



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 6  
1445 ROSS AVENUE, SUITE 1200  
DALLAS TX 75202-2733

JUN - 6 2016

Caleb Osborne  
Associate Director – Water Division  
Arkansas Department of Environmental Quality  
5301 Northshore Drive  
Little Rock, Arkansas 72118-5317

Re: Final submittal of *Regulation No. 2: Regulation Establishing Water Quality Standards for Surface Waters of the State of Arkansas*, as amended by third party rulemaking initiated by Domtar A.W. LLC

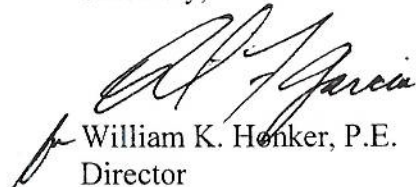
Dear Mr. Osborne:

The Environmental Protection Agency (EPA) has completed its review of the revisions to *Regulation No. 2: Regulation Establishing Water Quality Standards for Surface Waters of the State of Arkansas* that were made in relation to the Third Party Rulemaking process initiated by Domtar A. W. LLC. The revisions to Regulation No. 2 were adopted by the Arkansas Pollution Control and Ecology Commission (APC&EC) on October 23, 2015 and became effective on November 5, 2015. They were submitted to the EPA for approval on December 21, 2015, by the Arkansas Department of Environmental Quality (ADEQ).

In a letter dated February 9, 2016, EPA took no action on the submitted revision to Regulation No. 2 as the information provided in the submission was not sufficient to determine that the site-specific criteria changes are protective of the aquatic life use in the Red River and protective of downstream uses in Louisiana. Additional information was received by the EPA on March 30, 2016. After review of this additional material, EPA determined that the supporting documentation remains insufficient to demonstrate that the revised minerals criteria are protective of the aquatic life use. In addition, the revised criteria are not protective of downstream uses. Therefore, EPA is disapproving the site-specific total dissolved solids and sulfate criteria revisions for the Red River from the Oklahoma-Arkansas state line to its confluence with the Little River and the site-specific sulfate criterion for the Red River from its confluence with the Little River to the Arkansas-Louisiana state line. Please note that under 40 CFR § 313.21(c), new and revised standards do not go into effect for Clean Water Act (CWA) purposes until approved by EPA. Therefore, previously approved language in the January 24, 2008, version of the Arkansas water quality standards remains in effect for CWA purposes.

I appreciate the APC&EC's and the ADEQ's effort in the review of these revised provisions of the State's standards and also appreciate ADEQ's assistance with coordinating meetings and correspondence with the third party. If you have any questions or concerns, please contact me at (214) 665-3187 or contact Karen Kesler at (214) 665-3185.

Sincerely,



William K. Henker, P.E.  
Director  
Water Division

Enclosure

cc: Sarah Clem, Branch Manager, Water Division ADEQ

**TECHNICAL SUPPORT DOCUMENT:  
EPA REVIEW OF SITE-SPECIFIC CRITERIA REVISIONS TO *REGULATION 2:  
REGULATION ESTABLISHING WATER QUALITY STANDARDS FOR SURFACE  
WATERS OF THE STATE OF ARKANSAS FOR THE RED RIVER, ARKANSAS***

Revisions Adopted by the Arkansas Pollution Control and Ecology Commission via Minute  
Order No. 15-22 for Domtar A.W. LLC

**U.S. EPA REGION 6  
WATER DIVISION  
June 2016**

# Table of Contents

|  |          |
|--|----------|
| <b>I. Introduction .....</b>   | <b>1</b> |
| <i>Background.....</i>   | <i>1</i> |
| <i>Chronology of Events.....</i>   | <i>1</i> |
| <i>Summary of Revised Provisions.....</i>  | <i>2</i> |
| <b>II. Revised Provisions EPA is Disapproving .....</b>                                | <b>2</b> |
| <i>Site-Specific Water Quality Criterion for TDS in the Upper Red River.....</i>       | <i>2</i> |
| <b>Disapproval Justification .....</b>   | <b>2</b> |
| <b>Action .....</b>  | <b>4</b> |
| <i>Site-Specific Water Quality Criterion for sulfates in the Upper Red River .....</i> | <i>4</i> |
| <b>Disapproval Justification .....</b>   | <b>4</b> |
| <b>Action .....</b>  | <b>5</b> |
| <i>Site-Specific Water Quality Criterion for sulfate in the Lower Red River.....</i>   | <i>5</i> |
| <b>Disapproval Justification .....</b>   | <b>6</b> |
| <b>Action .....</b>  | <b>6</b> |
| <b>III. References .....</b>   | <b>6</b> |

## **I. Introduction**

### ***Background***

As described in § 303(c) of the Clean Water Act (CWA) and in the standards regulation within the Code of Federal Regulations (CFR) at 40 CFR § 131.20, states and authorized tribes have primary responsibility to develop and adopt water quality standards to protect their waters. State and tribal water quality standards consist of three primary components: beneficial uses, criteria to support those uses, and an antidegradation policy. In addition, CWA § 303(c)(1) and 40 CFR § 131.20 require states to hold public hearings at least once every three years to review and, as appropriate, modify and adopt standards.

Under 40 CFR § 131.21, the Environmental Protection Agency (EPA) reviews new and revised surface water quality standards that have been adopted by states and authorized tribes. Authority to approve or disapprove new and/or revised standards submitted to EPA for review has been delegated to the Water Division Director in Region 6. Tribal or state water quality standards are not considered effective under the CWA until approved by EPA.

The purpose of this Technical Support Document (TSD) is to provide the basis for the Environmental Protection Agency's disapproval of site-specific water quality criteria revisions for the Red River (total dissolved solids (TDS) and sulfate) to Regulation No. 2: *Regulation Establishing Water Quality Standards for Surface Waters of the State of Arkansas*. These revisions were adopted by the Arkansas Pollution Control and Ecology Commission (APC&EC) in Minute Order 15-22 and are further described in the subsection below titled "Summary of Revised Provisions."

### ***Chronology of Events***

|                   |  |
|-------------------|--|
| November 20, 2014 | A third party, Domtar A.W. LLC (Domtar), filed a petition with the APC&EC to amend Regulation No. 2  |
| December 5, 2014  | The APC&EC initiated the rulemaking proceedings via a Minute Order No. 14-41   |
| December 8, 2014  | Public notice of the proposed rule-making was published  |
| January 26, 2015  | Public hearing on the proposed rule-making was held in Ashdown, Arkansas   |
| February 9, 2015  | Public comment period ended on the proposed changes to Regulation No. 2  |
| October 23, 2015  | Becky Keogh, Director, Arkansas Department of Environmental Quality (ADEQ), signed Minute Order No. 15-22 adopting changes to Regulation No. 2 |

|                   |  |
|-------------------|--|
| December 21, 2015 | William K. Honker, Director, Water Division, EPA Region 6, received letter from, Ellen Carpenter, Water Division Chief, ADEQ, requesting EPA approval of the adopted revisions and transmitting the water quality standards submission package |
| February 9, 2016  | EPA Region 6 issues a letter to ADEQ stating that no action would be taken on the submission package to allow the third party time to respond to EPA's comments  |
| March 30, 2016    | ADEQ submits additional information prepared by the third party to EPA   |

***Summary of Revised Provisions***

By letter dated December 21, 2015, ADEQ submitted several water quality standards revisions adopted by the APC&EC via Minute Order No. 15-22 to EPA for review and approval. These revisions are located in Regulation 2.511 and Appendix A. The revisions include sulfate (200 mg/L to 250 mg/L) and TDS (850 mg/L to 940 mg/L) criteria for the Red River from the Oklahoma (OK)/ Arkansas (AR) state line to its confluence with the Little River (Upper Red River). The revisions also include the increase of the sulfate criterion from 200 mg/L to 225 mg/L for the Red River from its confluence with the Little River to the AR/Louisiana (LA) state line (Lower Red River).

**II. Revised Provisions EPA is Disapproving**

In accordance with the requirements found in Regulation No. 2.306 of the Arkansas Water Quality Standards, Domtar contracted with FTN Associates, Ltd., to complete a summary rationale for the revised site-specific criteria. One of the purposes of the summary rationale was to provide scientific justification for the revised site-specific water quality criteria for the Red River from the OK/AR state line to the AR/LA state line.

***Site-Specific Water Quality Criterion for TDS in the Upper Red River***

**Table 1.** Site-specific water quality criterion revision for TDS in the Red River submitted by ADEQ to EPA for review and approval.

| Reach Description   | Current Criterion | Proposed Criterion |
|---|-------------------|--------------------|
| Red River from the OK/AR state line to its confluence with the Little River | 850 mg/L          | 940 mg/L           |

**Disapproval Justification**

In its review of the summary rationale/toxicity test and additional material submitted in support of the revised TDS criterion for the Upper Red River, EPA determined that the documents did not sufficiently demonstrate protection of aquatic life use which is required by 40

CFR § 131.6. The documents also did not demonstrate protection of downstream use which is required by 40 CFR § 131.10(b).

The initial Domtar submission included a summary rationale and a toxicity test as justification for this criterion change. The summary rationale consisted of a series of bullet points, without an in-depth discussion of how the revised criterion is protective of the current aquatic life designated use. The summary rationale referenced the use attainability analysis (UAA) submitted for a separate rulemaking proposed by the Southwestern Electric Power Company (SWEPCO) as evidence that the aquatic life designated use was attained in the Little River and the Lower Red River. However, the SWEPCO UAA does not provide a sufficient demonstration of protection of the aquatic life designated use for the TDS revision in the Upper Red River proposed by the Domtar rulemaking because this reach was not discussed in the SWEPCO UAA and a TDS value this high was not discussed in the SWEPCO UAA.

As the summary rationale provided limited information, the primary line of evidence presented for protection of aquatic life use at this TDS criterion was a single toxicity test. While the toxicity test adds to the weight of evidence demonstrating protection of aquatic life, it alone does not demonstrate protection. The toxicity test was performed with *Ceriodaphnia dubia*, which, while a standard toxicity testing species, is not the most sensitive species to the effects of minerals. It also only represents tolerance for one species rather than for an entire community. As no classification of the benthic community in the Upper Red River was made, EPA is unable to determine whether *C. dubia* is a representative species for determining toxicity of this TDS concentration for the Upper Red River community.

In addition to the summary rationale and the toxicity study, a copy of the Buchanan et al. 2003 paper was also included in the Domtar submission. This paper, an attachment of the submission, was not referenced in the summary rationale, and there was no discussion of the paper included in the submission. Due to the lack of discussion of the protection of the aquatic life use at this revised TDS criterion, EPA requested that Domtar submit additional information demonstrating how this criterion is protective of the aquatic life use, including numeric tolerance values for Red River species. The additional material submitted by Domtar included a discussion of the aquatic life community --the same discussion that was included in the additional material submitted for the SWEPCO submission. This additional material included a very limited discussion of the Upper Red River reach and referenced the Buchanan et al. 2003 study. This Buchanan et al. 2003 study included data on fish presence and abundance from 1995 to 2001. The submission did not include any information describing the current fish community, and no description of the benthic community, historic or present, was included. Without a current description of the community present in the water body, it is difficult to assess what impacts the current revisions will have on the aquatic life. In addition, minerals concentrations were not determined at the time of the fish sampling and a discussion pairing this data to monitoring data for the Upper Red River was not included. The additional material also did not include data from studies other than the Buchanan study, and did not include any numerical tolerances. Therefore, EPA was not able to use this information to further assess whether the aquatic life use was protected.

Further, the protection of downstream uses was not demonstrated. The criterion revision submitted by Domtar was contingent upon the approval of the revision to the downstream TDS criterion, which was associated with a separate rulemaking submitted by SWEPCO. However, the TDS criterion proposed with the SWEPCO rulemaking was not protective of the TDS criterion in LA, and therefore could not be approved. Without this revision, the downstream TDS criterion for the Lower Red River is 500 mg/L. The proposed 940 mg/L criterion for the Upper Red River will not be protective of that downstream criterion for the Lower Red River. Even though the Little River flows into the Red River at the divide between these two reaches, the dilution is not enough to meet the downstream criterion. According to the mass-balance model of TDS concentrations in the Red River submitted by Domtar, the TDS concentration in the Red River before dilution from the Little River would be 935.5 mg/L and after dilution from the Little River would be 856.5 mg/L. Therefore the 940 mg/L criterion will not be protective of downstream uses.

**Action**

EPA is disapproving the site-specific TDS criterion change for the Red River from the OK/AR state line to its confluence with the Little River. Protection of aquatic life use was not demonstrated and downstream uses were not protected with this criterion.

As specified in 40 CFR § 131.21(c), these revised standards do not go into effect for CWA purposes until approved by EPA. Therefore, the previously approved criterion of 850 mg/L remains in effect for CWA purposes.

***Site-Specific Water Quality Criterion for sulfates in the Upper Red River***

**Table 2.** Site-specific water quality criterion revision for sulfate in the Upper Red River submitted by ADEQ to EPA for review and approval.

| Reach Description   | Current Criterion | Proposed Criterion |
|---|-------------------|--------------------|
| Red River from the OK/AR state line to its confluence with the Little River | 200 mg/L          | 250 mg/L           |

**Disapproval Justification**

In its review of the summary rationale/toxicity test and additional material submitted in support of the revised sulfate criterion for the Upper Red River, EPA determined that the documents did not sufficiently demonstrate protection of aquatic life use which is required by 40 CFR § 131.6. The documents also did not demonstrate protection of downstream use which is required by 40 CFR § 131.10(b).

A summary rationale and a toxicity test were provided as justification for this criterion change. This summary rationale consisted of a series of bullet points, without an in-depth discussion of aquatic life use protection. The summary rationale referenced the UAA submitted for the Southwestern Electric Power Company (SWEPCO) rulemaking as evidence that the aquatic life designated use was attained in the Little River and the Lower Red River, however no discussion of the aquatic life use in the Upper Red River was included, which is the reach in



question for this criterion revision. In addition, the SWEPCO UAA, which was for a separate rulemaking, discussed criteria revisions for TDS and temperature, but not sulfate. Therefore, no specific discussion of the impact of sulfates on the aquatic life and how this criterion is protective of the aquatic life designated use was presented aside from one toxicity test.

The toxicity test provided some evidence of protection of aquatic life, but it alone is not sufficient to demonstrate protection of the entire community. The toxicity test was performed with *C. dubia*, which while a standard toxicity testing species, is not the most sensitive species to the effects of minerals. As no classification of the benthic community was conducted, and no comparison was made between the tolerance of *C. dubia* and that of other indigenous species, EPA is unable to determine whether *C. dubia* is a representative species for determining toxicity of these sulfate levels for the entire Upper Red River community. Given this, insufficient data were included to be able to determine that the aquatic life use will be sufficiently protected with this sulfate criterion.

Further, the protection of downstream uses was also not demonstrated. This rulemaking proposed changes in sulfate criteria for Upper Red River and for the Lower Red River. The lack of protection of downstream uses is driven by the sulfate criterion in LA, which is 110 mg/L. The proposed criterion for the Lower Red River is 225 mg/L which is not protective of the LA criterion. Given that, this value cannot be approved and the previously approved 200 mg/L would still be the applicable criterion for the Lower Red River. Therefore, the proposed criterion for the Upper Red River, 250 mg/L, would not be protective of the criterion for the Lower Red River (200 mg/L). Based on the mass-balance submitted as part of the additional information for the Domtar rulemaking, the sulfate concentration in the Red River at its confluence with the Little River would be 224.6 mg/L. This value, which takes into account the dilution from the Little River, is not protective of the downstream use in the Lower Red River with its sulfate criterion of 200 mg/L. Also, according to this mass-balance, it is not protective of the 110 mg/L LA criterion farther downstream.

### Action

EPA is disapproving the site-specific sulfate criterion revision for the Red River from the OK/AR state line to its confluence with the Little River. Demonstration of aquatic life use protection was inadequate and downstream uses were not protected with this criterion.

As specified in 40 CFR § 131.21(c), these revised standards do not go into effect for CWA purposes until approved by EPA. Therefore, the previously approved criterion of 200 mg/L remains in effect for CWA purposes.

### *Site-Specific Water Quality Criterion for sulfate in the Lower Red River*

**Table 3.** Site-specific water quality criterion revision for sulfate in the Lower Red River submitted by ADEQ to EPA for review and approval.

| Reach Description   | Current Criterion | Proposed Criterion |
|---|-------------------|--------------------|
| Red River from its confluence with the Little River to the AR/LA state line | 200 mg/L          | 225 mg/L           |

## **Disapproval Justification**

After reviewing the summary rationale/toxicity test and additional material submitted in support of the revised sulfate criterion for the Lower Red River, EPA determined that the documents did not sufficiently demonstrate protection of aquatic life use which is required by 40 CFR § 131.6. The documents also did not demonstrate protection of downstream use which is required by 40 CFR § 131.10(b).

A summary rationale and a toxicity test were provided as justification for this criterion change. As stated above, this summary rationale did not include an in-depth discussion of aquatic life use protection. It referenced the UAA submitted for the Southwestern Electric Power Company (SWEPCO) rulemaking as evidence that the aquatic life designated use was attained in the Little River and the Lower Red River, however the SWEPCO submission only discussed the impacts of TDS in the Lower Red River and did not discuss the impacts of sulfates. While a toxicity test was included and does demonstrate some evidence of protection of aquatic life, it alone is not sufficient to demonstrate protection of the entire community. The toxicity test was performed with *C. dubia*, which, while a standard toxicity testing species, is not the most sensitive species to the effects of minerals. As no classification of the benthic community was conducted and no comparison was made between the tolerance of *C. dubia* and that of other indigenous species, EPA is unable to determine whether *C. dubia* is a representative species for determining toxicity of these sulfate concentrations for the entire Lower Red River community.

Along with these issues, the protection of downstream uses was also not demonstrated. This reach of the Red River flows directly into Louisiana whose sulfate criterion is 110 mg/L. There is no additional water body at the state line that adds dilution to the Red River, so the 225 mg/L sulfate criterion is not protective of the downstream use in Louisiana, which is protected by a 110 mg/L sulfate criterion.

## **Action**

EPA is disapproving the site-specific sulfate criterion change for the Red River from its confluence with the Little River to the AR/LA state line. Sufficient demonstration of aquatic life use protection was not included and the downstream use was not protected by this criterion.

As specified in 40 CFR § 131.21(c), these revised standards do not go into effect for CWA purposes until approved by EPA. Therefore, the previously approved criterion of 200 mg/L remains in effect for CWA purposes.

## **III. References**

Buchanan, T.M., D. Wilson, L.G. Claybrook, and W.G. Layher. 2003. Fishes of the Red River in Arkansas. *J. Ark. Acad. Sci.* 57:18-26.