UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 7
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Lenexa, Kansas 66219

SEP 18 2013

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

Dear Mr. Hoke:

The Missouri Department of Natural Resources recently proposed a number of revisions to the state's water quality standards rule (10 CSR 20-7.031) and invited the public and interested stakeholders to submit written comments on these revisions through September 18, 2013 (38 MoReg 939-1069). This letter transmits the U.S. Environmental Protection Agency's comments on the draft rule. Additionally, the Enclosure provides comments on portions of 10 CSR 20-7.031 falling outside the scope of the current rulemaking but warranting further review and possible modification in future rulemakings. The EPA appreciates this opportunity to provide formal feedback to the MDNR on the state's WQS.

General Comments

(1) Among other important changes, the draft rulemaking extends Clean Water Act Section 101(a)(2) uses (i.e., fishable and swimmable uses) to hundreds of additional streams and lakes in Missouri. The EPA strongly supports this aspect of the rulemaking, which would bring the state into closer compliance with the requirements of the CWA. However, certain terms appearing in Section (2) of the WQS must be defined more clearly, and some of the language applied in this section must be modified to ensure that it comports with the CWA and applicable federal regulations. The EPA has provided recommendations for addressing these issues in the specific comments, below.

(2) The proposed rule also adopts certain written documents and electronic databases by reference. Bear in mind that (a) such documents and databases must be identified in the rule by title and publication date (or version number) and (b) the public must be afforded the opportunity to review the cited documents and databases prior to adoption by the state. As discussed below, the EPA will review the cited materials to determine whether any specific provisions or components constitute WQS. Such provisions or components determined to be WQS must be consistent with the CWA and applicable federal regulations and approved by the EPA before becoming effective for CWA purposes.

Specific Comments

(1) The proposed definition for "variance" given at 10 CSR 20-7.031(1)(X), together with the proposed authorizing provision for variances given at 10 CSR 20-7.031(12), should allow the state to provide meaningful regulatory relief in instances where a water quality standard cannot be achieved in the

short term owing to one or more of the factors identified in the federal regulations at 40 CFR 131.10(g). The EPA is supportive of the proposed definition and authorizing provision.

(2) The proposed language at 10 CSR 20-7.031(2) seemingly assigns CWA Section 101(a)(2) uses and other uses to many additional streams and lakes in Missouri, a change that would foster widespread improvements in surface water quality and bring the state into closer compliance with the CWA and implementing federal regulations. However, the wording of 10 CSR 20-7.031(2)(D) is problematic, in that it could be interpreted to mean that the use designation process will occur at some point in the future rather than as a part of this rulemaking. The language at 10 CSR 20-7.031(2)(D)3 also would exempt many waters of the U.S. from the application of the rebuttable presumption established at Subsection (2)(A) unless "hydrologic and biological data are sufficient for assigning designated uses." Such an exemption would not comply with the CWA and implementing regulations found at 40 CFR § 131.10(j)(2).

Additionally, paragraph (2)(D)(4) prohibits CWA section 101a)(2) uses and other uses from being assigned to certain categories of waters. The identified categories do not fall outside the jurisdiction of the CWA in all cases. Consequently, the proposed language would be inconsistent with the CWA and its implementing regulations, specifically, 40 CFR § 122.2 and/or 40 CFR § 131.10(j).

The revised WQS must ensure that all waters referenced in subsection (2)(A) are designated for aquatic habitat protection, human health protection, whole body contact-B, secondary contact recreation, irrigation, and livestock and wildlife protection. In this regard, the EPA would support the MDNR's application of the following simplified language (or other equivalent language) at 10 CSR 20-7.031(2)(D):

"(D) Administration.

1. Designated uses applied to individual water bodies or stream segments pursuant to subsections (2)(A) and (2)(B) of this rule shall be those identified in Tables G and H and in the Missouri Use Designation Dataset, version 1.0, as published by the department on August …, 2013.

2. Designated uses shall be assigned on a case-by-case basis to water bodies or stream segments not otherwise represented in Tables G and H or in the Missouri Use Designation Dataset but falling within the jurisdiction of the Missouri Clean Water Law.

3. Designated uses shall not be assigned to waters falling outside the jurisdiction of the Missouri Clean Water Law. [Alternatively, the MDNR may wish to insert a reference to language found at 40 CFR § 122.2 or at 40 CFR §131.10(g), depending upon the department's intent.]"

(3) The state's proposed language at 10 CSR 20-7.031(2)(D)1 attempts to describe general features of the enhanced 1:100,000 scale National Hydrography Dataset, but alternating references throughout the rule to the NHD, the use designation dataset, and Tables G and H are confusing. In keeping with the simplifying language presented above, we recommend that the NHD and the use designation dataset be defined at 10 CSR 20-7.031(1) as follows:

"(P) Missouri Use Designation Dataset—A geospatial dataset maintained by the department. This dataset documents the names and locations of the state's rivers, larger streams, and larger

lakes and reservoirs and the designated uses assigned to these water bodies under section (2) of this rule."

"(R) National Hydrography Dataset (NHD)—A digital vector dataset used in conjunction with geographic information systems to describe the location of rivers, streams, lakes, reservoirs, and other surface water features. As applied in this rule, the term refers to a 1:100,000 scale dataset enhanced and supported by information obtained through the Missouri Resource Assessment Partnership (MoRAP) and other scientific sources and limited in geographic extent to the state of Missouri. This dataset provides the geospatial framework for the Missouri Use Designation Dataset."

(4) Pursuant to the previous comment, 10 CSR 20-7.031(2)(A)3 should refer to the enhanced NHD described in Subsection (1)(R) rather than the NHD "described in paragraph (2)(D)1. of this rule...."

(5) Tables G and H reference the NHD and assign CWA Section 101(a)(2) uses and other uses to waters included in the NHD. For clarity, these references, which are located at the top of the tables, should refer to the applicable version of the Missouri Use Designation Dataset, not the NHD. Also, they should be accompanied by footnotes indicating that they refer to all waters in the Missouri Use Designation Dataset not otherwise listed in the tables. At some point in the future, the MDNR may wish to reconsider the need for retaining Tables G and H if the Missouri Use Designation Dataset subsumes all the information contained in these tables (for a useful precedent, see the Kansas WQS at K.A.R. 28-16-28(b)(ddd) and-29(d)(d) and the associated Kansas Surface Water Register at http://www.kdheks.gov/befs/download/Current_Kansas_ Surface_Register.pdf).

(6) 10 CSR 20-7.031(2)(E) reads:

"Use designation dataset. The department shall maintain a geospatial dataset and associated list of waters that receive use designations as described in this rule and Tables G and H. All revisions to this Use Designation Dataset shall be approved by the commission and U.S. Environmental Protection Agency during the next systematic review or subsequent triennial review."

Here, the EPA would recommend the following alternative language or equivalent language:

"(E) Missouri Use Designation Dataset. The department shall maintain the geospatial dataset described in Subsection (1)(P) of this rule. Future versions of the Missouri Use Designation Dataset shall be appropriately referenced in Subsection (D)(1), Section (5), and Tables G and H and shall take effect upon approval by the Commission and the U.S. Environmental Protection Agency."

(7) 10 CSR 20-7.031(2)(F) appears to address use attainability in waters falling under the jurisdiction of the Missouri Clean Water Law but not yet included in the geospatial dataset or in Tables G or H. This provision reads, in part:

"In accordance with 40 CFR 131.10(j) and paragraph (2)(D)3. of this rule, a demonstration of use attainability must be performed when the commission—

1. Designates or has designated uses for a water body that do not include the protection of fish, shellfish, and wildlife, or recreation in and on the water; or

2. Wishes to remove a designated use that protects fish, shellfish, and wildlife, or recreation in and on the water; or

3. Wishes to apply sub-categories of uses that protect fish, shellfish, and wildlife, or recreation in and on the water, which require less stringent criteria than section 304(a) of the Clean Water Act."

As written, this provision may be interpreted to mean that demonstrations of attainability are required after the Commission has taken the above actions. The EPA recommends the following alternative language or equivalent language:

"In accordance with 40 CFR 131.10(j) and paragraph (2)(D)3 of this rule, the following potential actions must be preceded and supported by a use attainability analysis:

1. Designation of a water body for uses that do not include the protection of fish, shellfish and wildlife, recreation in and on the water, and human health protection;

2. Removal of one or more of the uses identified in paragraph 1 of this Subsection; or

3. Application of any use sub-categories for the protection of fish, shellfish and wildlife, recreation in and on the water, or human health protection that require less stringent criteria than issued by the EPA under Section 304(a) of the Clean Water Act."

(8) 10 CSR 20-7.031(2)(G)2 reads, in part:

"Use attainability analyses intended for recreation in and on the water shall be performed in accordance with methods and procedures as found in *Missouri Recreational Use Attainability Analyses: Water Body Survey and Assessment Protocol, December 19, 2007* as published by the Water Protection Program, Division of Environmental Quality, Missouri Department of Natural Resources…."

This new provision appears to apply the 2007 UAA protocol as a WQS, whereas previously it had been applied by the EPA as a tool used in the review and interpretation of recreational UAAs. Although it is unlikely that every element in the protocol constitutes a WQS as defined in the federal regulations (40 CFR § 131.3(i)), it is anticipated that some elements within the document may meet this definition. The EPA will review the document to determine which, if any, specific elements are in fact WQS. It will then review those elements to ensure they are consistent with the CWA and applicable federal regulations, including 40 CFR §§ 131.2, 131.5, 131.6 and 131.10. Elements approved by the EPA will become effective for CWA purposes, whereas disapproved elements or elements not acted upon will continue to serve, in the words of the protocol, as "guidance for any party interested in conducting investigations to provide scientifically defensible information on existing and attainable recreational uses of the classified waters of the State." As always, if Missouri wishes to remove a CWA Section 101(a)(2) use (e.g., WBC) that is not an existing use, or to adopt a use subcategory that requires less stringent criteria than previously applicable (e.g., SCR), it must demonstrate, through a UAA, that the Section 101(a)(2) use is unattainable (40 CFR §§ 131.10(j)(2)).

(9) 10 CSR 20-7.031(2)(G)3 reads, in part:

> "Use attainability analyses intended for aquatic habitat protection shall be performed in accordance with methods and procedures as found in *Missouri Aquatic Habitat Use Attainability Analyses: Water Body Survey and Assessment Protocol* dated November 6, 2013, as published by the Water Protection Program, Division of Environmental Quality, Missouri Department of Natural Resources...."

The cited protocol is still being developed by the MDNR, and the EPA will reserve any detailed comments pending its review of the completed document. However, the general information provided in Comment 8, above, would apply to this protocol and to any aquatic life UAA submitted by the MDNR pursuant to this protocol. The EPA is concerned that the cited protocol will not undergo the required public notice prior to the Commission's scheduled (November 6, 2013) WQS adoption hearing. For the time being, therefore, the MDNR may wish to consider replacing paragraph (2)(G)3 with the following general language or equivalent language:

> "Use attainability analyses intended for uses other than recreation in and on the water shall be designed and implemented on a case-by-case basis. Any such analysis conducted or accepted by the department shall constitute a structured scientific assessment of the factors potentially affecting the attainment of the use pursuant to 40 CFR § 131.10(g)."

(10) 10 CSR 20-7.031(2)(G)4 reads:

> "Demonstrations of use attainability will be performed in accordance with protocols and procedures outlined in this section of this rule and approved by the commission and U.S. Environmental Protection Agency."

The above language could be interpreted to mean that the Commission and/or the EPA are required to approve all demonstrations of use attainability. This provision should simply reaffirm that revised use designations shall become effective for CWA purposes upon approval by the Commission and the EPA.

(11) 10 CSR 20-7.031(3)(B)1 should refer to Sections (4) and (5) of the proposed rule rather than Sections (3) and (4).

(12) 10 CSR 20-7.031(3)(D) references an updated antidegradation implementation procedure approved by the Commission on May 2, 2012. This updated procedure places a 10 percent cumulative cap on instream degradation and is supported by the EPA (see the agency's July 2, 2009, and August 16, 2011, action letters addressing this subject).

(13) 10 CSR 20-7.031(5) addresses specific criteria and reads, in part, "The specific criteria shall apply to waters contained in the Use Designation Dataset and Tables G and H of this rule." This provision must refer to a specific version of the dataset; i.e., "the Missouri Use Designation Dataset, version 1.0, as published by the department on August ..., 2013."

(14) 10 CSR 20-7.031(5)(R) reads, in part:

> "The biological integrity of waters, as measured by lists or numeric indices of benthic invertebrates, fish, algae, or other appropriate biological indicators, shall not be significantly

different from reference waters. Waters targeted for numeric biological criteria assessment must be contained within the Use Designation Dataset and shall be compared to reference waters of similar size (i.e., same MoRAP Aquatic Gap size category specified at paragraph (1)(C)1. of this rule), habitat type, and aquatic ecoregion type (based on MoRAP Aquatic Gap) using procedures including but not limited to those referenced by 10 CSR 20-7.050."

For consistency and clarity, the word "Missouri" should be inserted before the words "Use Designation Dataset," both here and at other locations in the WQS. The reference to 10 CSR 20-7.050 is rather vague, in that said rule seemingly describes different levels of data quality ranging from 1 (least scientifically rigorous) to 4 (most scientifically rigorous). The reference to this rule at 10 CSR 20-7.031(5)(R) should specify which parts of the rule are being applied in the assessment of biological integrity.

(15) 10 CSR 20-7.031(5) (S)1.B addresses water effect ratios and other physical and chemical factors that may justify the development of site-specific criteria. As noted in the EPA's 2001 guidance document, *Streamlined Water-Effect Ratio Procedure for Discharges of Copper* (EPA-822-R-01-005, March 2001):

"WER-based site-specific criteria provisions are subject to EPA review under Section 303(c) of the Clean Water Act and its implementing regulations at 40 CFR Part 131. This can be structured in two ways.

1. A state may submit each individual determination of a WER-based site-specific criteria value to EPA for review and approval.

2. A state may incorporate WER adjustment provisions into its water quality standards, submitted to EPA for review and approval. Once the provisions are in place, the results of each site-specific application of the procedure would be subject to public participation requirements, but would not be submitted for further Section 303(c) review.

In all cases, it should be noted that the WER derivation is part of the standards setting process. In the absence of an appropriate specification of the site criterion, WERs are not used for adjusting reasonable potential calculations, wasteload allocations, or permit limits."

Because the proposed WQS at 10 CSR 20-7.031(5)(S)2.A adopt the above-mentioned document and other EPA guidance documents by reference, the MDNR has placed itself in a position to apply WERs in the development of effluent limits using the second option, above. Other forms of site-specific criteria must be submitted to, and approved by, the EPA on a case-by-case basis prior to becoming effective for CWA purposes.

(16) 10 CSR 20-7.031(7) addresses metropolitan no-discharge streams and reads, in part:

"No water contaminant except uncontaminated cooling water, permitted stormwater discharges in compliance with permit conditions and **excess wet-weather bypass discharges not interfering with beneficial uses**, shall be discharged to the watersheds of streams listed in Table F" (emphasis added).

However, because cooling water discharges and stormwater discharges require permit coverage, this sentence should be amended to read "No water contaminants except those contained in

permitted cooling water discharges and permitted stormwater discharges shall be discharged to the watersheds of streams listed in Table F."

The EPA would note that "not interfering with beneficial uses" is not necessarily the same thing as meeting applicable permit limits or complying with other applicable regulations. For example, wet-weather bypasses must comply with the general criteria provisions of the WQS (10 CSR 20-7.031(3)) and with 10 CSR 20-7.015(9)(G)2, which reads, in part, "The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation." This language is derived from 40 CFR § 122.41(m)(2) and would apply to wet-weather bypasses and all other bypasses.

(17) The MDNR has modified 10 CSR 20-7. 031(11) by removing the phrase "with all deliberate speed." This change addresses an objection raised by the EPA in a January 25, 2013, disapproval action. The EPA supports this revision.

(18) 10 CSR 20-7.031(12) addresses variances. Please refer to the EPA's previous remarks on this subject, presented in comment 1, above.

(19) The fiscal note accompanying the proposed WQS rule indicates that revisions have been made to Table H that alter the recreational use designations of a number of stream segments. The EPA will defer any comments on these revisions pending its review of the supporting UAAs. Other changes addressed in the fiscal note include (a) the restoration of use designations to two water body segments included in Table H in response to an August 16, 2011, disapproval action taken by the EPA and (b) the correction of the start/end points for one losing stream segment in Table J. The EPA will review these changes and provide comments at a later time.

The EPA appreciates Missouri's continuing efforts to protect and restore water quality and the state's overall commitment to the triennial WQS review and revision process. We look forward to working with the MDNR on the rulemaking considered in this letter and on future rulemakings. If you would like to discuss the above comments or the supplemental comments attached to this letter, please contact John DeLashmit, Chief, Water Quality Management Branch, at (913) 551-7821.

Sincerely,

Karen Flournoy

Karen Flournoy
Director
Water, Wetlands and Pesticides Division

cc: John Madras, MDNR

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Enclosure

Enclosure

Supplemental Comments on Missouri Water Quality Standards Rule, 10 CSR 20-7.031

(1) Missouri's WQS at 10 CSR 20-7.031(1)(A) define acute toxicity as:

> "Conditions producing adverse effects or lethality on aquatic life following short-term exposure. The acute criteria in Tables A and B are maximum concentrations which protect against acutely toxic conditions. Acute toxicity is also indicated by exceedence of whole-effluent toxicity, or WET, test conditions of paragraph (4)(I)2. For substances not listed in Table A or B, three-tenths (0.3) of the median lethal concentration, or the no observed acute effect concentration for representative species, **may be used** to determine absence of acute toxicity" (emphasis added).

In turn, paragraph (4)(I)2 reads:

> "The following whole effluent toxicity conditions must be satisfied: A. Single dilution method. The percent effluent at the edge of the zone of initial dilution will be computed and toxicity tests performed at this percent effluent. These tests must show statistically insignificant mortality on the most sensitive of at least two (2) representative, diverse species; and B. Multiple dilution method. An LC50 will be derived from a series of test dilutions. The computed percent effluent at the edge of the zone of initial dilution must be less than three-tenths (0.3) of the LC50 for the most sensitive of at least two (2) representative, diverse species."

Therefore, for WET purposes, the maximum allowable effluent concentration at the edge of the zone of initial dilution is expressed in the WQS as 0.3 times the LC_{50} or as any concentration causing "statistically insignificant mortality." However, the EPA's *Technical Support Document for Water Quality-Based Toxics Control* (EPA/505/2-90-001, March 1991) recommends that, for acute protection, the criteria maximum concentration be set at 0.3 TU_a. The TSD also notes that the results of single dilution tests are highly variable, and it strongly discourages any reliance on such tests.

Given this information, the EPA recommends that 10 CSR 20-7.031(1)(A) and (4)(I)2 be revised to (a) provide for a consistent level of water quality protection based on the application of 0.3 TU_a at the edge of the ZID and (b) require the use of a multiple dilution approach in the establishment of WET permit limits. Lastly, the expression "may be used" in Subsection (1)(A) should be revised to read "shall be used" to ensure this provision is implemented in a consistent and predictable manner.

(2) 10 CSR 20-7.031(1)(A)2.A defines whole body contact recreation as "Activities involving direct human contact with waters of the state to the point of complete body submergence." This provision also indicates that waters designated for this use are "intended to be used for swimming, water skiing, or skin diving." The EPA would point out that other activities, such as wading and lounging in comparatively shallow water or canoeing, kayaking and jet skiing in deeper water, may entail some degree of deliberate total bodily immersion, especially when pursued by children and teenagers (some recently-submitted use attainability analyses from Missouri provide evidence of this fact). The line separating immersion-based from non-immersion-based activities is ambiguous, at best, and likely varies from individual to individual.

The EPA expects the MDNR to weigh these concerns when assigning recreational uses to waters of the U.S. Where total bodily immersion can be reasonably accommodated in some form, and where none of the factors listed at 40 CFR 131.10(g) clearly preclude recreation in and on the water, the waterbody in question must be designated and protected for whole body contact recreation pursuant to 40 CFR §§ 131.2, 131.5(a)(4), 131.6(a) and (f) and 131.10(g), (j) and (k).

(3) 10 CSR 20-7.031(1)(E) defines chronic toxicity as:

> "Conditions producing adverse effects on aquatic life or wildlife following long-term exposure but having no readily observable effect over a short time period. Chronic numeric criteria in Tables A and B are maximum concentrations which protect against chronic toxicity; these values shall be considered four- (4-) day averages, with the exception of total ammonia as nitrogen which shall be considered a thirty- (30-) day average. Chronic toxicity is also indicated by exceedence of WET test conditions of Subsection (5)(Q). For substances not listed in Table A or B, commonly used endpoints such as the no-observed effect concentration or inhibition concentration of representative species **may be used** to demonstrate absence of toxicity" (emphasis added).

Subsection (5)(Q) reads:

> "WET Chronic Tests. Chronic WET tests performed at the percent effluent at the edge of the mixing zone shall not be toxic to the more sensitive of at least two (2) representative, diverse species. Pollutant attenuation processes such as volatilization and biodegradation which may occur within the allowable mixing zone will be considered in interpreting results."

Therefore, for WET purposes, the maximum allowable effluent concentration at the edge of the MZ is expressed in the WQS as the NOEC or IC. However, the TSD recommends that, for chronic protection, the criterion continuous concentration be set at 1.0 TU_c.

10 CSR 20-7.031(1)(E) and (5)(Q) should be revised to (a) provide for a consistent level of water quality protection based on the application of 1.0 TU_c at the edge of the MZ and (b) require the use of a specific inhibition concentration (e.g., IC_{25}) in the derivation of the NOEC (NOECs derived from the IC_{25} approximate NOECs obtained via hypothesis testing; hence, the IC_{25} is the preferred statistical method for determining the NOEC; see TSD, page 6). Lastly, in 10 CSR 20-7.031(1)(E), the words "may be used" must be changed to "shall be used" to ensure this provision is implemented in a consistent and predictable manner.

(4) 10 CSR 20-7.031(1)(F)3 reads, in part, "For effluent regulation purposes, publicly-owned L3 lakes are those for which a substantial portion of the surrounding lands are publicly owned or managed." Please explain any differences in how the effluent regulations will be applied to publicly-owned versus privately-owned L3 lakes.

(5) "Waters of the state" is defined in the Missouri WQS at 10 CSR 20-7.031(1)(BB) (and in the Missouri Clean Water Law at § 644.016(27)) as follows:

> "All rivers, streams, lakes, and other bodies of surface and subsurface water lying within or forming a part of the boundaries of the state which are not entirely confined and located completely upon lands owned, leased, or otherwise controlled by a single person or by two (2) or

more persons jointly or as tenants in common and includes waters of the United States lying within the state."

"Waters of the state" also is defined in the Missouri WQS at 10 CSR 20-7.031 (1)(GG), which adopts 10 CSR 20-2.010 by reference. 10 CSR 20-2.010(82) reads:

"All rivers, streams, lakes and other bodies of surface and subsurface water lying within or forming a part of the boundaries of the state which are not entirely confined and located completely upon lands owned, leased or otherwise controlled by a single person or by two (2) or more persons jointly or as tenants in common. These waters also include waters of the United States lying within or adjacent to the state."

The EPA interprets these definitions to collectively include all waters of the U.S. lying within or adjacent to the state, including all waters of the U.S. located on privately-owned land. Please clarify whether the MDNR shares this interpretation.

(6) 10 CSR 20-7.031(5)(A)4.F reads:

"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...."

This provision apparently authorizes the use of flow-variable permit limits. Although the EPA supports the application of both tiered and seasonal fixed limits in permits issued under the National Pollutant Discharge Elimination System, the agency believes that the application of flow-variable limits would present serious regulatory and environmental drawbacks:

- Facilities issued flow-variable water quality-based effluent limits would no longer be required to provide a consistent level of treatment predicated on the application of a critical low flow condition (e.g., 7Q10). Instead, authorization to release more pollutants during periods of elevated stream flow would provide an incentive to store wastewater and meter out partially treated effluent in accordance with the prevailing stream flow. Overall, the advent of flow-variable permit limits would lead to an increase the quantity of pollutants discharged to the waters of the U.S.

- For example, flow-variable permit limits applied to certain industries and publicly owned treatment works would increase the quantity of nitrogen and phosphorus entering receiving streams. Because lakes or reservoirs located downstream of some such facilities would tend to serve as nutrient sinks, increased nutrient loading at higher flows would translate into increased water/sediment nutrient concentrations in the lakes/reservoirs over time. This, in turn, would accelerate the eutrophication process, diminish the functional longevity of these waters, and interfere with local, state and national efforts to develop and implement meaningful nutrient reduction strategies.

- Flow-variable permit limits would complicate the development and implementation of total maximum daily loads and associated waste load allocations. Traditionally, the dilution provided by higher flows has been allotted primarily to nonpoint sources. To accommodate flow-variable

permit limits in instances involving total maximum daily loads, load allocations would need to be reduced to offset the required increases in waste load allocations.

- In addition to continuous stream flow monitoring, any wastewater treatment facility with a flow-variable permit limit would need to monitor the quality of its final effluent and the magnitude of its discharge on an essentially continuous (rather than periodic) basis for self-monitoring and reporting purposes.

- Facilities with flow-variable permit limits also would have to be designed/constructed in a manner allowing for rapid operational adjustments to changes in stream flow. However, even under the best of circumstances, facility adjustments would lag behind actual changes in stream flow, thereby greatly increasing the risk of non-compliance with applicable permit limits.

- The proposed WQS at 10 CSR 20.7.031(4)(A) and (5)(H) prohibit the occurrence of harmful bottom deposits in waters of the state. Such deposits can form when stream flows are no longer sufficient to suspend and transport particulate matter discharged from wastewater treatment facilities. Therefore, any water quality-based effluent limit applied during a period of higher stream flow would need to account for the reduction in particle transport capacity accompanying the stream's transition to a lower flow. Moreover, the MDNR would be expected to develop best professional judgment-based technological limits for treatment systems (e.g., settling ponds) lacking a technology-based performance standard for suspended solids, and this limit would supersede any less stringent WQBEL otherwise deemed applicable under the prevailing flow condition.

- For a wide variety of pollutants (e.g., various metals), in-stream background concentrations are positively correlated with stream flow. Ambient water quality criteria may be approached or even exceeded during high flow events (i.e., there may be little or no remaining dilution increment). The MDNR would need to account for this possibility during the development of any flow-variable WQBELs.

- The proposed WQS at 40 CSR 20-7.031(1)(Z) state that " hardness [as applied in the criteria equations for metals] will be determined by the lower quartile (twenty-fifth percentile) value of a representative number of samples from the water body in question or from a similar water body **at the appropriate stream flow condition**" (emphasis added). Hardness generally exhibits an inverse relationship with stream flow, such that the lowest hardness levels (and the most stringent metal criteria) occur (apply) during the largest runoff events. Flow-variable permit limits for hardness-dependent metals would need to reflect this fact.

- Antidegradation and antibacksliding considerations would need to be weighed very carefully during the development of flow-variable permit limits to protect downstream waters from unwarranted increases in contaminant concentrations. The state's antidegradation procedures would need to be revised to account for the impacts of flow-variable WQBELs on downstream water quality.

For these and other reasons, the EPA would strongly encourage the MDNR to remove any WQS language authorizing the use of flow-variable permit limits.

(7) 10 CSR 20-7.031(5)(A)5.C pertains to wetlands and reads:

> "Specific criteria shall include both chronic and acute concentrations to better reflect the different tolerances to the inherent variability between concentrations and toxicological characteristics of a condition."

The meaning of the above sentence is unclear. We suggest ending the sentence after the first use of the word "concentrations."

(8) 10 CSR 20-7.031(5)(E) establishes a permissible pH range (6.5-9.0) for all waters of the state, including MZs and zones of initial dilution. As worded, this provision would require all discharges to comply with this pH range (criterion) at end-of-pipe. (Note: discharges of uncontaminated cooling water and discharges from water treatment plants seemingly would constitute the sole exceptions to this requirement; pursuant to 10 CSR 20-7.015(9)(I)1, the pH of these discharges may range from 6 to 10.5 standard units "if it can be demonstrated that the pH will not exceed nine (9) standard units beyond the regulatory mixing zone.")

The MDNR may wish to consider revising 10 CSR 20-7.031(5)(E) to provide for the wider application of the pH criterion at the edge of the MZ. Such a change would need to be submitted to and approved by the EPA before becoming effective for Clean Water Act purposes.

(9) Parameters referenced in subsections 10 CSR 20-7.031(5)(F) through (5)(H) (i.e., taste and odor producing substances; turbidity and color; solids) have no associated numeric criteria and are not otherwise listed in Tables A or B; therefore, they appear to apply to all waters of the state and should be addressed under the general criteria provisions rather than the specific criteria provisions of the WQS.

(10) 10 CSR 20-7.031(5)(I) addresses radioactive materials and reads "All streams and lakes shall conform to state and federal limits for radionuclides established for drinking water supply." As required by the 1986 amendments to the Safe Drinking Water Act, the EPA has issued maximum contaminant levels for the following radionuclides in drinking water: combined radium 226/228 (5 picoCuries per Liter); gross alpha, not including radon and uranium (15 pCi/L); beta emitters (4 millirems per year); uranium (30 micrograms per liter). However, none of these MCLs are included as drinking water criteria in Table A of the WQS. Does the MDNR intend to adopt these values as drinking water criteria in future WQS rulemakings?

(11) 10 CSR 20-7.031(5)(M) addresses the development and application of water quality criteria for carcinogenic substances. It reads, in part, "Assumptions are two (2) liters of water and six and one-half (6.5) grams of fish consumed [per person] per day." Although this language has not changed appreciably from previous WQS, a value of 17.5 grams per person per day represents the 90th percentile (freshwater) fish consumption rate for adults in the United States (see Section 5.1.1.1, Table 4, in the EPA's *Estimated Per Capita Fish Consumption in the United States*, March 2000, Office of Water, Office of Science and Technology, Washington, DC). This consumption rate has been applied as a national default value in the development of human health criteria for carcinogenic substances and non-carcinogenic substances alike (see the EPA's *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health (2000)*, October 2000, Office of Water, Office of Science and Technology, Washington, DC). The EPA recommends applying this default consumption rate when developing criteria protective of sport

anglers. A higher default consumption rate, 142.4 grams per day, should be applied when developing criteria protective of subsistence fishers. The EPA's methodology provides additional recommendations for other sensitive subpopulations, such as women of childbearing age and children younger than 14 years.

Based on this information, the per capita fish consumption rate cited in the state's WQS (6.5 grams per day) does not reflect recent science. The fish consumption rate should be increased to at least 17.5 grams per day.

(12) 10 CSR 20-7.031(5)(N) addresses water quality criteria for nutrients and chlorophyll. All elements of this Subsection, other than Table M, were disapproved previously by the EPA (see August 16, 2011 action letter). These disapproved elements are not applicable for CWA purposes and, in the interest of clarity, should be removed from the WQS.

(13) 10 CSR 20-7.031(5)(P) reads:

> "Criteria to protect designated uses are based on current technical literature, especially the Environmental Protection Agency's publication, *Quality Criteria for Water*, 1986. Criteria may be modified or expanded as additional information is developed or as needed to define narrative criteria for particular situations or locations."

Tables A and B in the WQS no longer reflect the most recent scientific and technical literature. In the years that followed the state's adoption of these tables, the EPA has issued new or revised national criteria recommendations for a variety of pollutants (see http://water.epa.gov/scitech/swguidance/standards/ criteria/current/index.cfm). The EPA looks forward to working with the MDNR, the Commission and interested stakeholders in the review and revision of these tables.

(14) 10 CSR 20-7.031(5)(Q) addresses chronic WET tests. Please see comment 3, above, which discusses this provision and related provisions in the WQS.

(15) 10 CSR 20-7.031(5)(S)1 reads: "Site-specific criteria may be appropriate where, but is not limited to the examples given in subparagraphs A. or B. of this paragraph." For clarity, the MDNR may wish to consider revising this sentence to read "Site-specific criteria may be appropriate under the circumstances described in subparagraphs A. or B. of this paragraph or under other related circumstances."

Schaben, Darlene

From: Delashmit, John <Delashmit.John@epa.gov>
Sent: Wednesday, September 18, 2013 4:49 PM
To: Hoke, John
Cc: Angelo, Robert; Lavaty, Ann; Bagley, Melissa; Taylor-Curth, Carol
Subject: EPA Comments on 10 CSR 20-7.031 - Water Quality Standards
Attachments: EPA Comments on WQS Rule_9_18_2013.pdf

John,

Attached are the EPA's comments on the subject Rule. The original will follow via regular mail. Please contact me if you have any questions, and thanks for the opportunity to provide comments.

JD

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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SEP 24 2013

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:

The Missouri Department of Natural Resources recently proposed a number of revisions to the state's water quality standards rule (10 CSR 20-7.031) and invited the public and interested stakeholders to submit written comments on these revisions through September 18, 2013 (38 MoReg 939-1069). This letter transmits the U.S. Environmental Protection Agency's comments on the draft rule. Additionally, the Enclosure provides comments on portions of 10 CSR 20-7.031 falling outside the scope of the current rulemaking but warranting further review and possible modification in future rulemakings. The EPA appreciates this opportunity to provide formal feedback to the MDNR on the state's WQS.

General Comments

(1) Among other important changes, the draft rulemaking extends Clean Water Act Section 101(a)(2) uses (i.e., fishable and swimmable uses) to hundreds of additional streams and lakes in Missouri. The EPA strongly supports this aspect of the rulemaking, which would bring the state into closer compliance with the requirements of the CWA. However, certain terms appearing in Section (2) of the WQS must be defined more clearly, and some of the language applied in this section must be modified to ensure that it comports with the CWA and applicable federal regulations. The EPA has provided recommendations for addressing these issues in the specific comments, below.

(2) The proposed rule also adopts certain written documents and electronic databases by reference. Bear in mind that (a) such documents and databases must be identified in the rule by title and publication date (or version number) and (b) the public must be afforded the opportunity to review the cited documents and databases prior to adoption by the state. As discussed below, the EPA will review the cited materials to determine whether any specific provisions or components constitute WQS. Such provisions or components determined to be WQS must be consistent with the CWA and applicable federal regulations and approved by the EPA before becoming effective for CWA purposes.

Specific Comments

(1) The proposed definition for "variance" given at 10 CSR 20-7.031(1)(X), together with the proposed authorizing provision for variances given at 10 CSR 20-7.031(12), should allow the state to provide meaningful regulatory relief in instances where a water quality standard cannot be achieved in the

short term owing to one or more of the factors identified in the federal regulations at 40 CFR 131.10(g). The EPA is supportive of the proposed definition and authorizing provision.

(2) The proposed language at 10 CSR 20-7.031(2) seemingly assigns CWA Section 101(a)(2) uses and other uses to many additional streams and lakes in Missouri, a change that would foster widespread improvements in surface water quality and bring the state into closer compliance with the CWA and implementing federal regulations. However, the wording of 10 CSR 20-7.031(2)(D) is problematic, in that it could be interpreted to mean that the use designation process will occur at some point in the future rather than as a part of this rulemaking. The language at 10 CSR 20-7.031(2)(D)3 also would exempt many waters of the U.S. from the application of the rebuttable presumption established at Subsection (2)(A) unless "hydrologic and biological data are sufficient for assigning designated uses." Such an exemption would not comply with the CWA and implementing regulations found at 40 CFR § 131.10(j)(2).

Additionally, paragraph (2)(D)(4) prohibits CWA section 101a)(2) uses and other uses from being assigned to certain categories of waters. The identified categories do not fall outside the jurisdiction of the CWA in all cases. Consequently, the proposed language would be inconsistent with the CWA and its implementing regulations, specifically, 40 CFR § 122.2 and/or 40 CFR § 131.10(j).

The revised WQS must ensure that all waters referenced in subsection (2)(A) are designated for aquatic habitat protection, human health protection, whole body contact-B, secondary contact recreation, irrigation, and livestock and wildlife protection. In this regard, the EPA would support the MDNR's application of the following simplified language (or other equivalent language) at 10 CSR 20-7.031(2)(D):

"(D) Administration.

1. Designated uses applied to individual water bodies or stream segments pursuant to subsections (2)(A) and (2)(B) of this rule shall be those identified in Tables G and H and in the Missouri Use Designation Dataset, version 1.0, as published by the department on August ..., 2013.

2. Designated uses shall be assigned on a case-by-case basis to water bodies or stream segments not otherwise represented in Tables G and H or in the Missouri Use Designation Dataset but falling within the jurisdiction of the Missouri Clean Water Law.

3. Designated uses shall not be assigned to waters falling outside the jurisdiction of the Missouri Clean Water Law. [Alternatively, the MDNR may wish to insert a reference to language found at 40 CFR § 122.2 or at 40 CFR §131.10(g), depending upon the department's intent.]"

(3) The state's proposed language at 10 CSR 20-7.031(2)(D)1 attempts to describe general features of the enhanced 1:100,000 scale National Hydrography Dataset, but alternating references throughout the rule to the NHD, the use designation dataset, and Tables G and H are confusing. In keeping with the simplifying language presented above, we recommend that the NHD and the use designation dataset be defined at 10 CSR 20-7.031(1) as follows:

"(P) Missouri Use Designation Dataset—A geospatial dataset maintained by the department. This dataset documents the names and locations of the state's rivers, larger streams, and larger

lakes and reservoirs and the designated uses assigned to these water bodies under section (2) of this rule."

"(R) National Hydrography Dataset (NHD)—A digital vector dataset used in conjunction with geographic information systems to describe the location of rivers, streams, lakes, reservoirs, and other surface water features. As applied in this rule, the term refers to a 1:100,000 scale dataset enhanced and supported by information obtained through the Missouri Resource Assessment Partnership (MoRAP) and other scientific sources and limited in geographic extent to the state of Missouri. This dataset provides the geospatial framework for the Missouri Use Designation Dataset."

(4) Pursuant to the previous comment, 10 CSR 20-7.031(2)(A)3 should refer to the enhanced NHD described in Subsection (1)(R) rather than the NHD "described in paragraph (2)(D)1. of this rule...."

(5) Tables G and H reference the NHD and assign CWA Section 101(a)(2) uses and other uses to waters included in the NHD. For clarity, these references, which are located at the top of the tables, should refer to the applicable version of the Missouri Use Designation Dataset, not the NHD. Also, they should be accompanied by footnotes indicating that they refer to all waters in the Missouri Use Designation Dataset not otherwise listed in the tables. At some point in the future, the MDNR may wish to reconsider the need for retaining Tables G and H if the Missouri Use Designation Dataset subsumes all the information contained in these tables (for a useful precedent, see the Kansas WQS at K.A.R. 28-16-28(b)(ddd) and-29(d)(d) and the associated Kansas Surface Water Register at http://www.kdheks.gov/befs/download/Current_Kansas_ Surface_Register.pdf).

(6) 10 CSR 20-7.031(2)(E) reads:

"Use designation dataset. The department shall maintain a geospatial dataset and associated list of waters that receive use designations as described in this rule and Tables G and H. All revisions to this Use Designation Dataset shall be approved by the commission and U.S. Environmental Protection Agency during the next systematic review or subsequent triennial review."

Here, the EPA would recommend the following alternative language or equivalent language:

"(E) Missouri Use Designation Dataset. The department shall maintain the geospatial dataset described in Subsection (1)(P) of this rule. Future versions of the Missouri Use Designation Dataset shall be appropriately referenced in Subsection (D)(1), Section (5), and Tables G and H and shall take effect upon approval by the Commission and the U.S. Environmental Protection Agency."

(7) 10 CSR 20-7.031(2)(F) appears to address use attainability in waters falling under the jurisdiction of the Missouri Clean Water Law but not yet included in the geospatial dataset or in Tables G or H. This provision reads, in part:

"In accordance with 40 CFR 131.10(j) and paragraph (2)(D)3. of this rule, a demonstration of use attainability must be performed when the commission—

1. Designates or has designated uses for a water body that do not include the protection of fish, shellfish, and wildlife, or recreation in and on the water; or

2. Wishes to remove a designated use that protects fish, shellfish, and wildlife, or recreation in and on the water; or

3. Wishes to apply sub-categories of uses that protect fish, shellfish, and wildlife, or recreation in and on the water, which require less stringent criteria than section 304(a) of the Clean Water Act."

As written, this provision may be interpreted to mean that demonstrations of attainability are required after the Commission has taken the above actions. The EPA recommends the following alternative language or equivalent language:

"In accordance with 40 CFR 131.10(j) and paragraph (2)(D)3 of this rule, the following potential actions must be preceded and supported by a use attainability analysis:

1. Designation of a water body for uses that do not include the protection of fish, shellfish and wildlife, recreation in and on the water, and human health protection;

2. Removal of one or more of the uses identified in paragraph 1 of this Subsection; or

3. Application of any use sub-categories for the protection of fish, shellfish and wildlife, recreation in and on the water, or human health protection that require less stringent criteria than issued by the EPA under Section 304(a) of the Clean Water Act."

(8) 10 CSR 20-7.031(2)(G)2 reads, in part:

"Use attainability analyses intended for recreation in and on the water shall be performed in accordance with methods and procedures as found in *Missouri Recreational Use Attainability Analyses: Water Body Survey and Assessment Protocol, December 19, 2007* as published by the Water Protection Program, Division of Environmental Quality, Missouri Department of Natural Resources...."

This new provision appears to apply the 2007 UAA protocol as a WQS, whereas previously it had been applied by the EPA as a tool used in the review and interpretation of recreational UAAs. Although it is unlikely that every element in the protocol constitutes a WQS as defined in the federal regulations (40 CFR § 131.3(i)), it is anticipated that some elements within the document may meet this definition. The EPA will review the document to determine which, if any, specific elements are in fact WQS. It will then review those elements to ensure they are consistent with the CWA and applicable federal regulations, including 40 CFR §§ 131.2, 131.5, 131.6 and 131.10. Elements approved by the EPA will become effective for CWA purposes, whereas disapproved elements or elements not acted upon will continue to serve, in the words of the protocol, as "guidance for any party interested in conducting investigations to provide scientifically defensible information on existing and attainable recreational uses of the classified waters of the State." As always, if Missouri wishes to remove a CWA Section 101(a)(2) use (e.g., WBC) that is not an existing use, or to adopt a use subcategory that requires less stringent criteria than previously applicable (e.g., SCR), it must demonstrate, through a UAA, that the Section 101(a)(2) use is unattainable (40 CFR §§ 131.10(j)(2)).

(9) 10 CSR 20-7.031(2)(G)3 reads, in part:

> "Use attainability analyses intended for aquatic habitat protection shall be performed in accordance with methods and procedures as found in *Missouri Aquatic Habitat Use Attainability Analyses: Water Body Survey and Assessment Protocol* dated November 6, 2013, as published by the Water Protection Program, Division of Environmental Quality, Missouri Department of Natural Resources...."

The cited protocol is still being developed by the MDNR, and the EPA will reserve any detailed comments pending its review of the completed document. However, the general information provided in Comment 8, above, would apply to this protocol and to any aquatic life UAA submitted by the MDNR pursuant to this protocol. The EPA is concerned that the cited protocol will not undergo the required public notice prior to the Commission's scheduled (November 6, 2013) WQS adoption hearing. For the time being, therefore, the MDNR may wish to consider replacing paragraph (2)(G)3 with the following general language or equivalent language:

> "Use attainability analyses intended for uses other than recreation in and on the water shall be designed and implemented on a case-by-case basis. Any such analysis conducted or accepted by the department shall constitute a structured scientific assessment of the factors potentially affecting the attainment of the use pursuant to 40 CFR § 131.10(g)."

(10) 10 CSR 20-7.031(2)(G)4 reads:

> "Demonstrations of use attainability will be performed in accordance with protocols and procedures outlined in this section of this rule and approved by the commission and U.S. Environmental Protection Agency."

The above language could be interpreted to mean that the Commission and/or the EPA are required to approve all demonstrations of use attainability. This provision should simply reaffirm that revised use designations shall become effective for CWA purposes upon approval by the Commission and the EPA.

(11) 10 CSR 20-7.031(3)(B)1 should refer to Sections (4) and (5) of the proposed rule rather than Sections (3) and (4).

(12) 10 CSR 20-7.031(3)(D) references an updated antidegradation implementation procedure approved by the Commission on May 2, 2012. This updated procedure places a 10 percent cumulative cap on instream degradation and is supported by the EPA (see the agency's July 2, 2009, and August 16, 2011, action letters addressing this subject).

(13) 10 CSR 20-7.031(5) addresses specific criteria and reads, in part, "The specific criteria shall apply to waters contained in the Use Designation Dataset and Tables G and H of this rule." This provision must refer to a specific version of the dataset; i.e., "the Missouri Use Designation Dataset, version 1.0, as published by the department on August ..., 2013."

(14) 10 CSR 20-7.031(5)(R) reads, in part:

> "The biological integrity of waters, as measured by lists or numeric indices of benthic invertebrates, fish, algae, or other appropriate biological indicators, shall not be significantly

different from reference waters. Waters targeted for numeric biological criteria assessment must be contained within the Use Designation Dataset and shall be compared to reference waters of similar size (i.e., same MoRAP Aquatic Gap size category specified at paragraph (1)(C)1. of this rule), habitat type, and aquatic ecoregion type (based on MoRAP Aquatic Gap) using procedures including but not limited to those referenced by 10 CSR 20-7.050."

For consistency and clarity, the word "Missouri" should be inserted before the words "Use Designation Dataset," both here and at other locations in the WQS. The reference to 10 CSR 20-7.050 is rather vague, in that said rule seemingly describes different levels of data quality ranging from 1 (least scientifically rigorous) to 4 (most scientifically rigorous). The reference to this rule at 10 CSR 20-7.031(5)(R) should specify which parts of the rule are being applied in the assessment of biological integrity.

(15) 10 CSR 20-7.031(5) (S)1.B addresses water effect ratios and other physical and chemical factors that may justify the development of site-specific criteria. As noted in the EPA's 2001 guidance document, *Streamlined Water-Effect Ratio Procedure for Discharges of Copper* (EPA-822-R-01-005, March 2001):

"WER-based site-specific criteria provisions are subject to EPA review under Section 303(c) of the Clean Water Act and its implementing regulations at 40 CFR Part 131. This can be structured in two ways.

1. A state may submit each individual determination of a WER-based site-specific criteria value to EPA for review and approval.

2. A state may incorporate WER adjustment provisions into its water quality standards, submitted to EPA for review and approval. Once the provisions are in place, the results of each site-specific application of the procedure would be subject to public participation requirements, but would not be submitted for further Section 303(c) review.

In all cases, it should be noted that the WER derivation is part of the standards setting process. In the absence of an appropriate specification of the site criterion, WERs are not used for adjusting reasonable potential calculations, wasteload allocations, or permit limits."

Because the proposed WQS at 10 CSR 20-7.031(5)(S)2.A adopt the above-mentioned document and other EPA guidance documents by reference, the MDNR has placed itself in a position to apply WERs in the development of effluent limits using the second option, above. Other forms of site-specific criteria must be submitted to, and approved by, the EPA on a case-by-case basis prior to becoming effective for CWA purposes.

(16) 10 CSR 20-7.031(7) addresses metropolitan no-discharge streams and reads, in part:

"No water contaminant except uncontaminated cooling water, permitted stormwater discharges in compliance with permit conditions and **excess wet-weather bypass discharges not interfering with beneficial uses**, shall be discharged to the watersheds of streams listed in Table F" (emphasis added).

However, because cooling water discharges and stormwater discharges require permit coverage, this sentence should be amended to read "No water contaminants except those contained in

permitted cooling water discharges and permitted stormwater discharges shall be discharged to the watersheds of streams listed in Table F."

The EPA would note that "not interfering with beneficial uses" is not necessarily the same thing as meeting applicable permit limits or complying with other applicable regulations. For example, wet-weather bypasses must comply with the general criteria provisions of the WQS (10 CSR 20-7.031(3)) and with 10 CSR 20-7.015(9)(G)2, which reads, in part, "The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation." This language is derived from 40 CFR § 122.41(m)(2) and would apply to wet-weather bypasses and all other bypasses.

(17) The MDNR has modified 10 CSR 20-7. 031(11) by removing the phrase "with all deliberate speed." This change addresses an objection raised by the EPA in a January 25, 2013, disapproval action. The EPA supports this revision.

(18) 10 CSR 20-7.031(12) addresses variances. Please refer to the EPA's previous remarks on this subject, presented in comment 1, above.

(19) The fiscal note accompanying the proposed WQS rule indicates that revisions have been made to Table H that alter the recreational use designations of a number of stream segments. The EPA will defer any comments on these revisions pending its review of the supporting UAAs. Other changes addressed in the fiscal note include (a) the restoration of use designations to two water body segments included in Table H in response to an August 16, 2011, disapproval action taken by the EPA and (b) the correction of the start/end points for one losing stream segment in Table J. The EPA will review these changes and provide comments at a later time.

The EPA appreciates Missouri's continuing efforts to protect and restore water quality and the state's overall commitment to the triennial WQS review and revision process. We look forward to working with the MDNR on the rulemaking considered in this letter and on future rulemakings. If you would like to discuss the above comments or the supplemental comments attached to this letter, please contact John DeLashmit, Chief, Water Quality Management Branch, at (913) 551-7821.

Sincerely,

Karen Flournoy

Karen Flournoy
Director
Water, Wetlands and Pesticides Division

cc: John Madras, MDNR

Corey Buffo, EPA HQ

Enclosure

Enclosure

Supplemental Comments on Missouri Water Quality Standards Rule, 10 CSR 20-7.031

(1) Missouri's WQS at 10 CSR 20-7.031(1)(A) define acute toxicity as:

> "Conditions producing adverse effects or lethality on aquatic life following short-term exposure. The acute criteria in Tables A and B are maximum concentrations which protect against acutely toxic conditions. Acute toxicity is also indicated by exceedence of whole-effluent toxicity, or WET, test conditions of paragraph (4)(I)2. For substances not listed in Table A or B, three-tenths (0.3) of the median lethal concentration, or the no observed acute effect concentration for representative species, **may be used** to determine absence of acute toxicity" (emphasis added).

In turn, paragraph (4)(I)2 reads:

> "The following whole effluent toxicity conditions must be satisfied: A. Single dilution method. The percent effluent at the edge of the zone of initial dilution will be computed and toxicity tests performed at this percent effluent. These tests must show statistically insignificant mortality on the most sensitive of at least two (2) representative, diverse species; and B. Multiple dilution method. An LC50 will be derived from a series of test dilutions. The computed percent effluent at the edge of the zone of initial dilution must be less than three-tenths (0.3) of the LC50 for the most sensitive of at least two (2) representative, diverse species."

Therefore, for WET purposes, the maximum allowable effluent concentration at the edge of the zone of initial dilution is expressed in the WQS as 0.3 times the LC_{50} or as any concentration causing "statistically insignificant mortality." However, the EPA's *Technical Support Document for Water Quality-Based Toxics Control* (EPA/505/2-90-001, March 1991) recommends that, for acute protection, the criteria maximum concentration be set at 0.3 TU_a. The TSD also notes that the results of single dilution tests are highly variable, and it strongly discourages any reliance on such tests.

Given this information, the EPA recommends that 10 CSR 20-7.031(1)(A) and (4)(I)2 be revised to (a) provide for a consistent level of water quality protection based on the application of 0.3 TU_a at the edge of the ZID and (b) require the use of a multiple dilution approach in the establishment of WET permit limits. Lastly, the expression "may be used" in Subsection (1)(A) should be revised to read "shall be used" to ensure this provision is implemented in a consistent and predictable manner.

(2) 10 CSR 20-7.031(1)(A)2.A defines whole body contact recreation as "Activities involving direct human contact with waters of the state to the point of complete body submergence." This provision also indicates that waters designated for this use are "intended to be used for swimming, water skiing, or skin diving." The EPA would point out that other activities, such as wading and lounging in comparatively shallow water or canoeing, kayaking and jet skiing in deeper water, may entail some degree of deliberate total bodily immersion, especially when pursued by children and teenagers (some recently-submitted use attainability analyses from Missouri provide evidence of this fact). The line separating immersion-based from non-immersion-based activities is ambiguous, at best, and likely varies from individual to individual.

The EPA expects the MDNR to weigh these concerns when assigning recreational uses to waters of the U.S. Where total bodily immersion can be reasonably accommodated in some form, and where none of the factors listed at 40 CFR 131.10(g) clearly preclude recreation in and on the water, the waterbody in question must be designated and protected for whole body contact recreation pursuant to 40 CFR §§ 131.2, 131.5(a)(4), 131.6(a) and (f) and 131.10(g), (j) and (k).

(3) 10 CSR 20-7.031(1)(E) defines chronic toxicity as:

> "Conditions producing adverse effects on aquatic life or wildlife following long-term exposure but having no readily observable effect over a short time period. Chronic numeric criteria in Tables A and B are maximum concentrations which protect against chronic toxicity; these values shall be considered four- (4-) day averages, with the exception of total ammonia as nitrogen which shall be considered a thirty- (30-) day average. Chronic toxicity is also indicated by exceedence of WET test conditions of Subsection (5)(Q). For substances not listed in Table A or B, commonly used endpoints such as the no-observed effect concentration or inhibition concentration of representative species **may be used** to demonstrate absence of toxicity" (emphasis added).

Subsection (5)(Q) reads:

> "WET Chronic Tests. Chronic WET tests performed at the percent effluent at the edge of the mixing zone shall not be toxic to the more sensitive of at least two (2) representative, diverse species. Pollutant attenuation processes such as volatilization and biodegradation which may occur within the allowable mixing zone will be considered in interpreting results."

Therefore, for WET purposes, the maximum allowable effluent concentration at the edge of the MZ is expressed in the WQS as the NOEC or IC. However, the TSD recommends that, for chronic protection, the criterion continuous concentration be set at 1.0 TU_c.

10 CSR 20-7.031(1)(E) and (5)(Q) should be revised to (a) provide for a consistent level of water quality protection based on the application of 1.0 TU_c at the edge of the MZ and (b) require the use of a specific inhibition concentration (e.g., IC_{25}) in the derivation of the NOEC (NOECs derived from the IC_{25} approximate NOECs obtained via hypothesis testing; hence, the IC_{25} is the preferred statistical method for determining the NOEC; see TSD, page 6). Lastly, in 10 CSR 20-7.031(1)(E), the words "may be used" must be changed to "shall be used" to ensure this provision is implemented in a consistent and predictable manner.

(4) 10 CSR 20-7.031(1)(F)3 reads, in part, "For effluent regulation purposes, publicly-owned L3 lakes are those for which a substantial portion of the surrounding lands are publicly owned or managed." Please explain any differences in how the effluent regulations will be applied to publicly-owned versus privately-owned L3 lakes.

(5) "Waters of the state" is defined in the Missouri WQS at 10 CSR 20-7.031(1)(BB) (and in the Missouri Clean Water Law at § 644.016(27)) as follows:

> "All rivers, streams, lakes, and other bodies of surface and subsurface water lying within or forming a part of the boundaries of the state which are not entirely confined and located completely upon lands owned, leased, or otherwise controlled by a single person or by two (2) or

more persons jointly or as tenants in common and includes waters of the United States lying within the state."

"Waters of the state" also is defined in the Missouri WQS at 10 CSR 20-7.031 (1)(GG), which adopts 10 CSR 20-2.010 by reference. 10 CSR 20-2.010(82) reads:

> "All rivers, streams, lakes and other bodies of surface and subsurface water lying within or forming a part of the boundaries of the state which are not entirely confined and located completely upon lands owned, leased or otherwise controlled by a single person or by two (2) or more persons jointly or as tenants in common. These waters also include waters of the United States lying within or adjacent to the state."

The EPA interprets these definitions to collectively include all waters of the U.S. lying within or adjacent to the state, including all waters of the U.S. located on privately-owned land. Please clarify whether the MDNR shares this interpretation.

(6) 10 CSR 20-7.031(5)(A)4.F reads:

> "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...."

This provision apparently authorizes the use of flow-variable permit limits. Although the EPA supports the application of both tiered and seasonal fixed limits in permits issued under the National Pollutant Discharge Elimination System, the agency believes that the application of flow-variable limits would present serious regulatory and environmental drawbacks:

- Facilities issued flow-variable water quality-based effluent limits would no longer be required to provide a consistent level of treatment predicated on the application of a critical low flow condition (e.g., 7Q10). Instead, authorization to release more pollutants during periods of elevated stream flow would provide an incentive to store wastewater and meter out partially treated effluent in accordance with the prevailing stream flow. Overall, the advent of flow-variable permit limits would lead to an increase the quantity of pollutants discharged to the waters of the U.S.

- For example, flow-variable permit limits applied to certain industries and publicly owned treatment works would increase the quantity of nitrogen and phosphorus entering receiving streams. Because lakes or reservoirs located downstream of some such facilities would tend to serve as nutrient sinks, increased nutrient loading at higher flows would translate into increased water/sediment nutrient concentrations in the lakes/reservoirs over time. This, in turn, would accelerate the eutrophication process, diminish the functional longevity of these waters, and interfere with local, state and national efforts to develop and implement meaningful nutrient reduction strategies.

- Flow-variable permit limits would complicate the development and implementation of total maximum daily loads and associated waste load allocations. Traditionally, the dilution provided by higher flows has been allotted primarily to nonpoint sources. To accommodate flow-variable

permit limits in instances involving total maximum daily loads, load allocations would need to be reduced to offset the required increases in waste load allocations.

- In addition to continuous stream flow monitoring, any wastewater treatment facility with a flow-variable permit limit would need to monitor the quality of its final effluent and the magnitude of its discharge on an essentially continuous (rather than periodic) basis for self-monitoring and reporting purposes.

- Facilities with flow-variable permit limits also would have to be designed/constructed in a manner allowing for rapid operational adjustments to changes in stream flow. However, even under the best of circumstances, facility adjustments would lag behind actual changes in stream flow, thereby greatly increasing the risk of non-compliance with applicable permit limits.

- The proposed WQS at 10 CSR 20.7.031(4)(A) and (5)(H) prohibit the occurrence of harmful bottom deposits in waters of the state. Such deposits can form when stream flows are no longer sufficient to suspend and transport particulate matter discharged from wastewater treatment facilities. Therefore, any water quality-based effluent limit applied during a period of higher stream flow would need to account for the reduction in particle transport capacity accompanying the stream's transition to a lower flow. Moreover, the MDNR would be expected to develop best professional judgment-based technological limits for treatment systems (e.g., settling ponds) lacking a technology-based performance standard for suspended solids, and this limit would supersede any less stringent WQBEL otherwise deemed applicable under the prevailing flow condition.

- For a wide variety of pollutants (e.g., various metals), in-stream background concentrations are positively correlated with stream flow. Ambient water quality criteria may be approached or even exceeded during high flow events (i.e., there may be little or no remaining dilution increment). The MDNR would need to account for this possibility during the development of any flow-variable WQBELs.

- The proposed WQS at 40 CSR 20-7.031(1)(Z) state that " hardness [as applied in the criteria equations for metals] will be determined by the lower quartile (twenty-fifth percentile) value of a representative number of samples from the water body in question or from a similar water body **at the appropriate stream flow condition**" (emphasis added). Hardness generally exhibits an inverse relationship with stream flow, such that the lowest hardness levels (and the most stringent metal criteria) occur (apply) during the largest runoff events. Flow-variable permit limits for hardness-dependent metals would need to reflect this fact.

- Antidegradation and antibacksliding considerations would need to be weighed very carefully during the development of flow-variable permit limits to protect downstream waters from unwarranted increases in contaminant concentrations. The state's antidegradation procedures would need to be revised to account for the impacts of flow-variable WQBELs on downstream water quality.

For these and other reasons, the EPA would strongly encourage the MDNR to remove any WQS language authorizing the use of flow-variable permit limits.

(7) 10 CSR 20-7.031(5)(A)5.C pertains to wetlands and reads:

> "Specific criteria shall include both chronic and acute concentrations to better reflect the different tolerances to the inherent variability between concentrations and toxicological characteristics of a condition."

The meaning of the above sentence is unclear. We suggest ending the sentence after the first use of the word "concentrations."

(8) 10 CSR 20-7.031(5)(E) establishes a permissible pH range (6.5-9.0) for all waters of the state, including MZs and zones of initial dilution. As worded, this provision would require all discharges to comply with this pH range (criterion) at end-of-pipe. (Note: discharges of uncontaminated cooling water and discharges from water treatment plants seemingly would constitute the sole exceptions to this requirement; pursuant to 10 CSR 20-7.015(9)(I)1, the pH of these discharges may range from 6 to 10.5 standard units "if it can be demonstrated that the pH will not exceed nine (9) standard units beyond the regulatory mixing zone.")

The MDNR may wish to consider revising 10 CSR 20-7.031(5)(E) to provide for the wider application of the pH criterion at the edge of the MZ. Such a change would need to be submitted to and approved by the EPA before becoming effective for Clean Water Act purposes.

(9) Parameters referenced in subsections 10 CSR 20-7.031(5)(F) through (5)(H) (i.e., taste and odor producing substances; turbidity and color; solids) have no associated numeric criteria and are not otherwise listed in Tables A or B; therefore, they appear to apply to all waters of the state and should be addressed under the general criteria provisions rather than the specific criteria provisions of the WQS.

(10) 10 CSR 20-7.031(5)(I) addresses radioactive materials and reads "All streams and lakes shall conform to state and federal limits for radionuclides established for drinking water supply." As required by the 1986 amendments to the Safe Drinking Water Act, the EPA has issued maximum contaminant levels for the following radionuclides in drinking water: combined radium 226/228 (5 picoCuries per Liter); gross alpha, not including radon and uranium (15 pCi/L); beta emitters (4 millirems per year); uranium (30 micrograms per liter). However, none of these MCLs are included as drinking water criteria in Table A of the WQS. Does the MDNR intend to adopt these values as drinking water criteria in future WQS rulemakings?

(11) 10 CSR 20-7.031(5)(M) addresses the development and application of water quality criteria for carcinogenic substances. It reads, in part, "Assumptions are two (2) liters of water and six and one-half (6.5) grams of fish consumed [per person] per day." Although this language has not changed appreciably from previous WQS, a value of 17.5 grams per person per day represents the 90th percentile (freshwater) fish consumption rate for adults in the United States (see Section 5.1.1.1, Table 4, in the EPA's *Estimated Per Capita Fish Consumption in the United States*, March 2000, Office of Water, Office of Science and Technology, Washington, DC). This consumption rate has been applied as a national default value in the development of human health criteria for carcinogenic substances and non-carcinogenic substances alike (see the EPA's *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health (2000)*, October 2000, Office of Water, Office of Science and Technology, Washington, DC). The EPA recommends applying this default consumption rate when developing criteria protective of sport

anglers. A higher default consumption rate, 142.4 grams per day, should be applied when developing criteria protective of subsistence fishers. The EPA's methodology provides additional recommendations for other sensitive subpopulations, such as women of childbearing age and children younger than 14 years.

Based on this information, the per capita fish consumption rate cited in the state's WQS (6.5 grams per day) does not reflect recent science. The fish consumption rate should be increased to at least 17.5 grams per day.

(12) 10 CSR 20-7.031(5)(N) addresses water quality criteria for nutrients and chlorophyll. All elements of this Subsection, other than Table M, were disapproved previously by the EPA (see August 16, 2011 action letter). These disapproved elements are not applicable for CWA purposes and, in the interest of clarity, should be removed from the WQS.

(13) 10 CSR 20-7.031(5)(P) reads:

> "Criteria to protect designated uses are based on current technical literature, especially the Environmental Protection Agency's publication, *Quality Criteria for Water*, 1986. Criteria may be modified or expanded as additional information is developed or as needed to define narrative criteria for particular situations or locations."

Tables A and B in the WQS no longer reflect the most recent scientific and technical literature. In the years that followed the state's adoption of these tables, the EPA has issued new or revised national criteria recommendations for a variety of pollutants (see http://water.epa.gov/scitech/swguidance/standards/ criteria/current/index.cfm). The EPA looks forward to working with the MDNR, the Commission and interested stakeholders in the review and revision of these tables.

(14) 10 CSR 20-7.031(5)(Q) addresses chronic WET tests. Please see comment 3, above, which discusses this provision and related provisions in the WQS.

(15) 10 CSR 20-7.031(5)(S)1 reads: "Site-specific criteria may be appropriate where, but is not limited to the examples given in subparagraphs A. or B. of this paragraph." For clarity, the MDNR may wish to consider revising this sentence to read "Site-specific criteria may be appropriate under the circumstances described in subparagraphs A. or B. of this paragraph or under other related circumstances."