



Final
**Delisting Decision
for
Little Cahaba River**

Assessment Unit ID # AL03150202-0103-103

Jefferson and St. Clair Counties

Total Dissolved Solids

Alabama Department of Environmental Management
Water Quality Branch
Water Division
March 2026

Figure 1-1 Map of the Little Cahaba River Watershed

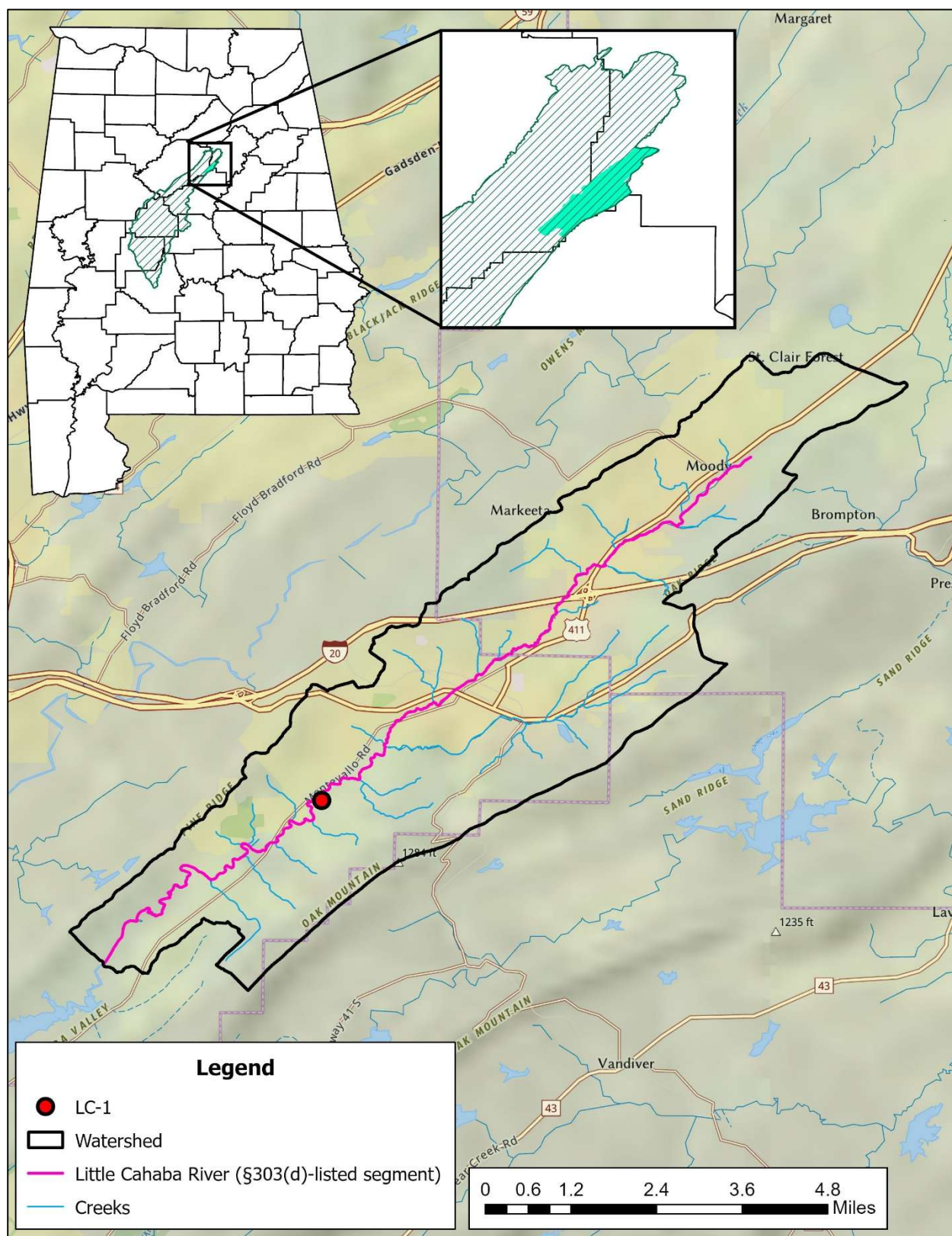


Table of Contents

1.0	Executive Summary	1
2.0	Basis for §303(d) Listing	1
3.0	Watershed Assessment.....	2
3.1	Water Quality Target Identification.....	2
3.2	Assessment of Ecoregional Reference Data	2
3.3	Land Use Assessment	4
4.0	Data Availability and Analysis – Basis for Delisting	6
4.1	Habitat, Macroinvertebrate, and Fish Assessments	6
4.2	Total Dissolved Solids Data.....	8
5.0	Conclusion	9
6.0	Public Participation.....	9
7.0	Appendix.....	10
7.1	References.....	10
7.2	Water Quality Data	11
7.3	Ecoregional Reference Guidelines.....	12
7.4	Little Cahaba River Watershed Photos (July 11, 2012).....	13
7.5	Little Cahaba River Watershed Photos (June 17, 2020).....	14
7.6	Little Cahaba River Watershed Photos (December 1, 2021).....	15
7.7	Little Cahaba River Watershed Photos (May 11, 2023).....	16

List of Figures

Figure 1-1: Map of the Little Cahaba River Watershed	ii
Figure 3-1: Ecoregion Map for the Little Cahaba River Watershed.....	3
Figure 3-2: Land Use Map for the Little Cahaba River Watershed.....	4
Figure 3-3: Primary Land Uses in the Little Cahaba River Watershed	5
Figure 4-1: Habitat Assessment (2023)	6
Figure 4-2: Macroinvertebrate Assessment (2023).....	7
Figure 4-3: Habitat Assessment (2020)	7
Figure 4-4: Fish Assessment (2020)	8
Figure 7-1: Little Cahaba River at Elliott Road (LC-1), Looking Upstream.....	13
Figure 7-2: Little Cahaba River at Elliott Road (LC-1), Looking Downstream.....	13
Figure 7-3: Little Cahaba River at Elliott Road (LC-1), Looking Upstream.....	14
Figure 7-4: Little Cahaba River at Elliott Road (LC-1), Looking Downstream.....	14
Figure 7-5: Little Cahaba River at Elliott Road (LC-1), Looking Upstream.....	15
Figure 7-6: Little Cahaba River at Elliott Road (LC-1), Looking Downstream.....	15
Figure 7-7: Little Cahaba River at Elliott Road (LC-1), Looking Upstream.....	16
Figure 7-8: Little Cahaba River at Elliott Road (LC-1), Looking Downstream.....	16

List of Tables

Table 3-1: Land Use Areas for the Little Cahaba River Watershed.....	5
Table 4-1: Little Cahaba River Sampling Station Description	6
Table 7-1: 2019-2023 TDS Data at Station LC-1	11
Table 7-2: 2020 Ecoregional Reference Guidelines for Ecoregions 67f, 67g, and 67h	12

1.0 Executive Summary

The Little Cahaba River, a part of the Cahaba River basin, is located in Jefferson and St. Clair counties. The Little Cahaba River begins northeast of Moody, Alabama and flows southwest to its confluence with the Cahaba River. The total length of the Little Cahaba River is approximately 24 miles, and the total drainage area of the Little Cahaba River watershed is 48.7 square miles. The Little Cahaba River is currently included on Alabama's 2024 §303(d) list as impaired for total dissolved solids from its source to Lake Purdy. The §303(d)-listed length of the Little Cahaba River is 13.75 miles, and the drainage area of the watershed for the listed segment is 24.7 square miles. This segment of the Little Cahaba River has a use classification of Fish and Wildlife (F&W).

The Little Cahaba River (AL03150202-0103-103) was first included on the 2018 §303(d) list as impaired for total dissolved solids from its source to Lake Purdy. The potential source of impairment was listed as industrial. The Little Cahaba River has subsequently been listed for total dissolved solids on the 2020-2024 §303(d) lists of impaired waterbodies.

During 2019-2023, additional data was collected for the Little Cahaba River to assess its ability to meet applicable water quality standards. The data indicates that the Little Cahaba River now fully supports its use classification with respect to total dissolved solids.

This report addresses the results of the delisting analysis for the Little Cahaba River. Based on the assessment of all available data, ADEM has determined that a water quality impairment due to total dissolved solids does not currently exist. Therefore, ADEM will not develop a Total Maximum Daily Load (TMDL) due to "more recent or accurate 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).

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 the Environmental Protection Agency (EPA) 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 standards applicable to their designated use classifications. The identified waters are prioritized based on severity of pollution with respect to designated use classifications. TMDLs for all pollutants causing violation of applicable water quality standards are established for each identified water. Such loads are established at levels necessary to implement the applicable water quality standards 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 instream 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).

In 2018, the Little Cahaba River was added to Alabama's §303(d) list as impaired for total dissolved solids from its source to Lake Purdy. The listing was based on a macroinvertebrate assessment at station LC-1 on July 11, 2012. The condition of the benthic macroinvertebrate

community was rated as “poor” in accordance with ADEM’s Intensive Multihabitat Bioassessment Methodology (WMB-I). The Little Cahaba River has subsequently been listed for total dissolved solids on the 2020-2024 §303(d) lists of impaired waterbodies.

3.0 Watershed Assessment

3.1 Water Quality Target Identification

The State of Alabama currently has no numeric criteria for total dissolved solids; therefore, narrative criteria must be used to assess the total dissolved solids impairment. While numeric criteria normally have a quantifiable endpoint for a given parameter, narrative criteria are qualitative statements that establish a set of desired conditions for all State waters. These narrative criteria are commonly referred to as “free from” criteria that enable states a regulatory avenue to address pollutants or problems that may be causing or contributing to a use impairment that otherwise cannot be evaluated against any numeric criteria. Typical pollutants that fall under this category are nutrients, siltation, and total dissolved solids. Historically, in the absence of established numeric criteria, ADEM and/or EPA would use available data and information coupled with best professional judgement to determine overall use support for a given waterbody. Narrative criteria continue to serve as a regulatory basis for determining use support and making listing/delisting decisions of waters in regard to Alabama’s §303(d) list. ADEM’s narrative criteria (ADEM Admin. Code r. 335-6-10-.06) are as follows:

335-6-10-.06 Minimum Conditions Applicable to All State Waters. *The following minimum conditions are applicable to all State waters, at all places and at all times, regardless of their uses:*

(a) State waters shall be free from substances attributable to sewage, industrial wastes or other wastes that settle to form bottom deposits which are unsightly, putrescent or interfere directly or indirectly with any classified water use.

(b) State waters shall be free from floating debris, oil, scum, and other floating materials attributable to sewage, industrial wastes or other wastes in amounts sufficient to be unsightly or which interfere directly or indirectly with any classified water use.

(c) State waters shall be free from substances attributable to sewage, industrial wastes or other wastes in concentrations or combinations, which are toxic or harmful to human, animal or aquatic life to the extent commensurate with the designated usage of such waters.

For the total dissolved solids impairment status, relative biological health and habitat suitability were evaluated along with an assessment of the total dissolved solids data.

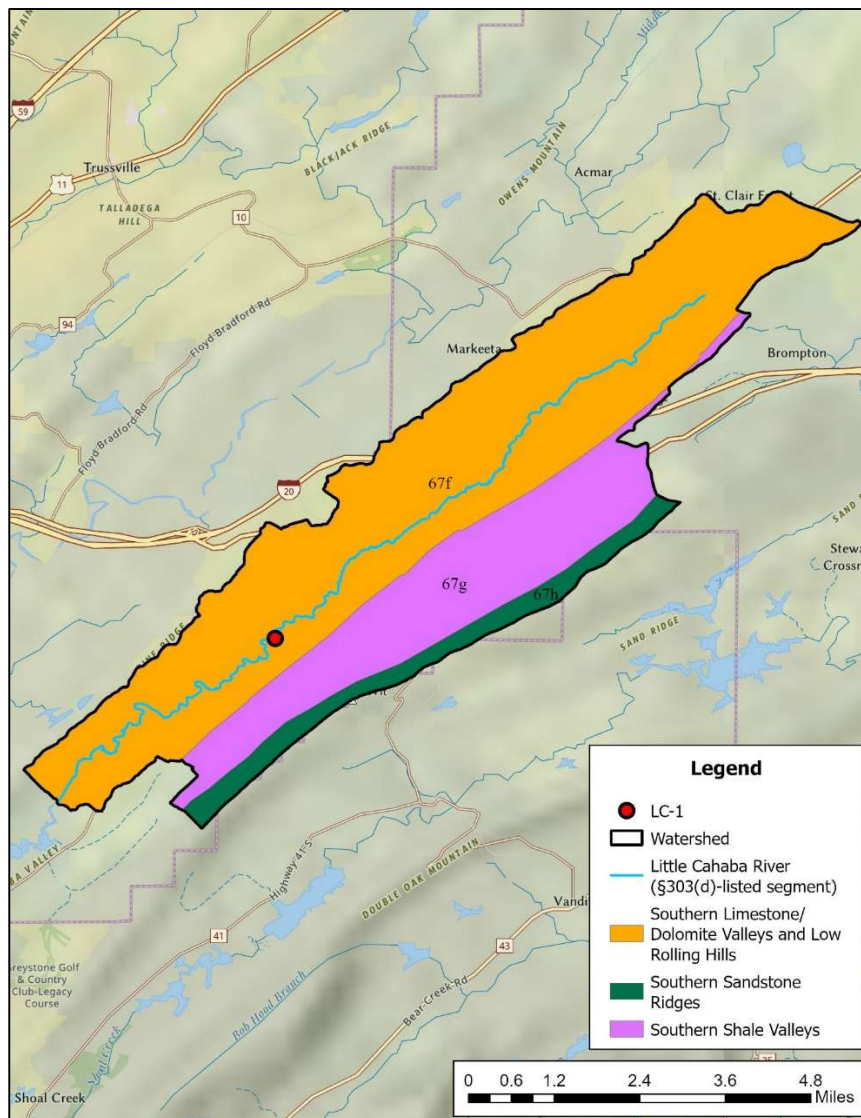
3.2 Assessment of Ecoregional Reference Data

ADEM has established ecoregional reference guidelines for several parameters and pollutants. Reference streams, also referred to as “reference reaches” or “ecoregional reference sites,” are defined as relatively homogeneous areas of similar climate, landform, soil, natural vegetation, hydrology, and other ecologically relevant variables (USEPA, 2000b) which have remained comparatively undisturbed or minimally impacted by human activity over an extended period of

time in relation to other waters of the State. While not necessarily pristine or completely undisturbed by humans, reference streams do represent desirable chemical, physical and biological conditions for a given ecoregion that can be used for evaluation purposes. The reference streams selected for a particular analysis depend primarily on the available number of reference streams and associated data within a particular ecoregion. Therefore, the total number of reference sites selected and the aerial scale (i.e., Ecoregion Level III, Level IV) used to represent a reference condition will often vary on a case-by-case basis.

The watershed for the §303(d)-listed segment of the Little Cahaba River is comprised of three Level IV ecoregions: 67f (Southern Limestone/Dolomite Valleys and Low Rolling Hills), 67g (Southern Shale Valleys), and 67h (Southern Sandstone Ridges). Figure 3-1 displays the ecoregion areas for the Little Cahaba River watershed. The watershed area percentages for each ecoregion are 67.39% (67f), 25.36% (67g), and 7.25% (67h). The reference data for each of these ecoregions can be found in Appendix 7.3, Table 7-2.

Figure 3-1 Ecoregion Map for the Little Cahaba River Watershed



3.3 Land Use Assessment

Land use for the Little Cahaba River (§303(d)-listed segment) watershed was determined using ArcGIS Pro with land use datasets derived from the 2021 National Land Cover Dataset (NLCD). Figure 3-2 and Table 3-1 display the land use areas for the Little Cahaba River watershed. Figure 3-3 is a chart depicting the primary land uses in the Little Cahaba River watershed.

Most of the Little Cahaba River watershed is forested/natural (50.55%) and developed land (39.93%). Agricultural land (9.26%) and open water (0.25%) make up the remaining land use.

Figure 3-2 Land Use Map for the Little Cahaba River Watershed

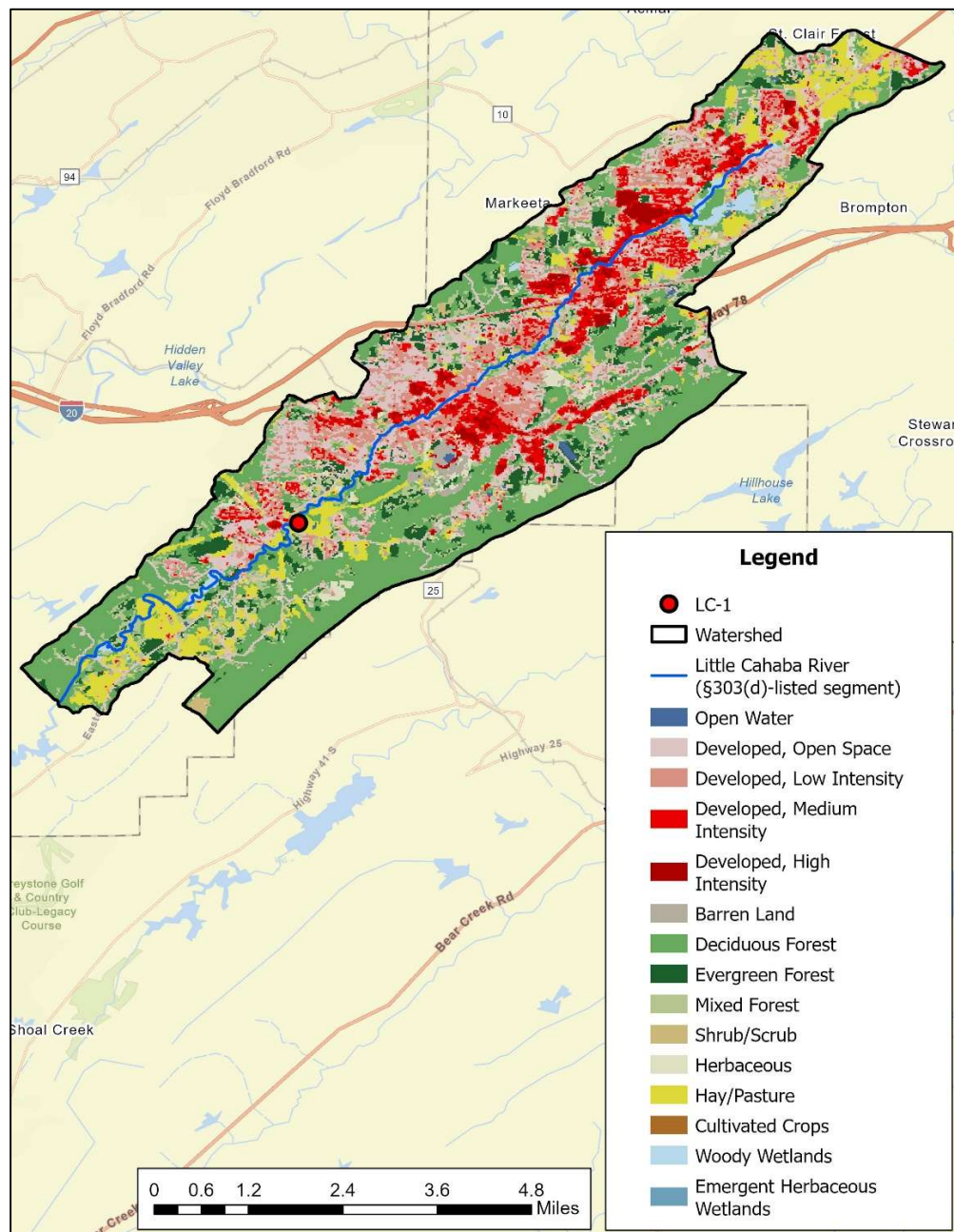
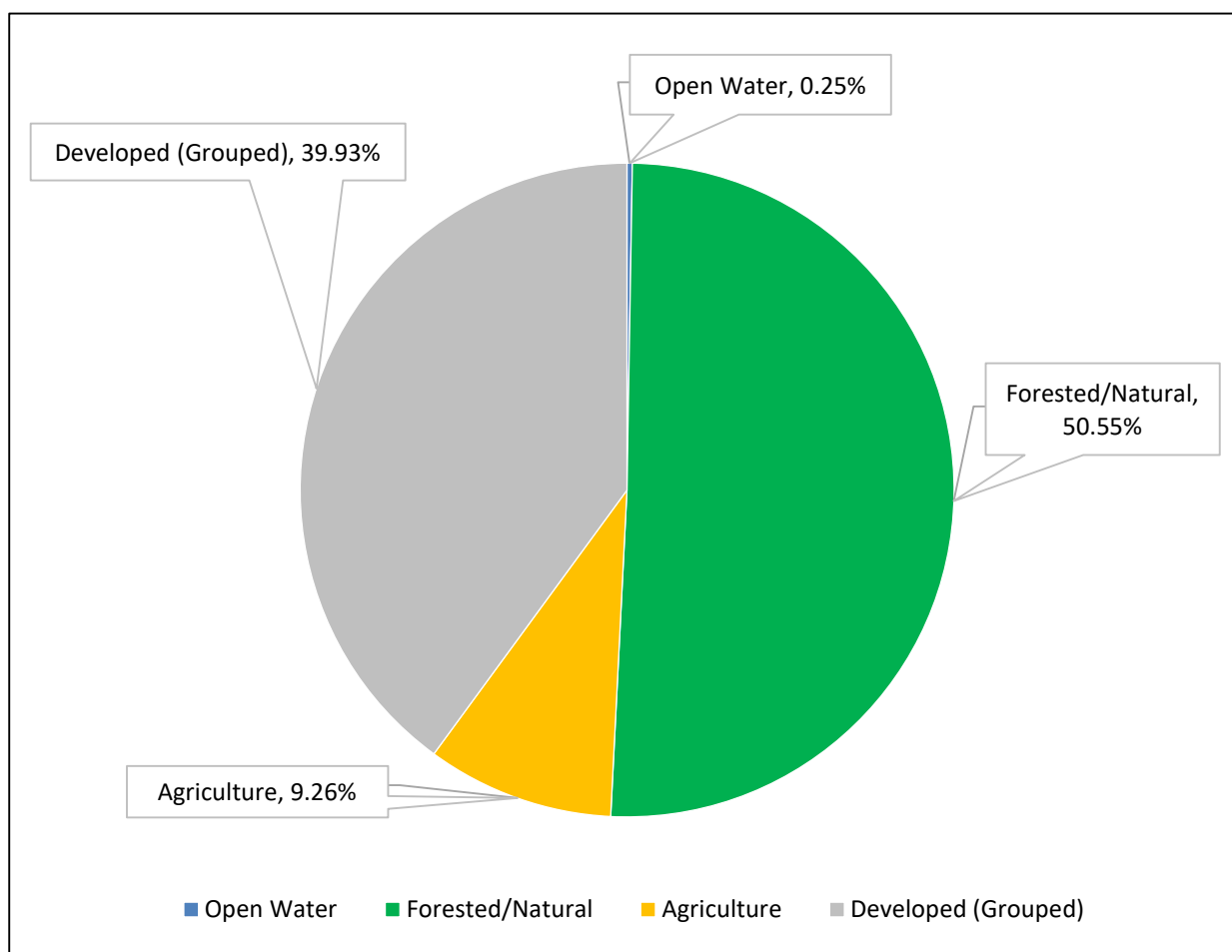


Table 3-1 Land Use Areas for the Little Cahaba River Watershed

Cumulative Land Use	Square Miles (mi ²)	Acres	Percent
Open Water	0.06	40.25	0.25%
Forested/Natural	12.49	7996.71	50.55%
Agriculture	2.29	1465.55	9.26%
Developed (Grouped)	9.87	6317.00	39.93%
Total	24.72	15819.52	100.00%

Figure 3-3 Primary Land Uses in the Little Cahaba River Watershed



4.0 Data Availability and Analysis – Basis for Delisting

The data used for this analysis is from 2019-2023. It should be noted that the Little Cahaba River has been sampled prior to 2019, but this data is older than six years of age. Only data that is six years in age or less was used in this analysis, which is consistent with *Alabama's Water Quality Assessment and Listing Methodology* (ADEM, 2024).

The §303(d)-listed segment of the Little Cahaba River was sampled at one station, LC-1, during 2019-2023. Figure 1-1 and Table 4-1 display the location and description, respectively, of the ADEM sampling station. Habitat, macroinvertebrate, and fish assessments along with physical and chemical data were collected at station LC-1.

Table 4-1 Little Cahaba River Sampling Station Description

Station ID	Station Location	Latitude	Longitude
LC-1	Little Cahaba River south of Leeds ~1 mile below Leeds WWTP	33.52444	-86.575277

4.1 Habitat, Macroinvertebrate, and Fish Assessments

Habitat and macroinvertebrate assessments were conducted by ADEM's Field Operations Division at station LC-1 on May 11, 2023. The habitat was rated as "good" (Figure 4-1), and the macroinvertebrate community was rated as "fair" (Figure 4-2). Habitat and fish assessments were conducted by ADEM's Field Operations Division at station LC-1 on June 18, 2020. The habitat was rated as "good" (Figure 4-3), and the fish community was rated as "fair" (Figure 4-4). These results provide evidence that there is no impairment in the Little Cahaba River due to total dissolved solids.

Figure 4-1 Habitat Assessment (2023)

Table 3. Results of the habitat assessment survey conducted on Little Cahaba River at LC-1, May 11, 2023. Macroinvertebrates were also collected.		
Habitat Survey	% Max Score	Rating
Instream Habitat Quality	81	Optimal (80-100)
Sediment Deposition	80	Optimal (80-100)
Frequency of Riffles	73	Sub-optimal (55-74.999)
Bank Vegetative Stability	60	Sub-optimal (55-74.999)
Riparian Zone Measurements	54	Marginal/Sub-optimal (50-54.999)
Habitat Assessment Score	184	
% Maximum Score	71	Good (64-83.999)

Figure 4-2 Macroinvertebrate Assessment (2023)

Table 4. Results of the Macroinvertebrate survey conducted on Little Cahaba River at LC-1, 05/11/2023.		
Macroinvertebrate Assessment	Results	Scores
Taxonomic richness and diversity metrics		
# EPT Families	11	11
WMB-I Survey Score		11.0
WMB-I Survey Rating		Fair

Figure 4-3 Habitat Assessment (2020)

Table 3. Results of the habitat assessment survey conducted on Little Cahaba River at LC-1, June 18, 2020. Fish IBI were also collected.		
Habitat Survey	% Max Score	Rating
Instream Habitat Quality	87	Optimal (80-100)
Sediment Deposition	80	Optimal (80-100)
Frequency of Riffles	75	Sub-optimal/Optimal (75-79.999)
Bank Vegetative Stability	90	Optimal (80-100)
Riparian Zone Measurements	85	Optimal (80-100)
Habitat Assessment Score	202	
% Maximum Score	84	Good (70-84.999)

Figure 4-4 Fish Assessment (2020)

Table 4. Results of the Fish survey conducted on Little Cahaba River at LC-1, 06/18/2020.		
Fish Assessment	Results	Scores
Taxonomic richness and diversity metrics		
Total Native Species	14	3
Number of shiner species	1	1
Number Lepomis species	5	5
# darter+madtom species	3	3
Tolerance metrics		
Number of intolerant species	0	1
Percent of tolerant species	13	5
Percent Lepomis	20	3
Trophic metrics		
Percent omnivores	5	5
Percent insectivorous Cyprinids	46	3
Percent top carnivores	1	1
Abundance, condition, and reproductive metrics		
Percent DELT+hybrids	0	5
Percent simple miscellaneous	47	5
IBI Survey Score		40
IBI Survey Rating		Fair

4.2 Total Dissolved Solids Data

Forty-two total dissolved solids samples were collected at station LC-1 during the 2019-2023 sampling seasons. This data can be viewed in Appendix 7.2, Table 7-1. The median of the total dissolved solids data is slightly higher than the weighted average ecoregional reference value of 168.8 mg/L. However, the biological assessments, which were the primary basis for the original listing, indicate that the total dissolved solids concentrations are not negatively affecting the F&W use.

5.0 Conclusion

Based on an examination of the recently collected water quality data on the Little Cahaba River, ADEM has determined that a water quality impairment due to total dissolved solids does not currently exist. Therefore, ADEM will not develop a TMDL due to “more recent or accurate data,” which is just cause for delisting a waterbody according to 40 CFR 130.7(b)(6)(iv).

6.0 Public Participation

As part of the public participation process, this Delisting Decision (DD) was placed on public notice and made available for review and comment. The public notice was prepared and published in newspapers in Montgomery, Huntsville, Birmingham, and Mobile, as well as submitted to persons who requested to be on ADEM’s postal and electronic mailing distributions. In addition, the public notice and subject DD were made available on ADEM’s Website: www.adem.alabama.gov. The public could 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 was given an opportunity to review the DD and submit comments to the Department in writing. No written comments were received during the public notice period.

7.0 Appendix

7.1 References

ADEM Administrative Code, 2025. Water Division - Water Quality Program, Chapter 335-6-10, Water Quality Criteria.

ADEM Administrative Code, 2025. Water Division - Water Quality Program, Chapter 335-6-11, Use Classifications for Interstate and Intrastate Waters.

Alabama Department of Environmental Management's Monitoring Program. 2011-2023.

Alabama Department of Environmental Management, *Alabama's Water Quality Assessment and Listing Methodology*, January 2024.

Alabama Department of Environmental Management, 2018, 2020, 2022 & 2024 §303(d) Lists and Fact Sheets.

Alabama Department of Environmental Management (ADEM), Laboratory Data Qualification SOP #4910 Revision 7.2, 2022.

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

United States Environmental Protection Agency, 1986. *Quality Criteria for Water*. Office of Water. EPA 440/4-91-001.

7.2 Water Quality Data

Table 7-1 2019-2023 TDS Data at Station LC-1

Station	Sample Date	Measured Flow (cfs)	TDS (mg/L)	TDS (mg/L), DET_COND*	Median TDS (mg/L)	Weighted Average Eco-reference Value (mg/L)
LC-1	1/9/2019	42.95	220		221	168.8
LC-1	2/19/2019	41.65	177			
LC-1	3/6/2019	35.8	197			
LC-1	4/4/2019	14.6	222			
LC-1	5/2/2019	11.55	222			
LC-1	6/6/2019	8.46	210			
LC-1	7/10/2019	13.45	237			
LC-1	8/7/2019	9.38	224			
LC-1	10/1/2019	9.05	254			
LC-1	11/6/2019	14.7	237			
LC-1	12/4/2019	14.2	103			
LC-1	1/8/2020	25.75	202	JQ1		
LC-1	2/5/2020	40.7	246			
LC-1	3/11/2020	92.8	200			
LC-1	5/13/2020	56.4	214	JQ6		
LC-1	6/17/2020	11.5	217			
LC-1	7/16/2020	17.7	200			
LC-1	8/5/2020	8.5	194			
LC-1	9/3/2020	29.1	252			
LC-1	10/28/2020	169.5	138			
LC-1	11/5/2020	14.7	395			
LC-1	12/8/2020	10.2	223			
LC-1	1/12/2021	28.5	238	JQ		
LC-1	2/3/2021	15.2	240			
LC-1	3/3/2021	49.75	193			
LC-1	4/7/2021	28.3	240			
LC-1	5/5/2021	283	112			
LC-1	6/1/2021	17.4	236			
LC-1	7/8/2021	54.5	181			
LC-1	8/4/2021	16.3	248			
LC-1	9/2/2021	25.4	212			
LC-1	10/7/2021	97.3	172			
LC-1	11/3/2021	18	245			
LC-1	12/1/2021	14.1	238			
LC-1	3/15/2023	28.4	183			
LC-1	4/6/2023	18	221			
LC-1	5/2/2023	11.3	220			
LC-1	6/6/2023	14.6	221			
LC-1	7/5/2023	39.4	255			
LC-1	8/1/2023	6.81	221			
LC-1	9/5/2023	8.12	240			
LC-1	10/3/2023	6.4	216			

*JQ1 denotes that the identification of the analyte is acceptable; the reported value is an estimate. Laboratory Control Sample (LCS)/Laboratory Fortified Blank (LFB) recovery is outside control limits. JQ6 denotes that the identification of the analyte is acceptable; the reported value is an estimate. Spurious contamination or reagent contamination is evident at a level that affects accuracy. JQ denotes that the identification of the analyte is acceptable; the reported value is an estimate. The reported value failed to meet established QC criteria.

7.3 Ecoregional Reference Guidelines

Table 7-2 2020 Ecoregional Reference Guidelines for Ecoregions 67f, 67g, and 67h

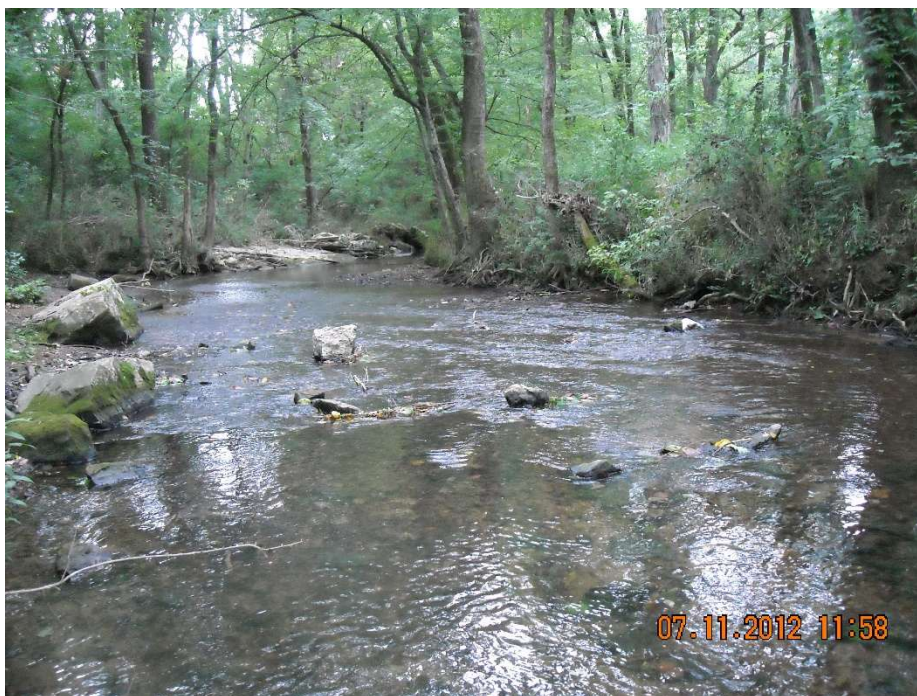
		Level 4	Level 4	Level 4
Parameters	Basis of comparison	67f	67g	67h
Physical				
Temperature (°C)	90th Percentile	25.00	24.28	26.00
Turbidity (NTU)	90th Percentile	12.36	25.90	9.24
Total Dissolved Solids (mg/L)	90th Percentile	172.00	119.60	311.00
Total Suspended Solids (mg/L)	90th Percentile	13.00	14.00	9.10
Specific Conductance (µmhos/cm@25c)	Median	206.80	106.35	36.00
Hardness (mg/L)	Median	93.70	48.00	8.20
Total Alkalinity (mg/L)	90th Percentile	137.18	104.23	87.24
Chemical				
Dissolved Oxygen (mg/L)	10th Percentile	7.10	5.92	7.00
pH (SU)	10th Percentile	7.00	7.00	6.70
pH (SU)	90th Percentile	8.20	8.10	8.00
Ammonia Nitrogen (mg/L)	90th Percentile	0.0270	0.0480	0.0221
Nitrate + Nitrite Nitrogen (mg/L)	90th Percentile	0.3528	0.2840	0.0675
Total Kjeldahl Nitrogen (mg/L)	90th Percentile	0.4150	0.6344	0.5180
Total Nitrogen (mg/L)	90th Percentile	0.6770	0.7720	0.5401
Dissolved Reactive Phosphorous (mg/L)	90th Percentile	0.0172	0.0270	0.0138
Total Phosphorous (mg/L)	90th Percentile	0.0520	0.0623	0.0418
CBOD-5 (mg/L)	90th Percentile	1.80	2.80	2.20
Total Chlorides (mg/L)	90th Percentile	4.83	5.10	13.76
Total Metals				
Total Aluminum (mg/L)	90th Percentile	0.3033	1.0156	0.4985
Total Iron (mg/L)	90th Percentile	0.7496	1.3280	0.7822
Total Manganese (mg/L)	90th Percentile	0.0570	0.1414	0.1143
Dissolved Metals				
Dissolved Aluminum - Al (mg/L)	90th Percentile	0.10	0.10	0.10
Dissolved Antimony - Sb (µg/L)	90th Percentile	5.00	1.00	5.00
Dissolved Arsenic - As (µg/L)	90th Percentile	16.00	1.0540	-
Dissolved Cadmium - Cd (µg/L)	90th Percentile	0.3695	1.50	-
Dissolved Chromium - Cr (µg/L)	90th Percentile	25.00	8.8500	34.10
Dissolved Copper - Cu (µg/L)	90th Percentile	25.00	12.00	21.50
Dissolved Iron - Fe (mg/L)	90th Percentile	0.2047	0.4734	0.1881
Dissolved Lead - Pb (µg/L)	90th Percentile	5.00	1.00	1.00
Dissolved Manganese - Mn (mg/L)	90th Percentile	0.04	0.0537	0.1001
Dissolved Mercury - Hg (µg/L)	90th Percentile	0.04	-	-
Dissolved Nickel - Ni (µg/L)	90th Percentile	25.00	15.00	87.30
Dissolved Selenium - Se (µg/L)	90th Percentile	5.00	5.00	5.00
Dissolved Silver - Ag (µg/L)	90th Percentile	1.50	1.50	2.50
Dissolved Thallium - Tl (µg/L)	90th Percentile	0.68	0.50	0.50
Dissolved Zinc - Zn (µg/L)	90th Percentile	25.00	15.00	25.95
Biological				
Chlorophyll a (mg/m ³)	90th Percentile	3.20	2.27	1.60
E. coli (mpn/dl)	10th Percentile	43.80	101.22	-

7.4 Little Cahaba River Watershed Photos (July 11, 2012)

Figure 7-1 Little Cahaba River at Elliott Lane (LC-1), Looking Upstream



Figure 7-2 Little Cahaba River at Elliott Lane (LC-1), Looking Downstream



7.5 Little Cahaba River Watershed Photos (June 17, 2020)

Figure 7-3 Little Cahaba River at Elliott Lane (LC-1), Looking Upstream

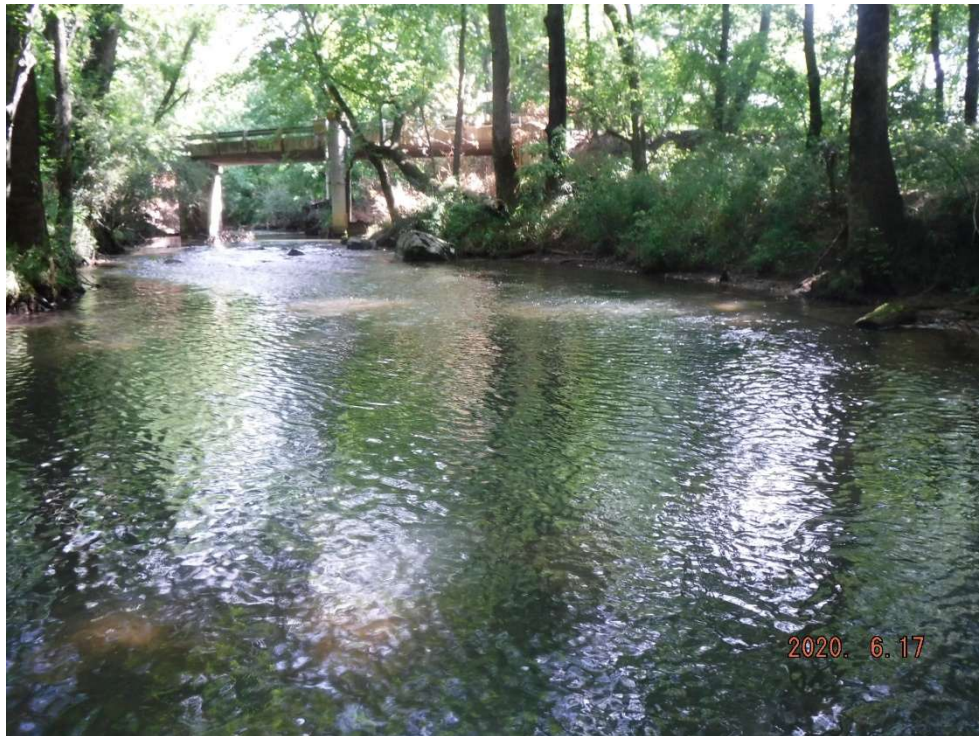


Figure 7-4 Little Cahaba River at Elliott Lane (LC-1), Looking Downstream



7.6 Little Cahaba River Watershed Photos (December 1, 2021)

Figure 7-5 Little Cahaba River at Elliott Lane (LC-1), Looking Upstream



Figure 7-6 Little Cahaba River at Elliott Lane (LC-1), Looking Downstream



7.7 Little Cahaba River Watershed Photos (May 11, 2023)

Figure 7-7 Little Cahaba River at Elliott Lane (LC-1), Looking Upstream

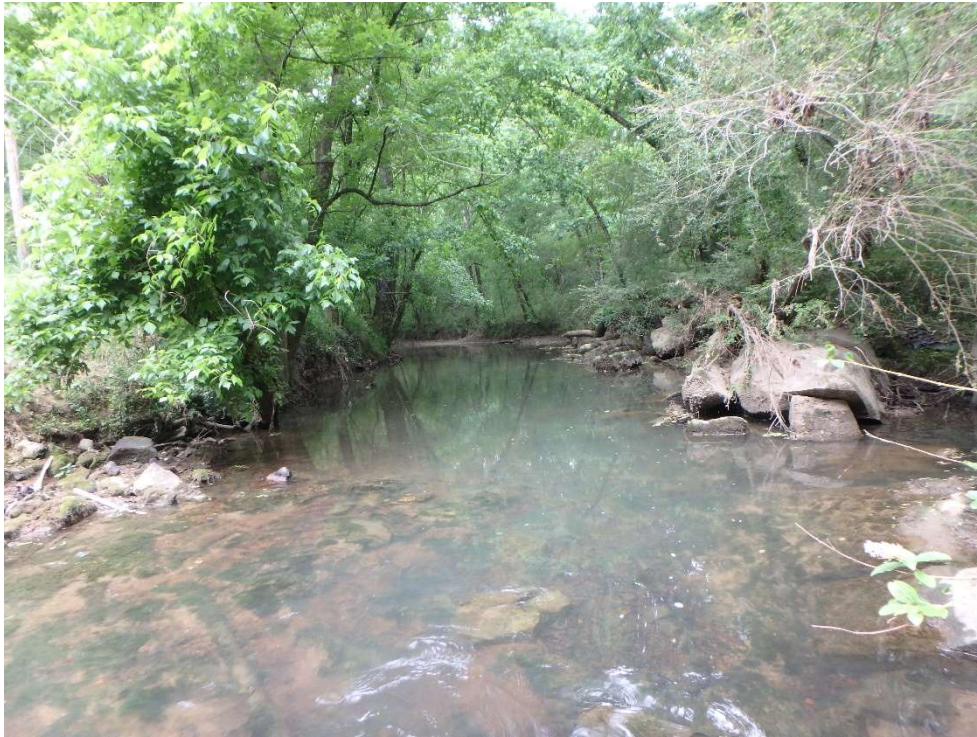


Figure 7-8 Little Cahaba River at Elliott Lane (LC-1), Looking Downstream

