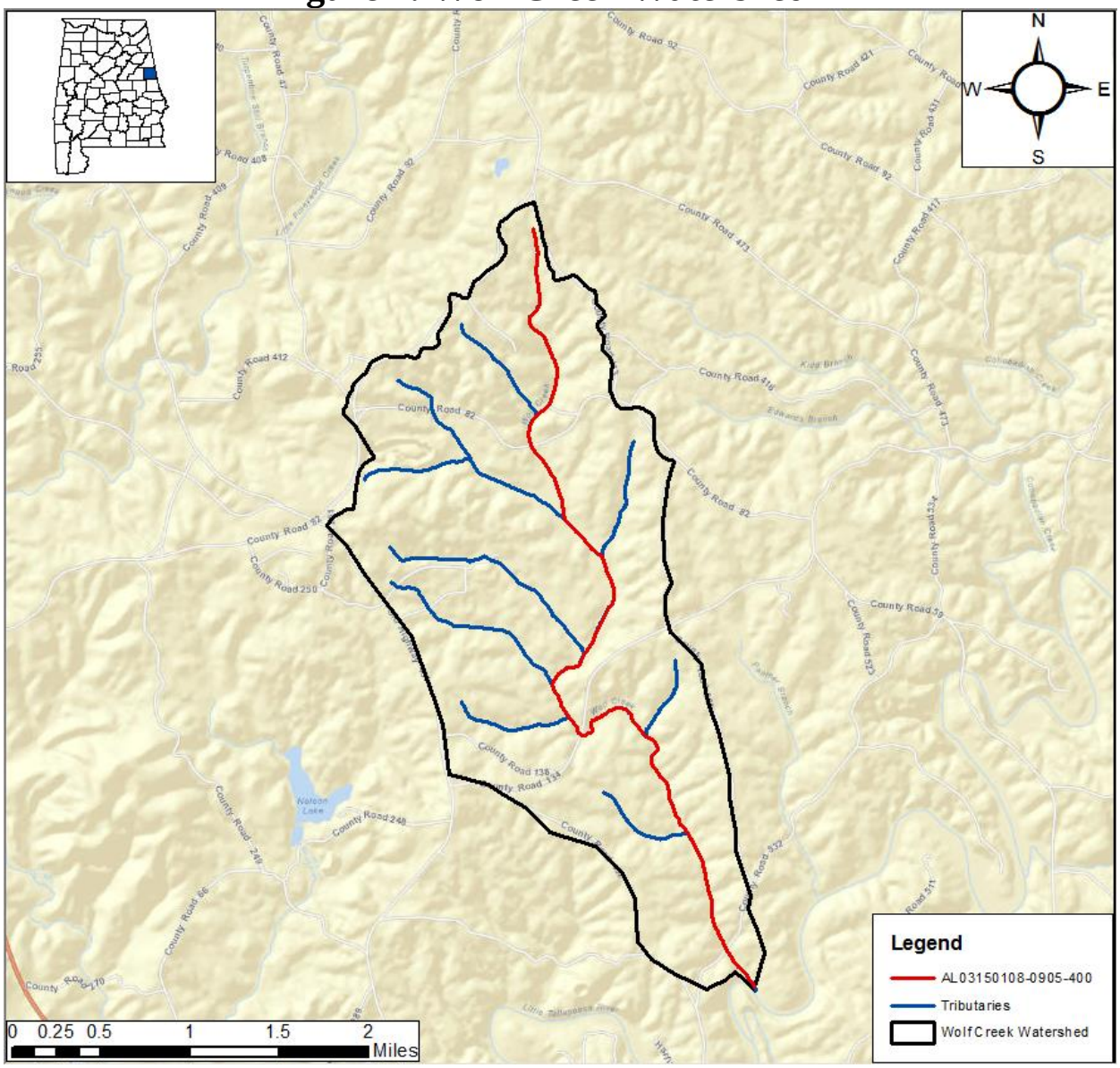
Draft
Delisting Decision
for
Wolf Creek

Waterbody ID # AL03150108-0905-400

pH

Alabama Department of Environmental Management
Water Quality Branch
Water Division
October 2017

Figure 1: Wolf Creek Watershed



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1.0 Executive Summary

Wolf Creek is located in Randolph County and is a part of the Tallapoosa River Basin. Wolf Creek feeds into the Little Tallapoosa River, which is a tributary to the Tallapoosa River. The length of Wolf Creek spans a distance of 5.53 miles with a contributing drainage area of approximately 5.2 mi^2. The entire length of Wolf Creek, from its source to the Little Tallapoosa River, is currently on the 2016 §303(d) list for pH. Wolf Creek has a designated use classification of Fish & Wildlife.

In accordance with ADEM water quality standards, the pH shall not be less than 6.0 s.u. nor greater than 8.5 s.u. for streams classified as Fish & Wildlife (F&W). In 2008, 2009, 2012, and 2015, water quality data was collected on Wolf Creek at three locations. Only one exceedance occurred in the samples collected at WOLF-2 and WOLF-3 during the 2008-2009 sampling period. However, data at the WOLF-3 station showed three out of the ten samples below 6.0 s.u. in 2012. As a result of the exceedances at WOLF-3, the entire 5.53 mile segment of Wolf Creek was placed on the §303(d) list by ADEM in 2014.

On April 24, 2012, an incident occurred in which 1,000 gallons of phosphoric acid spilled near Morrison Crossroads, which is within the Wolf Creek watershed. This incident occurred in the same year that the sampling violations at WOLF-3 occurred. ADEM re-sampled Wolf Creek at WOLF-2 at County Road (CR)-134 and WOLF-3 at CR-532 in 2015 as part of the §303(d) Monitoring Program. None of the pH measurements at WOLF-2 and WOLF-3 in 2015 were less than 6.0 s.u. or higher than 8.5 s.u.

This report addresses the results of the delisting analysis for Wolf Creek for pH. Based on the assessment of pH levels in water quality data, ADEM has determined that Wolf Creek is not impaired due to pH and that water quality standards are being met. Therefore, a Total Maximum Daily Load (TMDL) will not be developed due to "more recent data," which is just cause for delisting a waterbody according to Title 40 of the Code of Federal Regulations (CFR), Part 130.7(b)(6)(iv).

Table 1-1. Wolf Creek Segment from the 2016 §303(d) List

ID	Use	Cause	Date of Data	Size	Downstream/Upstream Locations
AL03150108-0905-400	F&W	pH	2012	5.53 miles	Little Tallapoosa River/Its source

2.0 Basis for §303(d) Listing

Section 303(d) of the Clean Water Act (CWA), as amended by the Water Quality Act of 1987 and EPA's Water Quality Planning and Management Regulations [Title 40 of the Code of Federal Regulations (CFR), Part 130], requires states to identify waterbodies which are not meeting water quality criteria applicable to their designated use classifications. The identified waters are prioritized based on severity of pollution with respect to designated use classifications. Total maximum daily loads (TMDLs) for all pollutants causing violation of applicable water quality criteria are established for each identified waterbody. Such loads are

established at levels necessary to implement the applicable water quality criteria with seasonal variations and margins of safety. The TMDL process establishes the allowable loading of pollutants, or other quantifiable parameters for a waterbody, based on the relationship between pollution sources and in-stream water quality conditions, so that states can establish water-quality based controls to reduce pollution from both point and non-point sources and restore and maintain the quality of their water resources (USEPA, 1991).

The State of Alabama has identified the 5.53 mile segment of Wolf Creek from its source to the confluence with the Little Tallapoosa River near CR-532 as being impaired for pH. The §303(d) listing was originally reported on Alabama's 2014 §303(d) List, and subsequently included on the 2016 list. The source of the impairment on the 2014 §303(d) list is identified as "agriculture." However, as mentioned in the executive summary, a phosphoric acid spill on April 24, 2012 is believed to be the cause of the low pH values recorded in 2012.

Water quality data from 2008 and 2012, which was used to list Wolf Creek for pH on the 2014 §303(d) list, is shown in Table 2-1. That data, collected by ADEM, indicated pH values less than 6.0 standard units (s.u.) for three of ten samples collected at station WOLF-3. In accordance with Alabama's Water Quality Assessment and Listing Methodology (2016), with a sample size of eight to eleven samples, only two exceedances are needed to place a waterbody on the §303(d) list. As a result, Wolf Creek was placed on the 2014 §303(d) list.

Table 2-1. 2008 and 2012 Data for Wolf Creek from WOLF-3*

Date	Water Temp (°C)	Flow (ft^3/s)	p.H. (s.u.)	D.O. (mg/L)	$CBOD_5$ (mg/L)	NH_3 (mg/L)
4/10/2008	15.03	3.9	7.09	9.91	6.4	0.015
5/14/2008	15.01	2.4	6.89	9.29	1	0.015
4/10/2012	15.84	4.714	6.63	9.98	2	0.007
5/21/2012	17.49	2.798	6.25	8.88	-	-
6/11/2012	19.92	2.193	6.27	8.82	2	0.008
7/9/2012	25.02	0.867	3.95	8.3	2	0.008
8/7/2012	23.67	0.4657	2.54	8.3	2	0.049
9/11/2012	19.42	0.982	5.43	9.2	2	0.008
10/9/2012	14.65	1.072	6.76	10	2	0.008
11/5/2012	11.16	1.2019	6.73	10.49	2	0.008

*Supporting data for 2014 §303(d) listing.

3.0 Technical Basis for Delisting Decision

3.1 Water Quality Target Identification

According to ADEM's Water Quality Criteria, ADEM Admin. Code r. 335-6-10-.09(5)(e)2, the pH shall not "be less than 6.0, nor greater than 8.5" in streams classified as Fish & Wildlife. For the purpose of this delisting, a minimum pH of 6.0 s.u. and a maximum pH of 8.5 s.u. are established, except where naturally occurring conditions are otherwise present.

3.2 Data Availability and Analysis

Stations WOLF-2 and WOLF-3 were sampled monthly from March through October in 2015 by ADEM as part of the §303(d) Monitoring Program. WOLF-1 was not sampled during 2015. Station locations are described in Table 3-1 and depicted in Figure 3-1. In 2015, at stations

WOLF-2 and WOLF-3, none of the pH measurements were less than 6.0 s.u or higher than 8.5 s.u., as shown in Figure 3-2.

Table 3-1. Wolf Creek Sampling Station Descriptions

Station ID	Stream Name	Location Description	Latitude	Longitude
WOLF-1	Wolf Creek	Wolf Creek at CR-82	33.43299	-85.47364
WOLF-2	Wolf Creek	Wolf Creek at CR-134	33.40990845	-85.46900082
WOLF-3	Wolf Creek	Wolf Creek at CR-532	33.39169207	-85.45548604

Figure 3-1. ADEM Sampling Stations on Wolf Creek

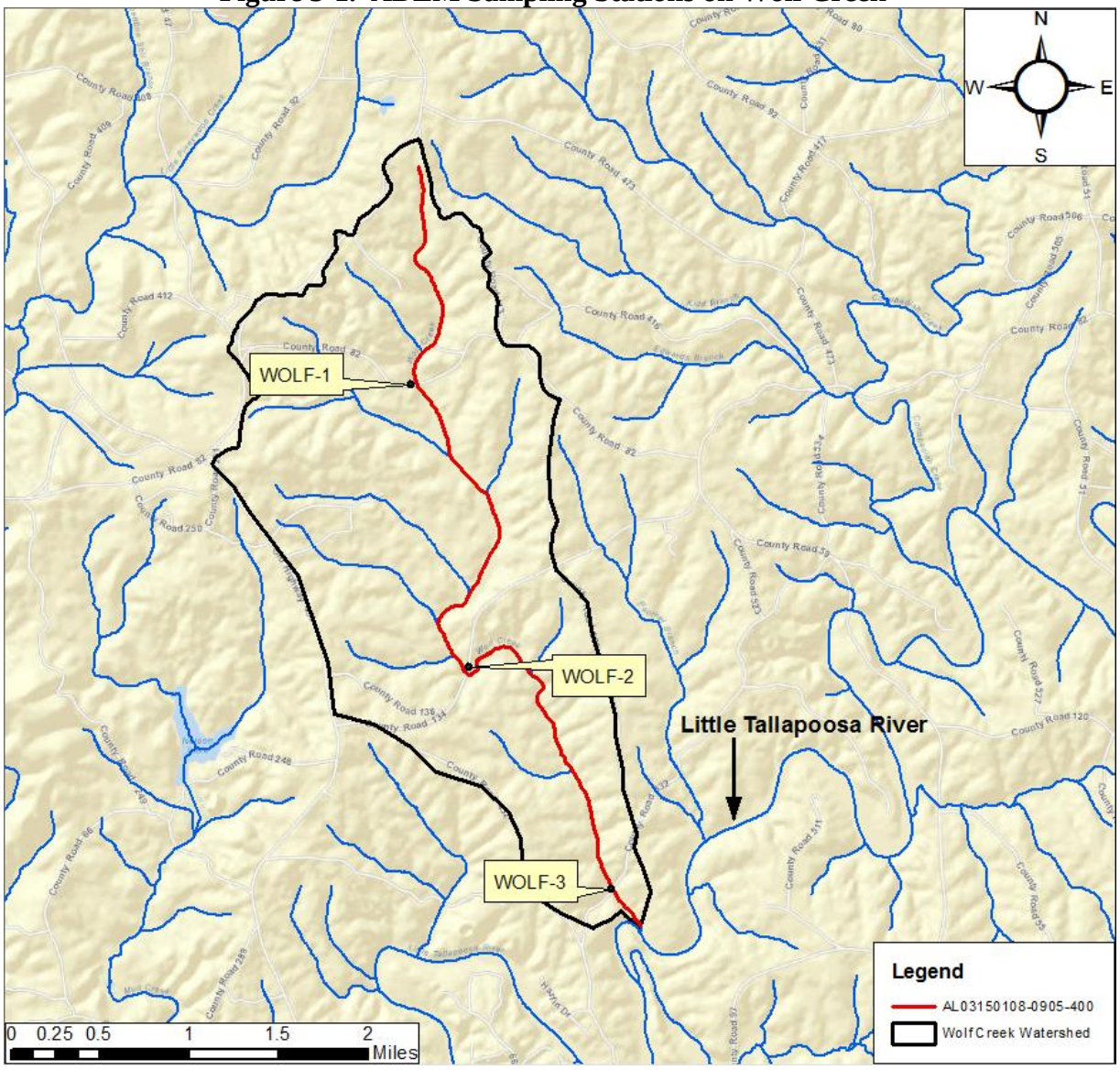
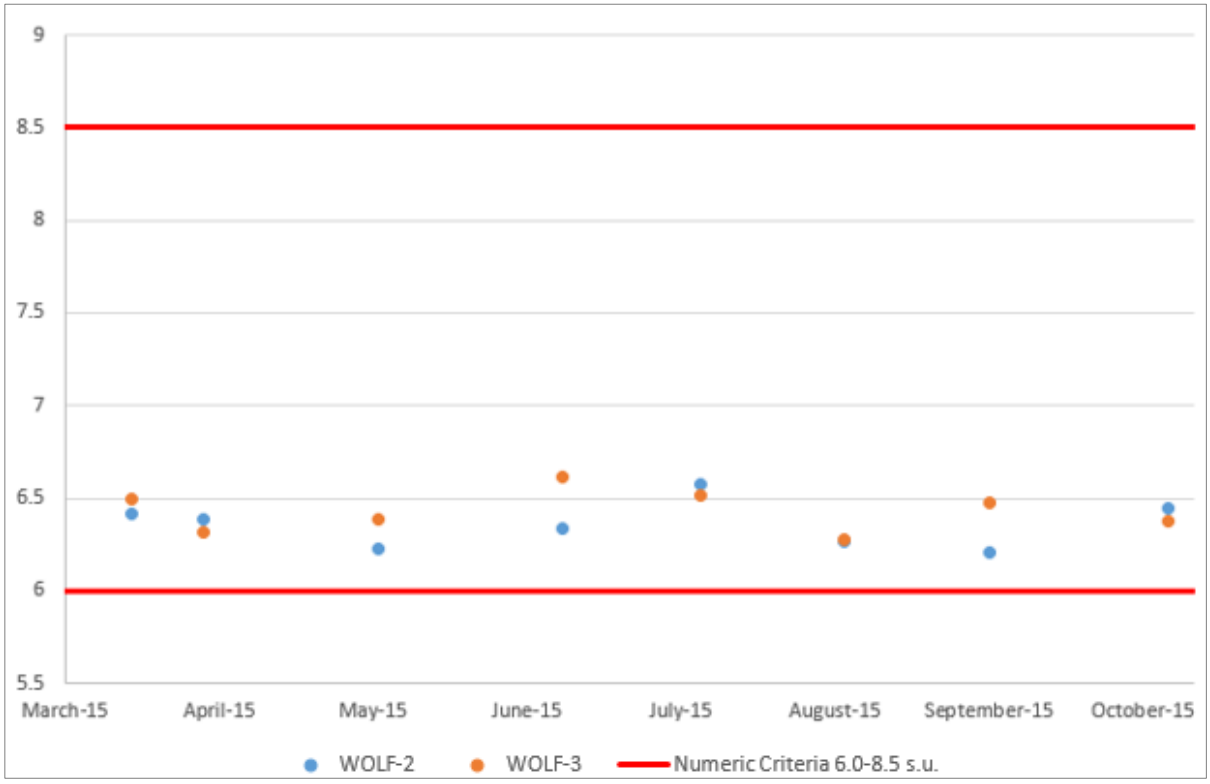


Figure 3-2. pH Measurements for Wolf Creek and Numeric Criteria



4.0 Source Assessment

4.1 Non-Point Sources

Land use for the Wolf Creek watershed was determined using ArcMap with land use datasets from 2011. Land use information for this assessment was derived from the 2011 National Land Cover Dataset (NLCD). Figure 4-1 is a map of the land uses in the Wolf Creek watershed and Table 4-1 contains a numerical breakdown of the land uses. The total drainage area for the Wolf Creek watershed is approximately 5.2 square miles. Overall, the watershed can be considered mostly rural, with 71.21% of the land cover being forested, 22.92% for agricultural use, 5.07% as developed land, and 0.8% as open water.

Figure 4-1. Land Use Map for the Wolf Creek Watershed

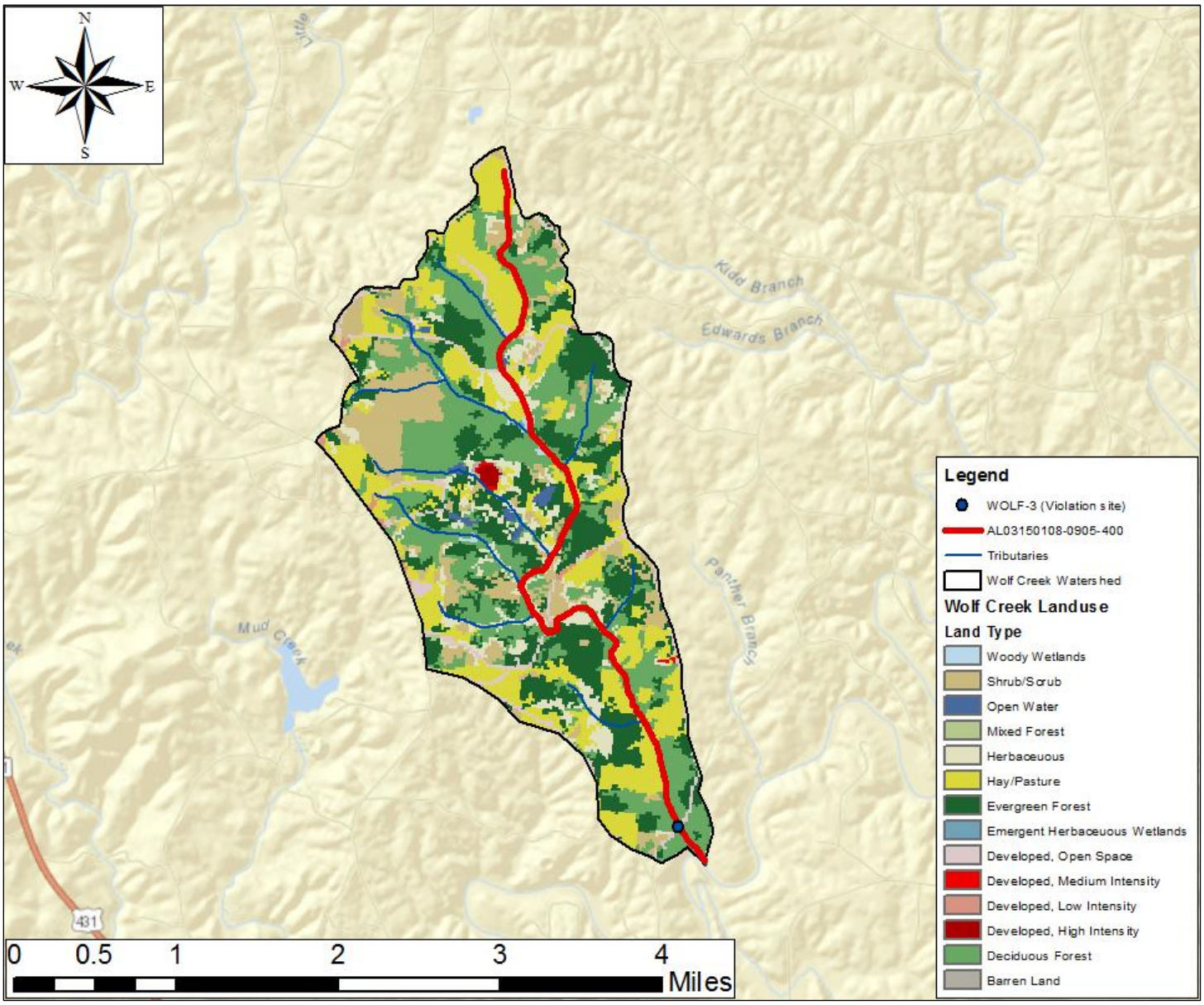
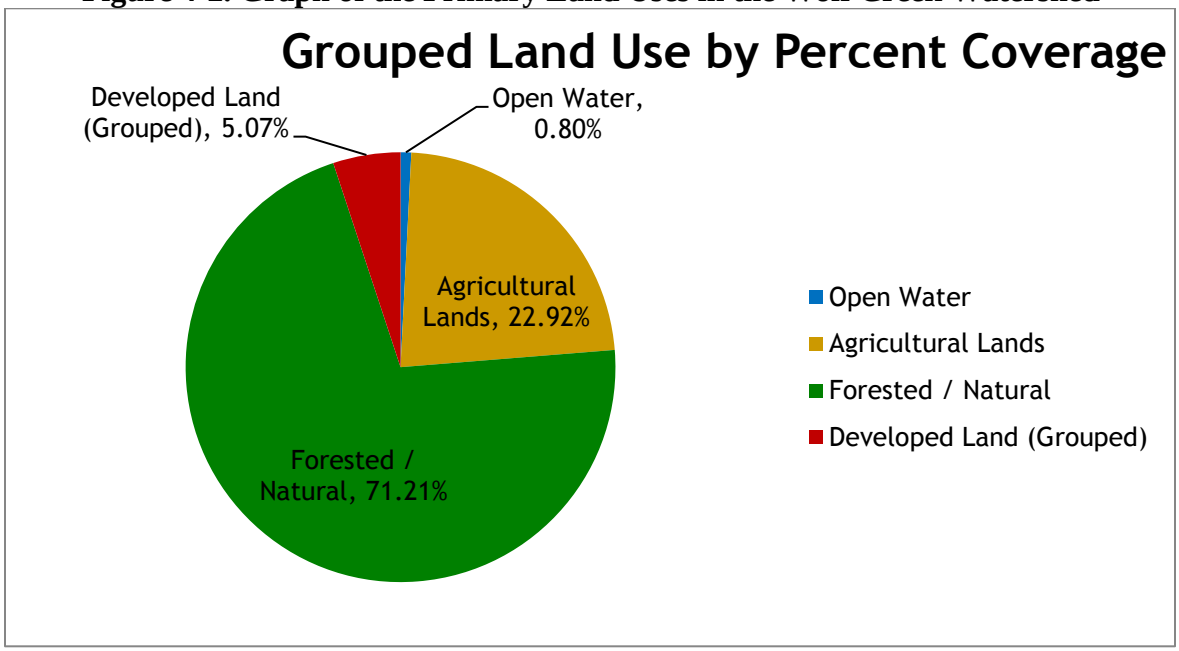


Table 4-1- Land Use Areas for the Wolf Creek Watershed

Class Description	Mi²	Acres	Percent
Open Water	0.04	26.91	0.8
Developed, Open Space	0.21	137	4.09
Developed, Low Intensity	0.03	16.23	0.48
Developed, Medium Intensity	0.01	4.45	0.13
Developed, High Intensity	0.01	9.34	0.28
Barren Land	0.00	2.89	0.09
Deciduous Forest	1.49	952.52	28.42
Evergreen Forest	1.14	728.79	21.75
Mixed Forest	0.00	2.89	0.09
Shrub/Scrub	0.65	415.66	12.4
Herbaceuous	0.43	274.21	8.18
Hay/Pasture	1.2	767.93	22.92
Cultivated Crops	0.00	0.00	0.00
Woody Wetlands	0.02	10.9	0.33
Emergent Herbaceuous Wetlands	0.00	1.33	0.04
TOTALS →	**5.24**	**3351.05**	**100.00**
Class Description	**Mi²**	**Acres**	**Percent**
Open Water	0.04	26.91	0.8
Agricultural Lands	1.2	767.93	22.92
Forested / Natural	3.73	2386.3	71.21
Developed Land (Grouped)	0.27	169.91	5.07
TOTALS →	**5.24**	**3351.05**	**100.00**

Figure 4-2. Graph of the Primary Land Uses in the Wolf Creek Watershed



4.2 Point Sources

There are no known point sources currently located within the Wolf Creek watershed.

5.0 Conclusions

After assessing all available water quality data for Wolf Creek, ADEM has determined that a water quality impairment due to pH no longer exists. It is believed that a phosphoric acid spill incident was the source of the low pH values that resulted in Wolf Creek's addition to the §303(d) list. During the sampling conducted in 2015, no exceedances above or below the numeric pH criteria were recorded. As a result, ADEM will not develop a TMDL due to "more recent data", which is just cause for delisting a waterbody according to Title 40 of the Code of Federal Regulations (CFR), Part 130.7(b)(6)(iv).

6.0 Public Participation

As part of the public participation process, this Delisting Decision (DD) will be placed on public notice and made available for review and comment. The public notice will be prepared and published in the major daily newspapers in Montgomery, Huntsville, Birmingham, and Mobile, as well as submitted to persons who have requested to be on ADEM's postal and electronic mailing distributions. In addition, the public notice and subject DD will be made available on ADEM's Website: www.adem.state.al.us. The public can also request paper or electronic copies of the DD by contacting Ms. Kimberly Minton at 334-271-7826 or kminton@adem.alabama.gov. The public will be given an opportunity to review the DD and submit comments to the Department in writing. At the end of the public review period, all written comments received during the public notice period will become part of the administrative record. ADEM will consider all comments received by the public prior to finalization of this DD and subsequent submission to EPA Region 4 for final review and approval.

7.0 Appendix

7.1 References

Alabama Department of Environmental Management, 2014 and 2016 Section §303(d) Lists.

Alabama's §303(d) Monitoring Program. 2015. ADEM.

Alabama's Trend Station Monitoring Program. 2008-2009, 2012, 2015. ADEM.

ADEM Administrative Code, 2017. Water Quality Program, Chapter 335-6-10, Water Quality Criteria, and Chapter 335-6-11, Use Classifications for Interstate and Intrastate Waters.

United States Environmental Protection Agency. 1991. Guidance for Water Quality-Based Decisions: The TMDL Process, Office of Water, EPA 440/4-91-001.

Alabama Department of Environmental Management (ADEM). 2016. Alabama's Water Quality Assessment and Listing Methodology.

EMA, Randolph County, and Hazardous Materials Spill at Morrison Crossroads 1 comment. "Hazardous materials spill at Morrison Crossroads." *The Randolph Leader*. N.p., 25 Apr. 2012. Web. 14 June 2017.

7.2 Water Quality Data

Table 7.1. Water Quality Data for Wolf Creek (2008 – 2012)

Station ID	Visit Date	Water Temperature (°C)	Flow (ft^3/s)	pH (s.u.)	D.O. (mg/L)	$CBOD_5$ (mg/L)	NH_3 (mg/L)
WOLF-1	4/10/2008	15.91	0.8	6.6	8.82	7.3	0.015
WOLF-2	4/10/2008	15.09	2.5	7.04	9.67	6.2	0.015
WOLF-2	5/14/2008	14.96	1.7	6.68	9.09	1	0.015
WOLF-2	3/23/2009	12.05	3.3	6.39	11.6	2	0.014
WOLF-2	4/23/2009	16.2	5.4	6.67	10.25	2	0.014
WOLF-2	5/7/2009	18.95	8.3	6.61	8.59	2.3	0.06
WOLF-2	6/9/2009	18.84	3.4336	5.94	8.68	-	-
WOLF-2	6/16/2009	20.05	5.3	6.66	8.41	2	0.014
WOLF-2	7/23/2009	21.43	1.87	6.66	8.48	2	0.014
WOLF-2	8/6/2009	20.68	7.41	6.52	8.28	2	0.006
WOLF-2	9/10/2009	20.28	1.733	6.73	8.77	2	0.006
WOLF-2	10/15/2009	17.77	8.302	6.57	8.73	2	0.006
WOLF-3	4/10/2008	15.03	3.9	7.09	9.91	6.4	0.015
WOLF-3	5/14/2008	15.01	2.4	6.89	9.29	1	0.015
WOLF-3	4/10/2012	15.84	4.714	6.63	9.98	2	0.007
WOLF-3	5/21/2012	17.49	2.798	6.25	8.88	-	-
WOLF-3	6/11/2012	19.92	2.193	6.27	8.82	2	0.008
WOLF-3	7/9/2012	25.02	0.867	3.95	8.3	2	0.008
WOLF-3	8/7/2012	23.67	0.4657	2.54	8.3	2	0.049
WOLF-3	9/11/2012	19.42	0.982	5.43	9.2	2	0.008
WOLF-3	10/9/2012	11.16	1.072	6.76	10	2	0.008
WOLF-3	11/5/2012	11.16	1.2019	6.73	10.49	2	0.008

Table 7.2. Water Quality Data for Wolf Creek (2015)

Station ID	Visit Date	Water Temperature (°C)	Flow (ft^3/s)	pH (s.u.)	D.O. (mg/L)	$CBOD_5$ (mg/L)	NH_3 (mg/L)
WOLF-2	3/25/2015	18.28	5.2355	6.42	10.08	2	0.01
WOLF-2	4/8/2015	21.05	5.3649	6.39	9.23	2	0.01
WOLF-2	5/12/2015	19.81	5.8948	6.23	9.01	2	0.01
WOLF-2	6/17/2015	23.15	5.7741	6.34	8.66	2	0.01
WOLF-2	7/14/2015	24.33	2.5043	6.57	8.32	2	0.01
WOLF-2	8/11/2015	24.16	3.3174	6.27	8.03	2	0.028
WOLF-2	9/8/2015	22.33	2.2285	6.21	8.32	2	0.007
WOLF-2	10/13/2015	19.11	1.4636	6.45	8.35	2	0.007
WOLF-3	3/25/2015	17.84	6.348	6.5	9.86	2	0.01
WOLF-3	4/8/2015	20.73	6.9864	6.32	9.3	2	0.01
WOLF-3	5/12/2015	19.22	7.0801	6.39	9.28	2	0.016
WOLF-3	6/17/2015	22.87	4.6694	6.61	8.81	2	0.024
WOLF-3	7/14/2015	24.13	2.9939	6.52	8.48	2	0.021
WOLF-3	8/11/2015	23.53	3.4403	6.28	8.24	2	0.033
WOLF-3	9/8/2015	21.96	3.1278	6.48	8.47	2	0.007
WOLF-3	10/13/2015	18.82	1.9922	6.38	8.46	2	0.007

7.3 Wolf Creek Photographs

Figure 7.1. Station WOLF-2 on Wolf Creek (Looking Upstream)

Figure 7.2. Station WOLF-2 on Wolf Creek (Looking Downstream)

Figure 7.3. Station WOLF-3 on Wolf Creek (Looking Upstream)

Figure 7.3. Station WOLF-3 on Wolf Creek (Looking Downstream)