**BEFORE THE ARKANSAS POLLUTION CONTROL AND ECOLOGY COMMISSION**

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| **IN RE:** | **REQUEST BY THE SOUTHWESTERN ELECTRIC POWER COMPANY TO INITIATE RULEMAKING TO AMEND REGULATION NO. 2** | ) ) ) ) | **DOCKET NO. 14-007-R** |

**SOUTHWESTERN ELECTRIC POWER COMPANY'S RESPONSE TO COMMENTS**

Southwestern Electric Power Company ("SWEPCO") for its Response to Comments states:

1. On September 26, 2014, the Arkansas Pollution Control and Ecology Commission ("APCEC") granted SWEPCO's Petition To Initiate Third-Party Rulemaking to Amend APCEC Regulation No. 2, Regulation Establishing Water Quality Standards for Surface Waters of the State of Arkansas. A public hearing was held on November 17, 2014 in Hope, Arkansas. The public comment period ended on December 23, 2014. Eleven written public comments were submitted. No comments were submitted at the public hearing.

2. The comments and SWEPCO's Response to each is as follows:

**Comment 1:** ADEQ's Water Quality Planning Branch commented on the draft markup of Regulation No. 2 stating that the footnote "† Not applicable for Clean Water Act purposes until approved by EPA" applies and should be used on pages 5-12, A-30, A-31 and A-32 and that the phrase "no domestic drinking water supply use" on page A-30 should be replaced with "no domestic water supply use."

**Response 1:** SWEPCO agrees and will make the revisions in the final version of the replacement pages.

**Comment 2:** Two commenters objected to the removal of the designated domestic water supply use from the Little River.

**Response 2:** SWEPCO is not asking to remove the designated domestic water supply use from the Little River.

**Comment 3:** One commenter objected to the removal of the domestic water supply use designation from the Red River.

**Response 3:** The domestic water supply use designation was previously removed from the upper portion of the Red River (from the Arkansas/Oklahoma state line to the mouth of the Little River) twenty years ago because the river historically did not meet secondary drinking water standards for minerals. The lower portion of the Red River, which is affected by SWEPCO's current request to amend APCEC Regulation No. 2, also has historically not met secondary drinking water standards for minerals. The entire Arkansas portion of the Red River is frequently in excess of the secondary drinking water standards because it contains elevated levels of minerals caused primarily by input from natural salt springs and seeps in Oklahoma and Texas. This prevents the Red River from being used as a drinking water source without extensive treatment. The Arkansas Department of Health confirmed that the lower portion of the Red River has not been approved for, nor is it under consideration for use as a public water system source. The Arkansas Natural Resource Commission confirmed that there are no existing or planned public water supply uses documented for this portion of the Red River and that the removal of the domestic water supply use designation does not conflict with the Arkansas Water Plan.

**Comment 4:** One commenter objected to allowing increased toxic pollutants into rivers.

**Response 4:** The subject of this rulemaking, TDS and temperature, are not toxic pollutants at the levels proposed. The toxicity threshold (based on tests of *Ceridaphnia dubia* using the facility's discharge) indicated that the level at which TDS becomes toxic is well above the mineral concentration in the facility's discharge. Based on studies performed and documented in support of the proposed changes to TDS and temperature, there should be no adverse effect on the aquatic life.

**Comment 5:** Four commenters objected to SWEPCO's being allowed to increase the total dissolved solids (TDS) and temperature it was discharging into the Little and Red Rivers.

**Response 5:** SWEPCO is seeking criterion which reflects the current ambient conditions in the Red River and to bring consistency to the water quality criterion on the Red River. Although SWEPCO will increase the TDS in its effluent, the proposed TDS criterion raises the existing TDS criterion of 100 mg/L to 138 mg/L in the Little River which is the level that represents no significant difference from the TDS levels one would find in a Gulf Coastal Plain Ecoregion least disturbed reference stream. See APCEC Regulation No. 2, § 2.511 (2014). Ecoregion reference streams are used to define natural background values for constituents that reflect concentrations due to non-anthropogenic sources. SWEPCO takes water out of the Little River for cooling water use and returns the water to the River. The same quantity of minerals taken in are discharged back to the River. The concentration of minerals in the water returned to the river is slightly higher due to the quantity of water evaporated in the cooling process. The concentration change proposed is not toxic and based on studies performed and documented in support of the proposed changes to TDS and temperature, there should be no adverse effect on the aquatic life.

The proposed temperature criteria change is based on existing temperature levels upstream of the facility and will correct the existing temperature criterion which was set lower than existing conditions. The affected segment of the Little River is the segment between Millwood Lake and the Red River. The temperature criterion for Millwood Lake and for the Red River is 32° C (89.6° F) while the affected segment of the Little River has a lower temperature criterion of 30° C (86° F). The ambient temperature of that segment often exceeds its temperature criterion and SWEPCO's request is to bring the temperature criterion of that segment up to 32° C (89.6° F) to be consistent with the temperature criterion above and below the segment.

**Comment 6:** Two commenters expressed concern about the possibility that a temperature increase may impact aquatic life with one commenter suggesting that a biologist should be employed to study the effect of SWEPCO's effluent on the aquatic life.

**Response 6:** SWEPCO is not seeking to increase the temperature criterion for this reach of the Little River above what is already in the River. Rather it is seeking to increase the temperature criterion to reflect historic and ambient conditions. Historic temperature measurements of the Little River below Millwood Lake and above the facility discharge point show frequent exceedances of the current temperature criterion because of the shallow nature of Millwood Lake and the wide and primarily unshaded nature of that segment of the Little River. The temperature criteria in Millwood Lake and the Red River into which the Little River discharges are currently set at 32° C (89.6° F) which is the temperature criteria SWEPCO is seeking for the segment between Millwood Lake and the Red River. The Technical Justification for a Site-Specific Temperature Criterion (FTN 2014) included field studies conducted by biologists to evaluate the physical, chemical and biological characteristics of the Little River. See Section 3.0 of the Technical Justification. The Technical Justification established that setting the temperature criterion in the Little River below Millwood Lake at 32° C (89.6° F) should have no adverse effect on the aquatic life.

**Comment 7:** On commenter commented that SWEPCO should not be allowed to change water quality standards by this "end run" stating that if SWEPCO did not disclose its plans to seek a rulemaking in its plant permit application, the rulemaking should be denied and the permit application should be reopened.

**Response 7:** A third-party rulemaking seeking to amend water quality standards set forth in APCEC Regulation No. 2 is not an end run around the permit application process. The third-party rulemaking process is provided for under both state and federal law and regulations and is unrelated to the permit application process. Here, SWEPCO is seeking to change the water quality standards (minerals and temperature) to reflect long-standing historic ambient conditions or Ecoregion values. *See also* Response 10 on page 6 below.

**Comment 8:** The Department of Arkansas Heritage expressed concerns about the implications of changes in TDS and temperature criteria to species of conservation concern known to occur in the Red River and the Little River. The Arkansas Natural Heritage Commission (ANHC) indicated the following species occurred in the referenced reaches of the Little River: *Arkansia wheeleri* (Ouachita rock pocketbook), *Cycleptus elongatus* (blue sucker), *Hiodon alosoides* (goldeye), *Quadrula apiculata* (southern mapleleaf), and *Quadrula metanervra* (monkeyface).

ANHC also stated that the following species occurred in the Red River: *Ammoncypta clara* (western sand darter), *Atractosteus spatula* (alligator gar), *Cycleptus elongates,* (blue sucker), and *Polydon spathula* (paddlefish). The Ouachita rock pocketbook is a federally listed species while the remaining species are all of State concern. Specifically the ANHC comment stated that higher levels of TDS could impair mussel feeding, interfere with fish spawning and prey identification and alter substrate. ANHC also stated that higher water temperature could decrease the dissolved oxygen resulting in shifts in the composition of aquatic organisms.

**Response 8:** As to TDS, SWEPCO is not proposing to raise TDS levels in the Red River above what currently occurs. The proposed criterion change to the Red River reflects existing concentrations of TDS and is based on years of measured TDS concentrations in the river obtained from the Arkansas Department of Environmental Quality Ambient Monitoring Network. As such, there will be no impact on the existing aquatic community due to the proposed TDS criteria for the Red River. SWEPCO is seeking to increase the TDS criterion in the Little River from 100 mg/L to 138 mg/L. 138 mg/L is a level that represents no significant difference from the TDS levels one would find in a Gulf Coastal Plain Ecoregion least disturbed reference stream. See APCEC Regulation No. 2,§ 2.511 (2014). Ecoregion reference streams are used to define natural background values for constituents that reflect concentrations due to non-anthropogenic sources.

In its comment the ANHC specifically expressed concern that higher levels of TDS in the Little River (up to 138 mg/L) could have adverse effects on the endangered *Arkansia wheeleri* (Ouachita rock pocketbook). Evaluating this potential requires the use of data from surrogate bivalve taxa because direct experimental evidence on *A. wheeleri* could not be found in the published scientific literature. Two published studies on unionid mussels used *Lampsilis siliquoidea* (fat mucket)[1] and *Elliptio complanata* (eastern elliptio)[2] mussels in 7 to 28 day laboratory toxicity tests to evaluate toxic thresholds to TDS as chloride (Cl) and sulfate ($SO_4$).

Blakeslee et al (2013) reported no significant adverse effect on adult *E. complanata* survival in 7-day exposures to 1,282 mg/L Cl as sodium chloride (NaCl) and no significant effect on metabolic rate in 28-day exposures to 641 mg/L Cl. Kunz et al (2013) reported no significant adverse effect on adult growth of juvenile *L. siliquoidea* in 28-day exposures up to 2,168 mg/L TDS (1,580 mg/L $SO_4$). Kunz et al also cited unpublished data showing the equivalent of no effect on growth of pink mucket (*L. abrupta*) exposed to 696 mg/$SO_4$. However, their results also showed a significant reduction in *L. siliquoidea* survival in 28-day exposures ranging from 298 to 643 mg/L TDS (116 to 386 mg/L $SO_4$, respectively).

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[1] Kunz, J. L., Conley, J. M., Buchwalter, D. B., Norberg-King, T. J., Kemble, N. E., Wang, N. and Ingersoll, C. G. (2013), Use of reconstituted waters to evaluate effects of elevated major ions associated with mountaintop coal mining on freshwater invertebrates. Environ. Toxicol. and Chem. 32: 2826–2835.

[2] Blakeslee, C. J., Galbraith, H. S., Robertson, L. S. and St. John White, B. (2013), The effects of salinity exposure on multiple life stages of a common freshwater mussel, *Elliptio complanata*. Environ. Toxicol. and Chem. 32: 2849–2854.

Studies on other freshwater bivalve mollusk taxa (fingernail clams *Sphaerium simile* and *Musculium transversum*) have indicated no effects on survival (96-hr acute exposures) in Cl concentrations up to 1,903 mg/L (Soucek et al, 2011) and $SO_4$ concentrations up to 2,000 mg/L $SO_4$ (Soucek and Kennedy, 2009).[3]

These studies indicate that sub-lethal TDS thresholds are well above the proposed criteria. Laboratory study results are less definitive regarding survival thresholds but still indicate thresholds above the proposed criteria. These results indicate that mineral concentrations at or near the proposed criteria should impose little, if any, limitation on the distribution and abundance of *A. wheeleri* in the Little River downstream of Millwood Dam.

In regard to temperature, SWEPCO is not proposing to raise the water temperature in the Little River above levels that are currently occurring. The proposed criterion change for temperature in the Little River is based on ambient data collected upstream of the SWEPCO plant discharge. Further, the proposed temperature criterion of 32° C (89.6° F) is consistent with the current temperature criteria of 32 ° C for Millwood Lake (upstream of the reference reach) and the Red River (downstream of the referenced reach). There will be no impact to aquatic life in the Little River due to the proposed temperature criterion.

As to the species of federal concern, small numbers of *Arkansia wheeleri* (Ouachita rock pocketbook) have been documented in the upper reach of the Little River below Millwood Lake, but no live *A. wheeleri* have been collected from the lower reach which extends from a short distance above the SWEPCO plant's intake downstream past the discharge location to the confluence of Little River with the Red River. See UAA Report, § 2.4 (FTN 2014). *A. wheeleri* has never been documented in the Red River downstream from the confluence with the Little River. Suitable habitat and water quality to support *A. wheeleri* is not present in the described reaches of these waterbodies due to construction of Millwood Lake on the Little River in the 1960s, which resulted in changes in flow, water temperature, sedimentation and water quality changes below the reservoir that can never be restored to pre-construction levels. There is little or no evidence that the proposed changes in TDS and temperature standards will further impact those species.

The federally listed Interior Least Tern (*Sterna antillarum athalassos*) which is mentioned by the ANHC is not an aquatic species. The Interior Least Tern is known from a large sandbar at the confluence of the Red River and the Little River. Nesting colonies of this species have been observed there, and at scattered downstream localities on the Red River, for a number of years. This species is found on terrestrial habitats associated with certain major stream channels. Successful nesting for this bird species occurs when predators are absent and when flood waters occur outside the nesting season. The proposed criteria would not be expected to impact terrestrial species such as the Interior Least Tern.

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[3] Soucek, D. J. and Kennedy, A. J. (2005), Effects of hardness, chloride, and acclimation on the acute toxicity of sulfate to freshwater invertebrates. Environ. Toxicol. and Chem. Environmental Toxicology and Chemistry, 24: 1204–1210.

**Comment 9:** The US Fish and Wildlife Service (USFWS) commented that it had no concern with the proposal to increase the TDS water quality standard for the Red River from the mouth of the Little River to the Arkansas/Louisiana state line or on the Little River from Millwood Lake to the Red River and no concern with the proposal to remove the designation of domestic supply use on the Red River. The USFWS expressed a concern that a significant alteration in the thermal regime of the Little River could provide a potential to affect the Ouachita rock pocketbook (*Arcidens wheeleri*).

**Response 9:** SWEPCO is not proposing to raise the water temperature in the Little River above levels that are currently occurring. The proposed criterion change for temperature in the Little River is based on ambient data collected upstream of the SWEPCO plant discharge. SWEPCO fully understands the lack of information with regard to temperature thresholds of importance to the Ouachita rock pocketbook. SWEPCO believes, however, that the adverse water quality impacts that resulted from construction of Millwood Lake are irreversible and too extensive to expect recovery of the mussel population to preconstruction levels. The construction of Millwood Lake in 1966 on the Little River brought major changes in flow, water temperature, and sedimentation to the reach of Little River between Millwood and the Red River. The surface area of the lake at the top of the conservation pool is 29,200 acres (11,800 ha), and its shoreline length at the top of the conservation pool is 65 miles (105 km). This sizeable impoundment was large enough to cause major changes in water quality following its construction, which resulted in adverse impacts to *A. wheeleri* and its habitat and other aquatic fauna, both above and below the dam.

A change in the temperature criterion is not expected to have further adverse impacts on the Ouachita rock pocketbook. The requested modification of the temperature criterion from 30° to 32° C (from 86° to 89.6° F) would bring the temperature criterion in line with the temperature standard in Millwood Lake and in the Red River.

**Comment 10:** Some commenters suggested that SWEPCO was not following proper procedure and that the requested water quality criteria changes represented an end run around the permitting process.

**Response 10:** Both federal and state law and regulations provide procedures for a request to the Arkansas Pollution Control and Ecology Commission to amend water quality standards when there is a scientifically based reason to do so. See, e.g. Ark. Code Ann. §8-4-202(c); APCEC Regulation No. 2, §§ 2.303 Use Attainability Analysis and 2.308 Site Specific Criteria; APCEC Regulation No. 8, § 8.809 Third-Party Petition for Rulemaking; ADEQ's Continuing Planning Process § IX-1 WQS Review and Revision Process and § IX-11 through 15 Use Attainability Analysis; 33 U.S.C.S. § 1313. SWEPCO has followed all of the proper procedures and its request is based upon a Use Attainability Analysis and the Technical Justification which provided the required scientific basis for the rulemaking. *See also* Response 7 on page 3 above.

**Comment 11:** International Paper Company (IP) commented on certain tables contained in the Use Attainability Analysis (UAA) supporting the requested TDS criterion change in the Red River. The tables are related to inputs into the Red River from the Sulphur River into which IP discharges from its Texas facility. IP provided replacement pages for the UAA.

**Response 11:** SWEPCO agrees with the replacement pages submitted by IP, but notes that both model simulations (i.e., low flow for Arkansas and harmonic mean flow for Louisiana criteria comparison) assume that the Arkansas TDS criteria is met in the Sulphur River at the Arkansas/Texas state line.

Respectfully submitted,

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## CERTIFICATE OF SERVICE

I hereby certify that on this 20th day of May, 2015, I served a copy of the foregoing Response to Comments on the following by electronic delivery:

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