Final
Total Maximum Daily Load (TMDL)
for
Walnut Creek

Assessment Unit ID # AL03140202-0502-102 (2008 ID)
Assessment Unit ID # AL03140202-0401-102 (2010 ID)

Metals (Lead)

Alabama Department of Environmental Management
Water Quality Branch
Water Division
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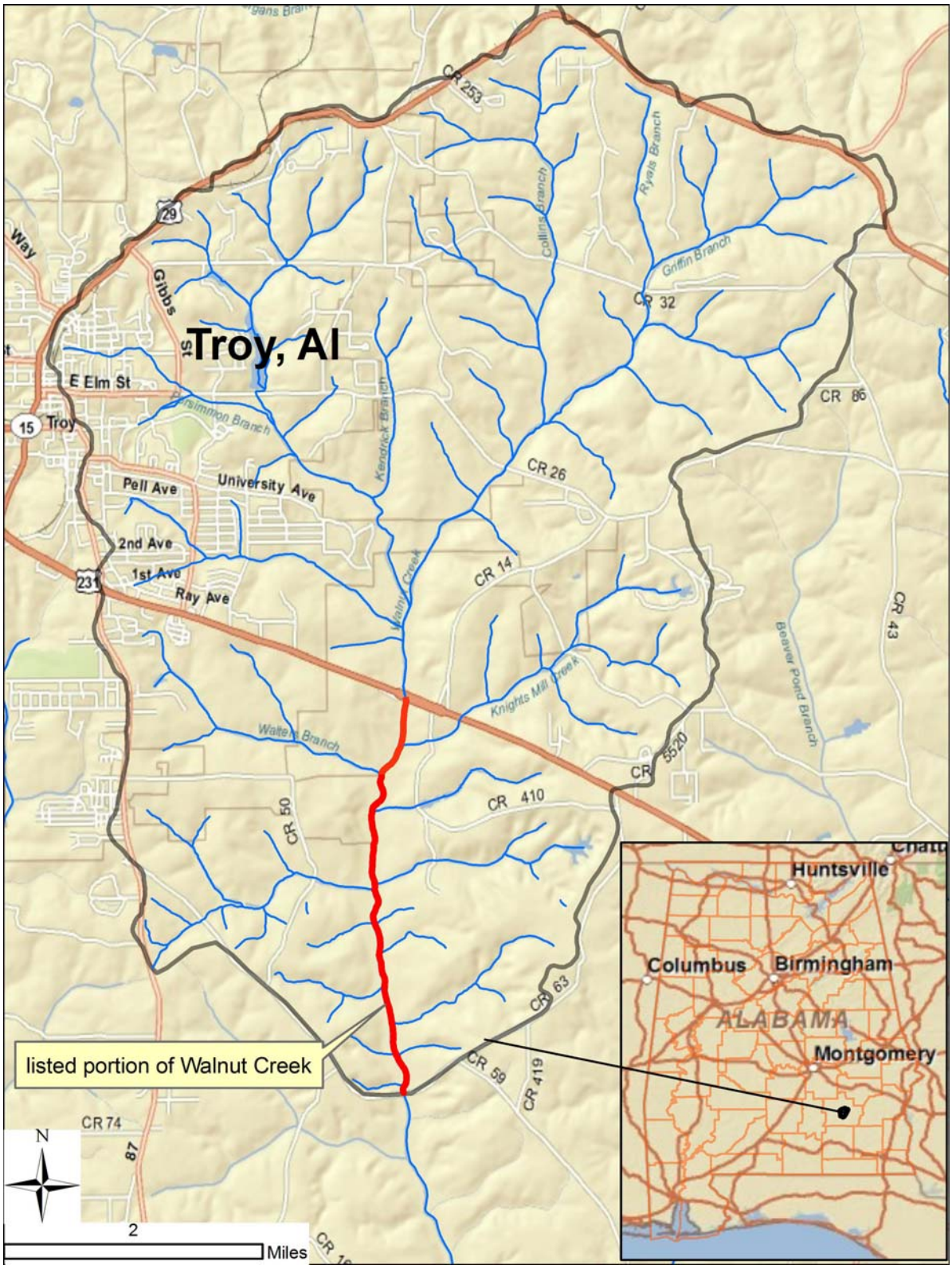
Figure I. §303(d) Listed Portion of Walnut Creek



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1.0 Executive Summary

Section §303(d) of the Clean Water Act (CWA) and EPA's Water Quality Planning and Management Regulations (40 CFR Part 130) require states to develop total maximum daily loads (TMDLs) for waterbodies that are not meeting their designated use under technology-based pollution controls. A TMDL is the maximum amount of pollutant a waterbody can assimilate while meeting water quality standards for the pollutant of concern. All TMDLs include a waste load allocation (WLA) for all National Pollutant Discharge Elimination System (NPDES) regulated discharges, a load allocation (LA) for all nonpoint sources, and an explicit and/or implicit margin of safety (MOS).

A Metals (Lead) TMDL was developed for the impaired segment of Walnut Creek located in the Choctawhatchee River basin in Troy, Alabama. Walnut Creek was originally placed on Alabama's 1998 §303(d) list of impaired waters for Unknown Toxicity based on a "Water Quality Assessment" study conducted between September and October 1997 by ADEM. The results of this study indicated the water quality of Walnut Creek below the Troy Walnut Creek WWTP to be moderately impaired based on degradation to the macroinvertebrate community.

During the 1998 through 2008 listing cycles, Walnut Creek's Assessment Unit ID was AL03140202-0502-102. During development of the 2010 Integrated Report its Assessment Unit ID was revised to AL03140202-0401-102. For purposes of this report and future tracking the new Assessment Unit ID will be used. According to the Draft 2010 §303(d) list, Walnut Creek is impaired for Metals (Lead) from Pike County Road 3304 to US 231, a distance of approximately 3.3 miles. The designated use classification of Walnut Creek is Fish and Wildlife (F&W). The Walnut Creek watershed is characterized as Forest (53%), Developed (14%), Agricultural (16%), and Other (17 %) and has a drainage area of 33.5 square miles at end of the listed segment.

Currently there are 42 active NPDES Permits within the listed portion of the Walnut Creek watershed. There are two continuous NPDES discharges, both of which are municipal wastewater dischargers and one industrial facility discharging stormwater only. The other 39 permits are for construction stormwater. There are no regulated MS4 areas within the Walnut Creek watershed. A map depicting active NPDES Permits is shown in Figure 3-1. The only active NPDES Permit considered to be contributing Metals (Lead) to Walnut Creek is the Troy Walnut Creek WWTP (AL0032310). The other continuous NPDES discharge (Suntrace Mobile Home Park) is not considered to be contributing Metals (Lead) to Walnut Creek, based upon the location of the discharge, type of waste (i.e. domestic sewage), and water quality sampling results. For this TMDL, only the Troy Walnut Creek WWTP will be considered in the WLA calculations.

A mass balance approach was used to calculate the Metals (Lead) TMDL for Walnut Creek. The mass balance approach utilizes the conservation of mass principle. Total existing mass loads were calculated by multiplying measured Lead concentrations times corresponding flows. Existing loads were calculated using available instream data. Total allowable loads were calculated based on the target Lead concentration and WWTP design flows. For the purpose of this TMDL the target will be based off the numeric freshwater chronic aquatic life criteria for Lead which is based off an instream "hardness" value. The hardness value used to calculate the Lead target value is based upon the median value of all hardness results from ADEM's ecoregional reference reaches. Using the median hardness value of 35 mg/l the **chronic** aquatic life criteria for Lead equals 0.789 ug/l. This value will be used as the Lead target value for this TMDL. Refer to Section 3.1 for more details on the target identification. Table 1-1 shows the percent reductions and Table 1-2 shows the results of the Metals (lead) TMDL.

Table 1-1. Metals (Lead) Loads and Required Reductions

Source	Existing Load (lbs/day)	Allowable Load (lbs/day)	Required Reduction (lbs/day)	Reduction %
Point Source (WLA)	0.0418	.0339	.0079	19
Nonpoint Source (LA)	0.0160	0.0171	0	0

Table 1-2. Lead (Dissolved) TMDL and Percent Reductions for Walnut Creek

TMDL	Margin of Safety	Waste Load Allocation (WLA)[a]			Load Allocation(LA)	
		WWTP[c]	WWTP	MS4s[b]		
(lbs/day)	(lbs/day)	(lbs/day)	% reduction	% reduction	(lbs/day)	% reduction
0.0526	implicit	0.0339	19	NA	0.0171	0

a. Currently, the Troy Walnut Creek WWTP is the only NPDES-regulated point source being addressed under this TMDL. Any future point sources that have the potential to discharge lead into the Walnut Creek watershed shall meet the applicable water quality criteria at end-of-pipe.
b. There are no MS4 areas currently located in the Walnut Creek watershed. Future MS4 areas would be required to demonstrate consistency with the assumptions and requirements of this TMDL.
c. ADEM's NPDES Program establishes Lead limits in the total recoverable form. Therefore, a partition coefficient of 0.467 must be used to convert from the dissolved form to the total recoverable form.

The allowable WLA in the table above was calculated using the design discharge flow for the Troy Walnut Creek WWTP which is 4.99 MGD, and a dissolved Lead concentration of 0.8145 ug/l. For ADEM NPDES permitting purposes, the WLA will be implemented as a monthly average Total Recoverable Lead concentration (see ADEM Admin. Code R. 335-6-6-.15(3)).

The ADEM NPDES permitting program routinely uses a list of partition coefficients for various metals to translate the dissolved portion of a metal to a total recoverable concentration. These partition coefficients can be used when the instream TSS value is 5 mg/l or less. The coefficients ADEM uses are based off EPA's "Technical Guidance Manual for Performing Wasteload Allocations, 1984" as attachment I of Book II "Water – Sediment Partition Coefficients for Priority Metals", Hydroqual, Inc., November 1982. The median value of all TSS data for each station on Walnut Creek was 5 mg/l or less. The TSS data can be viewed in Appendix 7.4. In order to calculate the Total Recoverable Lead concentration, the dissolved Lead concentration must be divided by the lead partition coefficient of 0.467 to calculate the Total Recoverable Lead concentration.

$$\text{Total Recoverable Lead concentration} = 0.8145 \text{ ug/l} / 0.467$$
$$= 1.744 \text{ ug/l}$$

Compliance with the terms and conditions of existing and future NPDES permits will effectively implement the WLA and demonstrate consistency with the assumptions and requirements of the TMDL.

The Department recognizes that adaptive implementation of this TMDL will be needed to achieve applicable water quality criteria, and we are committed towards targeting the load reductions to improve water quality in the Walnut Creek watershed. As additional data and/or

information becomes available, it may become necessary to revise and/or modify the TMDL accordingly.

Basis for §303(d) Listing

2.1 Introduction

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)] require 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. Total maximum daily loads (TMDLs) for all pollutants causing violation of applicable water quality standards are established for each identified waterbody. 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 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).

In 2010, the State of Alabama identified the 3.3 mile segment of Walnut Creek from County Road 3304 to US 231 in Pike County as being impaired by Metals (Lead) based on data collected in 2008. The §303(d) listing for this waterbody was originally reported on Alabama's 1998 List of Impaired Waters for Unknown Toxicity, and subsequently included on the 2000, 2002, 2004, 2006 and 2008 lists. Changes made from the 2008 §303(d) to the 2010 §303(d) list are shown below:

- Changed Unknown Toxicity to Metals (Lead) based on exceedances of the Lead criteria at ADEM monitoring station WCP-1A in 2008. Added Industrial as a potential source.
- Changed the upstream extent from Walters Branch to US 231 to include the Troy WWTP discharge.
- Changed Assessment Unit ID from AL03140202-0502-102 to AL03140202-0401-102.
- Changed waterbody size to 3.30 miles.

2.2 Problem Definition

Waterbody Impaired:	Walnut Creek from Pike CR 3304 to US 231.
Waterbody Length:	3.3 miles
Waterbody Drainage Area:	33.5 square miles
Water Quality Standard Violation:	Chronic Toxicity
Pollutant of Concern:	Metals (Lead)
Water Use Classification:	Fish and Wildlife

Usage Related to Classification:
The impaired segment of Walnut Creek is classified as Fish and Wildlife. Usage of waters in this classification is described in ADEM Admin. Code R. 335-6-10-.09(5)(a), (b), (c), and (d).

(a) Best usage of waters: fishing, propagation of fish, aquatic life, and wildlife, and any other usage except for swimming and water-contact sports or as a source of water supply for drinking or food-processing purposes.

(b) Conditions related to best usage: the waters will be suitable for fish, aquatic life and wildlife propagation. The quality of salt and estuarine waters to which this classification is assigned will also be suitable for the propagation of shrimp and crabs.

(c) Other usage of waters: it is recognized that the waters may be used for incidental water contact and recreation during June through September, except that water contact is strongly discouraged in the vicinity of discharges or other conditions beyond the control of the Department or the Alabama Department of Public Health.

(d) Conditions related to other usage: the waters, under proper sanitary supervision by the controlling health authorities, will meet accepted standards of water quality for outdoor swimming places and will be considered satisfactory for swimming and other whole body water-contact sports.

Chronic Toxicity Criteria:
Criteria for acceptable Chronic Toxicity for the Fish and Wildlife use classification are described in ADEM Admin. Code R. 335-6-10-.09(5)(e)5 as follows:

5. Toxic substances attributable to sewage, industrial wastes, or other wastes: only such amounts, whether alone or in combination with other substances, as will not exhibit acute toxicity or chronic toxicity, as demonstrated by effluent toxicity testing or by application of numeric criteria given in rule 335-6-10-.07, to fish and aquatic life, including shrimp and crabs in estuarine or salt waters or the propagation thereof.

335-6-10-.07 Toxic Pollutant Criteria Applicable to State Waters.

(1) The U. S. Environmental Protection Agency has listed the chemical constituents given in Table 1 as toxic pollutants pursuant to Section 307(a)(1) of the Federal Water Pollution Control Act (FWPCA). Concentrations of these toxic pollutants in State waters shall not exceed the criteria indicated in Table 1 to the extent commensurate with the designated usage of such waters.

(a) The freshwater and marine aquatic life criteria for certain of the pollutants are dependent on hardness or pH. For these pollutants, the criteria are given by the following equations. In the hardness-dependent equations for metals, a conversion factor converts the total recoverable value to a criterion expressed as the dissolved fraction in the water column. All numeric values listed for metals in Table 1 at the end of this chapter are expressed as dissolved metals unless otherwise noted.

4. Lead

(i) freshwater acute aquatic life:

conc. (µg/l) = (e(1.273[ln(hardness in mg/l as CaCO3)]-1.460))(CF); (Eq. 7)

conversion factor (CF) = 1.46203-[ln(hardness)(0.145712)]

(ii) freshwater chronic aquatic life:

conc. (µg/l) = (e(1.273[ln(hardness in mg/l as CaCO3)]-4.705))(CF); (Eq. 8)

conversion factor (CF) = 1.46203-[ln(hardness)(0.145712)]

Criteria Exceeded:

The 2010 Alabama's Water Quality Assessment and Listing Methodology states that a F&W-classified waterbody is placed in Category 5 if the following is true:

- There are more than two exceedances of a particular toxic pollutant criterion during the previous six years.

Three samples collected at ADEM monitoring station WCP-1A in 2008 exceeded the freshwater chronic aquatic life criteria for Lead. Therefore, the waterbody was changed from Unknown Toxicity to Metals (Lead) based on exceedances of the lead criteria. This data can be viewed in Appendix 7.2.

3.0 Technical Basis for TMDL Development

3.1 Water Quality Target Identification

For the purpose of this TMDL the target will be based off the numeric freshwater **chronic** aquatic life criteria for Lead. The **acute** aquatic life criteria was not exceeded in any sample. As mentioned above in Section 2.2 the numeric criteria for Lead is based on the instream "hardness" value and calculated with the following equation:

Lead conc. (µg/l) = (e(1.273[ln(hardness in mg/l as CaCO3)]-4.705))(CF);

conversion factor (CF) = 1.46203-[ln(hardness)(0.145712)]

The hardness value used to calculate the Lead target value is based upon the median value of all hardness results from ADEM's ecoregional reference reaches. The entire watershed for the listed portion of Walnut Creek lies within the Ecoregion Level IV "Southern Hilly Gulf Coastal Plan" (65d). The computed median hardness value for 65d was 35 mg/l. All hardness values used to compute the median value can be viewed in Appendix 7.3, Table 7-2. Details of ADEM's ecoregional reference reaches can be found in Appendix 7.4.

Using the median hardness value of 35 mg/l the **chronic** aquatic life criteria for Lead equals 0.789 ug/l. This value will be used as the Lead target value for this TMDL.

3.2 Source Assessment

3.2.1 Point Sources in the Walnut Creek Watershed

Continuous Point Sources

Currently there are 42 active NPDES Permits within the listed portion of the Walnut Creek watershed. There are two continuous NPDES discharges, both of which are municipal wastewater discharges and one industrial facility discharging stormwater only. The other 39 permits are for construction stormwater. A map depicting active NPDES Permits is shown in Figure 3-1. The only active NPDES Permit considered to be contributing Lead to Walnut Creek is the Troy Walnut Creek WWTP (AL0032310). The other continuous NPDES discharge (Suntrace Mobile Home Park) is not considered to be contributing Lead to Walnut Creek, based upon the location of the discharge, type of waste (i.e. domestic sewage),and water quality sampling results. For this TMDL, only the Troy Walnut Creek WWTP will be considered in the WLA calculations.

Based on the most recent NPDES Form 2A Application submitted to ADEM, the Troy Walnut Creek WWTP receives wastewater from three industrial users, namely Sanders Lead Company, KW Plastics Recycling Division, and Wayne Farms. Of the three, Sanders Lead Company, whose principal product is Lead generated from recycled batteries, is the most likely source of Lead to the WWTP discharge. This facility has a continuous discharge to the Troy WWTP of 0.2 MGD.

Non-Continuous Point Sources

Currently none of the Walnut Creek watershed qualifies as a Municipal Separate Stormwater Sewer System (MS4) area. Therefore, there will be no MS4 WLAs in this TMDL.

Future NPDES regulated stormwater discharges will be required to demonstrate consistency with the assumptions and requirements of this TMDL.

3.2.2 Nonpoint Sources in the Walnut Creek Watershed

From review of the data collected on Walnut Creek it is believed that nonpoint sources are not contributing to the Lead issue in Walnut Creek. Lead results from an upstream water quality station prior to any continuous point sources (Troy WWTP & Suntrace Mobile Home Park) discharges are below method detection limits (MDL). Based on this fact no nonpoint sources will be targeted for reductions in this TMDL.

3.3 Land Use Assessment

The predominant land use characteristics of the Walnut Creek watershed are Forest (53%), Developed (14%), and Agricultural (16%). A map depicting landuses is shown in Figure 3-2. Tabulated landuses are shown in Table 3-1 on the following page.

Figure 3-1. Point Source Map for the listed portion of Walnut Creek

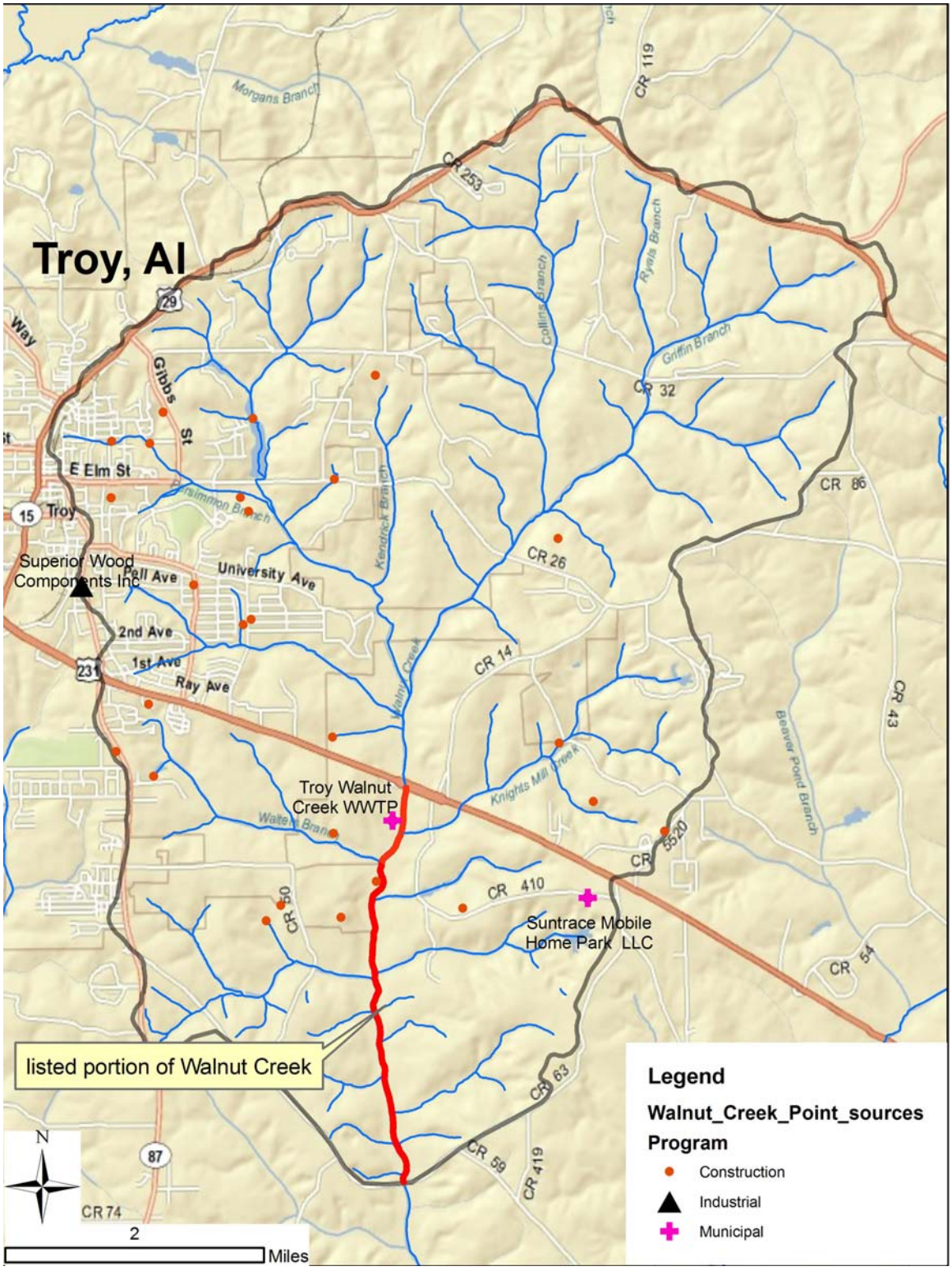


Figure 3-2. Land Use Map for the listed portion of Walnut Creek

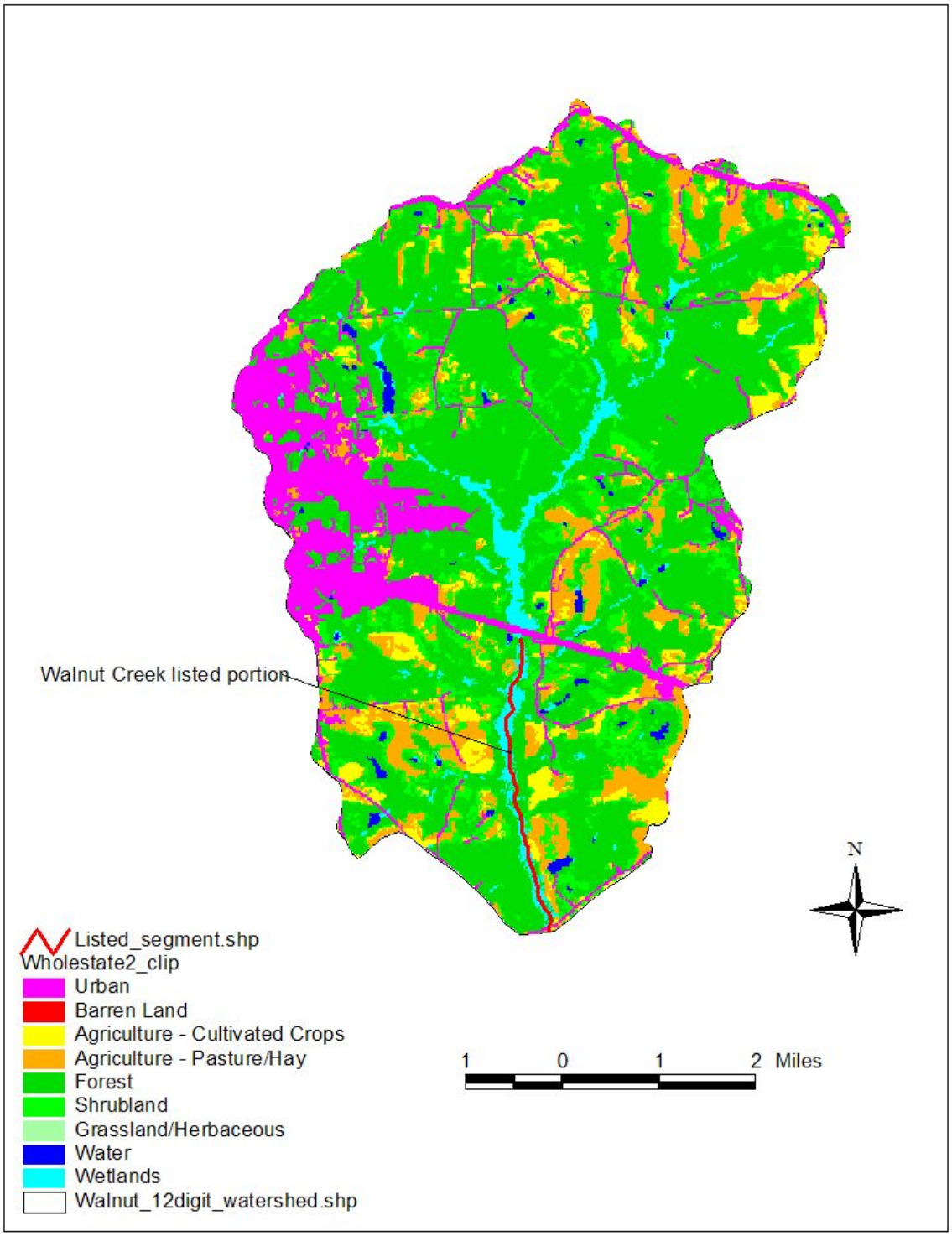


Table 3-1. Land Use Areas for the Walnut Creek Watershed

	Square Miles	Percent of Total
Open Water	0.30	0.9%
Developed Open Space	2.71	8.1%
Developed Low Intensity	1.22	3.6%
Developed Medium Intensity	0.46	1.4%
Developed High Intensity	0.18	0.5%
Deciduous Forest	6.00	17.9%
Evergreen Forest	7.06	21.1%
Mixed Forest	4.58	13.7%
Shrub/Scrub	4.39	13.1%
Grassland/Herbaceous	0.01	0.0%
Pasture/Hay	3.59	10.7%
Cultivated Crops	1.91	5.7%
Woody Wetlands	1.11	3.3%
Emergent Herbaceous Wetlands	0.01	0.0%
Total	33.5	100.0%

Aggregate

Developed	4.57	14%
Agriculture	5.50	16%
Forest	17.63	53%
Other	5.82	17%
Total	33.5	100%

3.4 Linkage Between Numeric Targets and Sources

From review of the data collected on Walnut Creek it is believed that nonpoint sources are not contributing to the Lead violations in Walnut Creek. Lead results from an upstream water quality station prior to any continuous point source discharges are below method detection limits (MDL). Based on this fact no nonpoint sources will be targeted for reductions in this TMDL.

The only active NPDES Permit considered to be contributing Metals (Lead) to Walnut Creek is the Troy Walnut Creek WWTP (AL0032310). For this TMDL, only the Troy Walnut Creek WWTP will be considered in the WLA calculations.

3.5 Data Availability and Analysis

Walnut Creek was originally placed on Alabama's 1998 §303(d) list of impaired waters for Unknown Toxicity based on a "Water Quality Assessment" study conducted between September and October 1997 by ADEM. The conclusions of this study indicated the water quality of Walnut Creek below the Troy Walnut Creek WWTP (station WC-1a) to be moderately impaired based on degradation to the macroinvertebrate community. The study also concluded that data from station WC-3, further downstream from the WWTP, documented the stream had recovered from the negative impacts of the WWTP. These conclusions were the basis for the original listing of Walnut Creek on Alabama's 1998 §303(d) list of impaired waters for Unknown Toxicity. A (.pdf) file of the study report can be viewed or downloaded from the following link: http://www.adem.state.al.us/programs/water/wqsurvey/1997WQSTroy.pdf

Additional monitoring was conducted by ADEM in 2006 and 2008 to assess the biological integrity and to specifically identify the cause of the impairment for Walnut Creek. However, a macroinvertebrate assessment, which was scheduled during both sampling years to verify impairment to aquatic communities, could not be completed due to non-flowing and unwadeable conditions. Monthly water quality sampling was conducted during both years to help identify the cause(s) of impairment at three different locations described in Table 3-2 and shown in Figure 3-2.

In developing the Draft 2010 §303(d) list, ADEM staff evaluated all the data collected for Walnut Creek over the past 6 years. From the evaluation it was concluded that Lead was the only parameter that exceeded criteria, thus providing a more specific cause of impairment during development of Alabama's 2010 List of Impaired Waters.

Water quality station WCP-1A (Walnut Creek just downstream of the Troy Walnut Creek WWTP effluent mixing zone) exceeded the Chronic Toxicity Criteria for Lead in three samples. The 2010 edition of Alabama's Water Quality Assessment and Listing Methodology states that a F&W-classified waterbody is placed in Category 5 if the following is true:

- There are more than two exceedances of a particular toxic pollutant criterion during the previous six years.

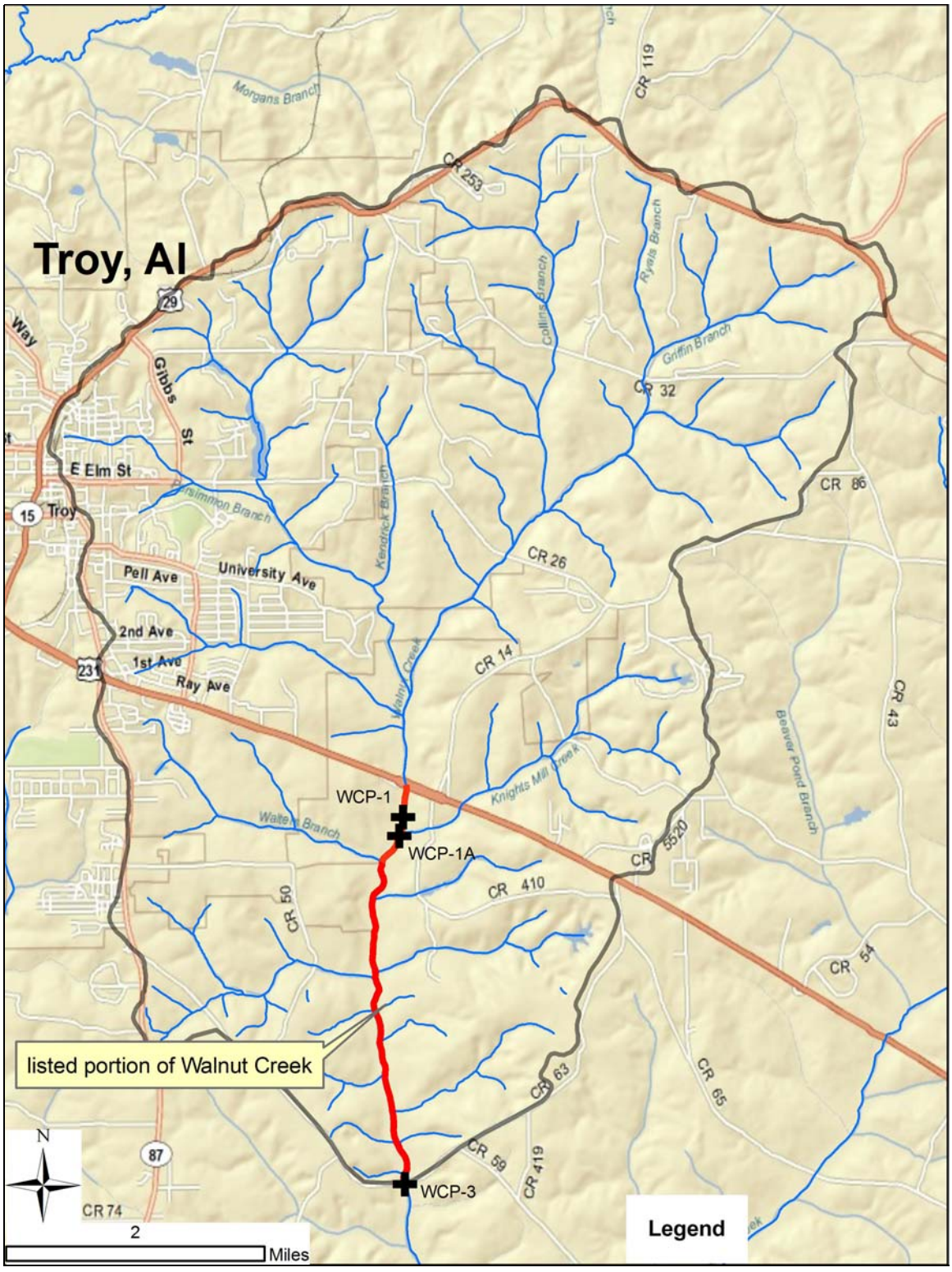
Evaluation of water quality data collected at stations WCP-1A and WCP-3 did not exceed the criteria for placing a waterbody into Category 5 based on the 2010 edition of Alabama's Water Quality Assessment and Listing Methodology for a F&W-classified waterbody.

The 2006 and 2008 Lead (Pb) lab results can be found in Appendix 7.2.

Table 3-2. ADEM Sampling Stations on Walnut Creek

Station ID	Name	Description of Sampling Location	Latitude	Longitude
WCP-1/ WC-1	Walnut Ck	Walnut Cr approximately 1/3 mile downstream of US Hwy 231, immediately upstream of the Troy Walnut Cr WWTP effluent mixing zone	31.769500	-85.924800
WCP-1A / WC-1a	Walnut Ck	Walnut Cr just downstream of the Troy Walnut Cr WWTP effluent mixing zone	31.767400	-85.925300
WCP-3 / WC-3	Walnut Ck	Walnut Cr just downstream of the Co Rd 59 bridge	31.728300	-85.925000

Figure 3-3. Map of ADEM Sampling Stations



3.6 Critical Conditions

The critical period for Metals (Lead) in Walnut Creek typically occurs during the summer season when ambient flow is low, resulting in reduced assimilative capacity of Walnut Creek with respect to the Troy Walnut Creek WWTP discharge.

3.7 Margin of Safety

There are two methods for incorporating a Margin of Safety (MOS) in the analysis: 1) implicitly incorporate the MOS using conservative model assumptions to develop allocations, or 2) by explicitly specifying a portion of the TMDL as the MOS and using the remainder for allocations.

The MOS in this TMDL is implicit since the Lead target was derived using hardness values from ecological reference streams, which are considered to represent least impacted conditions. In addition, the highest reported Lead exceedance was employed to estimate allowable Lead loads to Walnut Creek.

4.0 TMDL Development

4.1 Definition of a TMDL

A total maximum daily load (TMDL) is the sum of individual wasteload allocations for point sources (WLAs), load allocations (LAs) for nonpoint sources including natural background levels, and a margin of safety (MOS). The margin of safety can be included either explicitly or implicitly and accounts for the uncertainty in the relationship between pollutant loads and the quality of the receiving waterbody. As discussed earlier, the MOS is implicit in this TMDL. A TMDL can be denoted by the equation:

$$TMDL = \Sigma\ WLAs + \Sigma\ LAs + MOS$$

The TMDL is the total amount of pollutant that can be assimilated by the receiving waterbody while achieving water quality standards under critical conditions. This TMDL will be expressed on a mass loading basis (e.g. pounds per day).

4.2 Load Calculations

A mass balance approach was used to calculate the Metals (Lead) TMDL for Walnut Creek. The mass balance approach utilizes the conservation of mass principle. Total existing mass loads were calculated by multiplying measured Lead concentrations times corresponding flows. Existing loads were calculated for the highest instream Lead sample exceedance. Total allowable loads were calculated based on the target concentration and design flows as discussed below. Loads were calculated using the standard equation shown below.

Load (lbs/day) = concentration (mg/l) * flow (mgd) * conversion factor (8.34)

4.2.1 Load Allocation (LA)

Existing Conditions

From review of the data collected on Walnut Creek it is believed that nonpoint sources are not contributing to the Metals (Lead) impairment in Walnut Creek. Lead results from an upstream water quality station (WCP-1) just prior to any point source discharge were below method detection limits (MDL). To calculate an existing LA load, half the MDL will be used as the contributing LA concentration. MDL = 1.47 (µg/l) so half the MDL = 0.74 (µg/l). No flow measurements were collected at station WCP-1 due to Walnut Creek not being wadeable or no visible flow could be detected. For all sampling visits but one, the flows were considered normal. According to ADEM regulations, the minimum 7-day low flow that occurs one in 10 years (7Q10) shall be the basis for applying the chronic aquatic life criteria. Station WCP-1 located on Walnut Creek was the location used to calculate the 7Q10 since it was located immediately upstream of the Troy Walnut Creek WWTP. The calculated 7Q10 for WCP-1 was 4.02 cfs and was used to develop the Waste Load Allocation (WLA) for the Troy Walnut Creek WWTP. It was decided that the 7Q10 will also be the flow statistic used to compute the existing load allocation (LA) condition. Based on the above discussion of existing concentration, and 7Q10 flow value, the allowable load is shown below:

7Q10 flow (cfs)	Target Lead concentration (µg/l)	Existing Lead Load* (lbs/day)
4.02	0.74	0.0160

*Load (lbs/day) = ((µg/l)/1000) * (cfs /1.547) * 8.34

Allowable Conditions

The allowable load allocation (LA) will be calculated based off the Lead target times the 7Q10 flow at station WCP-1. Since WCP-1 is immediately upstream of the Troy Walnut Creek WWTP, the 7Q10 used to develop the Waste Load Allocation (WLA) for the Troy Walnut Creek WWTP will be used to compute the LA allowable condition. As discussed in Section 3.1, using the Ecoreference median hardness value of 35 mg/l, the **chronic** aquatic life criteria for Lead equals 0.789 ug/l. This value will be used as the Lead target for this TMDL. The current 7Q10 value for Walnut Creek at the Troy Walnut Creek WWTP discharge location equals 4.02 cfs. Based on the above target and 7Q10 flow values the allowable load is shown below:

7Q10 flow (cfs)	Target Lead concentration (µg/l)	Allowable Lead Load* (lbs/day)
4.02	0.789	0.0171

*Load (lbs/day) = ((µg/l)/1000) * (cfs /1.547) * 8.34

Percent Reduction

Based on the fact that existing nonpoint source (LA) loads were less than the calculated allowable nonpoint source loads there is no LA reduction necessary for the subject TMDL.

4.2.2 Waste Load Allocation (WLA)

Existing Conditions

As mentioned in Section 3.2, only the Troy Walnut Creek WWTP will be considered in the WLA calculations. Existing conditions of the Troy Walnut Creek WWTP will be based off monthly average flows and lead concentrations reported on Discharge Monitoring Reports (DMRs). The Troy Walnut Creek WWTP reports its Lead concentration as a Total Recoverable Lead concentration. The target value is for dissolved Lead concentration. Therefore, the Total Recoverable Lead concentration must be multiplied by a partition coefficient of 0.467 to calculate the dissolved portion. The decision was made to use the month of July 2008 to estimate existing point source conditions because it required the highest reduction to meet the instream water quality Lead concentration of all samples collected. Shown below, is the computed WLA existing load, calculated by multiplying the monthly average flow times the monthly average "dissolved" Lead concentrations reported by the Troy Walnut Creek WWTP during July 2008.

July 2008 Monthly Average Flow (mgd)	July 2008 Monthly Average "dissolved" Lead Concentration (µg/l)	Existing Lead Load* (lbs/day)
3.36	1.49	0.0418

*Load (lbs/day) = Avg Lead Conc((µg/l)/1000) * Q(mgd) * 8.34

Allowable Conditions

The allowable load will be calculated based on the Lead target times the design flow rate for the Troy Walnut Creek WWTP, the 7Q10 flow at the Troy Walnut Creek WWTP discharge location, and assumed upstream lead concentrations. As discussed above and in Section 3.1 (Water Quality Target Identification), using the Ecoreference median hardness value of 35 mg/l, the **chronic** aquatic life criteria for Lead equals 0.789 ug/l. This value will be used as the **[Downstream of Discharge Concentration (C_T)]** Lead target for this TMDL. The design flow for the Troy Walnut Creek WWTP equals 4.99 mgd.

In calculating the allowable load for the Troy Walnut Creek WWTP, credit will be given for the difference in allowable load allocation (LA) and the existing load allocation (LA). The credit will be calculated based off the following equation.

$Q_T C_T = Q_S C_S + Q_W C_W$

$C_W = (Q_T C_T - Q_S C_S) / Q_W$

Q_T = Total Flow (downstream of discharge) = WWTP design flow + 7Q10 stream flow
Q_T = 4.99 mgd + [4.02 cfs * (1 mgd/1.547 cfs)] = 7.59 mgd
C_T = Target Instream Lead Concentration (downstream of discharge) = 0.789 µg/l

Q_S = Stream Flow (upstream of discharge) = 7Q10 flow = 4.02 cfs = 2.60 mgd
C_S = Lead Concentration (upstream of discharge) = measured Lead concentration
= ½ MDL = 0.74 µg/l

Q_W = Flow of WWTP = WWTP design flow = 4.99 mgd
C_W = Lead Concentration of WWTP = being solved for as shown below

$C_W = (Q_T C_T - Q_S C_S) / Q_W$

C_W = [(7.59 mgd)*(0.789 µg/l) – (2.60 mgd)*(0.74 µg/l)] / 4.99 mgd

C_W = 0.8145 µg/l = Troy Walnut Creek WWTP Lead Concentration (dissolved)

Using the Troy Walnut Creek WWTP Lead concentration from above the allowable load is shown below:

Troy WWTP Design Flow (mgd)	Troy WWTP Allowable Lead Concentration (dissolved) (µg/l)	Troy WWTP Allowable Lead Load* (lbs/day)
4.99	0.8145	0.0339

*Load (lbs/day) = ((µg/l)/1000) * (mgd) * 8.34

Percent Reduction

The difference in the Lead loading between the existing conditions (month of highest reported instream Lead exceedance) and the allowable conditions converted to a percent reduction represents the total load reduction needed to achieve the instream Lead water quality criterion. The percent reduction calculation is shown below:

WLA Percent Reduction = [(existing load – allowable load) / existing load] *100
= [(0.0418 lbs/day – 0.0339 lbs/day) / 0.0418 lbs/day] * 100
= 19%

The TMDL was calculated as the total daily dissolved Lead load to Walnut Creek as evaluated at the Troy Walnut Creek WWTP discharge. Table 4-1 shows the results of the Lead TMDL and corresponding percent reductions developed for Walnut Creek. The Walnut Creek watershed is not located within an MS4 boundary therefore an MS4 wasteload allocation is not applicable.

Table 4-1. Metals (Lead) Loads and Required Reductions

Source	Existing Load (lbs/day)	Allowable Load (lbs/day)	Required Reduction (lbs/day)	Reduction %
Point Source (WLA)	0.0418	.0339	.0079	19
Nonpoint Source (LA)	0.0160	0.0171	0	0

Table 4-2. Lead (Dissolved) TMDL and Percent Reductions for Walnut Creek

TMDL	Margin of Safety	Waste Load Allocation (WLA)[a]			Load Allocation(LA)	
		WWTP[c]	WWTP	MS4s[b]		
(lbs/day)	(lbs/day)	(lbs/day)	% reduction	% reduction	(lbs/day)	% reduction
0.0526	implicit	0.0339	19	NA	0.0171	0

a. Currently, the Troy Walnut Creek WWTP is the only NPDES-regulated point source being addressed under this TMDL. Any future point sources that have the potential to discharge lead into the Walnut Creek watershed shall meet the applicable water quality criteria at end-of-pipe.
b. There are no MS4 areas currently located in the Walnut Creek watershed. Future MS4 areas would be required to demonstrate consistency with the assumptions and requirements of this TMDL.
c. ADEM's NPDES Program establishes Lead limits in the total recoverable form. Therefore, a partition coefficient of 0.467 must be used to convert from the dissolved form to the total recoverable form.

The allowable WLA in the table above was calculated using the design discharge flow for the Troy Walnut Creek WWTP of 4.99 mgd, and a dissolved Lead concentration of 0.8145 ug/l. For ADEM NPDES permitting purposes, the WLA will be implemented as a monthly average Total Recoverable Lead concentration (see ADEM Admin. Code R. 335-6-6-.15(3)). The ADEM NPDES permitting program routinely uses a list of partition coefficients for metals, to translate the dissolved portion of a metal to a total recoverable concentration. These partition coefficients can be used when the instream TSS concentration is 5 mg/l or less. The coefficients ADEM uses are based off an EPA document entitled "Technical Guidance Manual for Performing Wasteload Allocation, 1984" as attachment I of Book II "Water – Sediment Partition Coefficients for Priority Metals", Hydroqual, Inc., November 1982. The median value of all TSS data for each station on Walnut Creek was 5 mg/l or less. The TSS data can be viewed in Appendix 7.4. In order to calculate the Total Recoverable Lead concentration, the dissolved Lead concentration must be divided by the lead partition coefficient of 0.467 to calculate the Total Recoverable Lead concentration.

Total Recoverable Lead concentration = 0.8145 ug/l / 0.467
= 1.744 ug/l

4.3 TMDL Summary

Walnut Creek was originally placed on Alabama's 1998 §303(d) list of impaired waters for Unknown Toxicity based on a "Water Quality Assessment" study conducted between September and October 1997 by ADEM. The results of this study indicated the water quality of Walnut Creek below the Troy Walnut Creek WWTP to be moderately impaired based on degradation to the macroinvertebrate community.

In developing the Draft 2010 §303(d) list, ADEM staff evaluated all the data collected for Walnut Creek from the past 6 years. After the data was evaluated, it was concluded that Lead was the only parameter that exceeded water quality criteria and therefore the cause was changed from Unknown toxicity to Metals (lead).

A mass balance approach was used to calculate the Lead TMDL for Walnut Creek. Based on the TMDL analysis, it was determined that a 19% reduction in Lead loading was necessary to achieve compliance with applicable water quality standards.

Compliance with the terms and conditions of existing and future NPDES permits will effectively implement the WLA and demonstrate consistency with the assumptions and requirements of the TMDL.

The Department recognizes that adaptive implementation of this TMDL will be needed to achieve applicable water quality criteria, and we are committed towards targeting the load reductions to improve water quality in the Walnut Creek watershed. As additional data and/or information becomes available, it may become necessary to revise and/or modify the TMDL accordingly.

5.0 Follow Up Monitoring

ADEM has adopted a basin approach to water quality management; an approach that divides Alabama's fourteen major river basins into five groups. Each year, ADEM's water quality resources are concentrated in one of the five river basin groups. One goal is to continue to monitor §303(d) listed waters. Monitoring will help further characterize water quality conditions resulting from the implementation of best management practices in the watershed. This monitoring will occur in each basin according the schedule shown.

Table 5-1. §303(d) Follow Up Monitoring Schedule

River Basin Group	Year to be Monitored
Alabama / Coosa / Tallapoosa	2010
Escatawpa / Mobile / Lower Tombigbee / Upper Tombigbee	2011
Black Warrior / Cahaba	2012
Chattahoochee / Chipola / Choctawhatchee / Perdido-Escambia	2013
Tennessee	2014

6.0 Public Participation

As part of the public participation process, this TMDL was placed on public notice and made available for review and comment. The public notice was prepared and published in the four 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 TMDL was made available on ADEM's Website: www.adem.state.al.us. The public can also request paper or electronic copies of the TMDL by contacting Mr. Chris Johnson at 334-271-7827 or cljohnson@adem.state.al.us. The public was given an opportunity to review the TMDL 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 became part of the administrative record. ADEM considered all comments received by the public prior to finalization of this TMDL and subsequent submission to EPA Region 4 for final review and approval.

Appendix 7.1

References

ADEM Administrative Code, 2010. Water Division - Water Quality Program, Chapter 335-6-6, Use Classifications for Interstate and Intrastate Waters.

ADEM Administrative Code, 2010. Water Division - Water Quality Program, Chapter 335-6-10, Water Quality Criteria.

ADEM Administrative Code, 2010. Water Division - Water Quality Program, Chapter 335-6-11, Use Classifications for Interstate and Intrastate Waters.

Water Quality Assessment, Walnut Creek, Troy, Alabama. September – October 1997, Environmental Indicators Section, Field Operation Division, ADEM

Alabama's 2008 §303(d) Monitoring Program. ADEM.

Alabama Department of Environmental Management (ADEM), Alabama's Water Quality Assessment and Listing Methodology, December 2010.

Alabama's §303(d) Lists. 1998, 2000, 2002, 2004, 2006, 2008 and Draft 2010 §303(d) List, ADEM.

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

Technical Guidance Manual for Performing Wasteload Allocation, 1984 as attachment I of Book II "Water – Sediment Partition Coefficients for Priority Metals", Hydroqual, Inc., November 1982.

Appendix 7.2
Water Quality Data

Table 7-1. ADEM Metals (Lead) Data at Stations WCP-1, WCP-1A, and WCP-3

Station Id	Visit Date	Hard Mg/l	Pb Dissolved Ug/l	Adjusted Pb 1/2 MDL	Acute Lead Criteria (Ug/l)	Chronic Lead Criteria (Ug/l)	Pb Dissolved Detect Condition
WCP-1	10/18/2006	72	5	2.50	45.08	1.76	<MDL 5
WCP-1	4/9/2008	35.4	1.47	0.74	20.51	0.80	< MDL 1.47,
WCP-1	5/14/2008	58.3	1.47	0.74	35.72	1.39	< MDL 1.47,
WCP-1	9/11/2008	51.4	1.47	0.74	31.07	1.21	< MDL 1.47,
WCP-1	10/9/2008	33.9	1.47	0.74	19.54	0.76	< MDL 1.47,
WCP-1A	8/15/2006	154	5	2.50	103.00	4.01	<MDL 5
WCP-1A	9/7/2006	161	5	2.50	108.02	4.21	<MDL 5
WCP-1A	10/18/2006	96	5	2.50	61.77	2.41	<MDL 5
WCP-1A	4/9/2008	59.8	1.47	0.74	36.74	1.43	< MDL 1.47,
WCP-1A	5/14/2008	162	1.47	0.74	108.74	4.24	< MDL 1.47,
WCP-1A	7/2/2008	92.2	3.34	N/A	59.11	2.30	
WCP-1A	8/7/2008	133	4.46	N/A	87.97	3.43	
WCP-1A	9/11/2008	137	1.47	0.74	90.83	3.54	< MDL 1.47,
WCP-1A	10/9/2008	65.7	1.54	N/A	40.76	1.59	
WCP-1A	11/19/2008	77.4	2.41	N/A	48.81	1.90	
WCP-3	8/15/2006	110	5	2.50	71.63	2.79	<MDL 5
WCP-3	9/7/2006	137	5	2.50	90.83	3.54	<MDL 5
WCP-3	10/18/2006	101	5	2.50	65.28	2.54	<MDL 5
WCP-3	4/9/2008	58.4	1.47	0.74	35.79	1.39	< MDL 1.47,
WCP-3	5/14/2008	139	1.47	0.74	92.25	3.60	< MDL 1.47,
WCP-3	7/2/2008	93.1	1.47	0.74	59.74	2.33	< MDL 1.47,
WCP-3	8/7/2008	102	1.47	0.74	65.99	2.57	< MDL 1.47,
WCP-3	9/11/2008	104	1.47	0.74	67.40	2.63	< MDL 1.47,
WCP-3	10/9/2008	60.3	1.47	0.74	37.08	1.44	< MDL 1.47,
WCP-3	11/19/2008	66	0.55	0.28	40.97	1.60	< MDL .55,

Appendix 7.3
Table 7-2 Ecoreference 65d Hardness values

Station_ID	Date	Hardness Ca Mg mg_L
CEDW-1	3/24/2005	190
CEDW-1	5/12/2005	170
CEDW-1	6/30/2005	139
DRYB-1	5/2/1995	36
DRYB-1	7/15/1999	20.1
GRVW-1	4/26/2000	129
GRVW-1	5/17/2000	132
GRVW-1	6/7/2000	128
GRVW-1	9/25/2000	115
GRVW-1	1/16/2001	160
GRVW-1	2/20/2001	134
GRVW-1	3/12/2001	85
GRVW-1	3/20/2001	81
GRVW-1	3/23/2005	81.9
GRVW-1	5/11/2005	98.5
GRVW-1	6/29/2005	114
GRVW-1	10/12/2005	124
IHGR-1	5/2/1995	24
IHGR-1	9/19/2000	14.6
IHGR-1	3/10/2004	14.3
IHGR-1	11/17/2004	9.57
IHGR-1	3/15/2005	1
IHGR-1	3/15/2005	14.3
IHGR-1	3/15/2005	14.3
IHGR-1	4/7/2005	15.3
IHGR-1	6/15/2005	8.94
IHGR-1	8/9/2005	9.4
IHGR-1	10/13/2005	10.7
PATC-1	6/13/1995	16
PATC-1	6/29/2004	12
PATC-1	8/10/2004	16.7
PATC-1	11/17/2004	14.3
PYW-1	8/14/1991	48
PYW-1	7/14/1992	47
PYW-1	6/24/1993	59
PYW-1	6/24/1993	60
PYW-1	6/13/1995	27
PYW-1	6/24/1998	23.5
ROBM-2	3/23/2005	25.2
ROBM-2	5/11/2005	23.6
ROBM-2	6/29/2005	18.3
ROBM-2	10/13/2005	28.2
TALM-1	3/23/2005	23.1
TALM-1	5/11/2005	23.8
TLHC-1	8/1/2006	40
TLHC-1	9/7/2006	62
TLHC-1	10/12/2006	2
TLHC-1	10/12/2006	62
TLHC-1	10/12/2006	63
TURW-1	3/24/2005	39.6
TURW-1	5/12/2005	43.8
TURW-1	7/12/2005	27.4
WOLW-1	3/24/2005	81.7
WOLW-1	5/12/2005	33.7
WOLW-1	6/30/2005	27.6
WOLW-1	10/13/2005	40.3

count =	56
90th percentile =	130.5
average =	54.7
median =	34.9

Appendix 7.4
Table 7-2 Walnut Creek TSS values

Station Id	Visit Date	TSS mgl
WCP-1	4/9/2008	5
WCP-1	5/14/2008	3
WCP-1	6/5/2008	18
WCP-1	9/11/2008	4
WCP-1	10/9/2008	2
	median	**4**
WCP-1A	4/9/2008	5
WCP-1A	5/14/2008	7
WCP-1A	6/5/2008	7
WCP-1A	7/2/2008	6
WCP-1A	8/7/2008	1
WCP-1A	9/11/2008	5
WCP-1A	10/9/2008	1
WCP-1A	11/19/2008	5
	median	**5**
WCP-3	4/9/2008	1
WCP-3	5/14/2008	5
WCP-3	6/5/2008	7
WCP-3	7/2/2008	7
WCP-3	8/7/2008	1
WCP-3	9/11/2008	2
WCP-3	10/9/2008	2
WCP-3	11/19/2008	1
	median	**2**

Appendix 7.5

ADEM's Ecoregional Reference Reach Monitoring Program

Objectives

ADEM has maintained an Ecoregional Reference Reach Monitoring Program since 1991. These reaches are among the least-disturbed watersheds throughout the state and represent the "best attainable condition" for comparison with other streams. To make valid and accurate comparisons with other streams, reference reaches must also be typical of the subecoregion.

Intensive monitoring assessments, including chemical, physical, habitat, and biological data, are collected as part of this program to develop baseline reference conditions for each of Alabama's subecoregions. The program has concentrated on wadeable streams and rivers, but large river ecoregional reference reaches have been recently established on Sipsey Fork and Hatchet Creek to assess specific impacts to Locust Fork, Mulberry Fork, and the Cahaba River.

The long term goals of this monitoring are to:

1. Locate least-impacted and minimally disturbed reference streams in each subecoregion.
2. Develop a least-impacted ecoregional reference reach dataset that can be used for study-specific comparisons or the development of ecoregional reference conditions.

Design

Identifying Candidate Reference Reaches

1992-2004: Specific selection criteria were used to ensure that reference reaches were typical of the subecoregion and relatively unimpaired. Watersheds containing the highest percentage of natural vegetation were first located using topographic maps and land use information compiled by EPA and local Soil and Water Conservation Districts (SWCDs). Departmental databases were used to ensure that potential reference watersheds did not contain any point source discharges, mining, or urban runoff, and minimal agricultural sources. Field reconnaissance was then conducted to ground truth land use estimates. During this site visit, *in situ* field parameters were collected and visual macroinvertebrate surveys were conducted to screen for obvious impacts to chemical and biological conditions. Substrate composition, gradient, canopy cover, sinuosity, and habitat quality and availability were estimated to assess stream condition and comparability to other streams in the subecoregion. Intensive site assessments were then conducted to verify that the reaches were in good condition.

Through this process, a total of 594 locations have been investigated as potential reference reaches statewide. Information from these site visits identified 53 ecoregional reference reaches throughout Alabama (Table 1).

2005-2010: In 2005, ADEM began delineating all of the wadeable, flowing watersheds, or Monitoring Units (MUs) in each of its 5 basin groups. It developed a Watershed Disturbance Gradient (WDG) to classify each MU by its potential level of disturbance, based on landuse, road density, and population density. This technique allowed ADEM to identify the least-disturbed watersheds in each basin group and sample them as candidate reference reaches. Habitat and biological assessment results and monthly water quality data are used to verify that the sites are representative of least-impaired conditions within the subecoregion.

Since 2005, one-hundred and twenty-one least-disturbed MUs have been sampled as candidate reference reaches (Table 1).

Core and Supplemental Water Quality Indicators

1991-1995: macroinvertebrate community and habitat assessments were conducted annually at all reference reaches; one set of *in situ* measurements and water samples were collected during the same site visit.

1996-1998: macroinvertebrate community and habitat assessments were conducted at all reference reaches within the target basin in accordance with ADEM's five-year basin rotation cycle; one to three sets of *in situ* measurements and water samples were also collected.

1999-2004: macroinvertebrate community and habitat assessments were conducted at all reference reaches in accordance with ADEM's five-year basin rotation cycle or within the subecoregions where TMDLs or other intensive surveys were being conducted; *in situ* measurements and water samples were collected monthly at each of these sites, March-October.

2005-present: macroinvertebrate community and habitat assessments were conducted at all reference reaches and candidate reference reaches in accordance with ADEM's five-year basin rotation cycle; *in situ* measurements

and water samples were collected monthly at each of these sites, March-October. Metals, total organic carbon, and dissolved organic carbon were collected semi-monthly, March-October. Atrazine, pestides, and semi-volatile organics were collected twice between March and October.

List of parameters and laboratory methods used to analyze samples collected at reference reach stations.

Variable	Method	Reference	Detection Limit
Physical			
Temperature	Thermistor	ADEM SOP #2041	---
Turbidity	Nephelometer	ADEM SOP #2044	---
Total dissolved solids	SM 2540C	ADEM SOP #4007	1 mg/l
Total suspended solids	SM 2540D	ADEM SOP #4008	1 mg/l
Specific conductance	Wheatstone bridge	ADEM SOP #2043	---
Hardness	SM 2340B	ADEM SOP #4057	1 mg/l
Alkalinity	SM 2320	ADEM SOP #4039	1 mg/l
Chemical			
Dissolved oxygen	Luminescent Optical Probe	ADEM SOP #2045	---
pH	Glass electrode	ADEM SOP #2042	---
Ammonia	EPA 350.1	ADEM SOP #4045	0.015 mg/l
Nitrate + Nitrite	EPA 353.2	ADEM SOP #4048	0.003 mg/l
Total kjeldahl nitrogen	EPA 351.2	ADEM SOP #4046	0.15 mg/l
Total nitrogen	Calculation		
Dissolved reactive phosphorus	EPA 365.1	ADEM SOP #4049	0.004 mg/l
Total phosphorus	EPA 365.1	ADEM SOP #4050	0.010 mg/l
Chloride	Ion Chromatography	ADEM SOP #4035	1 mg/L
5-Day biochemical oxygen demand	EPA 5210B	ADEM SOP #4053	1.0 mg/l
Total organic carbon			
Dissolved organic carbon			
Total Metals			
Total Aluminum (mg/L)	EPA 200.7/EPA 200.9		
Total Iron (mg/L)	EPA 200.7/EPA 200.9		
Total Manganese (mg/L)	EPA 200.7/EPA 200.9		
Dissolved Metals			
Dissolved Aluminum (mg/L)	EPA 200.7/EPA 200.9		
Dissolved Antimony (µg/L)	EPA 200.7/EPA 200.9		
Dissolved Cadmium (mg/L)	EPA 200.7/EPA 200.9		
Dissolved Chromium (mg/L)	EPA 200.7/EPA 200.9		
Dissolved Copper (mg/L)	EPA 200.7/EPA 200.9		
Dissolved Iron (mg/L)	EPA 200.7/EPA 200.9		
Dissolved Lead (µg/L)	EPA 200.7/EPA 200.9		
Dissolved Manganese (mg/L)	EPA 200.7/EPA 200.9		
Dissolved Mercury (µg/L)	EPA 200.7/EPA 200.9		
Dissolved Nickel (mg/L)	EPA 200.7/EPA 200.9		
Dissolved Selenium (µg/L)	EPA 200.7/EPA 200.9		
Dissolved Silver (mg/L)	EPA 200.7/EPA 200.9		
Dissolved Thallium (µg/L)	EPA 200.7/EPA 200.9		
Dissolved Zinc (mg/L)	EPA 200.7/EPA 200.9		
Biological			
Chlorophyll *a*	Spectrophotometeric	ADEM SOP #4516	0.1 µg/l
Fecal coliform	Membrane filter	ADEM SOP #5600	---

Table 1. Description of ADEM's ecoregional reference reaches and candidate ecoregional reference reaches. Established (est.) and discontinued (disc.) dates are also given to give an idea of the reference reach status existing dataset for that station.

Stream	County	Ecoregion	Basin Name	Station Description	StationID	Project Year	Est.	Disc.	Latitude	Longitude
Bear Cr	Escambia	65f	Blackwater R	Bear Creek on dirt trail off Escambia Co Rd 51 approximately 0.7 miles upstream of confluence with Blackwater River (off old Rand Rd)	BRE-1	1991	1991		31.03334	-86.70961
Bear Cr	Houston	65g	Choctawhatchee R	On unnamed Houston Co Rd West of Dothan (<1 mile E. of Sardis Church)	BRH-1	1991	1991		31.20769	-85.54619
Bear Cr	Fayette	65i	Upper Tombigbee R	@ AL Hwy 171 crossing.	BRCF-64	2006	Candidate		33.52382	-87.80223
Bear Cr	Pickens	65i	Upper Tombigbee R	On Pickens Co Rd 38 North of Gordo	BRP-1	2007	1993		33.36961	-87.90364
Bear Cr	Dekalb	68d	Coosa R	Bear Adamsburg Rd in Dekalb Co off of Dekalb Co Rd 127 nr Ft. Payne & Dog Town	BERD-9	2005	2000		34.38094	-85.69789
Bear Cr	Tuscaloosa	68f	Black Warrior R	At "Oregonia Rd" Crossing SE of Sterling, AL	BERT-4	2007	2002		33.54245	-87.56167
Bear Creek	Monroe	65q	Coosa R	Bear Creek at unnamed Rd 3 miles upstream of Big Flat Creek	BEAM-1	2005	2005		31.65196	-87.33321
Beech Cr	Winston	68e	Black Warrior R	@ Winston Co. Rd 70 nr Grayson	BEEW-1	2007	Candidate		34.29723	-87.30594
Big Brush Cr	Hale	65i	Black Warrior R	@ Ala. Hwy 69	BBRH-42g	2007	Candidate		32.76052	-87.58511
Big Brush Cr	Hale	65i?	Black Warrior R	Big Brush Creek @ CR 21	BBRH-42d	2007	Candidate		32.78504	-87.65406
Big Coon Cr	Jackson	68b	Tennessee R	@ Jackson Co. Rd. 55.	BCNJ-1	2009	Candidate		34.85659	-85.92684
Big Swamp Cr	Lowndes	65a	Alabama River	Big Swamp Cr. at Lowndes Co Rd 37 nr Hammonds Lake	BSPL-5	2005	Candidate		32.10817	-86.52650
Big Yellow Cr	Tuscaloosa	68f	Black Warrior R	Big Yellow Cr @ Ala. Hwy 69	BYET-65a	2007	Candidate		33.57190	-87.40277
Binion Cr	Tuscaloosa	65i	Black Warrior R	@ unnamed Tuscaloosa Co Rd	BINT-31d	2007	Candidate		33.44300	-87.66382
Black Branch	Walker	68f	Black Warrior R	Black Branch at Coal Valley Road	BKBW-1	2007	Candidate		33.73807	-87.41524
Blevens Cr	Cullman	68d	Black Warrior R	Blevens Creek at unnamed Cullman Co. Rd west of Co Rd. 1082 (old 31)	BLVC-1	2007	1994		34.26730	-87.07640
Blubber Cr	Pickens	65i	Upper Tombigbee R	on AL Hwy 14 NW of Aliceville	BLBP-1	2006	1993		33.14725	-88.17053
Blue Cr	Tuscaloosa	68f	Black Warrior R	Unpaved Tuscaloosa Co. Rd (Old Watermelon Rd.)--only rd. to cross Blue Creek between its headwaters and mouth	BLUT-1	2007	Candidate		33.45083	-87.41222
Blue Cr	Jefferson	68f	Black Warrior R	Blue Creek at abandoned Co. Rd. near Black Diamond.	BLUT-2	2007	Candidate		33.34583	-87.09280
Blue Cr	Tuscaloosa	68f	Black Warrior R	@ Tuscaloosa Co. Rd 38	BLUT-49a	2007	Candidate		33.48389	-87.47139
Blue Girth Creek	Bibb	65p	Cahaba R	@ AL Hwy 5	BLUB-2	2007	Candidate		32.85776	-87.24432
Bogue Chitto Cr	Perry	65a	Alabama River	Bogue Chitto Creek at Co Rd 38 near Eagles Grove Church	BOCP-2	2005	Candidate		32.55548	-87.32595
Bon Secour R	Baldwin	75k	Mobile Bay Area	Bon Secour River @ Oyster Bay Canal	BS1	2007	Candidate		30.30221	-87.73575

BOTTLE CK		65p	Perdido-Escambia R	Bottle Cr. at Conecuh Co Rd. 43	BOTC-1	2008	Candidate		31.26863	-86.76373
Browns Cr	Winston	68e	Black Warrior R	Brown Creek off of CR 70	BROW-17	2007	Candidate		34.01085	-87.46057
Brush Cr	Russell	65i	Chattahoochee R	Brush Creek upstream of Russell Co. Rd. 33 nr Huguley. (On Topo it is listed as ADAMS BR)	BCR-1	1992	1992		32.42469	-85.26067
Brushy Cr	Lawrence	68e	Black Warrior R	Upstream of North Loop of Lawrence Co. Rd. 73 (east of Co. Rd 70) in Bankhead National Forest	BRSL-3	2007	1997		34.33070	-87.28620
Brushy Cr	Winston	68e	Black Warrior R	Brushy Creek at unnamed Winston CR nr mouth of Capsey Creek	BRSW-2	2007	Candidate		34.19986	-87.25444
Bryant Cr	Jackson	68d	Tennessee R	Upstream of AL Hwy 71 bridge in Jackson County, 2 miles south of Pisgah,	BYTJ-1	1993	1993		34.64658	-85.84303
Buck Cr	Autauga	65i	Alabama R		BCKA-26	2000	2000		32.59669	-86.86947
Buzzard Roost Cr	Colbert	65j	Tennessee R	@ Colbert Co. Rd. 21.	BZDC-1	2009	Candidate		34.69831	-87.98914
Cahulga Creek	Cleburne	45d	Tallapoosa R	Cahulga Creek at Highway 9	CLGC-1	2005	2005		33.63912	-85.60759
Cantrell Mill Cr	Lamar	65i	Upper Tombigbee R	Cantrell Mill Creek at Four Oaks Road (2nd road up Lamarion WMA)	CTML-6	2006	2001		34.04098	-88.03327
Capsey Cr	Winston	68e	Black Warrior R	@ unnamed Winston CR (FS 266) nr Inmanfield	CPSY-1	2007	Candidate		34.26957	-87.21056
Cedar Creek	Wilcox	65d	Alabama R	Cedar Creek at State Road 21 in Wilcox County	CEDW-1	2005	Candidate		31.99548	-86.89733
Chaney Cr	Dallas	65a	Alabama R	Chaney Creek @ Dallas Co. Rd. 3.	CYD-1	2005	1992		32.35439	-87.28939
Channahatchee Cr	Elmore	45a	Tallapoosa R	Chanahatchee Cr. at Elmore Co Rd 357 near Eclectic	CHNE-18	2005	2000		32.65024	-85.95085
Cheaha Cr	Clay	45d	Coosa R	Cheaha near Clay/Talladega County line, Talladega National Forest	CHEC-6	2005	2000		33.45275	-85.90273
Choccolocco Cr	Cleburne	45d	Coosa R	Choccolocco Cr. @ FS Rd. 540, Talladega National Forest Cleburne County	CHOC-2	2005	2000		33.82946	-85.58173
Clark Cr	Marion	65i	Upper Tombigbee R	@ CR 35, near Fulton Bridge	CLKM-4	2006	2001		34.08280	-88.02130
Clear Cr	Choctaw	65d	Lower Tombigbee	Clear Cr @ Choctaw CR 32	CLEC-1	2006	Candidate		32.23648	-88.19938
Clear Cr	Covington	65g	Yellow R	Clear Creek on dirt road upstream of Covington Co Rd. 20	CLC-1	1992	1992		31.12153	-86.37575
Coal Fire Cr	Pickens	65i	Upper Tombigbee R	Coal Fire Creek on Water Mill Rd., 2 mi. west of Palmetto, 8 mi. north of Reform	CLFP-13	2006	2001		33.48799	-88.02366
Cornhouse Cr	Randolph	45a	Tallapoosa R	Cornhouse at Randolph Co Rd. 33; 2 miles north of Level Road, trib. to Tallapoosa R.	CRHR-9	2005	2000	2004	33.21195	-85.51806
Cripple Cr	Tuscaloosa	65i	Black Warrior R	@Tuscaloosa County 38	CRIT-32a	2007	Candidate		33.49246	-87.56229
Cubahatchee Cr	Macon	65b	Tallapoosa River	Cubahatchee Creek @ Macon Co. Rd. 2.	CUBM-1	2005	Candidate		32.26220	-85.75930
Cubahatchee Cr	Macon	65b	Tallapoosa River	Cubahatchee Creek @ US Hwy 80.	CUBM-4	2005	Candidate		32.34640	-85.89020
Dobbins Br	Limestone	71h	Tennessee R	4 mi. east of Good Springs	DBBL-1	2005	2003		34.93530	-87.19110
Dry Cr	Barbour	65d	Choctawhatchee R	Dry Creek@ AL Hwy 239.	DRYB-1	2008	1999	2004	31.93467	-85.61036

Dry Cr	Talladega	67f	Coosa R	At Talladega Co Rd 234 (Forest Service Rd) off of Talladega Co. Rd 302 in the Talladega National Forest	DRYT-9	2000	2000		33.36568	-86.08963
Dry Cr	Etowah	67g	Coosa R	Dry Cr. at unnamed road east of Bachelor Chapel Road. One mile east of Mayes Crossroad	DRYE-4	2000	2000		34.01093	-85.81723
Dry Cr	Calhoun	67h	Coosa R	Dry Cr. at Calhoun Co. Rd 55 (Rabbittown Rd.) in Talladega National Forest near Burns	DRYC-2	2005	2000		33.84240	-85.59422
Dry Cr	Jackson	68b?	Tennessee R	Snodgrass Road, east of Scottsboro	DRYJ-2	2003	2003			
Emuckfaw Cr	Tallapoosa	45a	Tallapoosa R	3 miles west of Daviston on unnambed Tallapoosa Co Rd.	EMKT-14	2005	2000	2004	33.05527	-85.69489
Estill Fk	Jackson	68c	Tennessee R		ESTL-1	2009	Candidate		34.95153	-86.15036
Five Mile Cr		65p		Five Mile Cr @ AL Hwy 60	FIMH-41	2007	Candidate		32.87543	-87.71694
Folley Cr	Escambia	65f	Escambia R	Folley Creek @ Co. Rd. 53	FYCE-1	2008	Candidate		31.12779	-86.79647
Fourmile Cr	Bibb	67f	Cahaba R	At Bibb Co. Rd 10 NW of Brierfield. Trib to Little Cahaba	FRMB-8	2007	2002		33.07702	-86.97035
Fourmile Cr	Shelby	67f	Coosa R	@ Shelby Co. Rd. 61	FRMS-9	2005	2005		33.25649	-86.48980
Gabriel Cr	Hale	65i	Black Warrior R	@ Hale Co Rd 21	GABH-39a	2007	Candidate		32.94227	-87.65974
Goose Cr	Madison	71g	Tennessee R	Goose Creek @ Co. Rd 28 (Cherry Tree Rd)	GOOM-2	2009	Candidate		34.63486	-86.40368
Gravel Cr	Wilcox	65d	Alabama R	Gravel Creek at Alabama Highway 41, upstream side of bridge to 400 feet	GRVW-1	2005	Candidate		31.91804	-87.35911
Guess Cr	Jackson	68c	Tennessee R	Near Jackson Co Rd 20	GUES-1	2009	Candidate		34.75965	-86.19024
Guess Cr	Jackson	68c	Tennessee R	@ crossing upstream of ranch.	GUES-2	2009	Candidate		34.76707	-86.17682
Gulley Cr	Bibb	65i	Cahaba R	Gulley Creek @ AL Hwy 219	GULB-1	2007	Candidate		32.90062	-87.12365
Halls Cr	Baldwin	65f	Mobile Bay Area	Halls Creek @ AL. Hwy 59. North of Stockton just upstream of bridge	HLB-1	2006	1991		31.05264	-87.83701
Harris Cr	Clarke	65g	Lower Tombigbee	Harris Cr @ Norris Rd	HARC-1	2006	Candidate		31.77915	-87.98528
Hatchechubbee Cr	Russell	65b	Chattahoochee River	Hatchechubbee Cr at Antioch Rd.	HECR-3	2008	Candidate		32.25398	-85.26594
Hatchet Cr		45a	Coosa R	Hatchet Creek @ Dunham Property	HAT-2	2005	2005		32.99980	-86.14250
Hatchet Cr		45a	Coosa R	Hatchet Creek @ East Mill	HAT-3	2005	2005		33.13050	-86.05500
Hatchet Cr	Coosa	45a	Coosa R	Hatchet @ CR 18 @ USGS continous Gage (02408540)	HATC-1	2005	2003		32.91821	-86.26938
Hatchet Cr	Coosa	45a	Coosa R	Hatchet Cr. approx. 0.5 mi us of Coosa CR 29; accessed from park on river right.	HATC-1a	2005	1996		32.86486	-86.33390
Hatchet Cr	Coosa	45a	Coosa R	Hatchet Cr. at US Hwy 280	HATC-2	2005	1996		33.03639	-86.12333
Hatchet Cr	Coosa	45a	Coosa R	Hatchet Cr. at Tyler Ford (Billy Woodfin's Property)	HATC-3	2005	2004		32.91330	-86.28442
Hatchet Cr	Coosa	45a	Coosa R	Hatchet Cr approx. 4 mi us of Coosa CR 18 at the McConnell Property	HATC-4	2005	2004		32.94392	-86.23579
Hatchet Cr	Clay	45a	Coosa R	Hatchet Creek at AL Highway 148 or Co Rd 7	HTTC-1	2005	Candidate		33.19137	-86.04696
Hendrick Mill Br	Blount	67f	Black Warrior R	@ Blount Co. Rd.15	HNMB-4	2005	2000		33.87612	-86.56885

Herrin Cr	Morgan	71g	Tennessee R	Herrin Creek at Alabama Highway 157	HERM-3	2009	Candidate		34.32900	-87.00600
Hurricane Cr	Randolph	45a	Tallapoosa R	Hurricane Creek upstream of Randolph Co. Rd. 26.	HCR-1	2005	1992		33.17546	-85.59829
Hurricane Cr	Jackson	68c	Tennessee R		HURR-1	2009	Candidate		34.91678	-86.11828
Hurtsboro Cr	Russell	65a/b	Chattahoochee River	Hurtsboro Cr. At Russell CR 49	HUTR-4	2004	Candidate		32.17700	-85.30820
Ihagee Cr	Russell	65d	Chattahoochee R	Ihagee Creek @ Russell Co. Rd. 18. nr Ft. Benning	IHGR-1	2005	1995		32.23850	-84.98069
Indian Camp Cr	Lauderdale	71f	Tennessee R	Indian Camp Creek upstream of Lauderdale Co. Rd. 135 crossing at Indian Camp Festival Park North of Florence	INCL-1	2005	1994		34.92220	-87.62080
Inman Cr	Winston	68e	Black Warrior R	Inman Creek @ unnamed Forest Service Rd in the Bankhead National Forest	INMW-1	2007	1994		34.21590	-87.22400
Jack's Creek	Coosa	45a	Coosa R	Jack's Creek at Coosa CR 40 nr Rockford	JCKC-1	2005	2005		32.91720	-86.13375
Jock Cr	Tuscaloosa	68f	Black Warrior River	Jock Creek @ mouth @ unnamed road.	JKC-1	2007	Candidate		33.45310	-87.42820
Jones Cr	Coosa	45a	Coosa R	at Coosa Co. Rd. 18-- 2.5 miles northeast of Lyle --trib. to Hatchet Cr.	JNSC-16	2005	2000		32.90492	-86.29758
Jones Cr	Sumter	65a	Upper Tombigbee R	On Sumter Co Rd 20 NW of Epes	JNS-1	1991	1991	2001	32.70161	-88.14775
Ketchepedrakee Creek	Clay	45a	Tallapoosa R	Creek at highway 9	KETC-1	2005	2005		33.46342	-85.70072
Kinterbish Cr	Sumter	65d	Lower Tombigbee	Kinterbish Cr @ Sumter CR 9	KNBS-1	2006	Candidate		32.34627	-88.26527
Line Cr	Bullock	65a	Tallapoosa R	Line Creek @ AL Hwy 110.	LINB-1	2005	1995		32.20881	-85.89750
Little Buck Cr	Greene	65p	Black Warrior R	@Greene Co. Rd 220	LBUG-36a	2007	Candidate		32.99289	-87.76303
Little Canoe Cr	Etowah	67f	Coosa R	Little Canoe Creek @ unnamed Etowah Co. Rd. off of AL Hwy 7	LCNE-1	2005	1994		33.97006	-86.17892
Little Chattahospee Cr	Chambers	45b	Tallapoosa R	No Longer Sampled (at unnamed Chambers Co Rd West of Lafayette	LCC-1	1992	1992	1993	32.90761	-85.51100
Little Coon Cr	Jackson	68b	Tennessee R	@ Jackson Co. Rd. 53.	COCJ-1	2009	Candidate		34.87425	-85.91075
Little Emuckfaw Cr	Tallapoosa	45a	Tallapoosa R	Little Emuckfaw Cr at unnamed CR, approx. 1 mi north of Zana	LEMT-1	2005	Candidate		33.03963	-85.71341
Little Kinterbish Cr	Sumter	65d	Lower Tombigbee	Little Kinterbish Cr @ Sumter CR 9	LKNS-1	2006	Candidate		32.35395	-88.26552
Little Yellow Cr	Tuscaloosa	68f	Black Warrior R	Little Yellow Cr @ Ala. Hwy 70	LYCT-1	2007	Candidate		33.56769	-87.40925
Long Br	Macon	65i	Tallapoosa R	at Macon Co. Rd. 91 near Society Hill	LBM-1	1992	1992	2000	32.41319	-85.48119
Marriott Cr	Cullman	68e	Black Warrior R	On unnamed rd south of Cullman Co Rd 18	MRTC-1	2007	1994		34.04211	-86.86283
Mayberry Cr	Bibb	67h	Cahaba R	Mayberry Creek @ unnamed Bibb County Rd (May be 24)off of Bibb Co. Rd. 10.	MAYB-1	2007	1993		33.07125	-86.93853

Maye Cr	Escambia	65p	Escambia R	Maye Creek @ US Hwy 29	MYCE-1	2008	Candidate		31.10124	-86.94736
Maye Mill Cr	Escambia	65f	Escambia R	Maye Mill Creek @ unnamed Co. Rd	MMCE-1	2008	Candidate		31.06273	-86.96919
Middle Fk Cowikee Cr.	Russell	65b	Chattahoochee River	Middle Fk Cowikee Cr at Reeves Rd.	MFCR-1	2008	Candidate		32.17127	-85.37830
Mill Br	Franklin	65j	Tennessee R	@ Franklin Co. Rd. 11.	MLBF-1	2009	Candidate		34.53908	-88.10249
Mill Cr	Perry	65p	Cahaba R	Mill Creek @ AL Hwy 183	MILP-1	2007	Candidate		32.68851	-87.21752
Molder Br	Madison	68c	Tennessee R	@ Cove Rd., below Sneed Spring (upstream of manmade dam)	MLDM-2	2003	2003		34.82780	-86.35480
Mountain Fk Flint R	Madison	71g	Tennessee R	Above Confl. w/ Hester Creek @ New Market Bridge	MTNM-2	2009	Candidate		34.91070	-86.43690
New River	Marion	68f	Upper Tombibee	New River @ Marion CR 30.	NEWM-1	2006	Candidate		33.97320	-87.67793
North Fk Cowikee Cr	Russell	65b	Chattahoochee River	North Fork Cowikee Cr. At Prudence Rd, upstream of confluence with Hurtsboro Cr.	NFCR-1	2004	Candidate		32.19155	-85.30687
Oakachoy Cr	Coosa	45a	Tallapoosa R	Oakachoy Creek @ highway 259 crossing	OAKC-1	2005	Candidate	2005	32.83413	-86.04025
Oakmulgee Creek	Dallas	65i	Cahaba R	@ State Hwy 14	OKGD-3	2007	Candidate		32.48057	-87.12696
Okatuppa Cr	Choctaw	65q	Lower Tombigbee R	Choctaw Co. Rd. 18 W of Toxey (NE 1/4)	LT14	2006	2006		31.93983	-88.40163
Old Town Cr	Perry	65i	Cahaba R	Old Town Creek @ AL Hwy 175	OTCP-1	2007	Candidate		32.71137	-87.27714
Paint Cr	Coosa	45a	Coosa R	at unnamed Co Rd. off of Coosa Co Rd. 56 nr Marble Valley--trib. to Lay Lake/Coosa R.	PNTC-11	2005	2000		33.01838	-86.44741
Paint Rock R	Jackson	71g	Tennessee R	U.S. Highway 72	PRRJ-1	2009	Candidate		34.62417	-86.30639
Panther Cr	Lauderdale	65j	Tennessee R	At unnamed road crossing south of road that follows along Panther Creek. Downstream of the confluence of North and South Forks of Panther Creek	PNTL-1	2003	2003		34.96110	-88.13780
Panther Cr	Lauderdale	65j	Tennessee R	At unnamed road crossing south of road that follows along Panther Creek. Downstream of the confluence of North and South Forks of Panther Creek	PNTL-1	2009	Candidate		34.96110	-88.13780
Patrick Cr	Coffee	65d	Choctawhatchee R	On Coffee County Rd 368 (was Co 97)	PATC-1	2008	1995	1999	31.43840	-86.11210
Patsaliga Creek	Crenshaw	65d	Perdido-Escambia R	Patsaliga Creek @ State Highway 106 (near Brantley)	PALC-2	2007	Candidate	2005	31.59590	-86.40407
Pegues Cr	Tuscaloosa	68f	Black Warrior R	Pegues Creek off the end of unnamed road in T19S, R8W, S29, SW1/4.; approx. 2.1 miles upstream of confluence with Black Warrior River.	PGC-1	2007	Candidate		33.35900	-87.39320
Persimmon Cr	Macon	65b	Tallapoosa River	Persimmon Creek at Macon Co Rd 45	PSMM-31	2005	Candidate		32.35733	-85.70033
Pinchoulee Cr	Coosa	45a	Coosa R	Pinchoulee Creek at Coosa Co Rd 27	PCHC-2	2005	Candidate	2005	32.78768	-86.35788
Pine Barren Cr	Washington	65f	Lower Tombigbee	Pine Barren Cr @ Washington CR 34	PBCW-1	2006	Candidate		31.62303	-88.20715
Pineywoods Cr	Crenshaw	65d	Escambia R	Pineywoods Creek @ unnamed Crenshaw Co. Rd. south of Al HWY 106	PYW-1	2006	1991	2004	31.58378	-86.46186

Polecat Cr	Hale	65i	Black Warrior R	@ Hale Co. R. 51	BBRH-42a	2007	Candidate		32.74324	-87.55239
Poplar Cr	Marengo	65b	Lower Tombigbee R	@ county Rd 53 nr Thomaston -	PPM-1	2006	1992		32.27733	-87.60669
Potato Patch Cr	Perry	65p	Cahaba R	Potato Patch Creek @ unnamed CR	POPP-2	2007	Candidate		32.77420	-87.23210
Pratt Cr	Bibb	67h	Cahaba R	@ Oak Rd	PCB-1	2007	Candidate		33.04727	-87.09178
Prudes Cr	Tuscaloosa	68f	Black Warrior R	Prudes Creek 1/4 mile upstream of mouth @ unnamed road.	PDC-1	2007	Candidate		33.38950	-87.29420
Red Creek	Wilcox	65p	Alabama R	Red Creek at State Highway 162 in Wilcox Co.	REDW-1	2005	Candidate		32.03091	-87.50447
Robinson Cr	Monroe	65d	Alabama R	Robinson Creek at state road 47	ROBM-2	2005	Candidate		31.68341	-87.21802
Rock Cr	Colbert	65j	Tennessee R	@ Colbert Co. Rd. 7.	RCKC-2	2009	Candidate		34.60930	-88.06323
Rocky Cr	Butler	65d	Escambia R	Rocky Cr. At unnamed CR in S1/2 of section 1	RYC-5	2008	Candidate		31.68532	-86.71178
Rush Cr	Winston	68e	Black Warrior R	Rush Creek at Forest Service Rd. 245	RUSW-1	2007	Candidate		34.27356	-87.25157
S Fk Cowikee Cr	Barbour	65d	Chattahoochee R	Barbour Co. Rd. 79	SFCB-1	2008	Candidate	2005	32.01750	-85.29583
Salt Cr	Talladega	45d	Tallapoosa R	Salt Creek at Gravel Rd (T18S/R7E/S3) in NE Talladega Co	SALT-2	2005	2005		33.49892	-85.90240
Salt Cr	Clarke	65f	Lower Tombigbee	Salt Cr @ Clarke CR 15	SLTC-1	2006	Candidate		31.44222	-87.87157
Sandy Cr	Bibb	65p	Cahaba R	Sandy Creek @ AL Hwy 219	SANB-1	2007	Candidate		32.92483	-87.12863
Shoal Cr	Cleburne	45d	Coosa R	@ FS Rd. 500, Talladega National Forest, Cleburne Co	SHLC-3	2005	2000		33.72529	-85.60115
Silas Cr	Escambia	65f	Escambia R	Silas Creek @ Co. Rd. 4 ds of bridge	SSCE-1	2008	Candidate		31.07934	-86.88759
Silver Cr	Perry	65p	Cahaba R	Silver Creek @ AL Hwy 14	SILP-1	2007	Candidate		32.52877	-87.17823
Silver Cr	Clarke	65q	Alabama R	on Private Property (near corner of Sections 32, 33, 4 and 5)	SRC-1	2005	1991		31.69517	-87.58156
Sims Cr		65i		Sims Cr at US Hwy 11	SIMG-1	2007	Candidate		32.96956	-87.79409
Sipsey Fk	Winston	68e	Black Warrior R	Sipsey Fork at Winston CR 60 (Cranal Road)	SF-1	2007	1992		34.28558	-87.39906
Sipsey Fk	Winston	68e	Black Warrior R	Sipsey Fork @ AL Hwy 33 north of Double Springs	SF-2	2002	1992		34.21811	-87.36892
Soapstone Cr	Dallas	65b	Alabama R	Soapstone Creek upstream of US 80 east of Selma.	SPD-1	2005	1991		32.32220	-86.90630
South Fork Terrapin Creek	Cleburne	45d	Tallapoosa R	South Fork Terrapin Creek at Cleburne Co Rd 55	SFTC-1	2005	2005		33.86023	-85.52432
South Sandy Cr	Tuscaloosa	65i	Black Warrior R	@ unnamed Tuscaloosa Co. Rd	SSAT-58a	2007	Candidate		33.01271	-87.48458
South Sandy Cr	Bibb	65i	Black Warrior R	South Sandy Creek @ Talladega National Forest Rd. 731.	SSB-1	2007	1992		32.96906	-87.39776
Sweetwater Cr	Marengo	65d	Lower Tombigbee	Sweetwater Cr at Marengo CR 6	SWTM-1	2006	Candidate		32.06818	-87.90213
Swift Cr	Chilton	65i	Alabama R	Swift Creek at Chilton Co.Rd. 24 nr Billingsley	SWFC-1	2005	1993		32.72145	-86.69159
Talladega Cr	Talladega	45d	Coosa R	Talladega Creek at AL Hwy 77 bridge in Talladega Co	TCT-5	2005	1993		33.37839	-86.03025
Tallahatta Cr	Clarke	65d	Lower Tombigbee	Tallahatta Cr @ Wood Bluff Rd	TLHC-1	2006	Candidate		31.92425	-87.99374
Tallatchee Creek	Monroe	65d	Alabama R	Tallatchee Creek at state road 41 in Monroe County	TALM-1	2005	Candidate		31.82405	-87.38222

Tattilaba Cr	Clarke	65q	Lower Tombigbee	Tallilaba Cr @Bethlehem Rd	TLBC-1	2006	Candidate		31.61330	-87.97998
Taylor Cr	Perry	65p	Cahaba R	Taylor Creek @ AL Hwy 5	TAYP-1	2007	Candidate		32.81076	-87.26309
Terrapin Cr	Cleburne	45d	Coosa R	Terrapin Creek at canoe access on dirt road 224 off of CR 49	TEPC-1a	2005	Candidate	2005	33.89420	-85.46410
Thompson Cr	Lawrence	68e	Black Warrior R	Thompson Creek @ US Forest Service Rd. 208. in the Bankhead National Forest	TPSL-1	2007	1995		34.34100	-87.47120
Tollison Cr	Franklin	65j	Tennessee R	At unnamed road crossing between Franklin Co Rd 41 and 73. Trib to Cedar Creek, 6 mi west of Russelville.	TLNF-9	2003	2003		34.51671	-87.84516
Trussells Cr	Greene	65b	Upper Tombigbee River	Trussells Creek at Greene Co. Rd. 20 east of Gainesville.	TRSG-1	2006	Candidate		32.83318	-88.06255
Turkey Cr	Choctaw	65q	Lower Tombigbee	Turkey Cr @ US Hwy 84	TRKC-1	2006	2006		31.77937	-88.23813
Turkey Creek	Wilcox	65d	Alabama R	Turkey Creek @ unnamed Co Rd off CR 59, just upstream of Pine Barren Creek Confluence	TURW-1	2005	Candidate		31.94563	-86.98731
Tyro Cr	Tuscaloosa	68f	Black Warrior R	@ unnamed Tuscaloosa Co Rd nr Sterling	TYRT-61a	2007	Candidate		33.56606	-87.57614
Ulcanush Cr	Clarke	65q	Lower Tombigbee R	On Clark County rd 31 north of Coffeeville	ULCC-1	2006	1995	2004	31.78408	-88.10808
Vaughn Cr	Choctaw	65d	Lower Tombigbee	Vaughn Cr @ AL Hwy 10	VANC-1	2006	Candidate		32.11227	-88.13110
W Fk Little R	Dekalb	68d	Coosa R	West Fork Little River at at unnamed Dekalb Co. Rd.	LITD-1	2005	2003	2005	34.58631	-85.56332
Walkers Creek	Monroe	65q	Alabama R	Walkers Creek at unnamed Co Rd 2 miles upstream of confluence with Limestone Creek	WALM-2	2005	2005		31.55345	-87.25245
Wallace Cr	Perry	65i	Cahaba R	@ CR 47	WALP-1	2007	Candidate		32.75707	-87.29213
Walton Cr	Bibb	65i	Cahaba R	Walton Creek @ CR 51	WLTB-1	2007	Candidate		32.83971	-87.18488
Washington Cr	Perry	65a	Alabama R	Upstream of Hwy 183 bridge SW of Marion, AL	WASP-1	2005	1995		32.56997	-87.39136
Waters Cr	Perry	65p	Cahaba R	Waters Creek @ AL Hwy 14	WATP-1	2007	Candidate		32.59709	-87.20137
Wells Cr	Perry	65p	Cahaba R	Wells Creek @ AL Hwy 14	WELP-1	2007	Candidate		32.63791	-87.21661
Wells Cr	Clarke	65q	Lower Tombigbee	Wells Cr @ unnumbered Clarke CR. "Brunson Rd"	WELC-1	2006	2006		31.79108	-87.94448
Weogufka Cr	Coosa	45a	Coosa R	@co rd 41 nr stewartville	WGFC-1	2005	1993		33.07288	-86.24847
Weoka Creek	Elmore	45a	Coosa R	Weoka Creek at highway 231 crossing near junction with Co Rd 463	WEKE-1	2005	2005		32.75053	-86.23225
Weolustee Cr	Russell	65b	Chattahoochee River	Weolustee Creek At Russell Co Rd 4 nr Pittsview	WEER-1	2008	Candidate		32.19001	-85.17055
Wolf Cr	Walker	68f	Black Warrior R	Wolf Cr at 1st road crossing on Wolf Creek Rd, north of AL Hwy 102	WOFW-5	2007	Candidate		33.79891	-87.53340
Wolf Cr	St. Clair	67g	Coosa R	Wolf Creek at unnamed St. Clair Co. Rd (Cook Springs Cutoff) approx. 1 mile north of Wolf Creek	WLFS-9	2005	2000		33.54244	-86.37591
Wolf Creek	Wilcox	65d	Alabama R	Wolf Creek at State Road 21 in Wilcox Co	WOLW-1	2005	Candidate		31.99217	-86.91096
Yantley Cr	Choctaw	65d	Lower Tombigbee	Yantley Cr @ Choctaw CR 7	YNTC-1	2006	Candidate		32.22062	-88.27242
Yellow Cr	Tuscaloosa	68f	Black Warrior R	@ unnamed (Phelps Road) Tuscaloosa Co. Rd nr Co. 89	YELT-33a	2007	Candidate		33.33806	-87.45333