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September 10, 2018

Ms. Mary Barnett
Water Quality Planning Branch
Arkansas Department of Environmental Quality
Office of Water Quality
5301 Northshore Drive
North Little Rock, AR 72118

RE: Comments on Proposed 2018 Impaired Waterbodies List
FTN No. R05108-0636-005

Dear Ms. Barnett:

On behalf of Umetco Minerals Corporation (Umetco), please accept the attached comments regarding the Arkansas Department of Environmental Quality's (ADEQ's) draft, proposed 2018 Impaired 303(d) Waterbodies List and the current Assessment Methodology.

Umetco appreciates ADEQ's consideration of the attached comments. Should you have any questions regarding these comments, please contact Jim Strunk (215) 785-7373 or me at (501) 225-7779.

Respectfully submitted,
FTN ASSOCIATES, LTD

Philip Massirer

Philip Massirer, PE
Water Resources Engineer

PHM/tas

Attachment

R:\WP_FILES\05108-0636-005\2018-09-10 FTN LETTER TO ADEQ-UMETCO COMMENTS REGARDING THE DRAFT 303 D WATERBODIES LIST.DOCX

UMETCO COMMENTS ON 2018 DRAFT 303(D) LIST

1. Data collected at the EWCL monitoring station are not suitable for assessing Wilson Creek.

It is Umetco's understanding that Wilson Creek was assessed using data from the WILL and EWCL monitoring stations. Umetco provided this dataset at ADEQ's request with the understanding that it would be used in ADEQ's review of the report titled "Umetco Minerals Corporation Evaluation of Aquatic Life Use Attainment in Upper Wilson Creek", dated March 28, 2018 ("Upper Wilson Creek Report"). These data were submitted in an e-mail dated June 8, 2018 that included the following warning about the effects of the North Wilson Pond (NWP) drawdowns on water quality at EWCL:

> "We want to note that in late 2015, we were involved in significantly manipulating NWP water levels and flows which affected the EWCL water quality at that time. You will see that water quality at EWCL stabilized quickly in 2016 – but we caution you that these 2015 data represent only those unusual conditions in a short reach of Wilson Creek, particularly at the EWP inflow during the field experiments/investigations that were occurring."

The EWCL data should be excluded from the assessment calculations based on the legal and technical reasons presented below.

a) Agency guidance, regulations, and legal precedent support the exclusion of unrepresentative data for assessments.

EPA regulations call for ADEQ to "assemble and evaluate all existing and readily available water quality-related data and information" when assessing and compiling the state's 303(d) list. 40 C.F.R. § 130.7(b)(5). The duty to "assemble and evaluate" all data, however, is not a duty to accept and rely-on all such data. It is clear that after evaluating all existing and available data, ADEQ is free to exclude specific portions of the data from the assessment analysis so long as the Department articulates a "rationale for [its] decision to not use any existing and readily available data and information." 40 C.F.R. § 130.7(b)(6). ADEQ may exclude data because it is not spatially representative of conditions across the entire waterbody. *Center for Biological Diversity v. U.S. E.P.A.*, 90 F.Supp.3d 1177, 1202–03 (W.D. WA 2015)(upholding EPA's

approval of Washington's rationale for excluding certain pH data and ocean acidification information from certain sampling locations); *see also*, ADEQ Phase I Data Quality Requirements (requiring that data for assessment purposes be "characteristic of the main water mass or distinct hydrologic areas"). ADEQ may exclude data because it is not temporally representative of conditions in the stream. *Thomas v. Jackson*, 581 F.3d 658 (8th Cir. 2009) (upholding the rationale for excluding aged data for several waters); *see also*, Environmental Protection Agency, Office of Wetlands, Oceans and Watersheds, 2004 Integrated Reporting Guidance at 24 ("a State may determine that certain data are no longer representative of current conditions (e.g., land use has changed significantly, point source discharges have changed significantly, the hydrology of the water has been modified . . .")). ADEQ may also properly exclude streams from the impairment list when data represents naturally occurring excursions. Environmental Protection Agency, Office of Wetlands, Oceans and Watersheds, 2008 Integrated Reporting Guidance at 10–11 (explaining that States may exclude streams from Category 5 status where (1) the stream has naturally occurring excursions that trigger impairment and (2) the State's water quality standards include a provision stating that the numeric criteria for that constituent are not applicable when background conditions do not meet the criteria). Arkansas's water quality standards include such a provision: APC&EC Regulation No. 2, 2.501 ("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 to naturally occurring excursions.")

In sum, "there is no requirement that the state forward to the EPA all evidence submitted to it regarding a body of water." *Barnum Timber Co. v.* EPA, 835 F.Supp.2d 773, 782 (N.D. Cal 2011). Courts have affirmed that 40 C.F.R. 130.7(b)(5) and (b)(6) require only that "a state must send a 'description of the data' used to identify waters and a 'rationale' for any decision not to rely on readily available data." *Center for Biological Diversity*, 90 F.Supp.3d at 1212 (citing *Barnum Timber Co. v. EPA*, 835 F.Supp.2d at 782). ADEQ has the authority for excluding data from the assessment for good cause and in fact, this authority allows ADEQ to limit incorrect impairment decisions. This is consistent with ADEQ's past actions in other 303(d) assessments.

b). Data collected at EWCL are not temporally representative of conditions in Wilson Creek.

During the 2018 assessment period, low pH values at EWCL were largely attributable to two temporary factors: 1) experimental drawdowns of NWP, and 2) other construction activities in the Upper Wilson Creek watershed. As discussed below, the temporary, non-recurring nature of these factors is a compelling reason to exclude the EWCL data from the assessment calculations.

Drawdowns of NWP

During part of the 2018 assessment period, the EWCL data were strongly influenced by two drawdowns of NWP. The outflow from NWP enters Wilson Creek approximately 900 ft upstream of the EWCL monitoring station (see Figure 1). During typical hydrologic conditions, the outflow from NWP comprises a significant percentage of the flow at EWCL. A small (2-3 ft) drawdown occurred in NWP during the last week of December 2014. A large (approximately 10 ft) drawdown was started in June 2015 and continued until the water level reached the outlet again in December 2015. The drawdowns were deliberate, temporary experiments to investigate whether a relationship existed between the water level in NWP and seeps observed further downgradient on the site. These drawdowns produced negative effects on water quality in NWP that continued for a considerable time afterwards.

The drawdowns exposed areas of the NWP rock wall. Pyritic materials in the newly exposed rock face oxidized, producing sulfuric acid and dissolving metals and minerals. Surface runoff, seepage, and re-inundation of the exposed rock flushed the acid and dissolved metals and minerals into NWP. The effect of the drawdowns in lowering pH is evident from the difference in pH values observed at EWCL before and after the drawdown experiments. For several years prior to the drawdowns, most of the pH measurements at EWCL were at least 6.0 su. In contrast, there were 32 excursions out of a total of 51 values from January 2015 through the end of the assessment period, March 2017 (Table 1).

The effects of the NWP drawdown experiments continued long after the water level in NWP recovered to its normal elevation in December 2015. Due to complete turnover each winter in NWP, the entire volume of NWP was affected by the drawdown experiments. NWP has an average hydraulic residence time of approximately 1.8 years, which contributed to the long

duration of the water quality effects of the drawdown experiments. To address the lingering poor water quality in NWP, lime was added to the pond in March 2016 (which was ineffective in raising the pH of NWP due to lime slurry sinking to the bottom), again during September 19-21, 2016, and a third time in March 2017. After the second liming (September 2016), water quality in the NWP outflow improved and returned to conditions prior to the drawdowns.

Federal regulations at 40 CFR 130.7(b)(6)(iv) discuss "good causes" for not including a waterbody on the 303(d) list. One of those good causes is "changes in conditions, e.g., new control equipment, or elimination of discharges." The NWP drawdowns created an obvious and temporary source of pollution (analogous to a "discharge") that has been essentially eliminated by liming the pond multiple times and returning the pit lake water level to "normal" conditions (outflow over a weir that maintains a stable water level, which means that no future exposure of pyritic materials is expected). Although there will always be background sources of acidity and metals in NWP, the temporary effects caused by the drawdowns have been remedied, which is demonstrated by recent pH values at EWCL exceeding 6.0 su on all eleven sampling days since March 2018 (see Table 1).

Other Construction Activities in Upper Wilson Creek

Although water quality in the NWP outflow improved in late September 2016, pH values at EWCL after that time were likely affected by construction activities in the Upper Wilson Creek watershed. These construction activities included the AS008 channel improvements, other channel improvements in the Upper Wilson Creek watershed, and construction of the habitat wetlands immediately below the NWP outlet. The construction activities included excavation that created temporary exposure of pyritic materials, resulting in temporary low pH conditions downstream. By March 2018, these construction projects were complete and the large quantities of limestone that were used were improving the pH values at EWCL. On all eleven sampling days since March 2018, the pH at EWCL has been above 6.0 su, demonstrating that pH values at EWCL during October 2016 through the end of the assessment period are only representative of conditions affected by temporary construction activities and should therefore be excluded from the assessment calculations.

EPA's 2004 Integrated Report guidance states that data may be determined to no longer be representative of current conditions. The recent pH values at EWCL, as well as contextual information regarding the lime addition and water level management of NWP, demonstrate that the EWCL data affected by the drawdowns and by various construction activities are not representative of current conditions and should therefore be excluded from the assessment calculations.

Umetco acknowledges that the 2004 Integrated Report guidance cautions States about excluding data "because the data seem to represent extreme circumstances". However, this statement appears to refer to water quality conditions that are toxic or otherwise harmful to aquatic life or humans within a short time period and are likely to occur again at some point in the future. Umetco believes that this caution does not apply to exclusion of the EWCL data because those data represent conditions that should not occur again.

c). Data collected at the EWCL monitoring station are not spatially representative of conditions in Wilson Creek.

ADEQ's Phase I data quality requirements for assessment purposes call for the data to be "characteristic of the main water mass or distinct hydrologic areas". During the drawdown experiments and for a considerable time afterwards, the EWCL data were indicative of water quality only within a short (~900 ft) reach of Wilson Creek starting at the confluence of the inflow from NWP and extending downstream to the point where Wilson Creek enters EWP. The lime plant at EWP provides pH neutralization, which results in different water quality conditions in Wilson Creek from Outfall 001 to the confluence with Lake Catherine (approximately 0.8 miles). In Wilson Creek upstream of the confluence with the NWP outflow, water quality conditions were different than at EWCL during and after the NWP drawdowns. In other words, the EWCL data during and after the NWP drawdowns were representative of only 900 ft of Wilson Creek, which is approximately 7.5% of the entire stream length that was considered in the assessment.

2. The assessment methodology for pH should be revised to be consistent with evaluations of the aquatic life designated use based on biological data and/or comparison with natural conditions.

Naturally low pH occurs in the upper end of Wilson Creek prior to and after crossing the northern property line of the Umetco Former Wilson Mine Site. This is common for small streams in the Ouachita Mountain ecoregion. As discussed in the Upper Wilson Creek Report that Umetco submitted to ADEQ, the pH is below 6.0 su about 77% of the time in Wilson Creek upstream of areas affected by historical mining activities (monitoring station WIL-1). However, the biological field data that were documented in that report show that the aquatic life designated use is being attained in Upper Wilson Creek. This indicates a discrepancy between the results of the biological field data collection and the results of ADEQ's assessment based on pH.

Low naturally occurring pH levels in this region of Arkansas are clearly demonstrated by ADEQ's monitoring data for ten small streams in the Ouachita Mountain National Forest that have a large percentage of pH values below 6.0 su (Table 2). These ten streams are considered least disturbed streams, yet they would be considered to be impaired for pH based on the current assessment methodology.

Another example of naturally occurring low pH values in streams of this region is the pH data contained in the Upper Wilson Creek Report (Table 3). These data represent pH conditions in the reference streams that were selected by FTN Associates in collaboration with ADEQ Planning Division staff for comparison with Wilson Creek and Indian Springs Creek on the Umetco site. Table 3 clearly illustrates the occurrence of numerous naturally occurring pH values less than 6.0 su. These data represent least disturbed "small" streams in the Ouachita Mountains ecoregion.

For small streams in the Ouachita Mountains ecoregion, the current assessment methodology for pH should be revised so that pH values below 6.0 su will not result in an impairment unless site-specific biological data demonstrate an impairment caused by low pH. If the low pH values are due to naturally occurring conditions, the values below 6.0 su should not be considered excursions in the assessment calculations based on the following provision in Regulation 2.501: "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 to the naturally occurring excursions." Excluding naturally occurring excursions would be consistent with EPA's 2008 Integrated Reporting Guidance (memo from Diane Regas dated October 12, 2006; see pages 10-11). If a stream has naturally occurring excursions of a constituent that would trigger an impairment, this guidance allows the stream to be excluded from Category 5 as long as the State's water quality standards include a provision stating that the numeric criteria for that constituent are not applicable when natural background conditions do not meet the criteria.

After naturally occurring excursions have been excluded, if a small stream in the Ouachita Mountain ecoregion still has more than the allowable number of pH excursions, then it might be logical for ADEQ to use site-specific biological field data to determine whether or not the excursions have caused an impairment. Biological data provide a more accurate indication of the aquatic life conditions in a stream compared to an evaluation based solely on water quality data. If the biological field data show that the pH excursions have caused an impairment, then the stream should be assessed as impaired (i.e., Category 4 or 5). If the biological field data show that the pH excursions have not caused an impairment, then the stream should be assessed as supporting the aquatic life designated use (i.e., Category 1 or 2). If no biological field data are available, the stream should be placed in Category 3 (insufficient data).

ADEQ's current assessment methodology states that streams should be placed in "Category 5, low priority" if they have more than the allowable number of excursions for one or more constituents but they support designated uses. It is our understanding that EPA considers a total maximum daily load (TMDL) to be needed for every Category 5 impairment, regardless of priority. Developing TMDLs for least disturbed streams with naturally occurring excursions of pH (or other parameters) would not be expected to lead to environmental improvements. For streams such as Wilson Creek that have biological data demonstrating attainment of the aquatic life designated use, the methodology proposed above represents the true status of the stream more accurately than "Category 5, low priority".

3. If ADEQ does not exclude the EWCL data, Wilson Creek should be split into two assessment units (AUs) and the upper AU should be placed in Category 4b.

If ADEQ does not exclude the EWCL data from the assessment of Wilson Creek, the stream should be split into two AUs – one upstream of EWP and one downstream of EWP. The AU downstream of EWP should be assessed using the data collected at WILL because those data should be representative of Wilson Creek from Outfall 001 to the confluence with Lake Catherine. Because the data at WILL meet water quality standards, the expected assessment result for the Lower Wilson Creek AU would be Category 1. The Upper Wilson Creek AU should be placed in Category 4b instead of Category 5. Category 4b is more appropriate than Category 5 because Umetco's reclamation activities certainly qualify as "pollution controls" that are required for Category 4b. Umetco can develop documentation that is required for Category 4b, including describing the reclamation activities that are already in place and currently underway and how they are expected to result in attainment of water quality standards within a reasonable period of time.

4. Umetco disagrees with the DO listing for Indian Springs Creek.

The 2018 draft 303(d) list cites Indian Springs Creek (AR_08040101_902) as impaired for dissolved oxygen (DO), sulfate, and total dissolved solids (TDS). It is Umetco's understanding that the DO impairment was carried forward from the 2016 303(d) list because only 8 DO measurements were available within the 2018 assessment period. As stated in a public comment letter dated March 9, 2016, Umetco disagreed with the 2016 listing for DO based on lack of representativeness of data at OUA0184A as well as using data that may have been collected in enduring pools during periods of negligible flow. Umetco continues to disagree with the DO listing for Indian Springs Creek for the reasons stated in the March 9, 2016 letter.

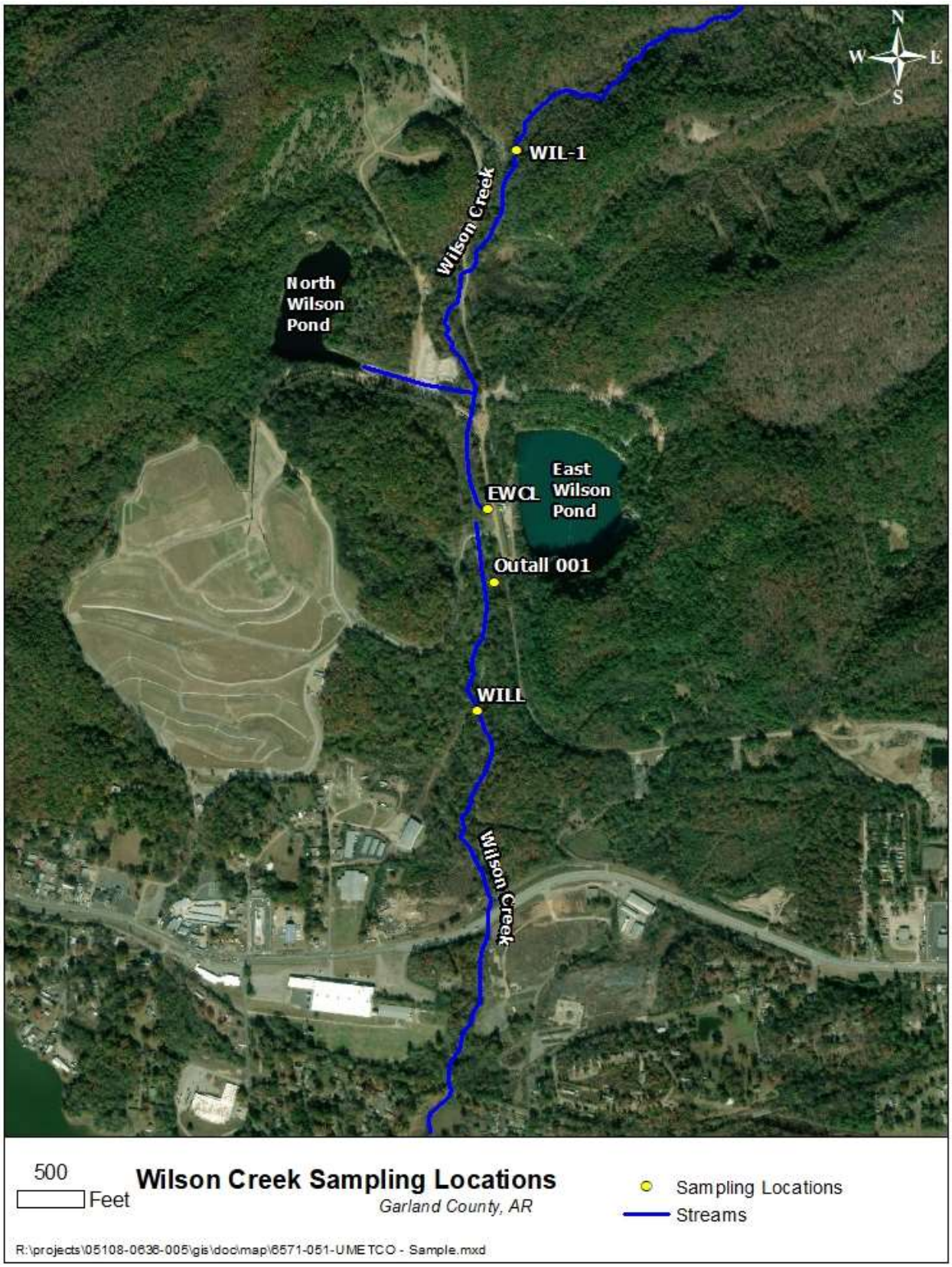

Figure 1. Map of Wilson Creek and selected sampling locations.

Table 1. pH data at EWCL for January 2010 – August 2018

Date	pH (su)	
1/13/2010	6.07	
7/13/2010	6.42	
1/04/2011	6.13	
7/27/2011	6.65	
1/12/2012	6.09	
7/09/2012	6.50	
1/22/2013	6.11	
7/18/2013	6.73	
9/17/2013	6.78	
10/11/2013	6.44	
10/15/2013	6.19	
10/16/2013	6.80	
11/21/2013	6.00	
12/17/2013	6.30	
1/15/2014	5.65	
2/18/2014	6.23	
3/18/2014	6.28	
4/10/2014	6.21	
5/22/2014	6.14	
6/04/2014	6.34	
7/16/2014	6.64	
7/28/2014	6.31	
8/21/2014	6.58	
9/10/2014	6.50	
10/08/2014	6.42	
10/16/2014	6.31	
11/11/2014	6.15	Start of 1st drawdown →
1/08/2015	5.80	
2/05/2015	5.77	
3/17/2015	5.66	
4/08/2015	6.76	
5/13/2015	4.43	Start of 2nd drawdown →
6/03/2015	5.83	
6/16/2015	6.19	
7/08/2015	5.93	
7/14/2015	6.14	
7/21/2015	6.33	
8/06/2015	6.23	
9/09/2015	6.94	Limestone BMP channel start →
11/04/2015	4.76	
11/17/2015	4.60	
12/03/2015	5.23	
1/12/2016	5.02	Limestone BMP channel finish →
2/03/2016	5.15	
2/12/2016	5.81	
2/23/2016	5.99	
2/24/2016	5.15	
3/07/2016	5.24	
3/10/2016	5.64	Liming →
3/25/2016	6.14	
3/31/2016	5.48	

Date	pH (su)	
4/06/2016	5.40	
4/20/2016	5.60	
4/21/2016	5.82	Spaulding drainage improvement start →
5/03/2016	5.49	
5/17/2016	5.83	
5/25/2016	6.01	
6/07/2016	5.72	
6/27/2016	6.18	
7/06/2016	5.33	
7/15/2016	6.45	
8/04/2016	5.84	
8/10/2016	6.30	
8/16/2016	5.12	
9/14/2016	5.11	Liming →
10/04/2016	6.22	
10/05/2016	6.20	
10/14/2016	6.15	
11/09/2016	6.16	
11/28/2016	5.64	
12/06/2016	6.10	South Lecroy Phase 3 start →
1/17/2017	6.54	
2/15/2017	5.78	
2/21/2017	6.49	
2/27/2017	5.95	Liming →
3/07/2017	6.12	
3/14/2017	5.71	
3/27/2017	5.27	
4/11/2017	6.17	
4/27/2017	6.02	
5/02/2017	5.96	Spaulding drainage improvement finish →
6/08/2017	5.92	
7/07/2017	5.42	South Lecroy Phase 3 finish →
8/03/2017	6.69	
9/08/2017	6.01	EWP drainage improv. & NWP wetlands start →
10/17/2017	6.15	
11/07/2017	6.22	EWP drainage improvement finish →
12/05/2017	6.32	
1/09/2018	5.86	NWP drainage improvement →
2/06/2018	5.67	
2/19/2018	5.70	
3/02/2018	6.21	NWP wetlands finish →
3/19/2018	6.35	
4/10/2018	6.83	
5/10/2018	6.44	
5/17/2018	6.57	
6/06/2018	6.55	
7/17/2018	6.41	
8/06/2018	6.41	NWP drainage improvement finish →
8/09/2018	6.16, 6.89*	
8/16/2018	6.88	
8/27/2018	6.35	

*Values on 8/09/2016 were measured at 09:59 and 13:01, respectively

Table 2. ADEQ pH data for small least disturbed streams in Ouachita Mountains ecoregion.

Station ID	Stream name	ADEQ designation	Watershed size (mi^2)	Location	pH measurements (su)			
					Mean	Std. dev.	Min.	Max.
ARK0182	Turner Creek		4.98	Ouachita National Forest	5.82	0.44	4.39	6.62
ARK0187	Negro Branch of South Fourche LaFave		8.57	Ouachita National Forest	5.97	0.50	4.49	6.99
ARK0190	Dry Fork South Fourche LaFave		30.80	Ouachita National Forest	5.83	0.59	4.49	6.74
ARK0208	West Gafford Creek		11.60	Ouachita National Forest	6.02	0.37	4.88	6.82
OUA0141	Fiddlers Creek	<10 mi^2 Ecoregion Reference	12.00	Ouachita National Forest	6.14	0.78	4.30	7.50
OUA0142	Irons Fork	<10 mi^2 Ecoregion Reference	10.50	Ouachita National Forest	5.83	0.44	4.56	6.63
OUA0194	Irons Fork		10.90	Ouachita National Forest	6.14	0.58	4.50	7.39
OUA0216	Alum Fork Saline River	Extraordinary Resource Waters	50.60	Ouachita National Forest	6.05	0.73	4.43	7.29
RED0069	Caney Creek	Extraordinary Resource Waters	8.82	Caney Creek WMA	6.16	0.54	5.13	7.13
RED0071	Short Creek		3.92	Caney Creek WMA	6.35	0.37	5.57	6.94
RED0083	Mill Creek		7.56	Rich Mountain Recreation Area	5.80	0.89	4.02	7.38

Table 3. pH data from the Upper Wilson Creek report.

Site	Date	pH (su)
REF-1	9/24/2015	6.16
REF-2	9/24/2015	4.98
REF-4	9/24/2015	6.73
REF-5	9/24/2015	5.09
REF-6	9/24/2015	6.70
REF-7	9/24/2015	6.78
REF-1	11/11/2015	5.77
REF-2	11/11/2015	4.88
REF-4	11/11/2015	6.33
REF-5	11/11/2015	5.22
REF-6	11/11/2015	6.56
REF-7	11/11/2015	6.24
REF-1	12/10/2015	5.93
REF-2	12/10/2015	5.10
REF-4	12/10/2015	6.76
REF-5	12/10/2015	5.32
REF-6	12/10/2015	6.50
REF-7	12/11/2015	6.51
REF-1	1/20/2016	6.84
REF-2	1/20/2016	5.77
REF-4	1/20/2016	6.32
REF-5	1/20/2016	5.19
REF-6	1/20/2016	6.13
REF-7	1/20/2016	6.75
REF-1	2/16/2016	6.47
REF-2	2/16/2016	5.63
REF-4	2/16/2016	6.57
REF-5	2/16/2016	6.11
REF-6	2/16/2016	6.78
REF-7	2/16/2016	6.62
REF-1	3/17/2016	5.30
REF-2	3/17/2016	4.78
REF-4	3/17/2016	6.38
REF-5	3/17/2016	5.51
REF-6	3/17/2016	6.03
REF-7	3/17/2016	5.86