to the designation of WBCR and SCR as a result of UAA [10 CSR 20-7.031, Table H]:**
Changes to WBCR (i.e., "swimmable") use designations must be accompanied by a UAA per 40 CFR 131.10(g). The Department has not identified any alternative regulatory approaches that would produce comparable results to the proposed changes in designations.

l) **Responding to EPA's October 29, 2009 decision on the Mississippi River [10 CSR 20-7.031, Table H]:**
Changes to WBCR (i.e., "swimmable") use designations must be accompanied by a UAA per 40 CFR 131.10(g). Designating this segment of the Mississippi River for WBCR instead of the proposed recommendation to designate the segment for SCR and apply the WBCR-Category B bacteria criteria, is an alternative regulatory approach and would produce a comparable result to the proposed changes. Rationale for the current proposal can be found in "Recommendation Regarding WBCR 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, March 10, 2011".

m) **Revised delineation and mileages of water body segments [10 CSR 20-7.031, Table G and Table H]:**
The Department has not identified any alternative regulatory approaches that would produce comparable results to the proposed revisions.

n) **Correction of Typographical Errors:**
Correcting the typographical errors in this rulemaking is the only reasonable alternative for addressing the errors.

15. **Information on how to provide comments on the RIR during the 60-day period before the proposed rule is filed with the SOS**

RIRs for current rule developments of the Water Pollution Control Branch may be found on the Water Protection Program Rule Development web page: http://www.dnr.mo.gov/env/wpp/rules/wpp-rule-dev.htm.

The comment period for this RIR is planned for [redacted] through [redacted]. Comments can be submitted by e-mail to John Hoke, john.hoke@dnr.mo.gov. Comments may also be sent by mail to:

John Hoke
Missouri Department of Natural Resources
Water Protection Program
P.O. Box 176
Jefferson City, Missouri 65102-0176

After publication in the *Missouri Register*, there will be another opportunity for public input during the open comment period and public hearing related to the proposed rulemaking prior to rule adoption.

16. **Information on how to request a copy of comments or the web information where the comments will be located**

Comments received may be viewed on the Water Protection Program Rule Development web page at http://www.dnr.mo.gov/env/wpp/rules/wpp-rule-dev.htm. Copies of these comments may also be requested directly from the program by e-mail from John Hoke, john.hoke@dnr.mo.gov or by telephone: (573) 751-6623.

Appendix A – Technical Documents and Data Used in Developing Proposed Rule

General Rulemaking Documents

1. Missouri Revised Statutes, Chapter 536 – Administrative Procedure and Review. http://www.moga.mo.gov/statutes/c536.htm

2. Missouri Rulemaking Manual, Missouri Secretary of State. http://www.sos.mo.gov/adrules/manual/manual.asp

3. Federal Clean Water Act. http://epw.senate.gov/water.pdf

4. Missouri Clean Water Law – Chapter 640. http://www.moga.mo.gov/statutes/c640.htm

5. Missouri Clean Water Law – Chapter 644. http://www.moga.mo.gov/statutes/c644.htm

CWA Section 101(a) use designations [10 CSR 20-7.031(2)(A) – (J)]:

6. EPA Water Quality Standards Letter, September 8, 2000.

7. Water Protection Forum - Water Classification Workgroup Agendas.

8. Water Protection Forum – "Small Streams Workgroup, Summary of Discussions on January 15, 2009; Missouri Department of Natural Resources; January 15, 2009".

9. Water Protection Forum – "Characteristics of unclassified streams sampled by the Resource Assessment and Monitoring Program; MDC; January 15, 2009".

10. Water Protection Forum – "Headwater Stream Aquatic Life Assessment of Aquatic Conservation Opportunity Areas; Missouri Department of Natural Resources; January 15, 2009".

11. Water Protection Forum – "National Hydrography Dataset (NHD) 1:100,000 Scale; Missouri Department of Natural Resources; January 15, 2009".

12. Water Protection Forum – "National Hydrography Dataset (NHD) 1:100,000 Scale; Missouri Department of Natural Resources; February 19, 2009".

13. Water Protection Forum – "Small Streams; Missouri Coalition for the Environment; February 19, 2009".

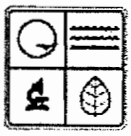
14. Water Protection Forum – "Categorical UAA Proposal; Missouri Department of Natural Resources; June 17, 2009".

In addition to the documents referenced above, previous draft and "strawman" versions of the WQS rule can be found on the Water Classification Workgroup web page at the following link: http://www.dnr.mo.gov/env/wpp/cwforum/adv-uncl-waters-wetlands.htm

15. Water Protection Forum – "National Hydrography Dataset (NHD) 1:100,000 Scale; Missouri Department of Natural Resources; February 19, 2009".

16. Water Protection Forum – "Small Streams; Missouri Coalition for the Environment; February 19, 2009".

17. Water Protection Forum – "Categorical UAA Proposal; Missouri Department of Natural Resources; June 17, 2009".



Missouri
Department of
Natural Resources

Public Comments

for

Regulatory Impact Report

General Comments

Submitted To

Missouri Department of Natural Resources

Water Protection Program

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 7
901 NORTH 5TH STREET
KANSAS CITY, KANSAS 66101

AUG 1 2 2011

RECEIVED

AUG 15 2011

WATER PROTECTION PROGRAM

Mr. John Hoke
Missouri Department of Natural Resources
Water Protection Program
P.O. Box 176
Jefferson City, Missouri 65102-0176

Dear Mr. Hoke:

This letter transmits the comments of the U.S. Environmental Protection Agency, Region 7, on Missouri's proposed rulemaking draft to the state's water quality standards (10 CSR 20-7.031) that is the basis for the Missouri Department of Natural Resources Regulatory Impact Report. We understand the public comment period closes on August 12, 2011. The EPA appreciates the opportunity to comment on the proposed rulemaking draft. We also understand that the draft rulemaking may change during the rulemaking process, and an additional opportunity to comment on the draft may be possible following action on the rule by the Missouri Clean Water Commission. Therefore, today's comments by the EPA reflect our preliminary review of the proposed rulemaking draft.

Proposed New provisions: (2) Designation of Uses

The EPA is pleased that the MDNR has included new provisions that address the Clean Water Act Section 101(a)(2) requirement that WQS must assign use designations for human recreation, protection of human health and aquatic life for numerous waters of the United States in Missouri that currently lack such designated uses. We are concerned that the proposed rulemaking draft is silent on the assignment of these CWA uses to many of the approximately 2570 Missouri lakes that intersect the United States Geological Survey's 1:100K National Hydrography Dataset spatial extent. The majority of these features are not currently identified in *10 CSR 20-7.031 Table G – Lake Classification and Use Designations*. The EPA understands that this proposed rulemaking draft identifies 46 new lakes to be added to Table G; however, the resulting number of lakes designated for protection falls far short of the number cited above. These lakes are currently protected only by Missouri's narrative and acute criteria. At a minimum, this rulemaking must include lakes that intersect the 1:100K dataset, excepting any waters that are found to not be waters of the United States.

The terms "unclassified" and "classified" waters within 10 CSR 20-7.031(4)(I) and (5), respectively, remain in the proposed rulemaking draft and appear undefined. It is not clear to the EPA how these terms are defined and/or their significance given the new (2) Designation of Uses provisions. Please specify the definitions of these terms in the context of the proposed rulemaking draft.

Proposed New Provision (2)(J) Implementation of new effluent limitations for discharges affected by subsection (2)(B) of this rule shall occur as authorized by state law and other rules, permits, settlement agreements, consent orders, compliance orders, compliance schedules or voluntary measures designed to achieve full compliance with the designations by June 30, 2020.

The EPA requests clarification from the state on the intent of this new provision. It is not clear as to whether this provision is intended to be applied as a compliance schedule provision. If it is a compliance schedule provision, the EPA recommends that such provision be consistent with the EPA's regulations at 40 C.F.R. § 122.47 which require that a compliance schedule only be included in a National Pollutant Discharge Elimination System permit where "appropriate" and require compliance with the final effluent limitation "as soon as possible." Additionally, any NPDES permit establishing a compliance date more than one year from permit issuance shall set forth interim requirements and dates for their achievement and/or progress reports.

Existing Provision (5) Specific Criteria (A) states: ***The maximum chronic protection criteria in Tables A and B shall apply to waters designated for the indicated uses given in Tables G and H....***

Subsection (5)(A) limits application of Missouri's numeric criteria to only those waters that have applicable designated uses listed in Tables G and H of 10 CSR 20-7.031; additionally, it also references Tables A and B while the proposed draft rulemaking appears to replace those tables with new numeric criteria identified in Tables A1, A2 and A3. The proposed rulemaking draft must be revised to apply all applicable numeric criteria to waters described in sections 2(A) and 2(B) of the proposed rulemaking draft. The provision also needs to identify the correct numeric criteria tables Missouri intends to implement.

In addition, EPA expects that Missouri's current antidegradation protections would apply to the waters described in section 2(A) and 2(B) of the proposed rulemaking draft.

Proposed Revisions to (5)(C)5. The *E. coli* count shall not exceed two hundred six (206) per one hundred milliliters (100 mL) of water as a geometric mean during the recreational season for the segment of the Mississippi River from North Riverfront Park to the confluence with the Meramec River.

The EPA understands that the proposed rulemaking draft attempts to address the EPA's October 29, 2009, determination that new or revised standards (i.e., standards supporting whole body contact recreation or WBCR) are necessary to meet the requirements of the CWA for this 28.6-mile segment of the Mississippi River around the City of St. Louis. The proposed rulemaking draft designates a secondary contact recreational use for this section of the Mississippi River, with the added provision at (5)(C)5 that the bacteria criteria sufficient to support the WBCR-Category B use be applied to the water body.

The EPA anticipates further discussion with the state to better understand this approach and how it will protect recreational users of this River segment consistent with the 2009 Determination.

(12) Variances.

The proposed rulemaking draft does not acknowledge the federal requirement that individual variances are water quality standards to be submitted to the EPA for review and approval prior to becoming effective for CWA purposes. A variance is a temporary revision to the applicable designated use and associated water quality criteria. The legal basis for granting a variance is that the state has fulfilled the same regulatory requirement for removing a designated use. As such, a variance is a revised WQS that must be supported on the basis of one of the factors specified in 40 CFR § 131.10(g), and requires review and approval by the EPA before it can be effective for Clean Water Act (CWA) purposes (40 CFR § 131.21(c)).

10 CSR 20-7.031 Tables A1, A2, and A3 – Numeric Criteria

The EPA's review of these numeric criteria tables is ongoing and we will offer comments if issues come to our attention with respect to new or revised criteria in the near future.

The EPA appreciates MDNR's continuing coordination on the proposed rulemaking draft revisions to its WQS regulations. Thank you for providing an opportunity for the EPA to participate in the stakeholder process and to provide these comments on the proposed rulemaking draft included with the Regulatory Impact Report. We look forward to working with you on this and the future proposed rule revisions to the State's WQS. If you would like to discuss our comments further, please contact me at (913) 551-7821, or Ann Lavaty, of my staff, at (913) 551-7370.

Sincerely,

John DeLashmit, P.E.
Chief, Water Quality Management Branch

NEWMAN, COMLEY & RUTH P.C.

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August 12, 2011

VIA E-MAIL: john.hoke@dnr.mo.gov
and U.S. Mail

Missouri Department of Natural Resources
Attention: John Hoke
Water Protection Program
P.O. Box 176
Jefferson City, Missouri 65102-0176

Re: Comments on Regulatory Impact Report for 10 CSR 20-7.031

To Whom It May Concern:

As the Missouri Department of Natural Resources (MDNR) is aware, I have actively participated in the stakeholder process leading up to the publication of the Regulatory Impact Report (RIR) for proposed changes to 10 CSR 20-7.031. Today, you received a copy of the enclosed letter signed by MPUA and other municipalities. I collaborated in the preparation of this comment and generally support the comments in this letter. I did, however, want to make several other comments on the regulatory impact report.

In Table A, the MDNR is proposing to change the dissolved oxygen (DO) water quality standard to closely mirror EPA's 304(a) criteria document. As written, this proposed standard presumably applies to all waters of the state. Under natural conditions, the proposed DO criteria will not be met in small, ephemeral streams that have little or no flow during the summer and fall months. These naturally occurring conditions will often result in instantaneous DO readings below the levels described in the proposed criteria in Table A3. Therefore, I suggest that the regulation be amended to clarify that application of this instantaneous minimum DO criteria only applies to permanent, flowing streams or lakes.

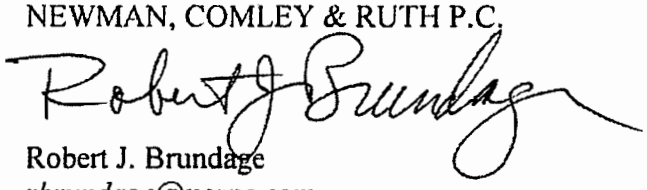
The enclosed letter from REGFORM and others comments on early life stages. It is difficult to comment upon a regulation that has not yet defined when early life stages are present. To date, there has been no stakeholder process to discuss when early life stages will be deemed

present. The stakeholder process should be initiated on this issue before the rule is published in the Missouri Register.

In the enclosed comments, there is a discussion of flow tiered effluent limits or criteria applicable to streams at differing flows. Presently, in 10 CSR 20-7.031(4)(A)4.F, it states that "discharge limitations may be based on higher stream flows if discharge volume or quality may be adjusted to correlate with stream flow." I have suggested that this language be broadened and expanded to fully acknowledge that different standards and effluent limitations may apply at different flow tiers. If the Department believes that this existing regulatory language is broad enough to allow the application of different standards and effluent limitations at different flow tiers, then the Department should confirm that this existing language provides all the authority needed for permit writers to fully implement flow tiered effluent limitations. Otherwise, I suggest the language be clarified. I also suggest that the mixing zone regulation be modified to clarify that mixing zones are available at different flow tiers.

Sincerely,

NEWMAN, COMLEY & RUTH P.C.

By: 

Robert J. Brundage
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RJB:jag

August 12, 2011

Mr. John Hoke
Missouri Department of Natural Resources
Water Protection Program
P.O. Box 176
Jefferson City, MO 65102

RE: Comments on the Draft Rule and Regulatory Impact Report for Revisions to Water Quality Standards 10 CSR 20-7.031.

Dear Mr. Hoke:

Thank you for the opportunity to comment on the Regulatory Impact Report (RIR) and draft revisions to the water quality standards at 10 CSR 20-7.031. The undersigned organizations/entities appreciate the Missouri Department of Natural Resources ("Department")willingness to work with stakeholders as evidenced by the changes to the rule as it has evolved over the past year. We are committed to revisions to Missouri's water quality standards that provide demonstrable protection for Missouri's aquatic resources and benefit for the citizens of Missouri, users of Missouri's streams, rivers and lakes. In that light, we believe there are some additional improvements that are needed that will make these rules and their implementation more feasible. Further, we believe that the RIR does not adequately quantify the regulatory and financial burdens that the rule will impose on permittees and ultimately the citizens of the State of Missouri. Lastly, we request that these comments be made part of the formal and final administrative record for this rulemaking. For ease of reference, we have organized our comments on the rule first (by section) and then on the RIR.

Comments on §7.031(1) Definitions

COMMENT: §(1)(G)1.A is not testable and unclear.

The definition of a warm-water aquatic community (WWA) as an "Indigenous warm-water aquatic community that occurs under natural water quality and habitat conditions" is unclear and not amenable to evaluation (i.e., statistical hypothesis testing). There is a significant body of technical literature and agency guidance stating that truly natural conditions do not occur. Thus, it is not clear what Missouri waters, if any, would fit this definition. How do we know what natural water quality or habitat occurred prior to development? Furthermore, how do we know what biota occurred under natural conditions?

As provided, the definition seems to intertwine natural condition concepts present in 40 CFR 131.10 and the upper (i.e., higher quality) end of the Biological Condition Gradient (BCG) associated with biocriteria literature. To evaluate attainment of this use, will the Department establish alternative water quality criteria that reflect natural conditions? In this regard, we note that Table A criteria do not support the natural condition concept. For example, several parameters listed in Table A are anthropogenic compounds that do not occur naturally. Furthermore, we note that draft biocriteria have not been codified into regulation and are therefore of questionable utility in assessing deviations from natural conditions. As the Department is aware, Missouri's biocriteria reference streams are the "best-available" representatives of natural conditions, but do not define the natural condition. In this regard, is the Department targeting aquatic communities and conditions of greater integrity than reference streams?

As included in BCG literature, aquatic life beneficial uses attainment does not infer that natural communities and condition must be present. Rather, waters that are pristine and closer to natural conditions achieve a level of biologic integrity above the minimum necessary to attain the use. We recognize that Missouri's current general warm-water fishery definition refers to the natural condition concept, but believe that definition to also be tenuous. All beneficial uses may be fully supported even when there are some deviations in the assemblage of organisms of a natural species composition. We believe the Department should consider a more accurate definition of WWA that reflects actual uses instead of a targeted level of protection that cannot be evaluated with current criteria. Under this comment, we also request that the Department publish any criteria (including biocriteria) in this rulemaking that would be used to assess attainment with the WWA use.

COMMENT: §(1)(G)1.E. The Exceptional Aquatic Community (EAC) use is a new use that has not been previously discussed with many stakeholders. It should be removed and addressed in a future rulemaking after there has been more opportunity for discussion.

This category attempts to combine two unrelated conditions into one. The first condition is waters containing "high diversity of aquatic species [or] unusual or unique assemblage of aquatic life." The second condition is waters containing listed threatened or endangered species (T&E). More specifically, the presence of T&E species do not necessarily mean that a waterbody is highly diverse. For example, the Topeka shiner (*Notropis topeka*) is an endangered species that occurs in headwater or small prairie streams. Small headwater streams typically are not as biologically diverse as larger perennial streams or rivers due to seasonal variation, dessication, high temperatures, etc. In this example, the presence of an endangered species (i.e., Topeka shiner) occurs in a waterbody that is not likely diverse. Thus, we question how the Department would determine attainment of this use. In addition, we strongly question the potential inclusion and implications of the EAC use for Missouri and Mississippi Rivers just due to the presence of pallid sturgeon (*Scaphirhynchus albus*).

This use was not vetted with broader stakeholder input and we are uncertain about how it will be implemented and what the implications are for this new use. In addition, it is not clear how water quality criteria would be applied to protect this use, which seems to be species or site-specific. Therefore, we request that the use be removed from this rulemaking to allow further time to discuss the purpose and implication for this new category.

COMMENT: The "aesthetic" use defined in §(1)(G)8 in the draft rule goes above and beyond the Clean Water Act 101(a) uses and should be removed.

§(1)(G)8 creates a new use for "Aesthetics" described as maintenance of conditions in waters to support aesthetic qualities as found in the General Criteria at 10 CSR 20-7.031(4). The referenced General Criteria are taken from federal and state Clean Water Laws and regulations and are also known as the "narrative criteria" or "free from criteria," e.g., free from odors, oil, scum, unsightly color, toxicity, solid wastes, etc. These criteria apply to all waters of the state [10 CSR 20-7.031(3)] and have long been part of Missouri's water quality standards and Missouri State Operating Permits. This regulatory approach is supported in the 1994 EPA"Water Quality Standards Handbook" which indicates that the narrative or general criteria apply to all designed uses at all flows. In fact, § 3.2.1 of the Handbook refers to and calls the narrative criteria, "aesthetic criteria." Nowhere in the 1994 "Water Quality Standards Handbook" does EPA refer to an "aesthetic use." It is clear that EPA and Missouri's own regulations intend for these narrative criteria to be broadly applied to protect all waterbodies of this state that have multiple and many different or unique uses. Defining these criteria as a "use" is flawed and should be removed from the draft rule for the following reasons.

Federal law and regulations do not define this use, and therefore, it is broader in regulatory scope than is required to comply with the Clean Water Act and we believe, ultimately have a detrimental effect on Missouri's streams by confusing the application of its narrative or general water quality criteria that are already there to protect Missouri's streams. Federal guidance for the establishment of unique or other uses, recognizes that certain streams possess unique features, conditions or uses that may require special protection. In these cases the unique condition or use is identified along with criteria necessary to protect the use. In this case the application or circumstances necessary for the assignment of an "aesthetic use" is unclear and vague. Additionally, no mention in the proposed rulemaking is made about criteria to protect such a use, a fundamental tenant of sound water quality standards.

The "aesthetic" use proposed by this rule is better defined not as a use but as a set of criteria, found in statute and rule. This approach is not consistent with the regulatory framework in which criteria are established to protect defined uses. In this case, the rule contains criteria to protect criteria, which is interesting and unique, but not very logical or sound.

The federal Clean Water Act has been implemented in the state successfully for 35 years without having the a defined use and the RIR lacks any compelling justification for the need to add it now.

Where there is a point source that is creating a violation of narrative criteria, the Department currently has the enforcement and permitting tools necessary to compel corrective action to achieve compliance so the "aesthetic" use as defined is unnecessary.

The RIR states that the addition of the "aesthetic" use will allow for clarity in 303d listings and TMDLs. On the contrary, the listing of waterbodies for issues such as odor and color will be extremely difficult to implement; will potentially expand the 303d list with further unsolvable listings; and force additional

TMDLs on an agency already struggling with limited resources. As an example, in the autumn, the Department often receives complaints about the black color of the water, which upon investigation is found to be fallen leaves creating a "tea" in the water. Likewise, there is a waxy brown substance that appears on the surface of larger rivers at certain times of the year. This is usually the residual from decayed leaf matter that washes into the river after storm events. Stagnant flood waters can cause odors and other nuisances. If three such complaints are received on a water given waterbody, would this lead to impairment of the "aesthetic" use? While today this seems like a remote possibility, our present circumstance of a 303d list filled with dissolved oxygen (DO) impairments based on low natural DO conditions coupled with a faulty water quality standard seemed unlikely not too long ago. We believe that the proposed change creates a potential for unnecessary work by both the department and the regulated community and does not appear to solve any real water quality problem.

COMMENT: In §(1)(H), the rule should make it clear that "Early Life Stages" applies to fish only.

Consistent with the Gold Book standard, the current rule should be clear that when establishing criteria for DO or ammonia, that the presence of early life stages should apply to fish species only. It appears that the word "fish" was removed from the rule in response to MDC comments, however this is incorrect. The standards are established on the basis that protection of early life stages of fish are protective of other aquatic life species. The following are from *Quality Criteria for Water 1986 (EPA 440/5-86-001):*

> The warmwater criteria are necessary to protect early life stages of warmwater fish as sensitive as channel catfish and to protect other life stages of fish as sensitive as largemouth bass. Criteria for early life stages are intended to apply only where and when these stages occur. These criteria represent dissolved oxygen concentrations which EPA believes provide a reasonable and adequate degree of protection for freshwater aquatic life *(p. 210) (Emphasis added).*

> Criteria for coldwater fish are intended to apply to waters containing a population of one or more species in the family Salmonidae. Although the acute lethal limit for salmonids is at or below **3** mg/L, the coldwater minimum has been established at 4 mg/L because a significant proportion of the insect species common to salmonid habitats are less tolerant of acute exposures to low dissolved oxygen than are salmonids *(p.209).*

We suggest the following language:

> (H) Early life states – **Any of the following life stages of fish species: t**~~T~~he pre-hatch embryonic period, the post-hatch free embryo or yolk-sac fry, the larval stage, or the juvenile state during when the organism feeds. Juvenile fish, which are anatomically rather similar to adults are not considered an early life stage.

COMMENT: The Department should specify by rule where ELS are absent.

In §(1)(H), the Department should specify default seasons or months where "Early Life Stages" (ELS) of fishes are believed absent, or present in reduced numbers, from each aquatic life use category proposed in this rule so that criteria and associated water quality based effluent limits are not more restrictive, and

therefore, more financially burdensom, than intended by federal water quality criteria guidance. Several states have explicitly specified periods where ELS are presumed present or absent. These include two states that border Missouri, Kansas and Illinois. Both states identify early life states present or absent for the respective seasons for compliance with DO and ammonia limits.

As bordering states with comparable climate have specified default ELS periods within regulation, we believe the Department has the authority to do so as well. We recognize that there may be unique biological communities represented by certain aquatic life use classifications or stream sizes that may require ELS periods that differ from the Kansas or Illinois setting. However, we believe that agency and research biologists have sufficient knowledge of Missouri fishes and fish communities to assign default periods where ELS are likely absent to a broad set of waters.

COMMENT: The rule should specify that a Use Attainability Analysis (UAA) is not needed to modify, where appropriate, the period where ELS are presumed absent.

We believe that a properly designed and performed biological investigation, under an approved Quality Assurance Project Plan, is sufficient for determining the ELS period for specific waterbodies. We believe this biological assessment is the regulatory equivalent of determining site-specific temperature or pH assumptions to implement ammonia criteria, or site-specific hardness assumptions for applying heavy metals criteria. Therefore, we request the Department to (1) identify default ELS periods within the upcoming rule and (2) incorporate by reference (or description) a biological assessment procedure that may be used to modify ELS assumptions where and when supported by scientific data.

COMMENT: The term "waters of the state" should specifically exclude manmade wastewater effluent conveyances in §(1)(AA)1.

The draft rule accompanying the RIR appropriately excludes manmade waste treatment and stormwater controls from "waters of the state." We assert that manmade wastewater effluent conveyances should also be excluded from "waters of the state."

Comments on §7.031(2) Stream Classification

COMMENT: §(2)(A) should be amended to make it clear that only perennial rivers and streams and intermittent streams with permanent pools classified prior to the upcoming rulemaking shall be assigned the presumptive beneficial uses of the Clean Water Act.

It is our understanding that the Department's intention for §(2)(A) is to ensure that all currently classified waters are assigned appropriate beneficial uses, in addition to streams represented by the 1:100,000 scale National Hydrography Dataset. The draft rule accompanying the RIR does not clearly convey the Department's intention. Therefore, we recommend the following specific revision in the proposed rule. If this is not the Department's intention, we request further dialogue with stakeholders regarding this important issue.

(2)(A) All perennial rivers and streams and intermittent streams with permanent pools **with designated general warmwater fishery beneficial uses as of December 31, 2009** shall, at a minimum, support Warm-water aquatic community; Human health protection; Whole body contact recreation Category B; Secondary contact recreation; *and* Livestock and wildlife protection, as defined at (1)(G) of this rule.

COMMENT: Irrigation use and "aesthetic" use are not presumed uses under the Clean Water Act 101(a) uses and should not be included as presumed uses in this rule.

§(2)(A) adds irrigation and a newly defined "aesthetic" use to the list of presumed uses. The purpose statement in the rule states that the "revisions are pursuant to the national goal" of §101(a)(2) of the Federal Clean Water Act, which states 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"* (emphasis added). If the purpose is to bring standards in line with federal goals, the rule should not exceed those goals. Irrigation is not designated as a presumed use and we request that the Department remove this from §(2)(A). Irrigation should be considered under §(2)(D) as a use that may be designated on a site-by-site basis. The newly defined "aesthetic" use is not a use under the Clean Water Act §101(a)(2) (see discussion above), but a set of a criteria under Missouri law. There is no basis given for including this as a "presumed use" in this subsection.

COMMENT: The rule should contain a process for adding waters to the dataset and list maintained under (2)(C), i.e., the "on-ramp."

The rule is clear about the process for removing uses but does not define any process or criteria for adding a waterbody to the list of classified waters. The rule should require a rigorous scientific process, equivalent to a UAAto demonstrate that a waterbody currently not represented by the 1:100K scale should be added to the dataset described in §(2)(C). We suggest the following language to §(2)(F):

(F) A use attainability analysis (UAA) must be performed when the Department:

4. Proposes to add a waterbody that is not spatially represented by the 1:100,00 scale National Hydrography Dataset (NHD) to the dataset and list of waters maintained under §(2)(C).

5. Proposes to add one or more of the uses listed in §(2)(A) to a waterbody where it believes a use is attainable that is not currently designated.

COMMENT: The statement under §(2)(A) stating that "uses are consistent with ...the Clean Water Act, §101(a)(2)" should be removed.

The uses listed in the current draft are considerably broader than the Clean Water Act §101(a) uses. The statement is misleading in that it could lead to the conclusion that the state presumptive uses are essentially the same as the federal, which is not the case. The irrigation and "aesthetic" uses that have been added to the most recent draft are not in the federal rule and represent an increased regulatory scope over the federal rule.

COMMENT: The statement under §(2)(D) regarding the "uses defined in paragraphs (1)(G)1-12" should be removed.

§(2)(D) states that the "uses defined under paragraphs (1)(G)1-12 are consistent with protection in accordance with the Clean Water Act §§101(a)(2) and 303(c)(2)(A)." It is not clear what purpose is served by including this sentence. It is potentially misleading in that the uses defined under (1)(G) are substantially broader in scope than the federal uses, so while federal and state may not be in conflict, they are far from similar. On the other hand, the state uses do not include navigation, contrary to the federal law, which says that in establishing standards states must consider "their use and value for public water supplies, propagation of fish and wildlife, recreational purposes, and also taking into consideration their use and value for navigation." Therefore, on two accounts, this statement is inaccurate and should be removed.

COMMENT: The modification to §(2)(K) is not an acceptable alternative to the language in the previous draft and should be changed to reflect the early intent.

Previous drafts of the rule contained the following language:

> (J) UAAs intended for aquatic life protection shall be performed in accordance with methods and procedures found in "Missouri Aquatic Life Protection Use Attainability Analyses: Waterbody Survey and Assessment Protocol" to be developed by the Department and adopted by the Missouri Clean Water Commission. Implementation of new effluent limitations for discharges affected by subsections (2)(C) and (2)(D) of the rule shall not occur until such time this document is adopted and available for use.

The intent of this statement was to ensure that the aquatic use protocol was in place with sufficient time to allow permittees to perform the necessary UAAon receiving streams. The timing is critical because without it, revised permit limits for dischargers to classified streams could become effective immediately upon first permit renewal after the effective date of this rule. If there is no protocol, the permittee may be subject to revised limits without an opportunity to assess the reach to determine what uses it will attain.

The language in the current draft is:

> (J) Implementation of new effluent limitations for discharges affected by subsection (2)(B) of this rule shall occur as authorized by state law and other rules, permits, settlement agreements, consent orders, compliance orders, compliance schedules or voluntary measures designed to achieve full compliance with the designations by June 30, 2020.

This new language does not provide the same assurance that dischargers will have the opportunity to conduct the necessary analyses or take other steps to prepare for the changes to effluent limitations. The June 30, 2020 full compliance date does not prevent the Department from issuing revised effluent limits at any time after the rule effective date. With this language, the implementation of §(2)(B) is completely unpredictable and is left to the preferences of individual permit writers, supervisors and management.

We strongly object to this change and ask that the the Department restore the previous language or similar language that will hold the Department accountable and provide assurance and predictability to the process for the benefit of those who will implement these changes.

Comments on §7.031(5)(A)4. Mixing Zones

COMMENT: The draft rule does not provide clear applicability of mixing zones for stream networks with differing beneficial uses or under dynamic flow or water quality conditions.

The applicability of mixing zones in stream networks with differing beneficial uses is unclear within §(5)(A)4 of the draft rule accompanying the RIR. We assert that mixing zones are appropriate within downstream waters if upstream beneficial uses differ. For example, application of a mixing zone to meet chronic warm-water aquatic community (WWAC) criteria in a downstream water with WWAC designation is appropriate if the upstream water is designated as a modified aquatic community (MAC) and protected by applicable criteria. In this example, a mixing zone should be allowed to transition from the MAC criteria to WWAC criteria. We recommend the following revision to §(5)(A)4.A.

> A. The mixing zone shall be exempted from the chronic criteria requirements of this section for those components of waste that are rendered nontoxic by dilution, dissipation, or rapid chemical transformation. Acute numeric criteria of Tables A and B and whole effluent toxicity requirements of subsection (4)(I) must be met at all times within the mixing zone, except within the zone of initial dilution. **Mixing zones are allowed in downstream waters with beneficial use designation or water quality standards that differ from upstream waters. The size of mixing zones within such downstream waters will be determined in accordance with subsection (5)(A)4.B. and F.** The following criteria do not apply to thermal mixing zones. Criteria for thermal mixing zones are listed in paragraph (5)(D)6.

COMMENT: The rule should better clarify the use and application of mixing zones and wasteload allocations for streamflow values exceeding steady-state low-flows (e.g.,, 7Q10, 30Q10 etc.).

Language currently in place at 10 CSR 20-7.031(4)(A.)4.F.states:

> "Mixing zone and zone of initial dilution size limits will normally be based on streams at the 7Q10 low flow. However, this percent of stream size limits also applies at higher stream flows and discharge limitations may be based on higher stream flows if discharge volume or quality may be adjusted to correlate with stream flow."

In this language, it is not clear what endpoint is being considered or targeted in the referenced correlation. The following brief discussion supports a revision of §(5)(A)4.F to explicitly state that water quality standards serve as the endpoint for all streamflow conditions. Technical frameworks that support water

quality criteria as the endpoint throughout a range of flow conditions are the continuous or stochastic (i.e., Monte Carlo) modeling approaches.

In addition to the critical condition (e.g.,, 7Q10) approach, federal technical guidance supports the application of continuous simulation modeling in determining wasteload allocations, water quality-based effluent limits, and Total Maximum Daily Loads. Continuous simulation modeling predicts water quality throughout the range of flows, as they occur in response to precipitation events, temporal patterns of point-source loading, and water withdrawls (where present). In other words, continuous simulation modeling yields a more realistic depiction of receiving water quality than the critical-condition approach that assumes that extreme hydroclimatic conditions (e.g.,, high temperatures, low-flows) occur in tandem with maximum effluent loads. We recognize that the continuous simulation approach requires additional resources to perform successfully. However, we believe that permittees should have the opportunity to utilize a continuous approach where critical-condition methods yield a more restrictive wasteload allocation than is supported by the criterion frequency or duration specified within federal criteria documents.

To resolve these concerns, we propose that 10 CSR 20-7.031(4)(A.)4.F. read as follows:

> Mixing zones and zones of initial dilution will normally be based on streams at the 7Q10 low flow. ~~However, this percent of stream size limits also applies at higher stream flows and discharge limitations may be based on higher stream flows if discharge volume or quality may be adjusted to correlate with stream flow.~~ **Where approved by the Department, permittees may use a continuous simulation or comparable approach to evaluate receiving water quality throughout, and in proportion to, the range of flows that occur within a waterbody. Where justified by attainment of water quality criteria and following satisfaction of 10 CSR 20-7.031(4)(A.)4.E., the Department may approve water-quality based effluent limits that incorporate mixing allowances that differ from mixing flows or percentages specified under 20-7.031(4)(A.)4.B.**

Comments on §7.031(11) Compliance with Water Quality Based Limitations

COMMENT: Missouri should provide greater flexibility in establishing compliance schedules for achieving compliance with water quality based effluent limitations, as allowed by federal regulations.

Missouri's current water quality standards limit compliance schedules to achieve compliance with water quality-based effluent limitations (WQBELs) to no later than three years, which does not provide the flexibility afforded under federal regulations (40 CFR 122.47) and guidance (*Compliance Schedules for Water Quality-Based Effluent Limitations in NPDES Permits*, Memorandum from James Hanlon dated May 10, 2007). Permittees frequently face significant challenges with meeting the current three-year maximum compliance schedule, considering the planning, financing, design, construction, and start-up phases needed to construct and implement new facilities particularly in the present economic turmoil. Without additional flexibility, permittees will likely continue to face administrative orders to gain additional implementation timeframes, representing a significant burden to both permittees and the

Department. While we support the appropriate use of water quality standards variances, the variance process is not amenable to providing the necessary flexibility. Therefore, we recommend the following specific language in the proposed rule.

> (11) Compliance with Water Quality Based Limitations. Compliance with new or revised National Pollutant Discharge Elimination System (NPDES) or Missouri operating permit limitations based on criteria in this rule shall be achieved with all deliberate speed ~~and no later than three (3) years from the date of issuance of the permit except where~~ **or as** provided for otherwise in 10 CSR 20-7.015(9)(H) and 10 CSR 20-7.031(2)(J). Variance from Water Quality Based Limitations may be requested in accordance with § (12) of this rule.

Comments on §7.031(12) Variances

COMMENT: Missouri should carefully consider regulatory provisions for water quality standards variances so these tools are not unduly limited.

The draft rule accompanying the the Department RIR provides a new section specific to variances from water quality standards. Variances provide the state will a very useful tool to grant additional timeframes to achieve appropriate water quality standards. We are concerned that the Department's draft rule includes provisions that may produce unintended consequences that limit the use of this valuable regulatory tool. Specifically, §(12)(A)2. includes provisions that eliminate variances if standards or criteria will be attained by implementing effluent limits per §7.015, which includes both technology- and water quality-based effluent limitations. However, WQBELs may be unattainable due to technology limitations or financial impacts that cause substantial and widespread economic and social impacts. These factors appear appropriate for water quality standards variances and could be excluded with the current draft rule. The 1994 Water Quality Standards Handbook and 40 CFR 131.34(c)(2) refer to compliance with technology based effluent limitations as a reason to deny or reject water quality standards variance requests. The verbiage of the proposed regulations must be adjusted to clarify and remove water quality based effluent limitations as justification for denial of variance requests.

We also note, that the variance language of the proposed rule in §(12)(A)3 references §7.031(4). Please clarify that this section pertains to the new §7.031(4) which pertains to the General Criteria.

In addition, the draft rule (§(12)(B)) includes a demonstration that achieving WQBELs or water quality standards is infeasible due to the provisions of 40 CFR 131.10(g). While §131.10(g) is appropriate for assessing beneficial use attainability, these provisions are not always applicable to meeting WQBELs or water quality criteria. For instance, WQBELs may not be feasible due to the limits of treatment technology, which is not a §131.10(g) factor. In this example, the draft rule language may exclude the appropriate use of water quality standards variances. We recognize that the factors contained in§131.10(g) are, in many cases, an applicable component of the variance demonstration. However, we are requesting the Department give consideration in the regulation to unique circumstances that are not specifically addressed by the factors identified in §131.10(g).

Also, §12(D) indicates that the variances will be promulgated with the water quality standards at the next triennial review. This requirement goes beyond what is required for variances. The previously mentioned Water Quality Standards Handbook indicates each individual variance is to be included with the water quality standards. Likewise, 40 CFR 131.34(c)(2) indicates that the water quality variance is authorized by the standards and implemented through the permit. Promulgation of the variances at the next scheduled triennial review is not required, not necessary and unduly burdensome for the permittees and the Department alike. We recommend deleting or modifying this section of the proposed regulations.

Lastly, we recommend deleting §(12)(A)2. and §(12)(B), unless revised language can be added to mitigate these concerns. We also recommend that the Department prepare a detailed water quality standards variance procedure through a stakeholder process to provide the public with a clear understanding of the variance process and requirements that includes guidance as to how these new variance procedures impact the variance procedures of § 644.061 RSMo.

Comments on Table A1-A3

COMMENT: Missouri should defer adopting the EPA criteria for nonylphenol.

Reeves and Littlehat[1] state that at press time, EPA regional offices were not aware of any other states or cities implementing nonylphenol (NP) as a standard besides Colorado and the District of Columbia. Colorado adopted the national criteria for NP with a delayed effective date. The Colorado Wastewater Utility Council had requested an extension of the effective date, citing the lack of an EPA-approved analytical method and the lack of ability to identify and control NP and its parent compounds in wastewater influent. EPA released an action plan August 18, 2010, addressing NP and nonylphenol ethoxylates (NPEs).[2] NPEs are nonionic surfactants that are used in a wide variety of industrial applications and consumer products, such as laundry detergents. NPEs can break down into NP in sewers, wastewater treatment facilities and the environment. EPA is supporting the voluntary phase-out of NPEs in laundry detergents and considering regulatory action under the Toxic Substances Control Act. Missouri should hold off on adopting NP criteria, which could result in permit limits for wastewater treatment facilities. Give EPA's source control initiatives time to reduce NP in the environment instead of requiring wastewater treatment facilities to treat it, which could be costly.

COMMENT: The rule in Table A3 should be clear that "Early Life Stages" applies to fish only.

Consistent with the Gold Book standard, the current rule should be clear that when establishing criteria for DO or ammonia, the presence of early life stages should apply to fish species only. It appears that the word "fish" was removed from the rule in response to MDC comments, however, this is incorrect. The standards are established on the basis that protection of early life stages of fish are protective of other aquatic life species. (See discussion above.)

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[1] Reeves, S. and P. Littlehat (May 2011). "Microconstituents: What to expect in your permit," *Water Environment & Technology* 23(5), pp. 46-51.

[2] http://www.epa.gov/oppt/existingchemicals/pubs/actionplans/np-npe.html, accessed June 13, 2011.

We request that footnote 1 be revised to read: "1 – Includes all embryonic and larval stages of fish and all juvenile forms of fish to 30 days following hatching."

COMMENT: The footnote of Table A3 should be modified to be consistent with criteria language from the Gold Book related to periodic cycles of DO concentration that naturally occur in waterbodies. The language we recommend including is as follows:

> **During periodic cycles of DO concentrations, minima lower than acceptable constant exposure levels are tolerable so long as:**
>
> 1. **The average concentration attained meets or exceeds the criterion;**
> 2. **The average DO concentration is calculated as recommended in Table 3 of the DO criterion included in the 1986 Gold Book Water Quality Criteria document; and**
> 3. **The minima are not unduly stressful and clearly are not lethal.**

COMMENT: The Department should clarify what DO criteria in the proposed rule will apply within mixing zones and to unclassified streams.

As currently written at 10 CSR 20-7.031(4)(A.), water quality criteria not labeled as "acute" criteria are considered "chronic criteria". According 10 CSR 20-7.031(4)(A.)4.B, chronic criteria apply to the edge of the mixing zone, while acute criteria must be outside of the zone of initial dilution. The draft DO criteria in Table A3 are labeled as neither chronic nor acute. Therefore, the Department should clarify what DO criterion applies **within** mixing zones. Furthermore, as waters without designated beneficial uses are protected through implementation of acute and general criteria at 10 CSR 20-7.031(3)(I)1, the absence of an "acute" criterion in Table A3 calls into question what DO criteria apply to unclassified waters, if any. To resolve these concerns, we propose modifying footnote #4 on Table A3 to read as follows:

> 4 - All minima should be considered as instantaneous concentrations to be achieved at all times. **Minima criteria protective of other life stages in this table shall apply to all waters protected by narrative criteria and outside the zone of initial dilution within waters protected by chronic water quality criteria that have been assigned an approved mixing zone by the Department.**

Comments on Related Regulatory Issues

COMMENT: In subsection (5)(S) Site-Specific Criteria Development for the Protection of Aquatic Life, the Department should implement EPA's 2007 updated criteria for copper, which uses the biotic ligand model (BLM) to determine bioavailability of copper.

For example, a paragraph could be added to (5(S)1 noting that site-specific criteria for copper may be developed on a case-by-case basis using the approach described in EPA's *Aquatic Life Ambient Freshwater Quality Criteria – Copper 2007 Revision* (EPA 822-R-07-001).

John Hoke
August 12, 2011

Comments on the Regulatory Impact Report

COMMENT: Section 1a. This section references the development of a UAAfor aquatic community designations. No cost is show in this RIR for developing this UAA procedure, nor are costs delineated for actually performing the aquatic UAAs. With the change in definition of aquatic life to aquatic community, and the addition of juvenile stages, it is believed that many more of these UAAs will need to be performed to determine where the associated uses are attainable.

COMMENT: The RIR, Section 4, does not fully delineate costs for the addition of 100K waters.

We note that the Department is not using more recent cost estimates for municipals whose wastewater assets are affected by this rule change. The State Revolving Loan Fund and recently-completed 604(b) grant funded infrastructure projects were not considered. The Federal Stimulus List generated a list of shovel-ready projects throughout Missouri, yet these requests were not used as a basis for establishing costs. The State's ARRA grant-funded 604(b) project perfomed by the Missouri's Regional Planning Commissions yields cost data from entities that serve less than 5,000 people. For example, the Boonslick Regional Planning Commission enumerates two municipalities (Middletown and Montgomery) and two villages (Truxton and Rhineland) that are upgrading their wastewater systems to include disinfection. The Department's desire not to use the current engineered costs estimates is perplexing and concerns advocates for locally-owned and locally-controlled municipal utilities.

We also believe that a subset of the municipal permittees that operate lagoons systems will be affected by this rule change. The lagoon policy used by Missouri's regulatory agency requires permittees that discharge to "unclassified waters" (using the current definition) monitor for ammonia. This new rule will change the receiving water determination of "unclassified water" to "classified water" for 175 municipalities utilizing lagoons with flows ranging between 0.05 to 1.0 MGD. This fact will require these municipalities and other private sewer providers, to comply with numeric ammonia criteria. Compliance with ammonia effluent limits will be a significant cost for municipalities, particularly smaller entities. In a review of one hundred four (104) municipal permittees (60% of the sample size) that have lagoon systems, we note that eighty (80) have a "monitor only" requirement at present. These permittees will, in most cases, be required to comply with ammonia effluent limits during their next permit cycle. In several of the above-mentioned 104 municipalities, this compliance will be mandatory in less than five (5) years due to the cycle of permit renewals. In only ten (10) cases are permittees currently required to meet ammonia effluent limits. In order to gain an understanding of the cost required to comply with the upcoming ammonia limits, a detailed analysis must be completed. As a cursory analysis, we contacted a Southwest Missouri municipality of 4,540 people and found that they spent $3,500,000 for an ammonia reduction project.

Using Tables 4.1 through 4.5 in the RIR, the capital cost of disinfecting with chlorination is estimated at $16,100 for systems that discharge between 0.05 MGD and 1.0 MGD. The capital cost of disinfection using ultra-violet (UV) light is $117,100. Recent inquires from the above-mentioned municipal systems

found the following cost data. One southwest Missouri municipality serving 1,320 people discharging 0.11 MGD (dry weather flow as listed in the NPDES Permit) will spend $470,000 in capital cost to construction chlorine disinfection facilities. In addition to the disinfection equipment, this community needed substantial earthwork; an effluent discharge structure & piping; a chlorine contact basin; chlorination/dechlorination system (including a fiberglass enclosure; electrical works; and a discharge piping and headwall. Many rural lagoon systems have similar circumstances as they are, in many cases, not close to a power sources and do not currently have facilities to supply to needed contact time to the effluent. This municipality is one such community. A second SW Missouri municipality serving 980 people with a flow of 44 million gallons per year through an irrigation system spent $180,000 for a used UV system. The community was required to install this equipment to use as needed when it cannot irrigate effluent to adjacent lands and it must discharge into an unclassified stream (the stream will become classified with this new rule). Third, a SE Missouri municipality spent $138,000 for chlorine disinfection. They serve 2,940 people and produce 0.43 MGD (actual flow listed in their NPDES Permit). Fourth, a small city in Saline County will be spending approximately $700,000 for UV disinfection, land application appurtenances, and sludge removal & dewatering next year. They have approximately 1,300 people with a flow of 0.78 MGD. Finally, a municipality in west-central Missouri is planning to spend $30,000 for chlorination / dechlorination. The City Clerk is "very concerned about the ongoing chemical cost" for the new system. This City's flow is 0.2 MGD and serves 1,025 people.

The Boonslick Regional Planning Commission listed four entities in their 604(b)-grant funded project that have current (Fall 2010) costs for disinfection. They include: Middletown at $44,057.07; Montgomery at $54,670; the village of Truxton at $101,525; and the village of Rhineland for $ 71,622. This data represents only one of the nineteen Regional Planning Commissions. An exhaustive search will undoubtedly show that many more disinfection cost examples exist.

While these are anecdotal inquiries, they are representative of the fact that the cost estimates in the RIR are, at least in some cases, significantly below the actual cost of the facilities that are required for installation. These costs affect affordability especially when coupled with other costs that communities are facing related to all infrastructure needs of repair and replacement of aging sewers, water distribution/treatment facilities, roads, and bridges, not to mention future not-yet-accounted-for wastewater treatment costs related to changing stream criteria such as ammonia and nutrients.

While we recognize that this rulemaking does not strictly pertain to the implementation/development of nutrient or revised ammonia criteria, we do believe it is critical to point out that the ever increasing list of revised or newly promulgated water quality criteria pose a strong potential for significant economic burden without a corresponding benefit for the environment. One example is the nutrient rule for lakes and reservoirs (not approved on the day of drafting these comments) and the yet to be developed stream nutrient criteria. The implementation of these criteria will have a significant cost and economic impact on the regulated community and ultimately the citizens of Missouri without a demonstrable benefit to aquatic communities. To date, the only environmental impact that has been shown by the Department is the presence of certain types of algae in certain Ozark streams where elevated levels of nutrients are present. All the while, these streams continue to attain full and robust aquatic communities.

We would like to call the Department's attention to a number of studies have been completed and many are ongoing on how states can implement this latest EPA mandate related to nutrients. There are a number of methods available to states given the flexibility under the federal rules. The National Association of Clean Water Agencies (NACWA) has encouraged EPA to consider allowing these methods as states progress. A copy of the letter is attached. Costs of upgrading treatment facilities to remove phosphorus and nitrogen vary with the size and type of the original facility. Some facilities, such as lagoons, faced with a number of requirements (reduced ammonia limits, disinfection, peak flow reduction, and now nutrients) may have to move from a physical treatment facility to a mechanical plant. Costs for new treatment plants are easier to determine, but harder to pay for. Because this rulemaking will designate an additional 85,000 miles of streams for WBC and AQL protection, and these streams are the smallest of the small, no mixing zones or dilution will be allowed when calculating effluent limits. While it is unclear what exact numbers will be eventually listed in effluent limits, a review of recent TMDL waste allocations for municipal discharges would lead us to believe that streams with naturally occurring low DO will be deemed as impaired by nutrients and unreasonable or unattainable limits applied to the wastewater treatment facility. Nutrient removal costs were the subject of a WERF study* and approximate costs for nutrient treatment are listed below:

Treatment Level	Capital, $/gpd	O & M, $/MG
BOD Removal (Secondary)	7.3	190
TN $\leq$ 8 mg/l, TP $\leq$ 1 mg/l	12.5	340
TN $\leq$ 5 mg/l, TP $\leq$ 0.3 mg/l	13.3	510
TN $\leq$ 3 mg/l, TP $\leq$ 0.1 mg/l	13.8	690
TN $\leq$ 1 mg/l TP $\leq$ 0.01 mg/l	20.0	1180

*Source: WERF Research Forum Webcast "Nutrients, Sustainability and Bioavailability; What We Know about Removing Nutrients in Wastewater", December 7, 2010

Other studies have noted that upgrade costs to move from a plant currently achieving secondary treatment (BOD of 30 mg/l and TSS of 30 mg/l monthly averages) range from $7.90 per gallon per day of capacity to a high of $16.90 per gallon per day of capacity. Operating costs, excluding labor and maintenance range from $190 to $690 per million gallons treated. Also of note, it is important to consider that the larger the facility, the more cost effective the improvements. Upgrades to very small facilities (under 10 MGD) are disproportionately expensive. In Missouri, many of these facilities are lagoons, and so will

have to construct new facilities to meet expensive nutrient requirements. The Department has not delineated these costs anywhere in this report, nor in previous reports. Stakeholder meetings regarding nutrients have frequently noted that levels of nutrients cannot be tied to specific beneficial uses protections, or impairments of use. Without this specificity and scientific basis, costs such as those listed above are difficult to justify both on a state-wide level as well as a local level. In addition, it is frequently noted that non-point sources contribute much more nutrients in many watersheds, yet the permitted dischargers will be required to meet very stringent nutrient limits, potentially with no net improvement in the downstream waterbodies. The Department should exercise all flexibility available to them under federal Clean Water Act rules to assure that requirements placed on dischargers will result in net gains in water quality with a corresponding demonstrable improvement in aquatic communities, while looking at the overall sustainability of communities and the environment. Increased power requirements, chemical production and transportation, and facilities that are more prone to upset should all be considered in the equation.

COMMENT: Section 3b states that no monetary effect is expected from the changes to the use designations. We disagree and believe that if the current definitions are left unchanged, there are significant unknown long term costs that are not accounted for in the RIR.

COMMENT: Section 3c does not identify those discharges who will be affected by changes to the definition of early life stages. This change could affect the application of DO and ammonia criteria. We encourage the Department to keep the current definition of early life stages, which applies to fish only and is consistent with the federal standard. If the Department retains the current draft change, then the RIR should reflect the potential affected permittees and any costs associate with this change.

COMMENT: In regard to Section 1c, we encourage the Department to work with all interested stakeholders in developing an aquatic community approach with regard to early life stages.

Page 3 of the RIR states that:

> "The Department is collaborating with MDC to develop an aquatic community approach to determine when early life stages are present and absent when applying numeric water quality criteria for DO (Table A3) and chronic ammonia (Tables B2 and B3)."

This lends the reader to believe that these changes will impact numeric water quality and thereby discharges to these waters. No costs are included for areas where discharges will be impacted by stricter numeric water quality standards. The issue of early life stages present is critical to the implementation of the proposed DO criteria. How this rule is implemented could either relieve or impose additional burdens

on permittees and ratepayers. Therefore, it is important that the Department to broaden these discussions to include other stakeholders. We understand that there is a stakeholder meeting scheduled for August 15, 2011 to discuss this issue and we encourage the Department to continue open discussions on this issue.

COMMENT: In regard to section 1k, reference is made here of changes to the designation of WBC and SCR as a result of UAA. There are 355 waterbody segments that are listed or referenced in this section. This would lead the reader to believe that 355 UAAs were performed to determine the appropriate beneficial use for these waters. No costs have been identified to perform UAAs on waters newly classified as protected for whole body contact or aquatic life protection. It would seem that since the stream miles protected is growing by more than three-fold, the numbers of UAAs would also grow, particularly since many of the newly proposed streams do not have perennial flow and many lack permanent pools. Costs to permittees to perform these analyses, as well as to the Department to assess their validity should be included in this RIR.

COMMENT: Regarding Section 1l, the RIR is responding to EPA's October 29, 2009 decision on the Mississippi River. the Department is considering using the Whole Body Contact Recreation (WBCR) bacteria criterion to protect for any possible recreation in 28.6 miles of the Mississippi River in the St. Louis area which is only designated for Secondary Contact Recreation (SCR). It is inappropriate for the Department to use the WBCR bacteria criterion for a waterbody that is designated for only SCR. Furthermore, it is unreasonable to require compliance with the WBCR bacteria criterion for a waterbody that may have only rare and infrequent recreational uses.

COMMENT: The RIR does not address costs and benefits associated with adopting water quality standards for nonylphenol (NP).

We request that the Department defer adoption of water quality standards for NP, which could result in permit limits for wastewater treatment facilities. If not deferred, the RIR must address associated costs. Nonylphenol ethoxylates (NPEs) are nonionic surfactants that are used in a wide variety of industrial applications and consumer products, such as laundry detergents. NPEs can break down into NP in sewers, wastewater treatment facilities and the environment. NPE removal by wastewater treatment plants is possible, but a high level of treatment could be required and substantial infrastructure needed. Further, EPA has not approved analytical methods for NP in effluent. Source control should be considered the preferred alternative regulatory approach that will produce comparable human health, public welfare or environmental outcomes. EPA released an action plan August 18, 2010, addressing NP and NPEs. EPA is supporting the voluntary phase-out of NPEs in laundry detergents and considering regulatory action under the Toxic Substances Control Act.

COMMENT: The RIR on states that the addition of the "aesthetic" use will not incur any unnecessary costs to the regulated community. There is no analysis to support this statement and experience indicates that if anything, 303d listings, TMDLs and burdens to the Department and the regulated community will increase as a result of this change.

COMMENT: Regarding Section 2a, it should be noted that the stakeholder process for stream classification was discontinued when the group could not reach a consensus on the number of streams to include in this category. Additionally, federal case law and regulation do not seem clear on which streams to include in "jurisdictional waters" under the Clean Water Act. Since the EPA letter in 2000 is the often cited reason to classify these streams for whole body and aquatic life protection, it is reasonable to ask which of these waters would currently be considered jurisdictional under current case law precedent.

COMMENT: Section 2b states that the use designations arose from stakeholder discussions. The Exceptional Aquatic Community use and the "aesthetic" use were not vetted in stakeholder meetings as far as we can determine.

COMMENT: Regarding Section 3d, the variance language in the rule seems circular in its requirements. A variance is granted for "a time limited variance to a water quality based effluent limitation or water quality standard found in the operating permit." However, in the rule, section 12 (2) indicates that "A variance shall not be granted if standards or criteria values will be attained by implementing effluent limits required under 10 CSR 20-7.015 of the rule and by implementing cost effective and reasonable best management practices for non-point source control." This language would seem to be contradictory. In addition, linking the variance to non-point source controls will prove problematic since non-point source controls are not regulated, with the exception of some municipal stormwater. Section 12.4(b) references the federal use attainability language. Why would a permittee need to apply for a variance if they have performed a UAA? The use of variances is a critical pathway to some permittees to allow for reasonable water quality improvements over time. We support the variance process, but believe that the rule language should be clarified before proceeding to publishing the rule.

Again, thank you for this opportunity. The undersigned organizations/entities urge the Department to focus on developing water quality standards that achieve real and demonstrable benefits, not standards that simply satisfy a process to meet an arbitrary or perceived time table. Questions regarding this letter may be directed to Ed Galbraith, Barr Engineering 1001 Diamond Ridge, Suite 100, Jefferson City, MO 65102; or by telephone at 573-638-5024.

Sincerely,

City of Independence City of Poplar Bluff City of Springfield City of St. Joseph

Little Blue Valley Sewer District Metropolitan St. Louis Sewer District

Missouri Public Utility Alliance REGFORM

C: John Madras
Leanne Tippett Mosby

MISSOURI FARM BUREAU FEDERATION
P.O. Box 658, 701 South Country Club Drive, Jefferson City, MO 65102 / (573) 893-1400

August 12, 2011

Missouri Department of Natural Resources
Water Protection Program
Attn: John Hoke
P.O. Box 176
Jefferson City, MO 65102-0176

Comments on the Regulatory Impact Report for Proposed Amendments to 10 CSR 20-7.031 Water Quality Standards

The following comments are submitted on behalf of Missouri Farm Bureau, the state's largest general farm organization.

The draft Regulatory Impact Report (RIR) underscores the magnitude of the proposed changes to the state's water quality standards. Therefore, we believe it is extremely important that the RIR clearly conveys the potential impact of the proposed rule.

According to the RIR, the proposed rule would increase classified stream miles from 25,025 to 109,870 accompanied by an estimated increase in the department's annual water quality monitoring costs from $3.3 million to $11.2 million. An alternative proposal also under consideration would increase classified stream miles to 183,591 at an estimated annual monitoring cost of $24.2 million.

Estimated first-year costs to wastewater treatment facilities for installation of disinfection systems, operation and maintenance, and testing total $95 million. Estimated ongoing annual costs to these facilities total $43 million. (Facility operators indicate costs may be substantially higher.)

These cost estimates are alarming, but the lack of actual estimates of costs to other affected parties is even more so. The department acknowledges that "it is difficult to estimate" costs of stream reclassification to nonpoint urban and nonurban sources (Q#3(a)). Costs to affected individuals will vary greatly depending on the extent and degree of impairment to any given waterbody. As indicated in the RIR, due to this variability and the uncertainty of program funding, even costs that may be at least partially offset by financial and technical assistance programs are difficult to estimate. Moreover, those who may be eligible for these programs will still bear costs. In short, this proposed rulemaking will result in widespread, significant direct costs to many private citizens, businesses and state and local government entities as well as indirect costs to all taxpayers.

Recommendations

Q#1(c)—Depending on decisions yet to be made pertaining to the proposed assessment protocol for aquatic life protection and related policies, the proposed change to the definition of "early life stages" may have significant cost implications, in which case it would not be a "minor revision." Suggest deleting "minor."

Q#2(a) and (b)—In order to more clearly convey the nature of the workgroup proceedings, the fact that there was neither unanimous agreement nor consensus among Water Classification Workgroup participants should be noted.

Q#2(c)—The "clarifying revisions" to the definition of "early life stages" drafted in cooperation with the Missouri Department of Conservation (MDC) and the "aquatic community approach" to verifying the presence of early life stages that the department plans to develop in cooperation with MDC have potential cost implications that may need to be taken into account. (Please see Q#1(c) recommendation.)

Q#3(b) and (c)—Due to the uncertainty of costs associated with proposed changes to definitions for "aquatic community" and "early life stages" as well as the proposed aquatic community approach and assessment protocol for aquatic life protection, suggest modifying "no expected effect, monetarily (such as costs or benefits) or otherwise, on any person" to reflect cost uncertainty. Likewise, cost uncertainty associated with the addition of use designations for "exceptional waters" and "aesthetics" should be referenced.

Q#3(j)—Q#9(j) cites short-term and long-term consequences to several types of regulated entities, including concentrated animal feeding operations (CAFOs) and on-site wastewater treatment systems, located in the watersheds of the lakes proposed for classification. These entities should be included in Q#3(j) among those identified as potentially affected.

Q#4(a)—The statement under the subheading "Environmental Benefit" describing persons who recreate in streams that have elevated levels of bacteria due to runoff should refer not only to livestock, but also to wildlife/pets/urban nonpoint sources cited in Q#3(a).

Q#4(b) and (c)—For reasons stated with Q#3(b) and (c) recommendation, suggest modifying language to reflect cost uncertainty.

Q#6(a)—The statement "What price is good health worth?" overstates the scope of the proposed rule. Suggest substituting language consistent with the following from Q#10(a): "The lack of aquatic community protection through appropriate use

designation may irreparably damage or harm these resources to the potential detriment of human health and the environment."

Q#6(b) and (c)—For reasons stated with Q#3(b) and (c) recommendation, suggest modifying language to reflect cost uncertainty.

Q#7(a)—Due to the lawsuit filed by the Coalition for the Environment, the Water Classification Workgroup proceedings ended without resolution of several issues, such as whether there is a better approach for identifying waters that should be considered "classified" than the 1:100K proposal. The 1:100K proposal targets classified waters more closely than the 1:24K alternative, but both result in overclassification. While the 1:100K proposal is the most viable alternative considered, the workgroup process did not allow for the development of other alternatives that may be less costly or less intrusive.

Q#7(b) and (c)—For reasons stated with Q#3(b) and (c) recommendation, suggest modifying language to reflect cost uncertainty.

Q#9(a)—Short-term and long-term consequences should include some reference to the uncertainty of costs associated with "nonpoint source driven bacteria impairments" described in Q#3(a).

Q#9(b) and (c)—For reasons stated with Q#3(b) and (c) recommendation, suggest modifying language to reflect cost uncertainty.

General recommendation—Wherever the phrase "fishable/swimmable" is used, suggest adding the statutory phrase "wherever attainable" with an explanation that "wherever attainable" is actual language from the federal Clean Water Act and "fishable/swimmable" is not. The commonly used "fishable/swimmable" may be suitable for informal communication. However, in order to more clearly convey that the standards implied by "fishable/swimmable" are subject to economic and other considerations set forth in the federal Clean Water Act—in other words, avoid perpetuating a common misconception that all waters must meet the standards implied by "fishable/swimmable"—official department communications, such as the RIR, should draw this important distinction.

Thank you for the opportunity to comment.

Sincerely,

Leslie Holloway
Director, State and Local Governmental Affairs

MISSOURI DEPARTMENT OF CONSERVATION

Headquarters

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ROBERT L. ZIEHMER, Director

August 2, 2011

Mr. John Hoke
Missouri Department of Natural Resources
Water Protection Program
P.O. Box 176
Jefferson City, MO 65102-0176

Subject- 2012 Triennial Review of Water Quality Standards- Regulatory Impact Report Comments

Dear Mr. Hoke:

Thank you for the opportunity to comment on the Regulatory Impact Report (RIR) for the proposed 2012 revisions to Missouri's Water Quality Standards (WQS). The RIR discusses potential economic impact to the residents of Missouri if the proposed changes in the 2012 WQS are implemented. The Missouri Department of Conservation (MDC) has trustee responsibilities for Missouri's fish, forests and wildlife and suggests that economic benefits of protecting these resources be considered as described below.

Missourians in a recent MDC survey conducted by the University of Missouri indicated a strong interest (93%) in our fish, forests and wildlife. These interests take many forms and can translate into economic benefits. One clear indication of the public's interest in aquatic resources is that approximately 1.1 million citizens annually participate in angling activities in Missouri. According to the most current National Survey of Fishing, Hunting, and Wildlife-Associated Recreation, a total of $1.1 billion is spent on angling alone annually in the state of Missouri (2006 dollars). Fourteen percent of this $1.1 billion originates from non-resident anglers further demonstrating that the value of Missouri's aquatic resources are recognized outside of our borders. The sustainability and quality of these public fisheries is directly dependent on the quality of the water in which the fish live.

The aforementioned economic benefits of angling do not reflect other forms of fish and wildlife recreation in and around the waters of the state. For example, results of a recent MDC Missouri River recreational use survey identified economic value in aquatic related activities such as hunting and wildlife watching in addition to angling. These non-angling activities are not unique to the Missouri River. From reservoirs in the northern plains to the pristine Ozark streams to the unique Bootheel drainage ditches, MDC staff stationed in every county can attest to many forms of recreation in aquatic habitats. The economic value of these activities surrounding Missouri waters has not been assessed, but the intrinsic value of these activities should be acknowledged in future regulatory impact reports.

MDC applauds DNR's leadership in providing an infrastructure to protect the biological integrity of Missouri's aquatic resources. Consideration of the economic benefits of protecting these aquatic resources is a critical part of the cost/benefit assessment. Increased protections, as could potentially occur through the proposed Exceptional Aquatic Community designated use, can pay high dividends to our resources and Missouri's citizens in the future.

I ask that you keep my staff informed and request appropriate information concerning Missouri's fish, forest and wildlife resources as needed.

Sincerely,

ROBERT L. ZIEHMER
DIRECTOR

c: Tom Draper, Mike Kruse, Dan Zekor, Karen Bataille, Rebecca O'Hearn, Mike McKee, Chris Vitello, Paul Calvert, Brian Canaday, Sherry Fischer