BEFORE THE ARKANSAS POLLUTION CONTROL AND ECOLOGY COMMISSION

IN THE MATTER OF AMENDMENTS TO REGULATION NO. 2, REGULATION ESTABLISHING WATER QUALITY STANDARDS FOR SURFACE WATERS OF THE STATE OF ARKANSAS	))))	DOCKET NO. 10-002-R

ADEQ's RESPONSE TO COMMENTS REGARDING THE ECONOMIC IMPACT/ENVIRONMENTAL BENEFIT OF THE PROPOSED CHANGES TO REGULATION NO. 2 AND REQUEST TO SUBSTITUTE PAGES TO REGULATION MARK-UP BASED ON COMMENTS

On April 9, 2010, the Arkansas Department of Environmental Quality (hereinafter "ADEQ" or "the Department"), submitted its Amended Petition to Initiate Rulemaking to Amend Regulation No. 2, Regulation Establishing Water Quality Standards for Surface Waters of the State of Arkansas. The Arkansas Pollution Control and Ecology Commission ("Commission") considered the Amended Petition at its April 2010 meeting. After considering the public comments on the Amended Petition, the Commission requested additional data from the Department concerning the economic impact/environmental benefit of the proposed amendments to the regulation. This data is provided to the Commission and the public for review in the Economic Impact/Environmental Benefit ("EI/EB") form provided in Regulation No. 8, Administrative Procedures.

To obtain the additional data, the Department contacted stakeholders who participated in the 2007 Triennial Review and municipal permit holders. A deadline of May 17, 2010 was set for receipt of comments. As this deadline was not governed by any statute or regulation and the total number of comments received was very small, all comments were accepted whether or not submitted by May 17. The Department received five (5) comment letters regarding the economic impact/environmental benefit of the proposed changes to the regulation. Only one of those comments provided numeric data regarding costs and that comment was from Beaver

Water District providing data on the positive economic benefit (in treatment cost savings) of the numeric nutrient criteria for Beaver Lake in Reg.2.509.

ADEQ also held a stakeholder meeting with the Arkansas Environmental Federation and representatives of municipal interests. As a result of that meeting, ADEQ made some substantial changes to the proposed regulation, which a draft was posted on the ADEQ website in early May. The changes in the proposed rule are outlined in the Second Amended Petition to Initiate Rulemaking. Based on those substantial changes to the proposed rule and the lack of actual cost estimates provided to ADEQ, the Department does not feel that a revision to the EI/EB analysis form (Exhibit E in the rulemaking packet filed on May 18, 2010) is necessary.

The comments are summarized below, with responses from the Department following.

Comment No. 1: Beaver Water District stated:

> Proposed Regulation 2.509 would establish numeric criteria for Chlorophyll a and Secchi Transparency in Beaver Lake. Chlorophyll a and Secchi Transparency measurements serve as indicators of the level of nutrient enrichment and algal growth in the Lake. The proposed numeric criteria for Chlorophyll a and Secchi Transparency were selected to limit nutrients and algae to levels that do not impair the Lake's designated drinking water use.
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> In the absence of any numeric nutrient criteria, nutrient enrichment and algal growth in the Lake may be allowed to increase to levels that will require significant water treatment costs. Already, Beaver Water District (BWD) experiences episodic taste and odor events typically caused by 2-Metholisoborneal (MIB) and occasionally by Geosmin. MIB and Geosmin are related to the concentration of algae and cyanobacteria in the raw water....During the last decade, however, the concentration of MIB has been such that this treatment is insufficient to remove the taste and odor.
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> Should the taste and odor events increase in frequency and intensity in the future, additional treatment may become necessary. BWD commissioned Black and Veatch to conduct a preliminary engineering investigation on methods to remove MIB and Geosmin to non-detectable levels. The recommended alternative was ozonation and the addition of powdered activated carbon. Total capital costs for implementing the recommended

alternative would be $42.2 million. The annual operation and maintenance for the system is estimated at $790,000. This converts to a wholesale rate increase of $0.32 per thousand gallons above the current rate of $1.20 per thousand gallons.

In addition, increases in algal growth due to nutrient enrichment will impact Lake turbidity (summer turbidity in Beaver Lake is mostly algal as evidenced by the ratio of total suspended solids to total volatile suspended solids). Studies by Dearmont *et al.* in Texas showed that every 1 percent increase in turbidity resulted in a ¼ percent increase in chemical costs for water treatment.

Response No. 1: ADEQ acknowledges this comment. ADEQ believes this data provides further justification for the proposed changes to Reg.2.509.

Comment No. 2: The Arkansas Environmental Federation submitted the following comments:

The AEF Water Committee met at 10 AM on May 11, 2010 to discuss the 3rd version of Draft APCEC Regulation #2 that was posted on the ADEQ website on Friday afternoon May 7, 2010. After further review, the committee believes that the proposed changes are needed to clarify the draft and minimize the economic impact:

Reg. 2.106 Definitions

Critical Flows

For human health criteria - use the harmonic mean flow or long term average flow ("a permittee may" is deleted)

For minerals criteria - use the harmonic mean flow or 4 cfs whichever is greater with the following exception ("a permittee may" is deleted):

For waters listed as Extraordinary Resource Waters and Ecological Sensitive Waters use the harmonic mean flow ("or waters impaired for minerals" is deleted).

For all other criteria, use the critical flow of Q7-10.

Rationale: Removal of the term "a permittee may" limits the interpretation of the criteria to permitting purposes only. The standards are used for many other purposes including, but not limited to, determining impairment, general and specific compliance, and appropriateness of the various uses.

Adding the "whichever is greater" to the mineral criteria does not change the basis under which numerous UAA's have been conducted, approved,

and remain in effect. This also removes a significant potential cost impact for permittees.

Changing "waters" to "criteria" makes the flow applicable to the other criteria in the standards, such as toxic substances in perennial streams. (This is the same as the current regulation)

Primary seasonal critical flow - this definition was removed in an earlier draft when the fisheries use was changed to aquatic life use. Now that the fisheries use as been reinstated, the definition should also be reinstated.

Reg. 2.404 - Mixing zones and Reg. 2.504 - pH

The insertion of pH in the 3rd paragraph along with changes in Reg. 2.504 continues to be of concern. We realize that ADEQ permitting practice has always been a discharge pH of between 6-9 (with rare exceptions). This does not mean there has not been a mixing zone, it only means that the discharge limits have historically been in this range. In order for discharger to cause the pH in streams or lakes to ..."fluctuate in excess of 1.0 unit below 6 or above 9" ... the discharge would likely have to be substantially below 6.0 or above 9.0. We don't believe that is the ADEQ's intent.

AEF believes that the draft changes and attempts to alter section 2.504 to account for diurnal fluctuations in discharge pH, primarily from municipal lagoon systems, while specifically prohibiting a mixing zone for pH, are counterintuitive and the current language should remain intact. Otherwise AEF is concerned that many dischargers would have to install continuous pH meters which are expensive to purchase, operate, and maintain and are prone to significant analytical drift.

Reg. 2.405 - Biological Integrity

We understand the ADEQ's intent to be able to use the data from third party aquatic biota assessments. We don't believe the current language prohibits the ADEQ from doing that and it does protect the permittees from having permit conditions requiring expensive assessments with little/no rationale. The cost of these assessments is substantial and in times of economic hardship it would be very tempting to require permittees to collect biotic data as part of their permit to populate ADEQ data needs.

We suggest that the acts of collecting and evaluating be in separate sentences so it is clear that its ADEQ's responsibility to collect and evaluate the data and its ADEQ's responsibility to evaluate any such data

collected by third parties under Reg. 2.303, 2.304, 2.306, 2.309, 2.310, and 2.311.

2.505 - Dissolved Oxygen

In the 3rd paragraph beginning with "All streams with watersheds of less than 10 mi^2 are expected to".....; We suggest that the first sentence be changed to read "Streams with watersheds of less than 10 mi^2 are generally expected to....

We are concerned that the referenced to the fish community described in Reg. 2.303 and the term "All streams" would be misconstrued to say that "All streams" are expected to have the reference stream fish community present, when in fact many will not have key or indicator species but may support an altered fisheries for other reasons, such as habitat differences.

Reg. 2.511 - Mineral Quality

(A) Although we understand that the intent of the removal of the monthly average criteria deals with impairment determinations, we continue to believe that another fix is more appropriate. Perhaps the following: ..."and represent the rolling 12 month average concentrations of chloride (Cl^-), sulfate ($SO_4^=$), and total dissolved solids".

We believe that many if not all of the listed streams will exceed these absolute values and some point and the evaluation criteria currently in the CPP will be changed with little/no public input. This could cause the streams to be listed as impaired and require dischargers to conduct expensive UAA's and other studies to change the criterion.

(B) Proposed changes to this section are more stringent than current language. ADEQ has taken the ecoregion values and added 1/3. The current regulation provides for the instream concentrations to raise by 1/3 or 15 mg/L, whichever is greater. AEF fails to understand the rationale behind this change as it could impact dischargers, particularly small municipalities on unnamed streams, by requiring the application of expensive ion exchange technology.

Summary:

AEF Water Committee has provided proposed changes, rationale, and potential non-quantitative cost impacts of the draft language as we interpret it. We believe that by incorporating the suggested changes, ADEQ will minimize the economic burden such that it can be readily identified and compiled.

Response No. 2: ADEQ acknowledges the comment. Following the April Commission meeting, ADEQ met with AEF and other interested stakeholders and, as a result, revised the proposed rulemaking. The Department does not think all of the narrative costs AEF references above are foreseeable and valid. No actual cost estimates were provided by AEF to support a revision of the economic impact/environmental benefit analysis. With the revisions ADEQ has made, and without information to support an analysis to the contrary, it is the opinion of ADEQ that any negative economic impact would be minimal.

However, based on part of this comment and the comment below, ADEQ proposed to removed the revisions to Reg.2.404, Mixing Zones, and 2.504, pH. ADEQ requests that the Commission substitute the attached pages, Exhibit A, as part of the proposed rulemaking packet.

Comment No. 3: One commenter submitted a list of the 30 NPDES permits in Arkansas that currently have pH limits above 9.0 or below 6.0, along with the following comment:

> It is my understanding that ADEQ's proposed addition of pH to the list of parameters for which mixing zones are not allowed (in Reg. 2.404) would effectively prohibit pH limits above 9.0 or below 6.0. Therefore, all 30 of these facilities would be affected by ADEQ's proposed change to Reg. 2.404.
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> I do not have any idea how much money it would cost for these facilities to comply with the proposed change. All of the facilities are municipal wastewater treatment systems, and I think (but I am not sure) that either most or all of them are secondary treatment systems with lagoons. These facilities serve communities ranging in size from small towns up to the City of Pine Bluff. I have first hand experience with only one of these facilities, and that facility needs a maximum pH limit of 10 because the pH is inherently high in their discharge due to algal photosynthesis in the lagoons (any wastewater lagoon will obviously have algae). I am assuming that most or all of the other facilities with maximum pH limits of 10 have similar situations.

Response No. 3: ADEQ acknowledges the comment. However, the Department disagrees with

the commenter's interpretation of the regulation. The term "mixing zone" should not be construed as meaning "dilution". Mixing zones are the area (as defined in Reg. 2.404) in the receiving stream where water quality standards may be exceeded until the pollutant is completely mixed with the receiving water.

The Department agrees that some POTWs with pond systems need higher pH than 9.0 s.u. pH limits must be based on Water Quality Standards (40 CFR 122.44(d)), in this case Reg. 2.504, or Technology limits (40 CFR 122.44 (a)), in this case 40 CFR 133.102(c), whichever is more stringent. In order for POTWs with pond systems to have pH limits outside of a pH range of 6-9 s.u., the publicly owned treatment works must demonstrate items 1 and 2 below, and the Department will evaluate items 3 and 4 below:

(1) Inorganic chemicals are not added to the waste stream as part of the treatment process;
(2) Contributions from industrial sources do not cause the pH of the effluent to be less than 6.0 s.u. or greater than 9.0 s.u.;
(3) Critical receiving stream flow must be greater than 0 cfs; and
(4) No pH water quality violations exist instream.

pH cannot be calculated based on traditional mass balance/mixing zone analysis. Those 30 facilities (POTWs) which have higher or lower pH limits satisfy all of the above criteria. Mixing zones were not considered in making these determinations. However, as stated above, ADEQ will remove the proposed revisions from Reg.2.404 and 2.504.

Comment No. 4: The City of Fayetteville submitted a copy of the AEF's comments on a previous version of the proposed rule. The City did not provide actual cost estimates regarding any proposed revision.

Response No. 4: ADEQ acknowledges the comment; however, no actual cost estimates were provided that required a revision to the economic impact/environmental benefit analysis form.

Comment No. 5: One commenter stated the following:

ADEQ's proposed changes to maps in Appendix A (A-1 – A-76) are likely to cause a negative economic impact to person's (sic) and entities who would not recognize their particular waterbody area as being one identified for proposed regulation. The law requires adequate public notification to potentially affected citizens by proposed rules [and regulations.] The currently proposed changes to Reg. 2 maps greatly reduce their quality, clarity and delineation factors. ALSO, why is the extra line legend item on the proposed maps not underlined as a new change proposal? Where is the authority citation for ADEQ to identify or regulation ESW caves, springs and seeps?

I further request that for the benefit of the commissioners and the public who mostly are not familiar with ecoregion names or plate #'s that in Appendix D, a column be added identifying the stream name by county or counties in which it is located so that the location of these named streams can be easily identified by the unprofessional citizens who are impacted by the rules.

Response No. 5: ADEQ acknowledges the comment; however, the commenter did not provide actual cost estimates that necessitate revision of the economic impact/environmental benefit analysis form.

Respectfully Requested,

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EXHIBIT A

Reg. 2.503 Turbidity

There shall be no distinctly visible increase in turbidity of receiving waters attributable to municipal, industrial, agricultural, other waste discharges or instream activities. Specifically, in no case shall any such waste discharge or instream activity cause turbidity values to exceed the base flows values listed below. Additionally, the non-point source runoff shall not result in the exceedance of the in stream all flows values in more than 20% of the ~~ADEQ~~ Arkansas Department of Environmental Quality ~~ambient~~ monitoring network samples taken in not less than 24 monthly samples.

Waterbodies	Base Flows Values (NTU)	All Flows Values (NTU)
Streams		
Ozark Highlands	10	17
Boston Mountains	10	19
Arkansas River Valley	21	40
Ouachita Mountains	10	18
Springwater-influenced Gulf Coastal	21	32
Typical Gulf Coastal	21	32
Least-Altered Delta	45	84
Channel-Altered Delta	75	250
Arkansas River	50	52
Mississippi River	50	75
Red River	50	150
St. Francis River	75	100
Trout	10	15
Lakes and Reservoirs	25	45

Reg. 2.504 pH

The pH standards of between 6.0 and 9.0 are applicable. As a result of waste discharges, the pH of water in streams or lakes must not fluctuate in excess of 1.0 standard unit ~~over~~ within the specified pH range during a period of 24 hours. ~~and~~ pH ~~values shall not be below~~ standards ~~6.0 or above 9.0~~ are applicable to all waters of the state, except in those waterbodies where natural background conditions result in pH values to either be less than or greater than the criteria listed.

EXHIBIT A

CHAPTER 4: GENERAL STANDARDS

Reg. 2.401 Applicability

The general standards outlined below are applicable to all surface waters of the State at all times unless otherwise designated in Appendix A. They apply specifically with regard to substances attributed to discharges, nonpoint sources or instream activities as opposed to natural phenomena. Waters may, on occasion, have natural background levels of certain substances outside the limits established by these criteria, in which case these criteria do not apply.

Reg. 2.402 Nuisance Species

All waters shall be free from substances attributed to man-caused point or nonpoint source discharges in concentrations that produce undesirable aquatic ~~life~~ biota or result in the dominance of nuisance species.

Reg. 2.403 Methods

The methods of sample collection, preservation, measurements and analyses shall be in accordance with the EPA's *Guidelines Establishing Test Procedures for the Analysis of Pollutants* (40 CFR, Part 136) or other proven methods acceptable to the Department.

Reg. 2.404 Mixing Zones

Mixing zones are allowed for all parameters not specifically excluded in Reg. 2.404 and the effects of wastes on the receiving stream shall be determined after the wastes have been thoroughly mixed with the mixing zone volume. Outfall structures should be designed to minimize the extent of mixing zones to ensure rapid and complete mixing.

For aquatic life toxic substances in larger streams~~,~~ (those with Q7-10 flows equal to or greater than 100 cfs)~~,~~ the zone of mixing shall not exceed 1/4 of the cross-sectional area and/or critical flow volume of the stream. The remaining 3/4 of the stream shall be maintained as a zone of passage for swimming and drifting organisms, and shall remain of such quality that stream ecosystems are not significantly affected. In the smaller streams~~,~~ (Q7-10 flows less than 100 cfs)~~,~~ because of varying local physical and chemical conditions and biological phenomena, a site-specific determination shall be made on the percentage of river width necessary to allow passage of critical free-swimming and drifting organisms so that negligible or no effects are produced on their populations. As a guideline, no more than 2/3 of the cross-sectional area and/or critical flow volume of smaller streams should be devoted to mixing zones thus leaving at least 1/3 of the cross-sectional area free as a zone of passage.

Mixing zones are not allowed for the parameters of bacteria or oil and grease, or where the background flow is less than the critical flow or where the background concentration of a waste parameter exceeds the specific criteria for that waste parameter.