

**ARKANSAS POLLUTION CONTROL & ECOLOGY COMMISSION  
ECONOMIC IMPACT/ENVIRONMENTAL BENEFIT ANALYSIS**

**Rule Number & Title: Rule 2, Rule Establishing Water Quality Standards for Surface Waters of the State of Arkansas**

**Petitioner: Division of Environmental Quality**

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Analysis Prepared by: Division of Environmental Quality

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Pursuant to APC&EC Rule 8.812, *Amendments to the following Rules are not exempt from the economic impact and environmental benefit analysis and are analyzed below:*

**Rule 2.507** – *Extension of the primary contact recreation season.*

**Rule 2.507** – *Revision of E. coli geometric mean criteria for “All Other Waters”.*

**Rule 2.508** – *Revision of cadmium criteria.*

**Rule 2.508** – *Addition of benzene, toluene, ethylbenzene, xylene, and phenol criteria.*

**Rule 2.512** – *Revision of ammonia criteria.*

**Appendix A** – *Addition of site-specific pH and dissolved oxygen (DO) criteria for certain waterbody assessment units (AUs).*

**Appendix A** – *Remove exceptions “no fishable/swimmable or domestic water supply uses” from two unnamed tributaries.*

**Appendix A** – *Remove exceptions “no fishable/swimmable or domestic water supply uses” and “exempt from Rule 2.406 and Chapter 5” from Coffee Creek.*

**Appendix A** – *Removal of site-specific temperature for tributary of Lake June below Entergy Couch Plant to confluence with Lake June.*

**Appendix A** – *Ecoregion boundary line updates.*

## **2A. ECONOMIC IMPACT**

### **1. Who will be affected economically by this proposed rule?**

**State:** a) the specific public and/or private entities affected by this rulemaking, indicating for each category if it is a positive or negative economic effect; and b) provide the estimated number of entities affected by this proposed rule.

*The proposed revisions to Arkansas’ water quality standards impact only those NPDES permitted facilities with current effluent limits and monitoring requirement that will change based on the proposed water quality standards changes. The entities affected by this rulemaking are facilities*

*that applied for and received NPDES permits authorizing the discharge of treated wastewater into waters of the state. The proposed revisions to Arkansas' water quality standards may result in changes to the limits in some NPDES permit for certain pollutants. Below, under "Impacts for Specific Rule Changes", the number of permits that could be impacted are listed for each change.*

*DEQ believes that the proposed amendments to Rule 2 may have a financial impact on some of these entities; however, DEQ has no way to quantify that impact or verify that the economic impact to these facilities will be negative or positive. Rule 2 does not have fees associated with it, making the cost of compliance with permits issued in compliance with this rule the source of any financial impact.*

The revisions in this rule will result in changes to the limits in NPDES permits for certain pollutants. As a result, some entities may incur additional costs to achieve compliance with more stringent limits. Other entities will incur no additional cost because their current treatment systems can achieve compliance with the more stringent limits. Multiple factors can influence what action or actions each entity can take to achieve compliance with a more stringent effluent limit. In some instances, an entity will have more than one treatment option available. The cost depends in part on the treatment technology used and on how the treatment system is operated. Each entity can choose its technology and how its system is operated.

*DEQ will receive public comments on these proposed revisions and reserves the right to amend this analysis based on those comments.*

### **Impacts for Specific Rule Changes**

**8 CAR §§ 21-302 & 21-507 (Rule 2.302 & Rule 2.507)– Extension of the primary contact recreation season**

- a) This revision is likely to impact NPDES permitted facilities with current effluent limits for bacteria that apply only during the primary contact recreation season, currently May to September.*
- b) There are currently 210 NPDES facilities with primary contact recreation season effluent limits or monitoring requirements.*

**8 CAR § 21-507 (Rule 2.507) – Revision of *E. coli* geometric mean criteria for "All Other Waters".**

- a) This revision is likely to impact NPDES permitted facilities with current effluent limits for bacteria that apply only during the primary contact recreation season, currently May to September.*
- b) There are currently 210 NPDES facilities with primary contact recreation season effluent limits or monitoring requirements.*

**8 CAR § 21-508 (Rule 2.508)– Revision of cadmium criteria.**

- a) This revision is likely to impact NPDES permitted facilities with current effluent limits for cadmium. DEQ notes that most NPDES permitted facilities with current effluent*

*limits for cadmium (twelve out of sixteen) can meet limits based on the proposed criteria.*

*b) Criteria changes for cadmium affect sixteen NPDES permitted facilities.*

**8 CAR § 21-508 (Rule 2.508)**– *Addition of benzene, toluene, ethylbenzene, xylene, and phenol criteria.*

*a) This revision is likely to impact NPDES permitted facilities with current effluent limits for benzene, toluene, ethylbenzene, xylene, and phenol. DEQ notes that NPDES permitted facilities with current effluent limits for benzene, toluene, ethylbenzene, xylene, and phenol are capable of meeting effluent limits based on the proposed criteria. One NPDES permitted facility has monitoring requirements for xylene.*

*b) The number of NPDES permitted facilities impacted are as follows: benzene – four facilities, toluene – three facilities, ethylbenzene– four facilities, xylene – one facility, and phenol– five facilities*

**8 CAR § 21-512 (Rule 2.512)**– *Ammonia – Revise current Rule 2 criteria (1999) to EPA updated 2013 criteria.*

*a) This revision is likely to impact NPDES permitted facilities with current effluent limits for ammonia. DEQ notes that criteria changes for ammonia will result in more stringent effluent limits for ammonia.*

*b) Criteria changes for ammonia affect five hundred and twenty (520) NPDES facilities.*

**Appendix A** – *Addition of site-specific pH and dissolved oxygen (DO) criteria for certain waterbody assessment units (AUs).*

*a) This revision will not impact NPDES permitted facilities. DEQ notes that these site-specific criteria are a more accurate representation of the historical background water quality of the AUs.*

*b) None.*

**Appendix A** – *Addition of Aquatic Life use on three waterbodies.*

*Unnamed tributary to Smackover Creek, Coffee Creek, and unnamed tributary to Flat Creek*

*a) This revision will not impact NPDES permitted facilities. DEQ notes that these revisions will add seasonal aquatic life and secondary contact recreation protection to these waterbodies.*

*b) None.*

**Appendix A** – *Coffee Creek (upper) Removal of exceptions “no fishable/swimmable or domestic water supply uses” and “exempt from Rule 2.406 and Chapter 5” from Coffee Creek.*

*a) This revision will not impact NPDES permitted facilities. DEQ notes that currently, no facility is permitted to discharge into upper Coffee Creek.*

*b) None.*

**Appendix A** – *Coffee Creek (lower) Remove of exceptions “no fishable/swimmable or domestic water supply uses” and “exempt from Rule 2.406 and Chapter 5” from Coffee Creek.*

*a) This revision is likely to impact one NPDES permitted facility that discharges to lower Coffee Creek. DEQ notes that the economic impact of this revision is dependent on how*

*the NPDES permitted facility decides to meet the effluent limits that result from this revision and therefore unknown at this time.*

**b) One**

**Appendix A – Removal of site-specific temperature for tributary of Lake June below Entergy Couch Plant to confluence with Lake June**

**a) This revision will not impact NPDES permitted facilities.**

**b) None.**

**Appendix A – Ecoregion boundary line updates.**

**a) This revision is likely to impact NPDES permitted facilities currently assigned to a different ecoregion and with permitted effluent limits for temperature, dissolved oxygen, turbidity, chloride, sulfate, total dissolved solids, or hardness-based metals. DEQ notes that some NPDES permitted facilities, but not all, will have revised effluent limits based on this change. DEQ is unable to quantify the relative costs for facilities to comply with the current criteria versus the proposed criteria.**

**b) Fifty-eight (58) of the seventy-three (73) facilities impacted by new ecoregion boundaries are likely to have revisions to the following parameters:**

<b>Parameter</b>	<b>Number of Facilities</b>
<i>Temperature</i>	3
<i>Dissolved Oxygen</i>	23
<i>Base Turbidity</i>	25
<i>All Turbidity</i>	30
<i>Cl<sup>-</sup></i>	27
<i>SO<sub>4</sub></i>	9
<i>Total Dissolved Solids</i>	13
<i>Hardness</i>	6

**2. What are the economic effects of the proposed rule? State: a) the estimated increased or decreased cost for an average facility to implement the proposed rule; and b) the estimated total cost to implement the rule.**

**a) DEQ is unable to quantify the cost for compliance for an average facility. The impact of these revisions is limited to NPDES permitted facilities that have limits or monitoring requirements that would change based on these revisions. Not all NPDES permitted facilities are impacted and an average NPDES permitted facility would not be impacted by all these changes. DEQ does not have a reliable way to estimate the difference in the cost to comply with the proposed revisions relative to the current costs of compliance with the rules that are in place. DEQ found examples of NPDES permitted facilities that could already comply with limits based on the proposed revisions. DEQ also found examples of NPDES permitted facilities that have on occasion failed to comply with the current rule. These examples demonstrate that determining if a cost is an increase or decrease cost may not be possible for some of these revisions.**

*DEQ will receive public comments on these proposed revisions and reserves the right to*

*amend this analysis based on those comments.*

- b) *DEQ will not incur any additional costs to implement these proposed revisions. DEQ is also unable to estimate the total cost of compliance for all impacted facilities.*

**3. List any fee changes imposed by this proposal and justification for each.**

*None.*

**4. What is the probable cost to DEQ in manpower and associated resources to implement and enforce this proposed change, and what is the source of revenue supporting this proposed rule?**

*DEQ will not incur any additional costs to implement these proposed revisions.*

*DEQ's manpower and associated resources to implement and enforce Arkansas' water quality standards (including these revisions) and administer the NPDES permitting program for Arkansas are funded by the federal government through the Environmental Protection Agency.*

**5. Is there a known beneficial or adverse impact to any other relevant state agency to implement or enforce this proposed rule? Is there any other relevant state agency's rule that could adequately address this issue, or is this proposed rulemaking in conflict with or have any nexus to any other relevant state agency's rule? Identify state agency and/or rule.**

*There are no known adverse impacts to any other relevant state agency. The proposed rule will support the missions of the Arkansas Game and Fish Commission by providing additional protection for aquatic life and the Arkansas Department of Health by providing additional protection for public health.*

*The Arkansas Water and Air Pollution Control Act vests authority in the Arkansas Pollution Control and Ecology Commission to adopt and amend water quality standards and to establish rules implementing or effectuating the powers and duties of the Division of Environmental Quality.*

*No other state agency could adequately address these issues.*

**6. Are there any less costly, non-regulatory, or less intrusive methods that would achieve the same purpose of this proposed rule?**

*There are no less costly, non-regulatory, or less intrusive methods that would achieve the same purpose and comply with the Arkansas Water and Air Pollution Control Act and the Clean Water Act.*

*Pursuant to Arkansas' delegated authority under the Clean Water Act, Arkansas is required to review its water quality standards on a triennial basis and to amend those standards as necessary. These revisions are part of that triennial review under the Clean Water Act.*

## **2B. ENVIRONMENTAL BENEFIT**

### **1. What issues affecting the environment are addressed by this proposal?**

*The proposed revisions are intended to provide more protective criteria to better protect aquatic life, human health, and the environment; or more accurate criteria based on site-specific conditions. Specifically, these revisions are more protective because:*

- *Adopting higher resolution ecoregion boundaries will designate more appropriate standards to waterbodies along ecoregion boundaries so that they can be protected appropriately.*
- *Adopting more stringent ammonia criteria will protect freshwater mussel species.*
- *Adopting the human health criteria (benzene, ethylbenzene, toluene, xylene, and phenol) will protect the health of Arkansans and indirectly protect aquatic health.*
- *Extending the primary contact season will accurately reflect the times when people in Arkansas are using waters of the state for recreation.*

*These proposed rules provide for the continued protection of water quality for all waters of the state. The proposed rule is part of the review and revision process required by the Clean Water Act and the federal regulations implementing that act.*

### **2. How does this proposed rule protect, enhance, or restore the natural environment for the well-being of all Arkansans?**

*The proposed revisions protect the natural environment for the well-being of all Arkansans by continuing to ensure that Arkansas' water quality standards are accurate and protective of all uses and human health.*

### **3. What detrimental effect will there be to the environment or to the public health and safety if this proposed rule is not implemented?**

*The proposed changes are necessary to ensure that existing uses and designated uses for waters of the state, and the water quality necessary to protect those uses, are protected and maintained.*

### **4. What risks are addressed by the proposal and to what extent are the risks anticipated to be reduced?**

*Specifically, these revisions are more protective because:*

- *Adopting higher resolution ecoregion boundaries will designate more appropriate standards to waterbodies along ecoregion boundaries so that they can be protected appropriately.*
- *Adopting more stringent ammonia criteria will protect freshwater mussel species.*
- *Adopting the human health criteria (benzene, ethylbenzene, toluene, xylene, and phenol) will protect the health of Arkansans and indirectly protect aquatic health.*
  - o *Benzene is a carcinogen and exposure can cause anemia, decrease in blood platelets, and increased risk of cancer.*
  - o *Toluene, while it is non-carcinogenic, exposure can cause nervous system, kidney, or liver problems. It is known to be more dangerous to children and pregnant women.*

- Ethylbenzene, while currently there is inadequate data for human carcinogen determination, exposure can cause eye and throat irritation, vertigo and dizziness. Exposure may also cause blood, liver, and kidney damage.
- Total Xylene exposure can cause irritation of the skin, eyes, nose, and throat; difficulty breathing; impaired lung function; impaired memory; stomach discomfort; headaches; lack of muscle coordination; changes in sense of balance; and possible changes in the liver and kidneys.
- Phenol, while currently there is inadequate data for human carcinogen determination, it is readily absorbed throughout the body. It is highly irritating to the skin, eyes, and mucous membranes. It can cause anorexia, progressive weight loss, diarrhea, vertigo, salivation, dark coloration of the urine, and blood and liver effects.
- Extending the primary contact season will accurately reflect the times when people in Arkansas are using waters of the state for recreation.

**Rule revisions that are not subject to this analysis:**

Pursuant to APC&EC Rule 8.812(A)(4), the following Rules are exempt from this economic impact and environmental benefit analysis because "the proposed rule makes only *de minimis* changes to existing rules or regulations, such as the correction of typographical errors or the renumbering of paragraphs or sections":

***Throughout Rule*** – Reformat footnote marks to be non-repetitive.

***Throughout Rule*** – Update ecoregion names.

**8 CAR § 21-106(Rule 2.106)**

**8 CAR § 21-303(Rule 2.303)**

**8 CAR § 21-405(Rule 2.405)**

**8 CAR § 21-501(Rule 2.501)**

**8 CAR § 21-502(Rule 2.502)**

**8 CAR § 21-503(Rule 2.503)**

**8 CAR § 21-504(Rule 2.504)**

**8 CAR § 21-505(Rule 2.505)**

**8 CAR § 21-508(Rule 2.508)** – Remove “indigenous” from 1st paragraph.

**8 CAR § 21-508(Rule 2.508)** – Update headings and table formatting. Convert values to µg/L.

**8 CAR § 21-511(a)(Rule 2.511(A))**

**Appendix A** – Heading revisions and waterbody name spelling revision.

**Appendix A** – Add “Source” and “Year” to site specific criteria and UAA tables.

**Appendix A** – Threatened and endangered species additions to current ESW designated streams.

**Appendix A** – Remove trout water from Bull Shoals Reservoir – Lower Portion, Greers Ferry Reservoir, and Ouachita Lake.

**Appendix A** – Revise “Ouachita River from Blakley Mt. Dam to Hwy. 270 bridge” to “Upper Lake Hamilton from Blakely Mt. Dam to Hwy. 270 bridge.”

**Appendix A** – Remove “Unnamed tributary of Lake June below Entergy Couch Plant to confluence with Lake June – maximum water temperature 95 degrees F (limitation of 5 degrees above natural temperature does not apply)

**Appendix A** – Remove “Unnamed tributary to Smackover Creek – no fishable/swimmable uses (GC-2, #2).” Remove site specific criteria “Year-round DO 2 mg/L.”

**Appendix A** – Remove “Unnamed tributary to Flat Creek – no fishable/swimmable uses (GC-2, #4).” Remove site specific criteria “Year-round DO 2 mg/L.”

**Appendix A** – Remove exceptions “no fishable/swimmable or domestic water supply uses” and “exempt from Rule 2.406 and Chapter 5” from Coffee Creek.