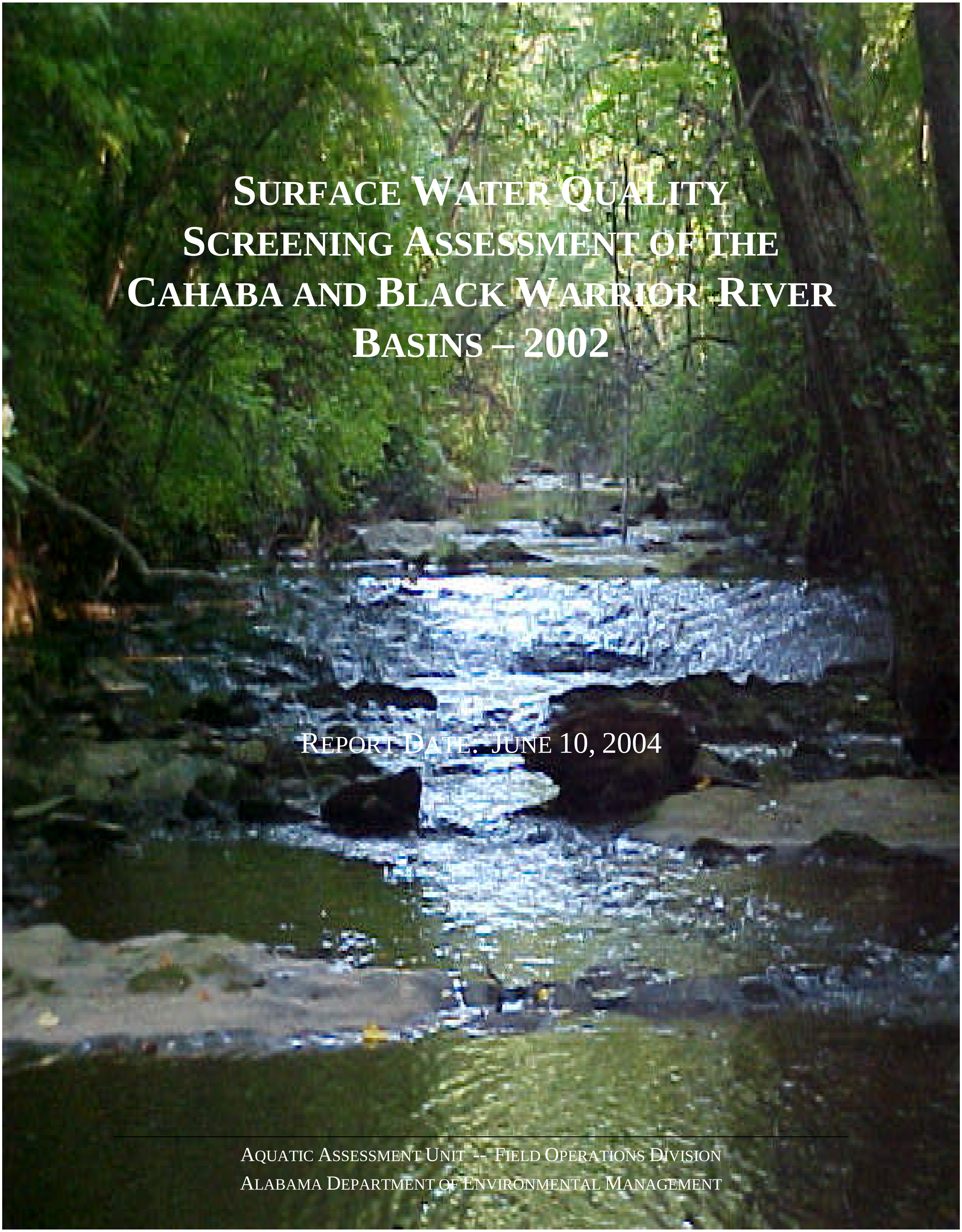

SURFACE WATER QUALITY SCREENING ASSESSMENT OF THE CAHABA AND BLACK WARRIOR RIVER BASINS – 2002

REPORT DATE: JUNE 10, 2004

AQUATIC ASSESSMENT UNIT -- FIELD OPERATIONS DIVISION
ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

*THIS PROJECT WAS FUNDED OR PARTIALLY FUNDED
BY THE ALABAMA DEPARTMENT OF
ENVIRONMENTAL MANAGEMENT
USING A CLEAN WATER ACT §319(H) NONPOINT SOURCE
DEMONSTRATION GRANT
PROVIDED BY THE U.S. ENVIRONMENTAL
PROTECTION AGENCY - REGION 4.*

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LIST OF ABBREVIATIONS

Abbreviation	Interpretation
§	Section
A&I	Agricultural and Industrial Water Use Classification
AAU	Aquatic Assessment Unit of ADEM's Field Operations Division
ADEM	Alabama Department of Environmental Management
ALAMAP	Alabama Monitoring and Assessment Program
ASWCC	State Soil and Water Conservation Committee
AU	Animal Unit as defined by ADEM CAFO Rules
BMP	Best Management Practices
Br	Branch
BWC	Black Warrior/Cahaba River Basin Group
CAFO	Concentrated Animal Feeding Operation
cfs	Cubic Feet per Second
C	Chemical/Physical Water Quality
Co.	County
Cond.	Conductivity
Confl.	Confluence
Cr	Creek
CR	County Road
CU	Cataloging Unit
CWA	Clean Water Act
CWP	Clean Water Partnership
DO	Dissolved Oxygen
DRP	Dissolved Reactive Phosphorus
ds	Downstream
EIS	Environmental Indicators Section of ADEM’s Field Operations Division
EPA	U.S. Environmental Protection Agency
EPT	Ephemeroptera, Plecoptera, and Trichoptera
F&W	Fish and Wildlife Water Use Classification
FOD	Field Operations Division
FSR	Forest Service Road
GPS	Global Positioning System
GSA	Geological Survey of Alabama
H	High
IBI	Index of Biotic Integrity (fish community)
LWF	Limited Warmwater Fishery
Macroinv.	Aquatic Macroinvertebrate
MB-EPT	Multihabitat Bioassessment for Ephemeroptera, Plecoptera and Trichoptera
mg/L	Milligrams per Liter
mgd	millions of gallons per day
mi^2	square miles
M	Moderate
NPDES	National Pollutant Discharge Elimination System
NPS	Nonpoint Source
nr	Near
NRCS	Natural Resources Conservation Service
NH_3-N	Ammonia Nitrogen
NO_3+NO_2-N	Nitrate/Nitrite Nitrogen
OAW	Outstanding Alabama Water Use Classification
ONRW	Outstanding National Resource Waters Designation
OE/DO	Organic Enrichment/Dissolved Oxygen
PWS	Public Water Supply Water Use Classification

R	River
Rd	Road
RM	River Mile
S	Swimming and Other Whole Body Water-Contact Sports Water Use Classification
Sh	Shellfish Harvesting Water Use Classification
SWCD	Soil and Water Conservation District
TDS	Total Dissolved Solids
TKN	Total Kjeldahl Nitrogen
TMDL	Total Maximum Daily Load
TNTC	Too numerous to count
TN	Total Nitrogen
TOC	Total Organic Carbon
TP	Total Phosphorus
TSS	Total Suspended Solids
Turb	Turbidity
TVA	Tennessee Valley Authority
µg/g	Micrograms per Gram
µg/L	Micrograms per Liter
ur	Unreported
us	Upstream
UT	Unnamed tributary
WQDS	Water Quality Demonstration Study
WWTP	Wastewater Treatment Plant

INTRODUCTION

Background: The goal of the Clean Water Act (CWA) is to restore and maintain the chemical, physical, and biological integrity of the Nation's Waters (Water Pollution Control Federation 1987). As the state's environmental agency, the Alabama Department of Environmental Management (ADEM) establishes water quality standards and implements management programs to meet these goals. The ADEM conducts monitoring to evaluate the effectiveness of these programs and to determine water quality status and trends.

Section 303(d) of the CWA (§303(d)) requires that each state identify those waters that do not currently support water quality standards or designated uses. For each waterbody on the list, the state is required to establish a Total Maximum Daily Load (TMDL) for the pollutant or pollutants of concern at a level necessary to meet the applicable water quality standards. Nationwide, this process has been most effective at addressing impairments caused by point source discharges. However, pollutants from point sources only accounted for 47 (15%) of the 303 total sources on Alabama's 2002 §303(d) list.

In 2003, the USEPA linked CWA §319 funding to the TMDL process to begin to implement nonpoint source control activities more effectively. To obtain best management practice implementation funding, a Watershed Plan that addresses an approved TMDL must be developed. The Watershed Plan must describe a holistic strategy to improve, maintain, or protect water quality, it must address both point and nonpoint source issues within the watershed, and it must describe how nonpoint source load reductions will be achieved.

ADEM NPS Management Strategy: In 1996, the Alabama Department of Environmental Management (ADEM) adopted an adaptive watershed management strategy to synchronize water quality monitoring and management. Concentrating planning and implementation efforts within one basin group allows a focused review of available data and provides coordinated water quality monitoring and assessment efforts, efficient implementation of pollution control activities on a geographic basis, and consistent and integrated decision-making for awarding CWA §319 funds.

Since 1998, ADEM's voluntary, incentive-based nonpoint source management program has been implemented through ten basinwide Clean Water Partnership Projects. Through these partnerships, management plans are developed and implemented for each basin. The partnerships allow for participation and collaboration among community-based groups, government agencies, industry, farms, forestry, special interest groups, and individual citizens.

ADEM NPS Monitoring Strategy: A 2-tiered monitoring approach is used to identify impaired waters, determine the causes and sources of impairment, and evaluate the effectiveness of pollution control activities. This approach concentrates ADEM's resources in areas with the greatest potential for impairment and where more intensive monitoring is required. Tier I monitoring, completed using ADEM's basinwide screening-level assessment methods, is conducted on a repeating 5-year management cycle during

ADEM's Nonpoint Source (NPS) and CWA §303(d) Monitoring Programs to identify or verify impaired waters, estimate water quality status and trends, and evaluate causes and sources of impairments. The Aquatic Assessment Unit (AAU) of ADEM's FOD has completed basinwide NPS screening assessments of the Black Warrior (1997), the Tennessee River basin (1998), the southeast Alabama River basins (1999), the Alabama, Coosa, and Tallapoosa River basins (2000), and the Escatawpa, Mobile Bay, and Tombigbee River basins (2001). Statewide, the results of these assessments have identified 120 sub-watersheds impaired by nonpoint source pollutants. Data and information collected during these assessments have been used to direct CWA §319 funds, develop nonpoint source basin management plans, and to update Alabama's list of impaired or threatened streams. The results of these assessments have been reported in 9 separate documents (ADEM 1999a, ADEM 2000a, ADEM 2002a, ADEM 2002b, ADEM 2002c, ADEM 2002d, ADEM 2002e, ADEM 2002f, ADEM 2003c). Copies can be downloaded from the Department's website (www.adem.state.al.us/FieldOps/WQReports/MontRep.htm)

Tier II monitoring projects, completed using watershed-specific, intensive assessment methods, are implemented at a much smaller scale and a more frequent monitoring cycle. They are used during ADEM's Nonpoint Source (NPS) Management and TMDL Implementation Programs to quantify causes and sources of impairment and to monitor program effectiveness. In 2003, ADEM initiated Tier II Monitoring Projects in the Tennessee River Basin to evaluate the effectiveness of changing landuses and pollution control activities in the Sand Mountain and Big Nance River sub-watersheds (ADEM in prep).

2002 BWC Basinwide Assessment: During 2002, the Aquatic Assessment Unit (AAU) of the Field Operations Division completed the 2^{nd} basinwide screening assessments of the Black Warrior and Cahaba (BWC) River basins. As with all basinwide screening assessments, the project included reviews of landuse, Departmental regulatory databases, listing documents, and monitoring data collected by multiple agencies to identify data gaps and to prioritize sub-watersheds with the greatest potential for point and nonpoint source impairment. Waterbodies within Jefferson County were not assessed. Selected sites were monitored using ADEM's screening-level assessment techniques. Data were compiled and analyzed to estimate the level of impairment and to evaluate potential causes and sources of that impairment.

Based on analysis of recent bioassessment and intensive water quality monitoring data, forty-one impaired sub-watersheds were identified (Table 1, Fig. 1). The list focuses on sub-watersheds outside of major urban areas (Birmingham, Tuscaloosa, Jefferson County). Fourteen of the 42 sub-watersheds contain CWA §303(d)/TMDL stream or reservoir segments and are eligible for §319 funding and watershed planning. Data from the remaining 28 sub-watersheds should be reviewed as potential candidates for §303(d) listing.

Final Report: The purpose of this document is to provide an overview of recent data and assessment information that can be used to identify impaired stream segments for inclusion on the §303(d) list and to assist with the development of NPS watershed plans. The document includes a description of the methods used during the basinwide screening assessment. For each of the 96 sub-watersheds, landuse, nonpoint source estimates, permitting information, §303(d)/TMDL waterbodies, monitoring data and other assessment information are compiled in the Appendices. The document provides a summary of information available for each of the 42 impaired sub-watersheds. The summaries are organized into 6 sections by cataloging unit (CU).

Table 1. List of impaired sub-watersheds. Impairment determined by bioassessment and intensive physical/chemical data collected 1998-2002.

Sub-watershed		303(d)/ TMDL Stream[a]	Lowest Station Assessment	Suspected Cause(s)	Suspected nonpoint source(s)
Cahaba R (0315-0202)		303(d)			
050	Cahaba R.		Poor	Sedimentation, Nutrient enrichment	Pasture grazing, Mining, Urban development
070	Cahaba R.		Fair/Poor	Sedimentation, Nutrient enrichment, OE/DO	Mining, Historical forestry
150	Cahaba R.		Fair	Sedimentation	Pasture grazing, Crop runoff, Forestry
170	Cahaba R.	TA	Poor	Pathogens, Sedimentation, Erosion, Nutrient enrichment	Pasture grazing, Aquaculture, Septic tank failure
Mulberry Fork (0316-0109)					
010	Mulberry Fork		Poor	Sedimentation, Reduced flow, Unstable banks, Nutrient enrichment, OE/DO, Pathogens	Animal husbandry, Crop runoff, Pasture grazing, Forestry
020	Duck Cr.	TA	Poor	Reduced flow, sedimentation, DO/OE, Nutrient enrichment, Pathogens, Pesticides	Animal husbandry, Crop runoff, Pasture grazing, Forestry
030	Brindley Cr.	303(d)	Very poor	Sedimentation, OE/DO, Nutrient enrichment, Pathogens, pH, Reduced flow	Animal husbandry, Crop runoff, Pasture grazing, Forestry, Development
040	Eightmile Cr.	TA 303(d)	Fair	Pathogens, Sedimentation, Nutrient enrichment, OE/DO	WWTP, Urban runoff, Animal husbandry, Pasture grazing, Crop runoff, Forestry
050	Broglen R.	TA 303(d)	Poor	Sedimentation, Other habitat alteration OE/DO, Nutrient enrichment, Pathogens	WWTP, Urban runoff, Animal husbandry, Pasture grazing, Crop runoff, Forestry
080	Thacker Cr.	TA 303(d)	Poor	Pathogens, Ammonia, Nutrient Enrichment, OE/DO, Sedimentation, Other habitat alteration	Animal husbandry, Pasture grazing, Forestry
100	Sloan Cr.		Poor	OE/DO, Nutrient enrichment, Sedimentation	Forestry, Septic tank failure
110	Dorsey Cr.		Poor	Sedimentation, OE/DO, Nutrient enrichment	Animal husbandry, Pasture grazing, Mining, Forestry
120	Splunge Cr.		Fair	Sedimentation	Septic tank failure, Pasture grazing, Animal production, Forestry
130	Blackwater Cr.		Poor	Sedimentation, pH	Animal husbandry, Mining, Pasture grazing, Forestry, Septic tank failure
170	Lost Cr.	303(d)	Poor	Sedimentation, OE/DO, Metals, pH, Other habitat alteration	Mining, Forestry, Septic tank failure
180	Wolf Cr.	303(d)	Poor	Sedimentation, Other habitat alteration, pH, OE/DO	Mining, Forestry
190	Baker Cr.		Poor	Sedimentation	Mining, Forestry, Septic tank failure

a. 303(d): currently on ADEM's 2002 §303(d) list of impaired waters; TA: approved TMDL

Table 1, cont. List of impaired sub-watersheds. Impairment determined by bioassessment and intensive physical/chemical data collected 1998-2002.

Sub-watershed		303(d)/ TMDL Waterbody	Lowest Station Assessment	Suspected Cause(s)	Suspected nonpoint source(s)
Sipsey Fork (0316-0110)					
010	Sipsey Fork		Fair	Sedimentation	Unknown
030	Upper Brushy Cr.		Poor	Reason unclear	Animal husbandry, Pasture grazing
050	Right Fork Clear Cr.		Poor	Sedimentation, historic water quality problems	Pasture grazing, Mining
080	U. Rock Cr.	TA	Poor	Sedimentation, Pathogens, OE/DO	Pasture grazing, Animal husbandry
090	Crooked Cr.	TA	Poor	Sedimentation, Pathogens, OE/DO, Ammonia, Nutrient enrichment	Animal husbandry, Pasture grazing, Forestry
110	U. Ryan Cr.		Poor	Sedimentation, Nutrient enrichment, Pathogens, Flow modification	Animal husbandry, crop runoff, Pasture grazing, Forestry, Urban, Development
130	Sipsey Fork		No recent data; 1997 NPS priority	Sedimentation, Nutrient enrichment	Animal husbandry, Pasture grazing, Mining, Forestry, Septic tank failure
Locust Fork (0316-0111)					
010	U. Locust Fork		No recent data; 1997 NPS priority	OE/DO, pH, Sedimentation	Animal husbandry, Pasture grazing, Mining, Septic tank failure
020	Bristows Cr.		Fair	Nutrient enrichment	Crop runoff, Pasture grazing, Septic tank failure
030	Clear Cr.		Fair/poor	Sedimentation, Nutrient enrichment	Animal husbandry, Crop runoff, Pasture grazing, Urban, Septic tank failure, Development
040	Slab Cr.		Fair	Sedimentation, Nutrient enrichment	Animal husbandry, Row crops, Pasture runoff, Urban, Septic tank failure
050	Middle Locust Fork	TA 303(d)	Poor/Very poor	Nutrients, Ammonia, OE/DO, Pathogens, Sedimentation, Other habitat alteration	Animal husbandry, Crop runoff, Pasture grazing, Mining, Septic tank failure, WWTP
080	Sugar Cr.		Fair/poor	Sedimentation, Ammonia	Crop runoff, Pasture grazing, Mining

a. 303(d): currently on ADEM's 2002 §303(d) list of impaired waters; TA: approved TMDL

Table 1, cont. List of impaired sub-watersheds. Impairment determined by bioassessment and intensive physical/chemical data collected 1998-2002.

Sub-watershed		303(d)/ TMDL Waterbody	Lowest Station Assessment	Suspected Cause(s)	Suspected nonpoint source(s)
Upper Black Warrior R. (0316-0112)					
050	Upper Big Yellow Cr.	303(d)	Poor	Metals, OE/DO, Nutrient enrichment	Mining
070	Blue Cr.		Poor	Sedimentation, Nutrient enrichment	Mining
080	Davis Cr.		Poor	Sedimentation, Metals	Mining, Forestry
100	L. North R.	303(d)	Fair	Nutrient enrichment, Siltation, Other habitat alteration, Pathogens	Mining, Pasture grazing, Animal husbandry, Forestry, Crop runoff
120	Hurricane Cr.	303(d)	No recent data; 1997 NPS priority	Metals, Pathogens, Nutrient enrichment, Sedimentation, Other habitat alteration, Turbidity	Mining, Land development
Lower Black Warrior R. (0316-0113)					
030	Big Sandy Cr.		Fair	Sedimentation, Habitat degradation	Animal husbandry, Forestry
070	Gabriel Cr.		No recent data; 1997 NPS priority	Sedimentation, Habitat degradation	Crop runoff, Animal husbandry, Forestry
110	Minter Cr.		Fair	Sedimentation, Nutrient enrichment	Animal husbandry, Aquaculture, Pasture grazing, Forestry
120	Big Brush Cr.		Poor	Sedimentation, Habitat degradation, Nutrient enrichment, Pathogens	Pasture grazing, Aquaculture, Crop runoff, Urban
140	Dollarhide Cr.		Poor	Sedimentation, DO/OE, Nutrient enrichment	Aquaculture, Crop runoff, Pasture grazing, Urban, Septic tank failure
160	B. Prairie Cr.		Poor	Sedimentation, Nutrient enrichment, Pathogens	Aquaculture, Row crops, Pasture runoff , Point sources
170	L. Prairie Cr.		Fair	Sedimentation, Habitat alteration, Nutrient enrichment, OE/DO	Aquaculture, Row crops, Pasture runoff

a. 303(d): currently on ADEM's 2002 §303(d) list of impaired waters; TA: approved TMDL

METHODOLOGY

STUDY AREA

The BWC Basin Group contains portions of 2 major drainages (Fig. 1). The Black Warrior River is a main tributary of the Tombigbee River. It is comprised of five major tributaries or cataloging units (CU): Mulberry Fork, Sipsey Fork, Locust Fork, Upper Black Warrior, and Lower Black Warrior (USDASCS 1995). The Cahaba River is a major tributary or CU of the Alabama River (USDASCS 1995). Located within portions of 21 counties in central Alabama, the Black Warrior and Cahaba River basins drain approximately 8,106 mi^2 (15.5%) of the State. Tables 6 and 7 list the 96 sub-watersheds by CU and basin.

Table 6. Sub-watersheds of the Cahaba River CU.

Cataloging Unit		Sub-watershed
0315-0202 Cahaba River		
	010	Big Black Creek
	020[b]	Little Cahaba River
	030[b]	Cahaba River
	040	Cahaba Valley Creek
	050	Cahaba River
	060[b]	Shades Creek
	070	Cahaba River
	080	Shoal Creek
	090	Sixmile Creek
	100	Little Shultz Creek
	110	Shultz Creek
	120[a]	Haysop Creek
	130	Rocky Branch Creek
	140[a]	Cahaba River
	150[a]	Cahaba River
	160	Oakmulgee Creek
	170[a, b]	Cahaba River

a. 1996/1997 NPS Priority Sub-watershed
b. contains a 2004 §303(d) waterbody or approved TMDL

Table 7. Sub-watersheds located within the Black Warrior River Basin.

Cataloging Unit	Sub-watershed	Cataloging Unit	Sub-watershed
0109	**Mulberry Fork**	**0111**	**Locust Fork**
010	Mulberry Fork	010 [a]	Upper Locust Fork
020 [a,b]	Duck Creek	020 [a]	Bristows Creek
030 [a, b]	Brindley Creek	030 [a]	Clear Creek
040 [a, b]	Eightmile Creek	040 [a]	Slab Creek
050[b]	Broglen River	050 [a, b]	Middle Locust Fork
060	Blue Springs Creek	060 [a]	Calvert Prong
070[b]	Mud Creek	070	Blackburn Fork
080 [a, b]	Thacker Creek	080 [a]	Sugar Creek
090	Mill Creek	090	Gurley Creek
100	Sloan Creek	100	Hogeland Creek
110 [a]	Dorsey Creek	110	Turkey Creek
120 [a]	Splunge Creek	120[b]	Cane Creek
130	Blackwater Creek	130[b]	Five Mile Creek
140	Little Blackwater Creek	140[b]	Village Creek
150	Cane Creek	150[b]	Lower Locust Fork
160	Old Town Creek	**0112**	**Upper Black Warrior**
170[b]	Lost Creek	010	Big Branch
180[a, b]	Wolf Creek	020[b]	Upper Valley Creek
190	Baker Creek	030[b]	Lower Valley Creek
200	Bluff Creek	040	Little Shoal Creek
0110	**Sipsey Fork**	050[b]	Upper Big Yellow Creek
010	Sipsey Fork	060	Lower Big Yellow Creek
020	Sipsey Fork	070	Blue Creek
030	Upper Brushy Creek	080 [a]	Davis Creek
040	Lower Brushy Creek	090 [a]	Upper North River
050 [a]	Right Fork Clear Creek	100 [a, b]	Lower North River
060	Clear Creek	110	Yellow Creek
070	Sipsey Fork	120 [a, b]	Hurricane Creek
080 [a, b]	Upper Rock Creek		
090[b]	Crooked Creek		
100	Lower Rock Creek		
110	Upper Ryan Creek		
120	Lower Ryan Creek		
130 [a]	Sipsey Fork		

a. 1996/1997 NPS Priority Sub-watershed b. contains a 2004 §303(d) waterbody or approved TMDL

Table 7, cont. Sub-watersheds located within the Black Warrior River Basin.

Cataloging Unit		Sub-watershed
0316-0113		**Lower Black Warrior**
	010	Big Creek
	020	Cypress Creek
	030 [a]	Big Sandy Creek
	040	Keaton Lake
	050	Grant Creek
	060	Elliotts Creek
	070 [a]	Gabriel Creek
	080	Davis Creek
	090	Fivemile Creek
	100	Coleman Branch
	110	Minter Creek
	120 [a]	Big Brush Creek
	130	Wright's Creek
	140	Dollarhide Creek
	150	Hines Creek
	160 [a]	Big Prairie Creek
	170	Little Prairie Creek
	180	Backbone Creek
	190	French Creek

a. 1996/1997 NPS Priority Sub-watershed

Ecoregions

Ecoregions are relatively homogeneous ecological areas defined by similarity of climate, landform, soil, natural vegetation, hydrology, or other ecologically relevant variables. Since 1991, ADEM has maintained a network of least-impaired ecoregional reference sites (ADEM 2002n). Intensive monitoring assessments, including chemical, physical, habitat, and biological data, are collected to develop baseline reference conditions for each of Alabama's 29 Level IV subecoregions (Griffith et al. 2001). The reference condition establishes the basis for making comparisons and detecting use impairment (Omernik and Griffith 1991, Omernik 1995).

Approximately 77% of the BWC Basin Group lies above the Fall Line within 7 subecoregions of the *Ridge and Valley (67)* and *Southwestern Appalachians (68)* Ecoregions. A small section of the Cahaba River CU drains the *Piedmont (45)* Ecoregion.

Fig. 1. Cataloging units and sub-watersheds of the BWC Basin Group.

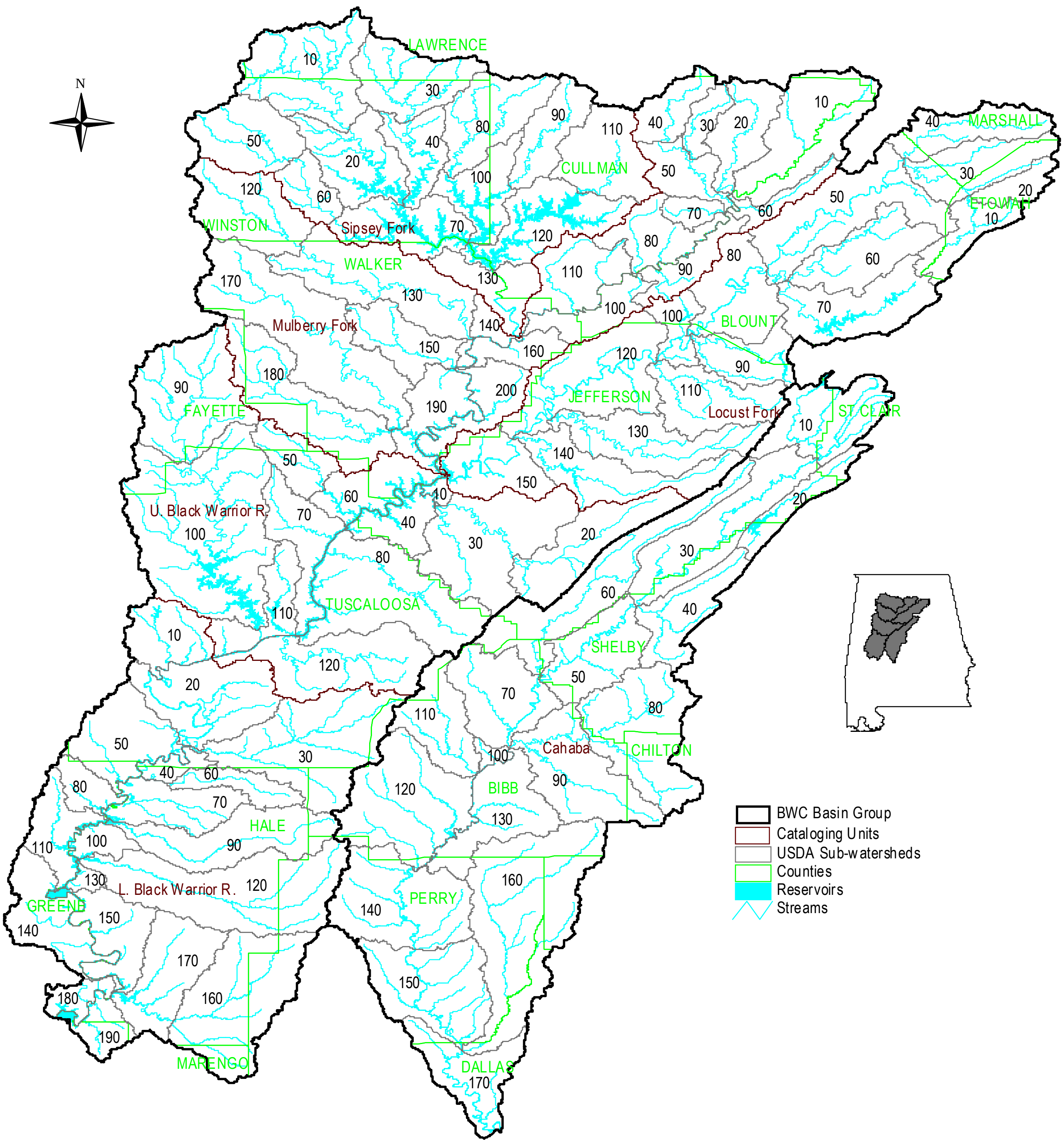

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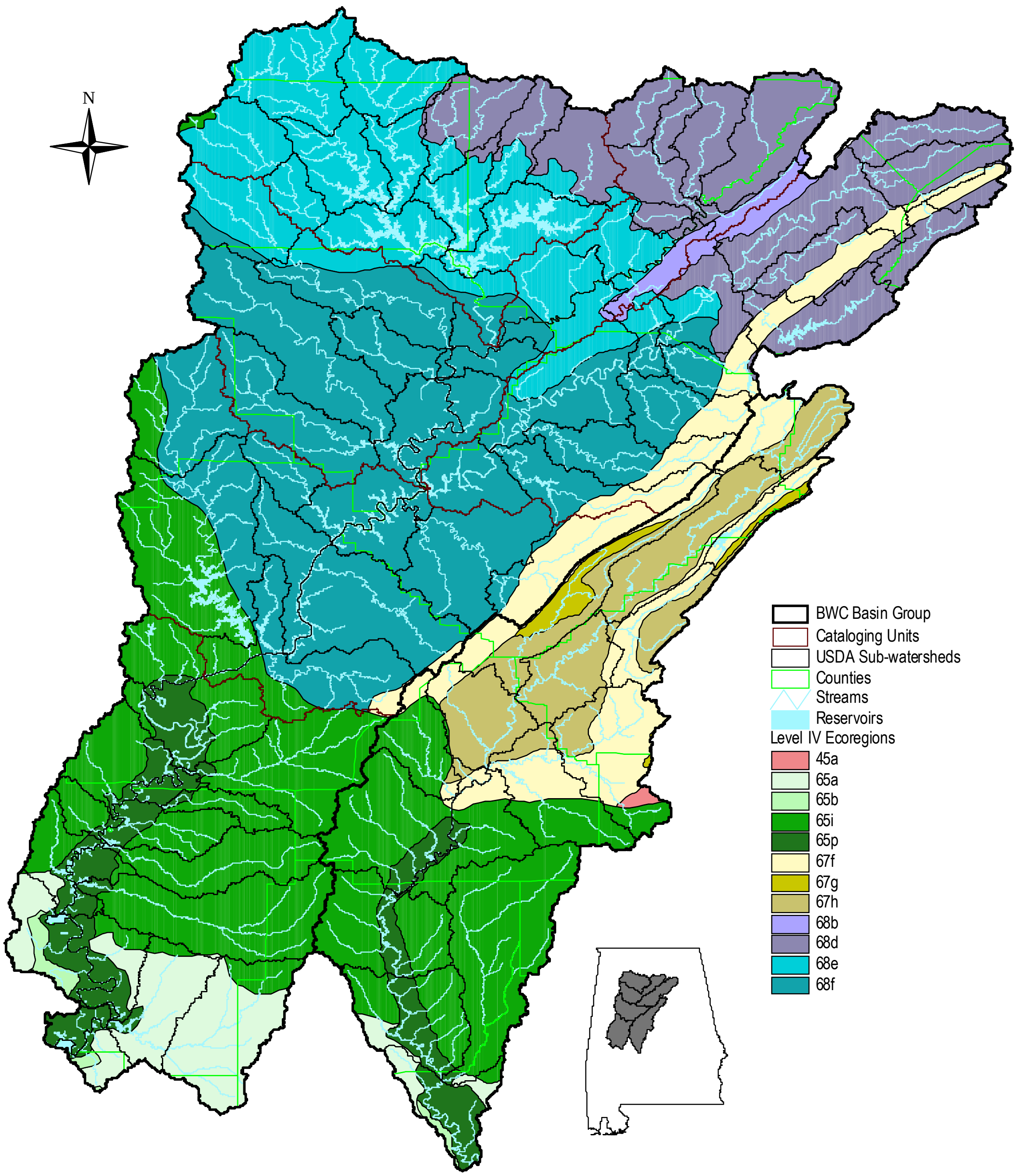
Fig. 2. Level IV Ecoregions in the BWC Basin Group.



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The southern section of the BWC Basin Group lies below the Fall Line within the *Southeastern Plains (65)* Ecoregion.

The *Piedmont (45)* Ecoregion comprises a transitional area between the mostly mountainous ecoregions of the Ridge and Valley (67) Ecoregion to the northwest and the relatively flat coastal plain to the southeast. A small portion of the Cahaba River CU lies within the *Southern Inner Piedmont (45a)* subecoregion. The landscape is a rolling to hilly and mostly forested, with major forest types of oak-pine and oak-hickory, and some loblolly-shortleaf pine. Open areas are mostly in pasture, although there are some small areas of cropland. Streams in this subecoregion tend to be low- to moderate-gradient streams with cobble, gravel, and sandy substrates.

The southern half of the Black Warrior and Cahaba River basins lie within the *Southeastern Plains (65)* Ecoregion. The Ecoregion is characterized by irregular plains with broad interstream areas. Natural vegetation is mostly oak-hickory-pine and southern mixed forest. The soils of the region are sands, silts, and clays. Elevations and relief are less than the Ridge and Valley (67) and Southwestern Appalachians (68) Ecoregions.

The Blackbelt region of the extreme southern portion of the Black Warrior River Basin is composed of two subecoregions of the Coastal Plain: the *Blackland Prairie* (65a) and the *Flatwoods/Blackland Prairie Margins* (65b). Because the regions are narrow and intermingled, many streams drain through portions of both subecoregions. The elevations in these regions range from 150-250' in the Blackland Prairie to 100-400' in the Flatwoods/Blackland Prairie margins. The soils are primarily clays and loams that weather into nutrient-rich soils that can bake hard in summers and become very adhesive when wet. Streams in this region usually erode to chalk bedrock and are noted for variable flows and high rates of runoff during storms. In summers, many smaller streams will go dry, and flow in larger streams becomes quite low. The natural vegetation of the Blackland Prairie, consisting of sweetgum, post oak, red cedar, and bluegrass prairie, has been transformed to cropland and pasture, with small patches of mixed hardwoods. Aquaculture, primarily pond-raised catfish, has increased in recent years. The Flatwoods are comprised of a mostly-forested lowland area of little relief, formed primarily on dark, massive marine clay.

The Lower Black Warrior River CU lies mainly within the *Fall Line Hills (65i)* subecoregion. Unlike other regions of the BWC, streams located within the Fall Line Hills flow year round due to extensive sand and gravel aquifers in the region (Mettee et al. 1996). Riverine wetlands are characteristic of the subecoregion. Within the BWC, the Fall Line Hills is a transition zone between the Coastal Plain and the Southwestern Appalachians. It is mostly forested terrain of oak-hickory-pine on hills with 200-400 foot relief. Longleaf pine is being reintroduced in many areas.

The *Southeastern Floodplains and Low Terraces (65p)* comprise a riverine ecoregion of large sluggish rivers and backwaters with ponds, swamps, and oxbow lakes. River swamp forests of bald cypress, water tupelo, and oak-dominated bottomland hardwood forests provide important wildlife corridors and habitat. In Alabama, cropland is typical on the higher, better-drained terraces, while hardwoods cover the floodplains.

The Ridge and Valley (67) Ecoregion consists of a series of folded and faulted parallel ridges that trend in the northeast–southwest direction. Ridges are generally made of sandstone and chert, while valleys are generally developed on limestone and shale. Springs and caves are relatively common. Land cover is mixed and present-day forests cover about 50% of the region. The ecoregion has diverse aquatic habitat and supports a unique and species-rich fish fauna. The Upper Cahaba River basin and eastern half of the Locust Fork drain the Ridge and Valley (67) Ecoregion. The area has been extensively developed for residential and commercial use.

The *Southern Limestone/Dolomite Valleys and Low Rolling Hills* (67f) is composed predominantly of limestone and cherty dolomite. Landforms are mostly undulating valleys and rounded ridges and hills, with many caves and springs. Within the Cahaba River, headwaters of tributary streams drain the subecoregion from the east and west. They are moderate- to low-gradient streams with bedrock, cobble, gravel, and sand substrates. Soils vary in their productivity, and land cover includes oak-hickory and oak-pine forests, pasture, intensive agriculture, and urban and industrial.

A distinct segment of the *Southern Shale Valleys* (67g) lies within the Cahaba River drainage between 67f and 67h. The subecoregion consists of undulating to rolling valleys and some low, rounded hills and knobs that are dominated by shale. The soils formed in materials weathered from shale, limestone, and clays. They tend to be deep, acidic, moderately well-drained, and slowly permeable. The steeper slopes are used for pasture or have reverted to brush and mixed forest land. Streams within the Southern Shale Valleys tend to be moderate- to low-gradient streams with bedrock, cobble, gravel, and sandy substrates.

The upper Cahaba River flows through the *Southern Sandstone Ridges* (67h) subecoregion. It encompasses major sandstone and shale ridges and conglomerate beds. Streams draining this subecoregion are high-to-moderate gradient with rocky substrates.

The *Southwestern Appalachians* (68) contain most of the Mulberry Fork, Sipsey Fork, and western portion of the Locust Fork of the Black Warrior River basin. Elevations range from around 1,100’ on the northern slopes to approximately 600’ at the northern boundary of the Fall Line Hills near Tuscaloosa. These low mountains contain a mosaic of forest and woodland with some cropland and pasture. The mixed mesophytic forest is restricted mostly to the deeper ravines and escarpment slopes, and the summit or tableland forests are dominated by mixed oaks with shortleaf pine.

Two thin fingers of the *Sequatchie Valley* (68b) subecoregion extend south into the upper reaches of the Mulberry Fork. It is composed mostly of limestones, dolomites, and shales. Streams are moderate- to low-gradient with bedrock, cobble, gravel, and sandy substrates. Springs are common.

The *Southern Table Plateaus* (68d) subecoregion drains the northwest corner of Mulberry Fork and eastern portion of Sipsey Fork. This portion of the subecoregion is characterized by a mild climate and gentle topography containing sandstone, shale layers, and coal-bearing strata. Cropland and pasture are common. It is one of Alabama's major poultry production regions and contains small areas of coal mining.

The rugged, mostly forested region of the *Dissected Plateau* (68e) subecoregion contains predominantly strongly sloping land, some steep-sided gorges and sandstone cliffs, and relief of 300-400 feet. The cool canyons and valleys often contain plant and animal species usually found further north. Streams are low-to-moderate gradient with bedrock and boulder substrates. The Bankhead National Forest occupies a large portion of 68e, providing public recreation, wilderness, and forestry areas. Most of the region is drained by the Sipsey Fork of the Black Warrior River. The Sipsey Fork is a National Wild and Scenic River in its headwaters, and downstream is impounded to form Lewis Smith Lake.

The *Shale Hills* (68f) ecoregion, sometimes called the Warrior Coal Field, has relatively low elevations, but the surface features are characterized by extensive hills and mostly strongly sloping topography. The shale, siltstone, and sandstone are relatively impermeable, and streams do not have the base flow found in more permeable adjacent areas, such as 65i or 67f. The region is mostly forested, but coal mining is a major industry, and the extensive open-pit mines have altered the landscape, soils, and streams.

Review of Available Data

The use of available data was an important component of the NPS screening assessment of the BWC Basin Group because it allowed ADEM to concentrate efforts in those areas where recent data were not available. Chemical, habitat, and biological data from other projects were used to supplement data collected during the NPS screening assessment. However, water quality data and information can range from casual observations to intensive water chemistry, biological, and physical characterization. To use existing data to accurately assess conditions within a sub-watershed, it is important to understand the objectives of these projects.

During 2000, ADEM identified two levels of waterbody assessments: monitored and evaluated (ADEM 2000b). When information such as observed conditions, limited water quality data, water quality data older than 5 years, or estimated impacts from observed or suspected activities are used as the basis for the assessment, the assessment is generally referred to as “evaluated”. Evaluated assessments usually require the use of some degree of professional judgment by the person making the assessment. Monitored assessments are based on chemical, physical, and/or biological data collected using commonly accepted and well-documented methods. There is a higher level of certainty associated with monitored assessments than with evaluated assessments.

Monitored assessments have been conducted in conjunction with ADEM’s Ecoregional Reference Reach Program (Appendix O), CWA §303(d) Waterbody Monitoring Program (Appendix P), Reservoir Monitoring Program, Ambient Monitoring Program (Appendix R), and the 2002 Periphyton Bioassessment Pilot Project (Appendix Q), GSA’s

Assessment of Mulberry Fork (Shepard et al. 2001, Shepard et al. 2002), and the University Tributary Nutrient Loading Project (Appendix S). Evaluated assessments have been conducted in conjunction with ADEM's ALAMAP Program (Appendix T). A summary of 6 of these projects, including lead agency, project objectives, type of assessments conducted and data collected, and applicable quality assurance manuals, is provided in the appendices.

Other data/information: ADEM's municipal, industrial, mining, and CAFO databases were reviewed to eliminate sub-watersheds primarily impacted by point sources or monitored in conjunction with NPDES permits (ADEM 2002g, 2002h). Biological and chemical data were also reviewed to locate sampling reaches in areas that had not been recently assessed.

Landuse*:* ADEM assigned each sub-watershed an NPS rating based on estimates of landuse percentages, animal populations, and sedimentation rates to prioritize sub-watersheds for assessment and to identify potential sources of impairment. These estimates were obtained from information provided to ADEM by the Alabama Soil and Water Conservation Committee (ASWCC) and local Soil and Water Conservation Districts (SWCD). This information was provided on Conservation Assessment Worksheets completed in 1998 (FY97 CWA § 319 Workplan Project #4). Sub-watershed assessment information is available at www.swcc.state.al.us.

Additional landuse information was obtained from estimates of percent land cover for the entire southeastern U.S. published by EPA (EPA 1997b). These estimates were based on leaf-off Landsat TM data acquired in 1988, 1990, 1991, 1992, and 1993. Recent ground-truthing of these estimates have indicated 58% accuracy due to a decrease in agricultural use and an increase in plantation pine in some areas of Alabama within the last 10 years (Pitt 2000). Use of these estimates to locate least-impaired ecoregional reference sites in Georgia has indicated an accuracy of 40-60% (Olson and Gore 2000). Therefore, only the conservation assessment worksheets were used to evaluate potential for impairment from nonpoint sources. The EPA Landsat data was provided in ADEM 1999a.

Animal population estimates*:* The potential NPS impairment from activities associated with animal husbandry was assessed. The impairment potential among the different animal types was standardized by converting animal populations into animal units (AU). Animal unit estimates were calculated for each of the animal types based on the current conversion factors found in ADEM Administrative Code Chapter 335-6-7 (Table 8). These values considered characteristics such as live weight equivalent waste quantity and constituent composition (limiting nutrients, moisture, additive compounds, etc.) (ADEM 1999b). AU estimates for each animal type were further standardized by converting to animal unit densities (AU/acre of sub-watershed).

Forestry practices*:* Where the information was available, 3 categories were summed to assess the potential for impairment from forestry practices: percent of acres clear-cut, percent of acres harvested annually, and percent of forest needing improvement. This information was provided by the local SWCD and the Alabama Forestry Association.

Table 8. Current conversion factors found in ADEM Administrative Code Chapter 335-6-7 (CAFO Program Rules).

Animal Type (CAFO Definition)	Numbers of Animals	Animal Units (AU)
Cattle (slaughter, feeder, dairy heifers)	1	1.0
Dairy (mature)	1	1.4
Swine (>55 lbs)	1	0.4
Poultry (Broiler & Layer)	125	1.0

Urban nonpoint sources: Percent urban land, number of current construction/stormwater authorizations, and estimated number of failing septic systems were used to identify sub-watersheds potentially impaired by urban landuses and to calculate an overall potential for impairment from urban sources.

NPS IMPAIRMENT POTENTIAL AND SUB-WATERSHED RANKING

<u>NPS Impairment Potential</u>: For each sub-watershed and CU, potential for NPS impairment was estimated for several categories: animal husbandry, row crops, pasture runoff, mining, forestry practices, and sedimentation. Each sub-watershed was assigned an impairment potential for each category. Table 9 shows the range of values used to define *low*, *moderate*, and *high* impairment potential for each category. These ranges were determined using the mean and standard deviation of BWC data for each parameter. A value of less-than-or-equal-to the calculated mean was assigned a *low* potential. Values greater than the mean, but equal-to-or-less-than two-standard deviations above the mean were assigned a *moderate* potential and values greater than two-standard deviations above the mean were assigned a *high* potential for NPS impairment.

For each sub-watershed and CU, the impairment potential for each category was converted from low, moderate, and high to scores of 1, 3, and 5, respectively. These values were summed to rate overall NPS impairment potential. Total scores greater than or equal to the 90th percentile were rated as *high*; scores greater than the 50^{th} percentile, but less than the 90^{th} percentile were *moderate*; scores less than the 50^{th} percentile were *low*.

<u>Urban Impairment Potential</u>: The "urban" and "other" NPS categories listed in Table 10 were used as indicators of potential problems in the watersheds but were not specifically addressed in this project. Table 10 shows the range of values used to define *low*, *moderate*, and *high* impairment potential for each urban category. These ranges were determined using the mean and standard deviation of BWC data for each parameter. A value of less-than-or-equal-to the calculated mean was assigned a *low* potential. Values greater than the mean, but equal-to-or-less-than two-standard deviations above the mean were assigned a *moderate* potential and values greater than two-standard deviations above the mean were assigned a *high* potential for urban impairment.

For each sub-watershed and CU, the urban impairment potential for each category was converted from low, moderate, and high to scores of 1, 3, and 5, respectively. These values were summed to rate overall NPS impairment potential. Scores greater than or equal to the

90th percentile were rated as *high*; scores greater than the 50th percentile, but less than the 90th percentile were *moderate*; scores less than the 50th percentile were *low*.

High ranked sub-watersheds also having a *high* non-rural NPS potential were further evaluated to determine the probable source location in relation to potential assessment sites.

Table 9. Range of values used to define "low", "moderate", and "high" potential for impairment for each nonpoint source category.

Category	Impairment Potential		
Rural NPS Categories	**Low**	**Moderate**	**High**
% Cropland	≤5.1	>5.1 to ≤15.3	>15.3
% Pasture land	≤15.0	>15.0 to ≤37.2	>37.2
% Mining	≤3.8	>3.8 to ≤11.6	>11.6
% Forestry Activities	≤25.5	>25.5 to ≤55.7	>55.7
Animal Units per Acre	≤0.37	>0.37 to ≤1.75	>1.75
% Aquaculture (Acres/Acre)	≤0.24	>0.24 to ≤0.62	>0.62
Sedimentation rate (tons/acre/yr)	≤7.4	>7.4 to ≤22.6	>22.6
Score with 7 categories	≤13	>13 to ≤19	>19
Score with 6 categories	≤10	>10 to ≤15	>15

Table 10. Range of values used to define "low', "moderate", and "high" potential for impairment from each urban or point source category.

Category	Impairment Potential		
Urban NPS Categories	**Low**	**Moderate**	**High**
Urban score	<5	5-10	>10
% Urban	≤5.0%	>5.0% to ≤15.5%	>15.5%
Development (highest rating)			
Total # permits, CSAs/acre of sub-watershed	≤0.0003	>0.0003 to ≤0.0008	>0.0008
# CSA/acre of sub-watershed	≤0.0002	>0.0002 to ≤0.0006	>0.0006
# of failing septic tanks/ac of sub-watershed	≤0.0052	>0.0052 to ≤0.0145	>0.0145

The values derived for the BWC Basin Group may not be applicable to water quality conditions and activities in other basins of Alabama. These categories and ranges are intended to be descriptive, but are open to differing interpretations considering alternative data analysis techniques and are subject to refinement as data availability and analysis warrants.

The local SWCDs also evaluated the streams for each of the sub-watersheds located in their respective counties. These evaluations were discussed during public meetings and were used to rank the sub-watersheds as to their perceived priority for conducting water quality improvement projects. The 1st priority was given to the sub-watershed with the greatest need. A single sub-watershed may have more than one priority if two or more of the counties containing the sub-watershed gave it a top-five priority ranking. This information was used to supplement the sub-watershed estimates of NPS impairment potential.

SITE SELECTION

Alabama's 2002 §303(d) list and the NPS impairment potential estimates were used to rank the sub-watersheds within the BWC Basin Group. Additional review of municipal, industrial, and mining permit tracking databases were used to identify those sub-watersheds with the most potential for impairment from point sources. Existing water quality reports were used to identify sub-watersheds where recent data were unavailable. A total of 44 sub-watersheds were targeted to select candidate assessment sites and conduct field reconnaissance. Two hundred three sites were visited to determine the best sampling locations for the NPS screening assessment. Where possible, assessment sites were located in relatively small drainages to relate water quality to specific nonpoint sources and to compare results to ADEM's network of least-impacted reference sites. Appendix F lists the target sub-watersheds and the sites chosen for assessment.

HABITAT ASSESSMENT

In the absence of water quality impairment, biological condition of the fish and aquatic macroinvertebrate communities is generally correlated with the quality of available habitat. The presence of stable and diverse habitat generally supports a diverse and healthy aquatic fauna (Barbour and Stribling 1991, Barbour and Stribling 1994). Therefore, habitat quality was assessed at each site to evaluate stream condition and to assist in the interpretation of biological data. Primary, secondary, and tertiary habitat parameters were evaluated. Primary habitat parameters evaluate the availability and quality of substrate and instream cover. They include those characteristics that directly support aquatic communities, such as substrate type and stability. Secondary habitat parameters evaluate channel morphology, which is determined by flow regime, local geology, land surface form, soil, and human activities. Channel morphology indirectly affects the biological communities by affecting sediment movement through a stream (Barbour and Stribling 1991). Secondary habitat parameters include an evaluation of flow regime, sinuosity/ instream geomorphology, and sediment deposition and scouring. Tertiary habitat characteristics evaluate bank structure and riparian vegetation. Bank and riparian vegetation prevent bank erosion and protect the stream from stormwater runoff from impervious surfaces. The presence of overhanging riparian vegetation also determines the primary energy source for aquatic macroinvertebrate communities—the base of the fish food chain (Vannote et al. 1980). Tertiary parameters include bank condition, bank vegetative protection, and riparian zone width.

The EPA has published 2 versions of stream habitat assessment forms to evaluate primary, secondary, and tertiary habitat parameters (Barbour et al. 1999). ADEM used the original habitat assessment form from 1989 through 1996. The EPA published revised habitat assessment forms that evaluated riffle/run and glide/pool streams separately (EPA 1997b). The primary habitat parameters of the glide/pool habitat assessment emphasize characteristics important to this stream-type, primarily pool structure and variability. The ADEM began using the revised forms in 1996 because they assess habitat quality and degradation to the glide/pool streams of south Alabama more accurately (ADEM 1999b). In addition, because they measure impairment to habitat quality, the scores (converted into percent of maximum score) were comparable between stream types and can be used to evaluate streams throughout the basin. At each site, two field personnel completed a riffle/run or glide/pool habitat assessment. The scores were averaged to obtain a final habitat assessment score. One physical characterization sheet was filled out at each station. Field data sheets used by ADEM are provided in Appendix L.

Habitat assessment guidelines: For comparison of habitat assessment results among locations and stream types, the scores for each of the 5 major habitat parameters (availability and quality of substrate and instream cover, sediment deposition, channel morphology, bank structure and stability, and riparian zone protection) are summed and then converted to percent of maximum score. With the exception of the Shale Hills (68f) subecoregion, habitat assessment guidelines for each subecoregion are based on analysis of ADEM's ecoregion reference site data collected within that subecoregion from 1991-2002. Total scores equal to or greater than the 5^{th} percentile of reference site data were designated as *excellent*; scores less than the 5^{th} percentile of reference site data were the remaining three categories were calculated as (low end of higher category minus (95th Percentile/4)). Only one reference reach has been established within the Shale Hills subecoregion (68f), which covers an area relatively impacted by mining activities and urban runoff from Birmingham. Habitat assessment guidelines for 68f were calculated using reference data collected in 68f and the 3 surrounding subecoregions: the Fall Line Hills (65i), the Southern Limestone/Dolomite Valleys and Rolling Hills (67f), and the Dissected Plateau (68e).

AQUATIC MACROINVERTEBRATE ASSESSMENT

ADEM's Multihabitat EPT (MB-EPT) screening method was used to collect aquatic macroinvertebrates at 72 sites within the BWC Basin Group (Appendix F). An in-depth description of the procedures used during an MB-EPT assessment can be found in ADEM 1999b. At each station, basic field parameters were measured and a stream flow was estimated using an abbreviated cross-section flow measurement technique of 6-10 measurements (ADEM 2000c). A Global Positioning System (GPS) Unit was used to determine the latitude and longitude of each station (if possible).

The MB-EPT method is an aquatic macroinvertebrate assessment technique used in basinwide screening assessments that entails monitoring multiple sites over a large area. The MB-EPT decreases collection effort and analysis time by processing the samples in the field and focusing on the collection of the pollution-sensitive Ephemeroptera, Plecoptera, and Trichoptera (EPT) taxa. This method was used to prioritize sub-watersheds most impaired by NPS pollution. Once priority sub-watersheds are identified, more extensive Tier II monitoring efforts are used to document and assess trends in water quality after BMP implementation.

Collect samples from multiple habitats: The productive habitats at a site will differ naturally between streams above and below the Fall Line. Coastal Plain streams, located below the Fall Line, are usually low-gradient, "glide-pool" streams, characterized by sandy substrates, a lack of riffle habitat, and meandering flows. Streams located above the Fall Line are generally moderate-to-high gradient, "riffle-run" streams. All available habitats were sampled at each site. Habitats routinely sampled using this method include riffles, leaf packs, rootbanks, snags/logs and rocks, and sand.

Process samples in the field: After each habitat was sampled, the organic material was elutriated from the inorganic material. The inorganic material was visually inspected for organisms (esp. Trichoptera in stone cases). The organic matter was washed down, and large debris was visually inspected and removed.

***Collect pollution-sensitive taxa*:** Representative "EPT" organisms were removed from the sample and preserved in a pre-labeled vial by habitat. The vials for each station were returned to the lab in a Nalgene container labeled with the station number, date and time collected, the names of the habitats collected at the station, and the initials of the team member who processed the sample. The organisms were identified to family level in the laboratory.

Field QA/QC procedures: At 10% of the field-picked stations, the debris remaining from each habitat was preserved in wide-mouth containers and returned to the laboratory to verify the removal of all EPT taxa and calculate the accuracy of the field-pick method.

Laboratory QA/QC procedures: Laboratory identifications for 10% of macroinvertebrate samples were verified by a second qualified biologist. All data entered in the aquatic macroinvertebrate mainframe Pace database are verified for accuracy.

Data analysis: The total number of pollution-sensitive EPT families collected from each station was compared to EPT Index data collected from least-impaired ecoregional reference reaches to evaluate the health of each stream reach. Each site was assessed as *excellent*, *good*, *fair*, or *poor* based on the number of pollution-sensitive EPT families collected (ADEM 2004a).

MB-EPT assessment guidelines: With the exception of the Shale Hills (68f) subecoregion, MB-EPT assessment guidelines for each subecoregion are based on analysis of ADEM's ecoregion reference site data collected within that subecoregion from 1991-2002. The *Excellent* category was equal to 5th-95th percentile of reference site data; the remainder of the categories were calculated as (low end of higher category minus (95th Percentile/4)). Only one reference reach has been established within the Shale Hills subecoregion (68f), which covers an area relatively impacted by mining activities and urban runoff from Birmingham. MB-EPT assessment guidelines for 68f were calculated using reference data collected in 68f and the 3 surrounding subecoregions: the Fall Line Hills (65i), the Southern Limestone/Dolomite Valleys and Rolling Hills (67f), and the Dissected Plateau (68e).

FISH IBI MULTI-HABITAT ASSESSMENT

Site selection: Thirty stations within the BWC were selected for the completion of fish community Index of Biotic Integrity (IBI) assessments (Appendix F). Fish IBI assessments were conducted at study reaches if impairment from sedimentation or habitat degradation was suspected or if the aquatic macroinvertebrate assessment bordered between two impairment categories.

Sample collection: The fish IBI assessment methods summarized here are described in more detail in O'Neil and Shepard (1998). They have been incorporated into the ADEM's Fish Community Assessment standard operating procedures manual. Additional information pertaining to metrics testing and criteria development is included in these sources.

At each station, one three-person team conducted a timed, multi-habitat assessment of the fish community, sampling all available habitats, including riffles, pools, runs, snags, and undercut banks. Small streams were sampled for 30 minutes while larger streams were sampled for 1 hour. Nylon minnow seines (1/8 to 3/16-inch mesh) and a portable backpack shocking unit were used to sample all habitat areas.

In the field, collected specimens were fixed in 10 to 20% formalin and preserved in 70% ethanol. A field sheet was completed at each site. In the laboratory, specimens were identified to species, measured, and weighed to the nearest gram. Results were converted into the number of fish collected per hour to calculate indices of biotic integrity.

Fish IBI metrics: IBI metrics rely on information from several perspectives of the aquatic biota including individual, population, community, ecosystem, and zoogeography (Karr, 1981). ADEM's fish IBI index is composed of 12 metrics that evaluate species richness and composition (number of native species, number of darter species, number of minnow species, number of sunfish species, number of sucker species, number of intolerant species, and proportion as sunfishes), trophic composition (proportion as omnivores and herbivores, proportion as insectivores and cyprinids, and proportion of top carnivores), and fish abundance and condition (number collected per hour, proportion of individuals with disease, tumors, fin damage, and anomalies) (O'Neil and Shepard 1998).

IBI assessment guidelines: Assessment guidelines for each metric were developed specifically for the Black Warrior and Cahaba River basins. Criteria vary with region (Appalachian Plateau and Coastal Plain) and stream size.

CHEMICAL ASSESSMENT

Table 11 lists the analysis method and detection limits for parameters analyzed by ADEM's Central Laboratory in conjunction with its monitoring programs. During the screening assessment of the BWC Basin Group, chemical parameters were used as indicators of NPS impairment including sedimentation (total suspended solids, total dissolved solids), nutrient enrichment (total phosphorus, nitrate/nitrite-nitrogen, CBOD-5), and mining impacts (total iron, total manganese).

Stream flow estimates, routine field parameters, and water quality samples were collected at each station during the macroinvertebrate assessment. Field parameters were also collected during the fish IBI assessment. Chemical analyses of water samples were conducted by ADEM's Central Laboratory in Montgomery. Water quality samples for laboratory analysis were collected, preserved, and transported to ADEM's Laboratory as described in ADEM Field Operations Standard Operating Procedures and Quality Control Assurance Manual, Volume I - Physical/Chemical (2000c). Laboratory analyses were conducted in accordance with ADEM's Quality Assurance Manual for the Alabama Department of Environmental Management Central Laboratory (ADEM 1999d).

Water quality samples and routine field parameters were collected in conjunction with several other projects conducted or funded by ADEM. These data and a description of each of the projects are provided in the Appendices.

QA/QC procedures: Duplicate field parameters were collected during 10% of the sampling events. Duplicate water quality samples were collected during 5% of the sampling events.

Assessment guidelines: Water quality parameters for several subecoregions within the BWC basin group (65i, 67h, 68d, 68e, and 68f) were assessed as *exceeding* or *not exceeding* background levels as defined by the 90th percentile of data collected at least-impaired ecoregional reference reaches within that subecoregion from 1991-2001 (ADEM 2004a). The 5th and 95th percentile were treated as outliers and removed before analysis. Assessment guidelines for laboratory parameters at the remaining subecoregions were calculated using the same method but are based on data collected 1991-1999 (ADEM 1999i).

CHAIN OF CUSTODY

The chain-of-custody procedure ensures the integrity of all samples collected by creating a written record that can be used to trace possession of a sample from the moment of collection through the entire data analysis process. Sample handling and chain-of-custody procedures were used for all biological and chemical samples as outlined in ADEM Field Operations Standard Operating Procedures and Quality Control Assurance Manual, Volumes I and II to ensure the integrity of all samples collected (1999b, 2000c).

FINAL ASSESSMENT AND RANKING OF SUB-WATERSHEDS

Although the phases of this project resulted in a fully integrated assessment of the BWC basins, biological, habitat, and chemical assessments were weighted differently in ranking and prioritizing sub-watersheds. Monitoring biological communities, which respond to stresses of various degrees over time, can detect impairment caused by infrequent or low-level NPS pollution. The results of fish and aquatic macroinvertebrate assessments and intensive chemical/physical samples were therefore used to identify impaired sub-watersheds. Landuse patterns, habitat condition, chemical water quality measurements, and Conservation Assessment Worksheet data were used to evaluate the cause(s) of impairment.

A sub-watershed was identified as impaired if the macroinvertebrate or fish community was assessed as *fair* or *poor* and if rural nonpoint sources were the primary source of the impairment. Within these sub-watersheds, reaches impaired by point sources or urban runoff are discussed.

Table 11. List of parameters analyzed by ADEM Central Laboratory. Analysis method, reference, and detection limit are also listed.

Parameter	***Method***	***Reference***	***Detection Limit***
Air Temperature	Thermometer	ADEM SOP Vol. 1	1°C
Water Temperature	Thermometer/Thermistor	ADEM SOP Vol. 1	1°C
Dissolved Oxygen	Modified Winkler Membrane Electrode	ADEM SOP Vol. 1	0.1 mg/L
pH	Glass Electrode	ADEM SOP Vol. 1	0.1 su
Specific Conductance	Wheatstone Bridge	ADEM SOP Vol. 1	10 µmhos/cm @ 25°C
Turbidity	Nephelometer	APHA et al. 1998	0.1 NTU
Stream Flow	Modified Cross Sectional	ADEM SOP Vol. 1	0.1 cfs
5-day Biochemical Oxygen Demand (BOD-5)	EPA 405.1	EPA/600/4-79/020	0.1 mg/L
Carbonaceous 5-day Biochemical Oxygen Demand (CBOD-5)			
Alkalinity (Alk)	EPA 310.1	EPA/600/4-79/020	1 mg/L
Aluminum, Total Recoverable (Al)	EPA 200.7	EPA/600/R-94/111	0.2 mg/L
Ammonia-nitrogen (NH_3-N)	EPA 350.1	EPA/600/R-93/100	0.015 mg/L
Arsenic, Total Recoverable (As)	EPA 206.2	EPA/600/4-79/020	10 ug/L
Cadmium, Total Recoverable (Cd)	EPA 200.7	EPA/600/R-94/111	0.003 mg/L
Carbonaceous BOD-5 (CBOD-5)	EPA 405.1	EPA/600/4-79/020	0.1 mg/L
Chloride (Cl)	EPA 300.A EPA 325.1	EPA/600/R-93/100 EPA/600/4-79/020	0.5 mg/L
Chlorophyll a (Chlor a)	SM 10200H	APHA et al. 1992	0.1 mg/m^3
Chromium, Total Recoverable (Cr-T)	EPA 200.7	EPA/600/R-94/111	0.015 mg/L
Copper, Total Recoverable (Cu)	EPA 200.7	EPA/600/R-94/111	0.02 mg/L
Fecal Coliform	Membrane Filter	ADEM SOP Vol. 6	---
Hardness	EPA 130.2 / SM2340B	EPA/600/4-79/020	1 mg/L
Hexavalent Chromium (Cr^{+6})	SM 3500CrB	APHA et al. 1998	0.02 mg/L
Iron, Total Recoverable (Fe)	EPA 200.7	EPA/600/R-94/111	0.02 mg/L
Lead, Total Recoverable (Pb)	EPA 239.2	EPA/600/4-79/020	2 ug/L
Magnesium, Total Recoverable (Mg)	EPA 200.7 EPA 242.1	EPA/600/R-94/111 EPA/600/4-79/020	0.05 mg/L
Manganese, Total Recoverable (Mn)	EPA 200.7	EPA/600/R-94/111	0.02 mg/L
Mercury, Total REcoverable (Hg)	EPA 245.2 EPA 245.5	EPA/600/4-79/020 EPA/600/4-91/010	0.3 ug/L
Nickel, Total Recoverable (Ni)	EPA 200.7	EPA/600/R-94/111	0.03 mg/L
Nitrate/nitrite-nitrogen (NO_3+NO_2-N)	EPA 353.2	EPA/600/R-93/100	0.003 mg/L
Organochlorine Pesticides	SW 8081A	EPA 1994	---
Organophosphorus Pesticides	SW 8141	EPA 1994	---
Ortho-Phosphorus (Ortho-P)	EPA 365.3	EPA/600/4-79/020	0.004 mg/L
Selenium, Total (Se)	EPA 270.2	EPA/600/4-79/020	10 ug/L
Silver, Total (Ag)	EPA 200.7	EPA/600/R-94/111	0.01 mg/L
Total Dissolved Solids (TDS)	EPA 160.1	EPA/600/4-79/020	1 mg/L
Total Kjeldahl Nitrogen (TKN)	EPA 351.2	EPA/600/R-93/100	0.15 mg/L
Total Organic Carbon (TOC)	EPA 415.2		0.5 mg/L
Total Organic Nitrogen (TON)	TKN+NH_3	EPA 1994	Calculated value
Total Phosphorus (Total P)	EPA 365.4	EPA/600/4-79/020	0.004 mg/L
Total Suspended Solids (TSS)	EPA 160.2	EPA/600/4-79/020	1 mg/L
Zinc, Total Recoverable (Zn)	EPA 200.7	EPA/600/R-94/111	0.03 mg/L
Zinc, Dissolved (Dis-Zn)	EPA 289.2	EPA/600/4-79/020	0.03 mg/L

Summary: Black Warrior and Cahaba River Basins

Landuse: Estimates of percent land cover for each CU are presented in Table 1. Percent forest ranged from 55% in the Locust Fork CU to 70% in the Sipsey Fork CU. Percent land cover as row crop, pasture, and mining ranged from 12% in the Upper Black Warrior River to 34% in the Lower Black Warrior River. Percent urban area was highest in the Locust Fork, Upper Black Warrior River, and the Cahaba River CUs.

CWA §303(d)/TDML Status: Ninety-six pollutants in 42 stream and reservoir segments were listed as causing impairment in the BWC Basin Group (Fig. 3). TMDL's have been approved for 21 pollutants, including pathogens (9), organic enrichment/dissolved oxygen (8), and ammonia (4) (Appendix C-1). Seventy-five pollutants are currently listed on Alabama's 2002 §303(d) list of impaired waters (Appendix C-2). Siltation (19) accounted for 25% of the listed pollutants. Twenty-five percent of the listed pollutants were nutrients (10), organic enrichment/dissolved oxygen (7), and ammonia (2). Metals (7), pH (5), and turbidity (2) composed 19% of the listed pollutants. Other habitat alteration indicates nonattainment of a designated use due to degraded habitat quality for aquatic flora or fauna. Other habitat alteration (14) and biology (1) accounted for 20% of the listed causes of impairment.

Nonpoint source (NPS) impairment potential: The potential for NPS impairment was estimated for each sub-watershed in the BWC Basin Group using data compiled by the local Soil and Water Conservation Districts (SWCD) (1998) and information on the number of current construction stormwater authorizations (Tables 2 and 3).

Table 1. Estimates of percent land cover within the Cahaba and Black Warrior River Basins (ASWCC 1998).

Cataloging Unit	Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
Cahaba River	65%	3%	13%	1%	15%	1%	2%
Mulberry Fork	63%	3%	19%	6%	3%	1%	4%
Sipsey Fork	70%	1%	19%	2%	1%	3%	2%
Locust Fork	55%	8%	15%	3%	13%	1%	4%
Upper Black Warrior River	69%	2%	4%	6%	13%	1%	5%
Lower Black Warrior River	56%	7%	27%	0%	8%	1%	2%

Based on this information, 32 of 96 (33%) sub-watersheds were at risk to rural NPS impairment in the BWC Basin Group (Fig. 4). Thirteen (65%) of the sub-watersheds located within the Mulberry Fork of the Black Warrior River had a *moderate* or *high* potential for NPS impairment. Forestry (Fig. 5), sedimentation (Fig. 6), animal husbandry (Fig. 7), runoff from pasture (Fig. 8) and croplands (Fig. 9), and mining (Fig. 10) were all concerns within the CU. The primary NPS concerns within the Locust Fork CU were runoff from pasture and crop lands, forestry, sedimentation, animal husbandry, and mining.

The main NPS concerns within the Sipsey Fork CU were pasture, animal husbandry, mining, and forestry. NPS concerns within the U. Black Warrior R. CU were limited to sedimentation, mining, and forestry. Aquaculture was concentrated in the Blackbelt region of the L. Black Warrior R. (Fig. 11).

Over 40% of the sub-watersheds in the Cahaba River, Mulberry Fork, and Locust Fork CUs were at risk to impairment from urban and point sources (Table 3, Fig. 12).

Table 2. Number of sub-watersheds with moderate or high ratings for each NPS category

Cataloging Unit	Total # sub-watersheds	Overall Potential	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry Impaired (Reported)	Sediment
Cahaba River	17	2	0	0	1	5	1	2 (9)	8
Mulberry Fork	20	13	10	0	7	10	8	15 (17)	15
Sipsey Fork	13	4	6	0	1	7	4	4 (9)	1
Locust Fork	15	5	4	0	9	9	4	5 (15)	6
U. Black Warrior R.	12	4	0	0	0	0	6	4 (5)	9
L. Black Warrior R.	19	4	0	6	9	7	0	4 (17)	3

Table 3. Number of sub-watersheds with moderate or high ratings for each point source or urban category

Category	Total # sub-watersheds	Overall Potential	% Urban	Development	Septic tank failure
Cahaba River	17	7	8	7	5
Mulberry Fork	20	9	5	5	11
Sipsey Fork	13	2	1	1	5
Locust Fork	15	7	8	6	7
U. Black Warrior R.	12	3	4	4	1
L. Black Warrior R.	19	5	7	3	3

Historical data/studies: The Black Warrior and Cahaba River Basins are among the most well-studied river basins in Alabama (Fig. 13). Twenty-two water quality assessment projects and programs have been conducted since 1998 by ADEM, the U.S. Environmental Protection Agency (USEPA), the Geological Survey of Alabama (GSA), U.S. Geological Survey (USGS), University of Alabama (UA and UAB), Jefferson County, and Samford University (SU).

Data from these projects and programs include both monitored and evaluated assessments. Monitored assessments are based on chemical, physical, and/or biological data collected using commonly accepted and well-documented methods. Evaluated assessments are based on observed conditions, limited water quality data, water quality data older than 5 years, or estimated impacts from observed or suspected activities.

Fig. 3. CWA §303(d) list of impaired stream or reservoir segments in the BWC Basin Group.

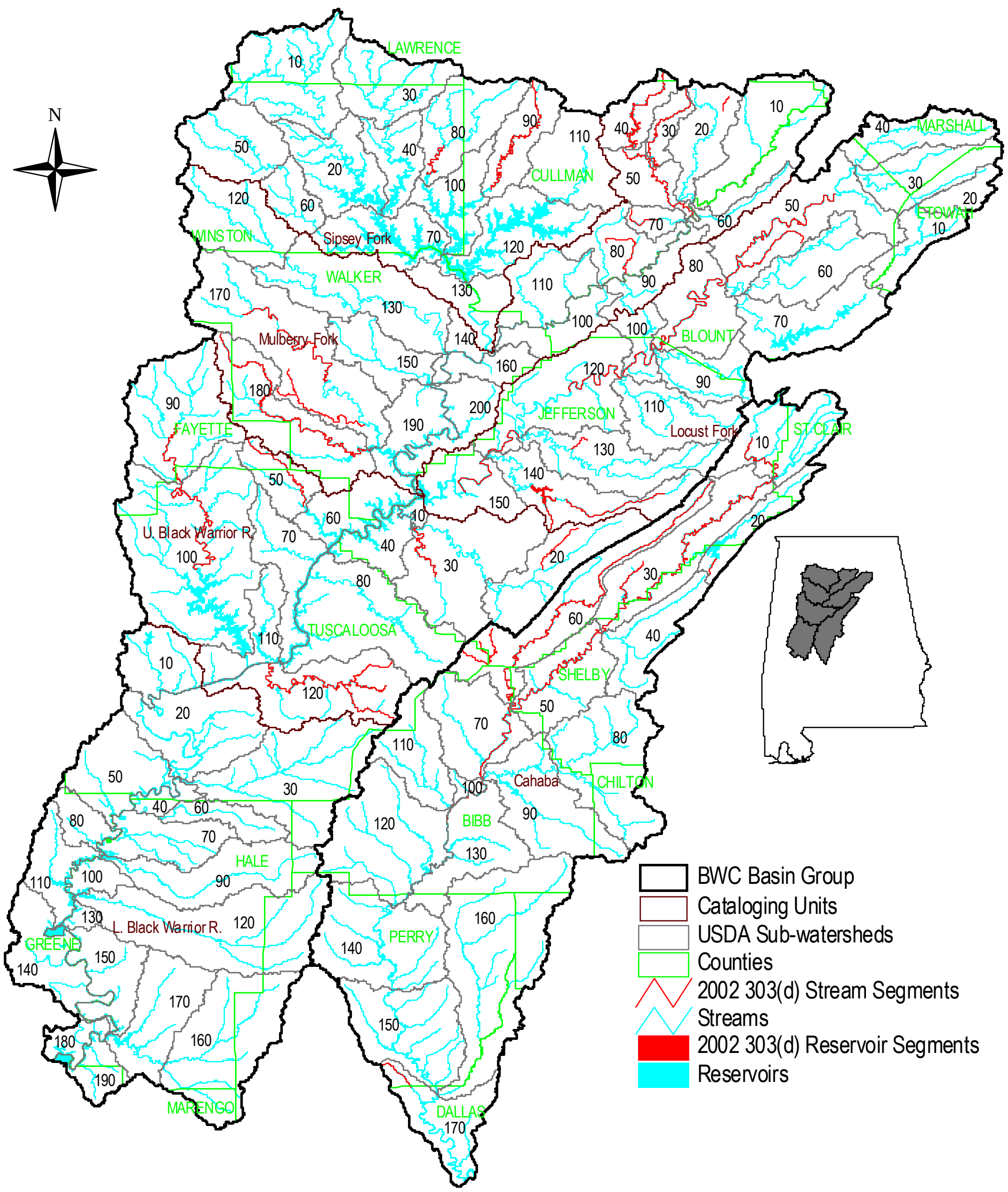

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Fig. 4. Estimated potential for impairment from rural nonpoint sources.

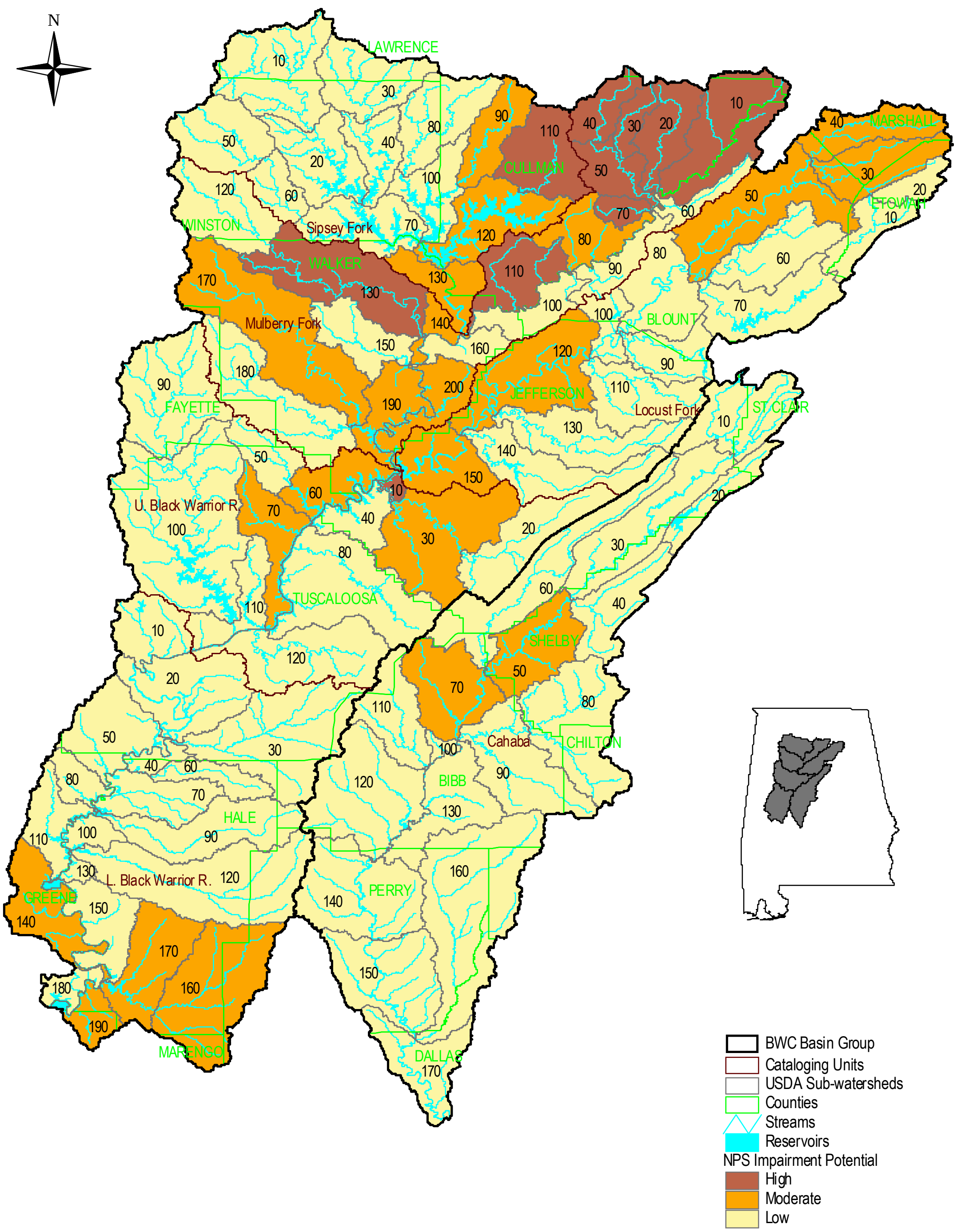

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Fig. 5. Estimated potential for impairment from forestry activities.

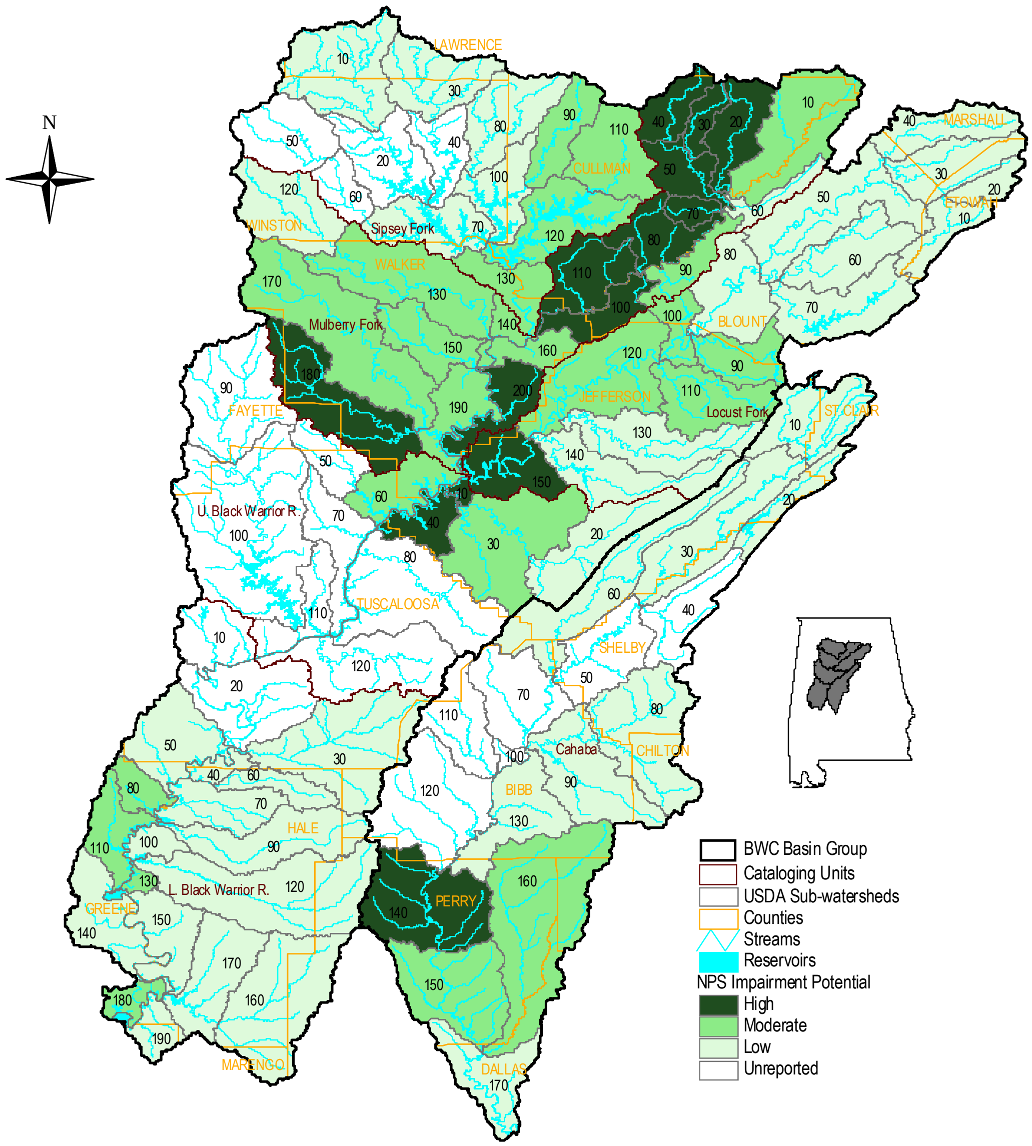

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Fig. 6. Estimated potential for impairment from sedimentation.

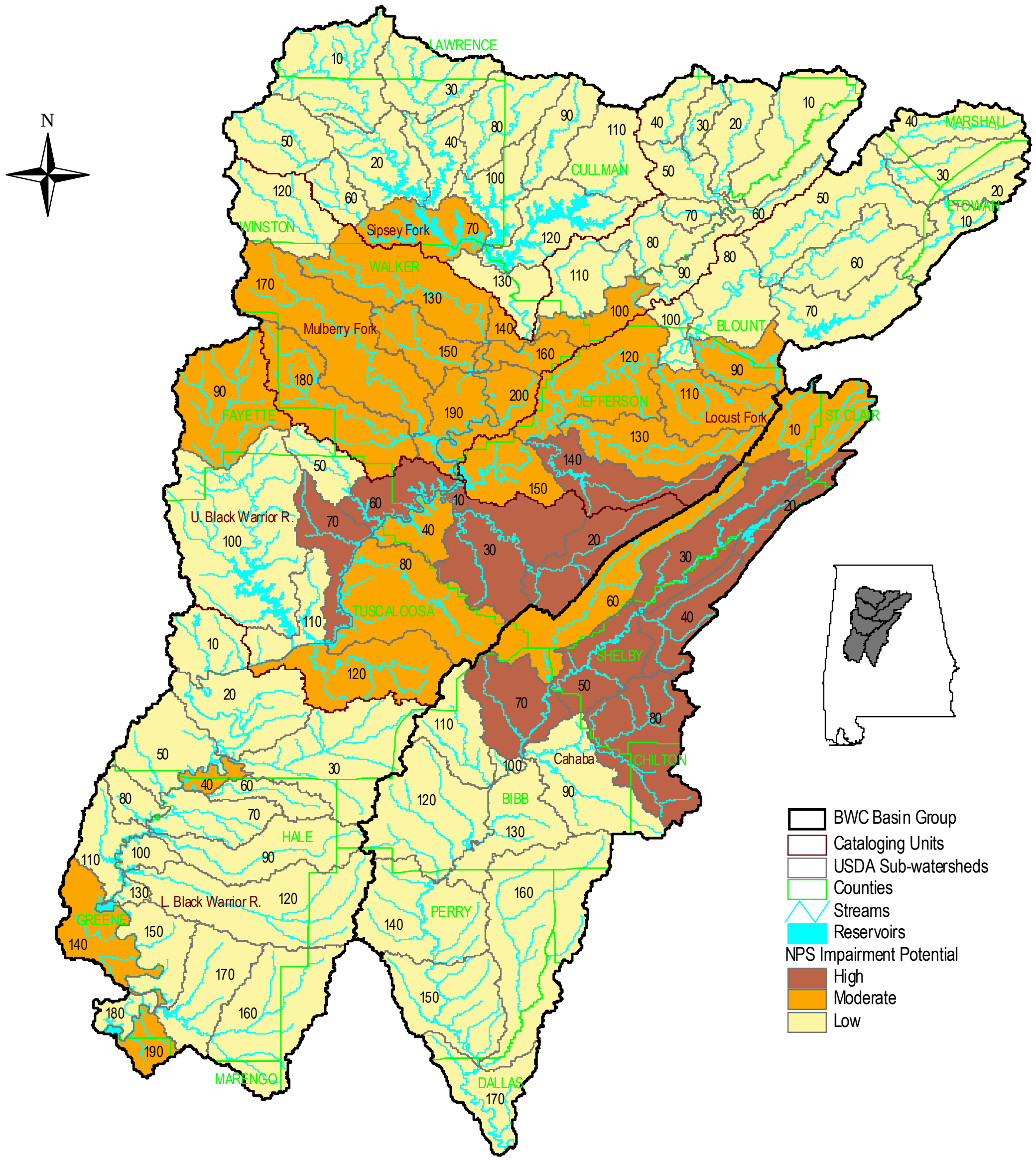

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Fig. 7. Estimated potential for impairment from animal husbandry.

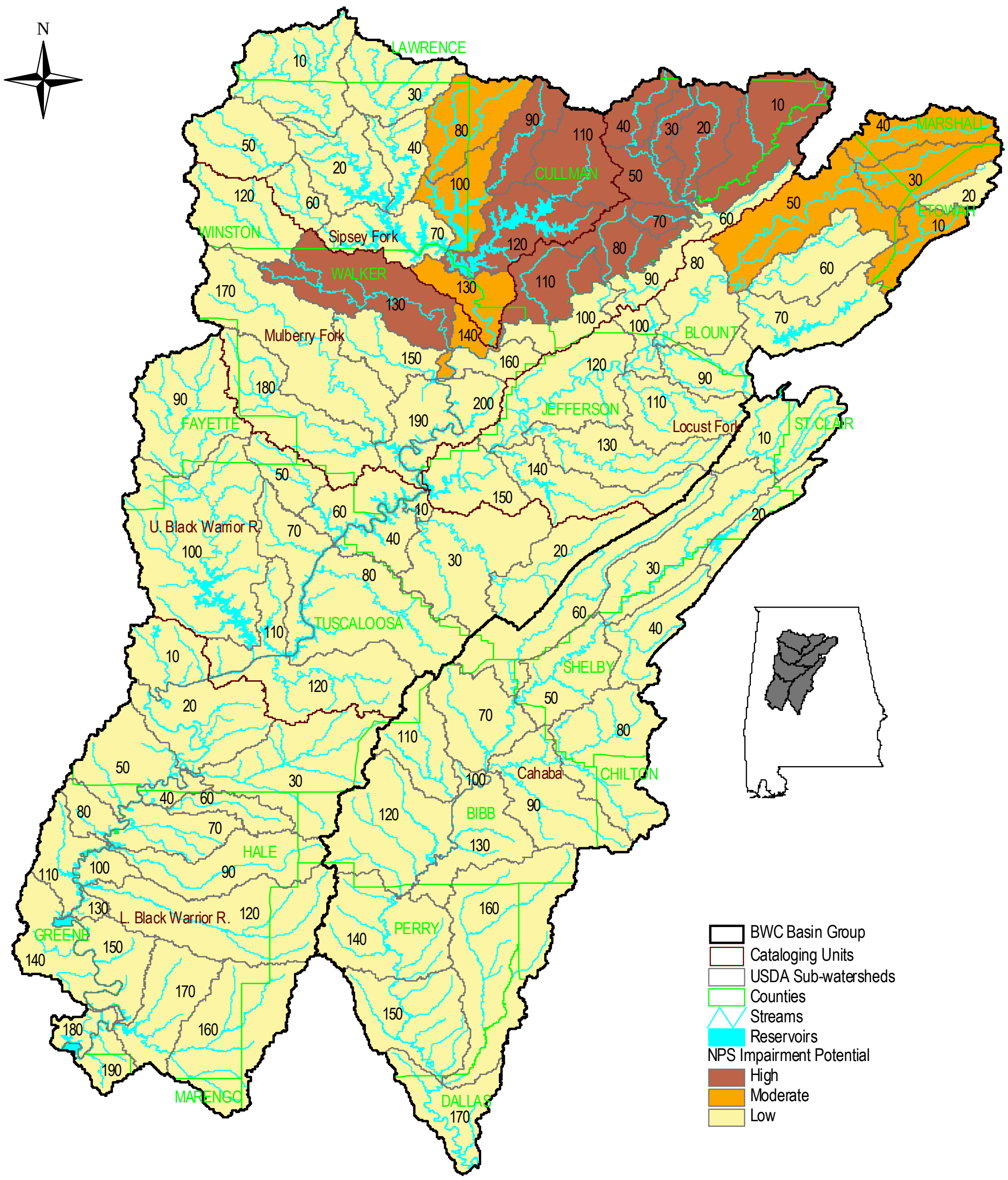

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Fig. 8. Estimated potential for impairment from pasture grazing.

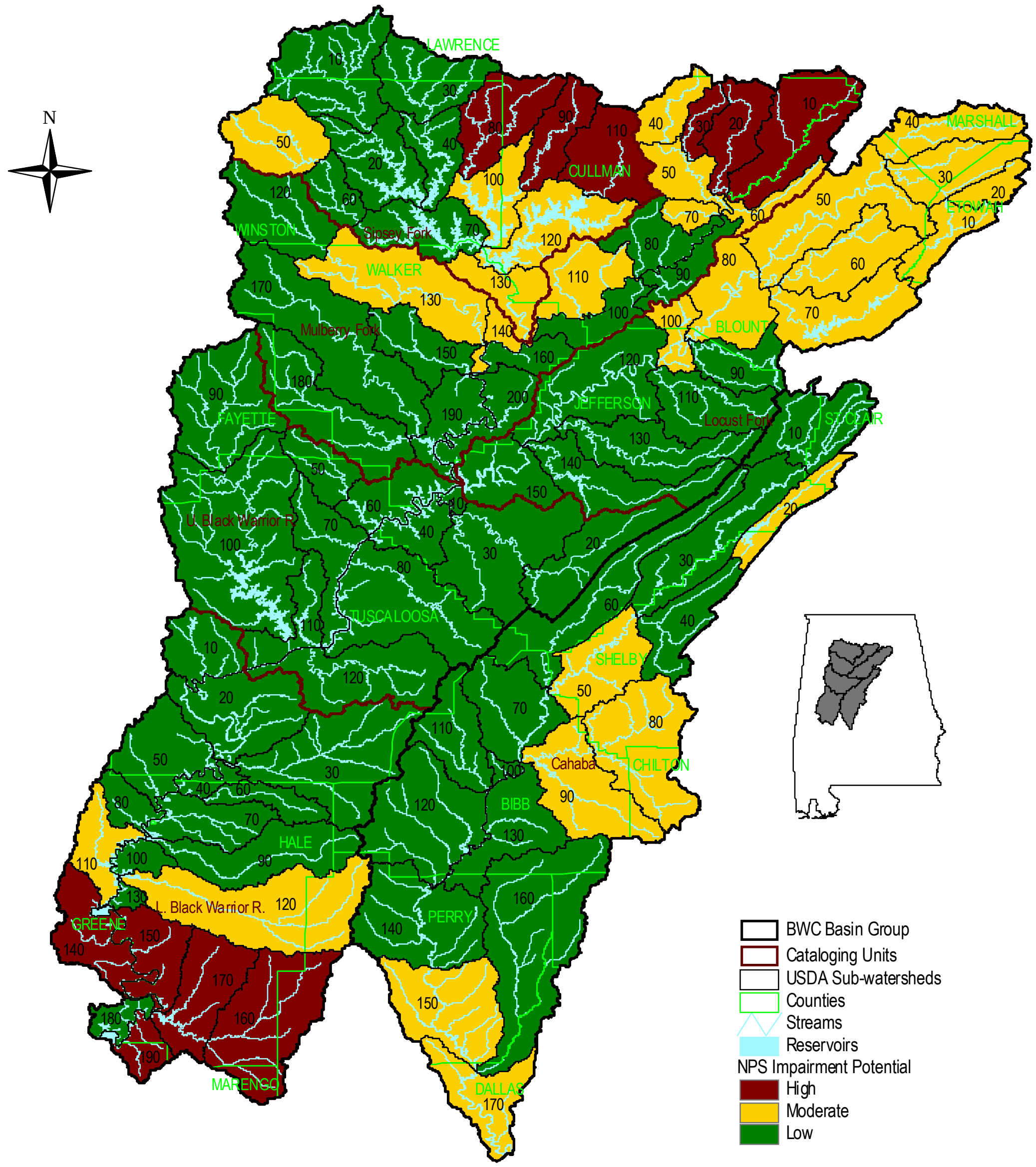

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Fig. 9. Estimated potential for impairment from crop runoff.

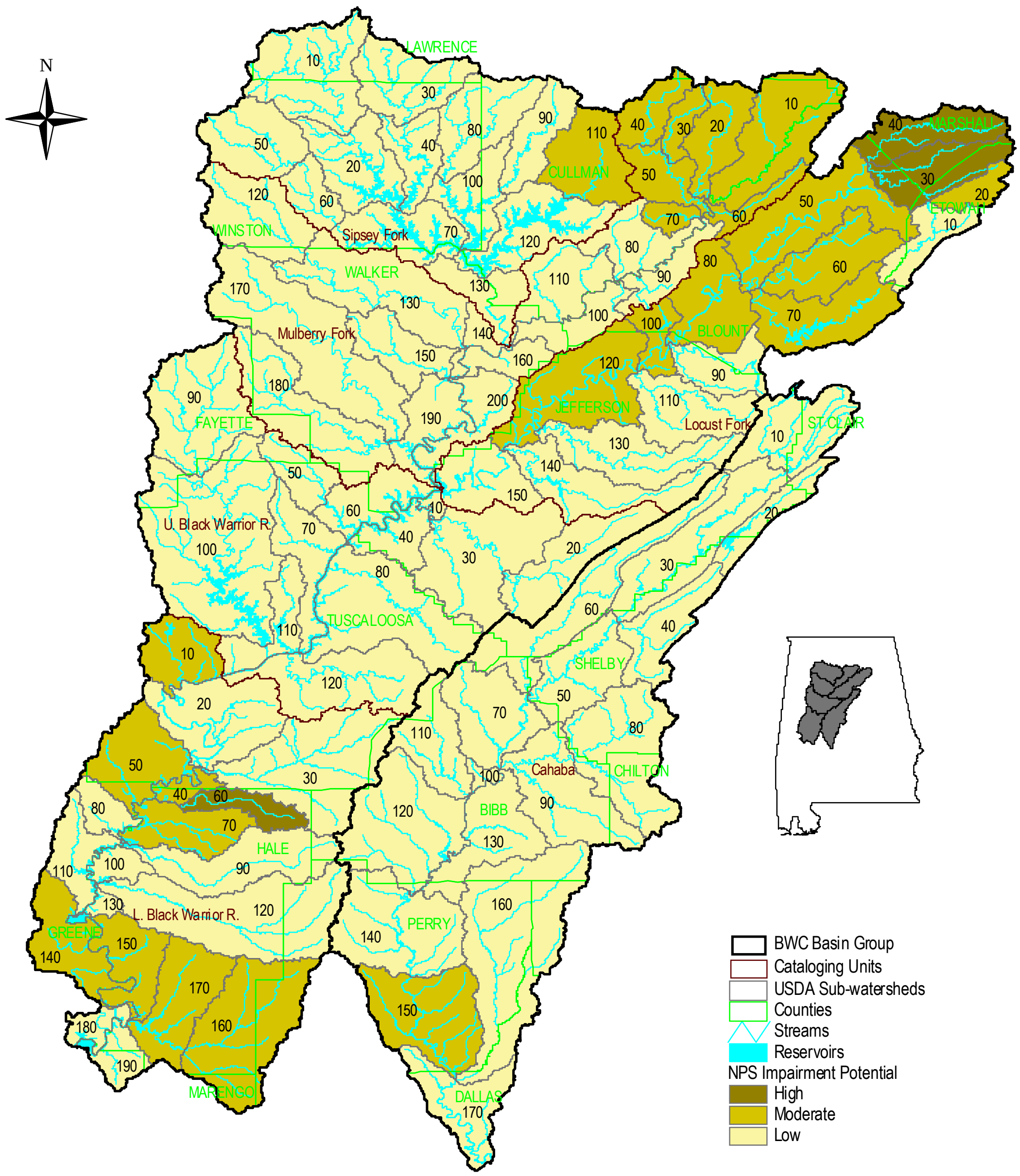

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Fig. 10. Estimated potential for impairment from mining activities.

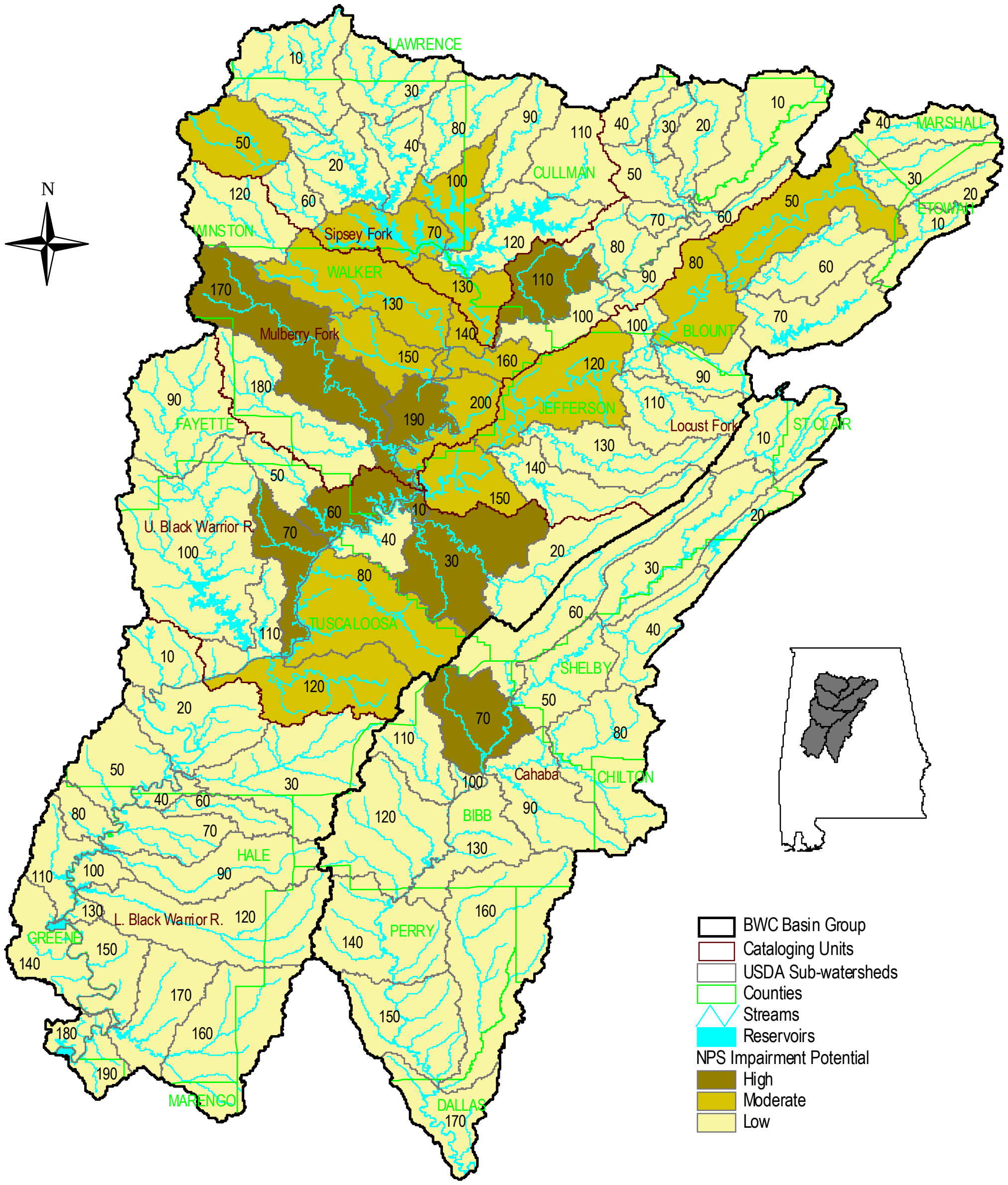

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Fig. 11. Estimated potential for impairment from aquaculture.

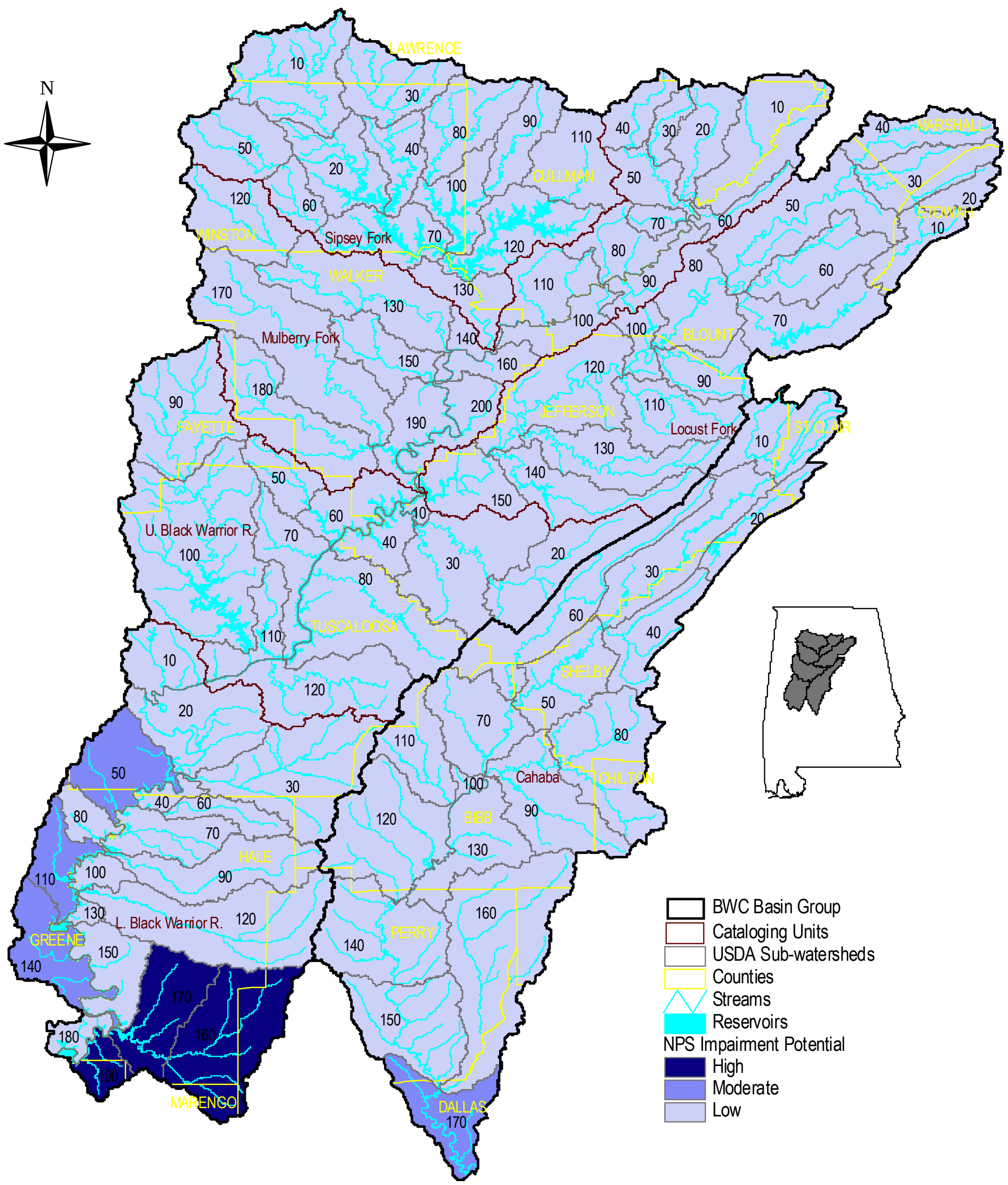

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Fig. 12. Estimated potential for impairment from urban sources.

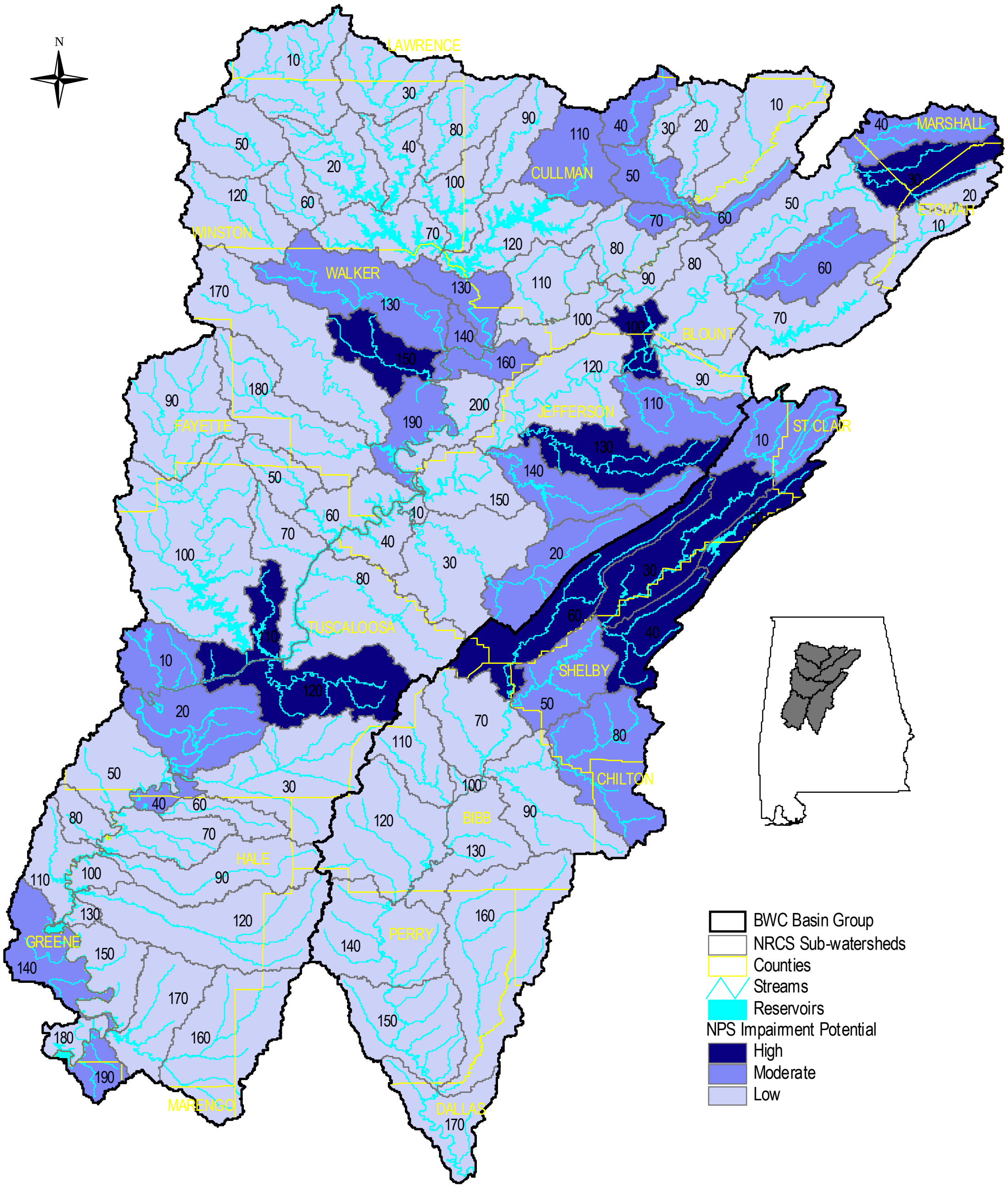

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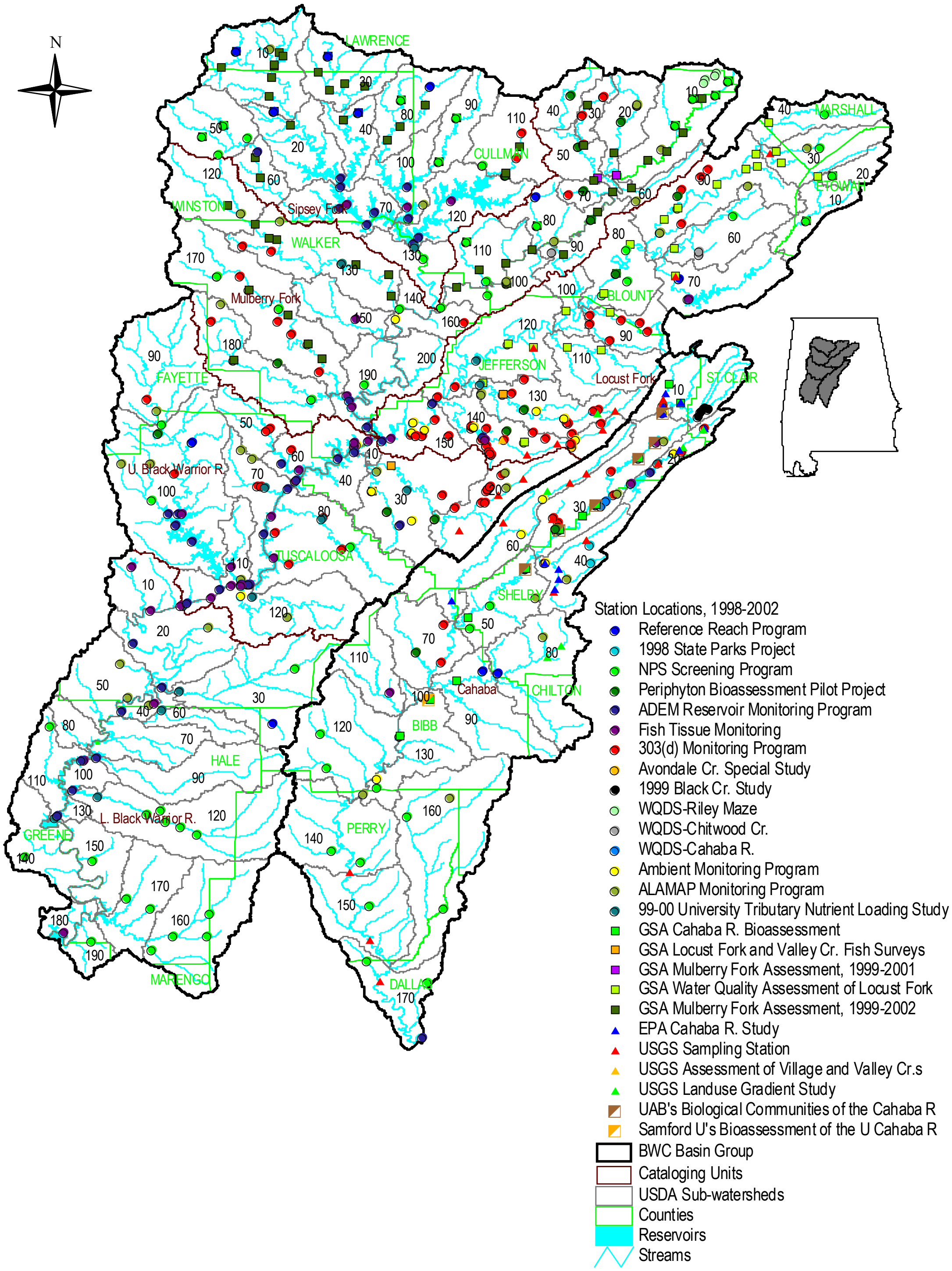
Fig. 13. Sampling locations within the BWC Basin Group, 1998-2002.



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Results of monitored assessments were used in this report to assess habitat, biological, and chemical conditions within a sub-watershed. Monitored assessments were conducted during 14 projects and programs (Table 4). Evaluated assessments were conducted in conjunction with ADEM's ALAMAP Program (Appendix F-7). Recent data and a summary of ADEM's Ecoregional Reference Reach, §303(d) Monitoring, Ambient Monitoring and ALAMAP Programs, ADEM's Periphyton Bioassessment Pilot Project, and the University Tributary Nutrient Loading Project are included in the appendices. Data from these programs and projects have not been published or reported in any other source. Summaries include lead agency, project objectives, data types collected, and applicable quality assurance manuals.

2002 NPS screening assessment: Forty-four sub-watersheds were selected for assessment during the screening assessment. Ten sub-watersheds containing CWA §303(d) stream segments were targeted for sampling to verify or document impaired biological conditions. Sub-watersheds were also targeted if the potential for impairment from nonpoint sources was estimated as *moderate* or high, or if recent (1998-2002) monitoring data were not available. In addition, 28 sub-watersheds assessed as impaired during the 1996 and 1997 basinwide screening assessments were monitored to evaluate trends in water quality, verify impairment, or to more accurately determine the source of impairment. Appendix F summarizes each of the sub-watersheds targeted during the 2002 NPS screening assessment. It also lists each of the sampling stations.

Sub-watershed assessments: Current and historical monitoring data collected by multiple agencies were combined to provide a comprehensive assessment of the BWC basin group (Fig. 13). These data included bioassessments and intensive water quality data that met programmatic requirements, such as well-documented procedures for sample collection and processing, data interpretation, and an established quality assurance-quality control program. ADEM's assessment of habitat and biological conditions are based on long-term data from ADEM's Ecoregional Reference Reach Program (ADEM 2004a). Assessment information obtained from GSA are based on long-term data collected and previously reported by GSA (O'Neil and Shepard 1997, Shepard et al., 1997, Shepard et al., 2001, Shepard et al. 2002). Appendices referenced in the summaries are located at the end of report.

Habitat and biological indicators of water quality have been assessed at 180 locations in 64 sub-watersheds since 1998. These data are summarized in Appendix G. ADEM conducted 127 macroinvertebrate assessments within the BWC basin group, 1998-2002. One hundred thirty-eight fish community Index of Biotic Integrity (IBI) assessments were conducted by ADEM and GSA. The overall condition for each station was rated as the lowest biological assessment result obtained. Thirty-four (19%) locations were assessed as *excellent*, *good*, or *good/fair*. Seventy-six (42%) stations were assessed as *fair* or *fair/poor* and 70 (39%) stations were assessed as *poor* or *very poor*. Two locations were assessed as *impaired*.

Table 4. Types of assessments and assessment guidelines for projects that have generated monitored assessment information.

Program/Project	Assessment Type[a]
Statewide	
ADEM's Ecoregional Reference Reach Program	H, C, B
ADEM's §303(d) Waterbody Monitoring Program	H, C, B
ADEM's Reservoir Monitoring Program	C, B
ADEM's Fish Tissue Monitoring Program	C
ADEM's State Park Assessment Project (ADEM 1999d)	H, C, B
ADEM's Ambient Monitoring Program	H, C, B
University Tributary Nutrient Project (ADEM 2000d)	C
USGS Landuse Gradient Study (data unavailable)	H, C, B
BWC	
ADEM's Periphyton Bioassessment Pilot Study (ADEM 2004d)	H, C, B
GSA's Assessment of Mulberry Fork, 1999-2002 (Shepard et al. 2001, Shepard et al. 2002)	H, B
USGS's Assessment of Water-Quality and Biological Conditions in Village and Valley Creeks	H, C, B
Cahaba River	
GSA's Cahaba River Bioassessment (O'Neil 2002)	H, B
USEPA's Biological and Water Quality Studies of the Cahaba River (Howard et al. 2002)	H, C, B
UAB's Assessment of the Cahaba River Using GIS (Angus et al. 1998)	B
1998 Cahaba River WQDS (ADEM 1999k)	H, C, B
Historical changes in the Ichthyofauna assemblages of the Upper Cahaba River in Alabama associated with extensive urban development in the watershed (Oronato et al. 2000)	B
Nutrient utilization and primary production during low flow conditions in the Cahaba River, Alabama (Blancher and Sklenar 1999)	C, B
Water quality conditions in the Cahaba River and likely pollutant sources (Pitt 2000b)	
Report on Fishes and Macroinvertebrates of the Upper Cahaba River (Howell and Davenport 2001)	B
Jefferson County's Cahaba River Water Quality Assessment Program	H, C, B
Periphyton Standing Crop in the Cahaba River, Alabama During Low-Flow Conditions, 2001 (TAI 2001)	H, B
Big Black Creek Water Quality Assessment, 1999-2000 (ADEM 2000e)	H, C, B
Locust Fork	
GSA's Water Quality Assessment of Locust Fork	C
2001 Chitwood Creek WQDS	H, C, B

a. H=habitat; B=Biological; C=chemical

Impaired sub-watersheds: A total of 41 priority sub-watersheds were identified within the BWC Basin Group (Table 6). Thirteen (32%) priority sub-watersheds were located within the Mulberry Fork CU . Sipsey Fork and the Lower Black Warrior River each contained 7 (17%) priority sub-watersheds. Six (14%) priority sub-watersheds were located in Locust Fork. The Cahaba River and Upper Black Warrior River each contained 4 (10%) priority sub-watersheds.

Sub-watershed summaries: A summary of information available for each of the priority sub-watersheds is provided. The summaries are organized into 6 sections by CU. Each summary discusses landuse, NPS impairment potential, assessments conducted within the sub-watershed, and the NPS priority rating based on available data. Appendices are located at the end of the report.

Fig. 14. 2002 NPS priority sub-watersheds and §303(d)-listed stream and reservoir segments. Overall results of bioassessments conducted 1998-2002 are also shown.

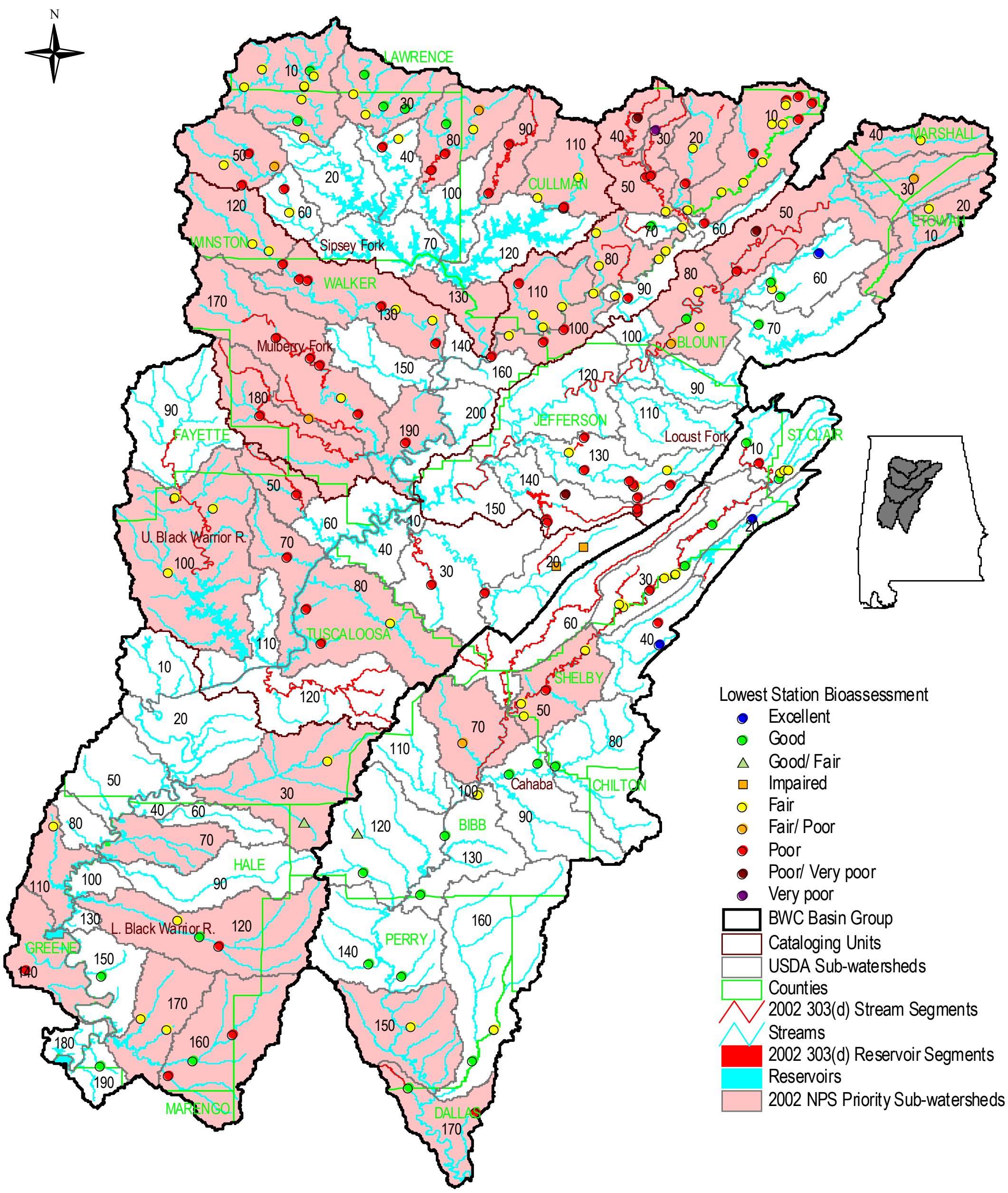

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Table 5. List of impaired sub-watersheds.

Sub-watershed		303(d)/ TMDL Stream[a]	Lowest Station Assessment	Suspected Cause(s)	Suspected nonpoint source(s)
Cahaba R (0315-0202)					
050	Cahaba R.		Poor	Sedimentation, Nutrient enrichment	Pasture grazing, Mining, Urban development
070	Cahaba R.		Fair/Poor	Sedimentation, Nutrient enrichment, OE/DO	Mining, Historical forestry
150	Cahaba R.		Fair	Sedimentation	Pasture grazing, Crop runoff, Forestry
170	Cahaba R.	TA	Poor	Pathogens, Sedimentation, Nutrient enrichment	Pasture grazing, Aquaculture, Septic tank failure, Streambank erosion
Mulberry Fork (0316-0109)					
010	Mulberry Fork		Poor	Sedimentation, Reduced flow, Unstable banks, Nutrient enrichment, OE/DO, Pathogens	Animal husbandry, Crop runoff, Pasture grazing, Forestry
020	Duck Cr.	TA	Poor	Reduced flow, sedimentation, DO/OE, Nutrient enrichment, Pathogens, Pesticides	Animal husbandry, Crop runoff, Pasture grazing, Forestry
030	Brindley Cr.	303(d)	Very poor	Sedimentation, OE/DO, Nutrient enrichment, Pathogens, pH, Reduced flow	Animal husbandry, Crop runoff, Pasture grazing, Forestry, Development
040	Eightmile Cr.	TA 303(d)	Fair	Pathogens, Sedimentation, Nutrient enrichment, OE/DO	WWTP, Urban runoff, Animal husbandry, Pasture grazing, Crop runoff, Forestry
050	Broglen R.	TA 303(d)	Poor	Sedimentation, Other habitat alteration OE/DO, Nutrient enrichment, Pathogens	WWTP, Urban runoff, Animal husbandry, Pasture grazing, Crop runoff, Forestry
080	Thacker Cr.	TA	Poor	Pathogens, Ammonia, Nutrient enrichment, OE/DO, Sedimentation, Other habitat alteration	Animal husbandry, Pasture grazing, Forestry
100	Sloan Cr.		Poor	OE/DO, Nutrient enrichment, Sedimentation	Forestry, Septic tank failure
110	Dorsey Cr.		Poor	Sedimentation, OE/DO, Nutrient enrichment	Animal husbandry, Pasture grazing, Mining, Forestry
120	Splunge Cr.		Fair	Sedimentation	Septic tank failure, Pasture grazing, Animal production, Forestry
130	Blackwater Cr.		Poor	Sedimentation, pH	Animal husbandry, Mining, Pasture grazing, Forestry, Septic tank failure
170	Lost Cr.	303(d)	Poor	Sedimentation, OE/DO, Metals, pH, Other habitat alteration	Mining, Forestry, Septic tank failure
180	Wolf Cr.		Poor	Sedimentation, Other habitat alteration, pH, OE/DO	Mining, Forestry
190	Baker Cr.		Poor	Sedimentation	Mining, Forestry, Septic tank failure

a. 303(d): currently on ADEM's 2002 §303(d) list of impaired waters; TA: approved TMDL

Table 5, cont.. List of impaired sub-watersheds.

Sub-watershed		303(d)/ TMDL Waterbody	Lowest Station Assessment	Suspected Cause(s)	Suspected nonpoint source(s)
Sipsey Fork (0316-0110)					
010	Sipsey Fork		Fair	Sedimentation	Unknown
030	Upper Brushy Cr.		Poor	Reason unclear	Animal husbandry, Pasture grazing
050	Right Fork Clear Cr.		Poor	Sedimentation, historic water quality problems	Pasture grazing, Mining
080	U. Rock Cr.	TA	Poor	Sedimentation, Pathogens, OE/DO	Pasture grazing, Animal husbandry
090	Crooked Cr.	TA	Poor	Sedimentation, Pathogens, OE/DO, Ammonia, Nutrient enrichment	Animal husbandry, Pasture grazing, Forestry
110	U. Ryan Cr.		Poor	Sedimentation, Nutrient enrichment, Pathogens, Flow modification	Animal husbandry, crop runoff, Pasture grazing, Forestry, Urban, Development
130	Sipsey Fork		No recent data; 1997 NPS priority	Sedimentation, Nutrient enrichment	Animal husbandry, Pasture grazing, Mining, Forestry, Septic tank failure
Locust Fork (0316-0111)					
010	U. Locust Fork		No recent data; 1997 NPS priority	OE/DO, pH, Sedimentation	Animal husbandry, Pasture grazing, Mining, Septic tank failure
020	Bristows Cr.		Fair	Nutrient enrichment	Crop runoff, Pasture grazing, Septic tank failure
030	Clear Cr.		Fair/poor	Sedimentation, Nutrient enrichment	Animal husbandry, Crop runoff, Pasture grazing, Urban, Septic tank failure, Development
040	Slab Cr.		Fair	Sedimentation, Nutrient enrichment	Animal husbandry, Row crops, Pasture runoff, Urban, Septic tank failure
050	Middle Locust Fork	TA 303(d)	Poor/Very poor	Nutrient enrichment, Ammonia, OE/DO, Pathogens, Sedimentation, Other habitat alteration	Animal husbandry, Crop runoff, Pasture grazing, Mining, Septic tank failure, WWTP
080	Sugar Cr.		Fair/poor	Sedimentation, Ammonia	Crop runoff, Pasture grazing, Mining
Upper Black Warrior R. (0316-0112)					
050	Upper Big Yellow Cr.	303(d)	Poor	Metals, OE/DO, Nutrient enrichment	Mining
070	Blue Cr.		Poor	Sedimentation, Nutrient enrichment	Mining
080	Davis Cr.		Poor	Sedimentation, Metals	Mining, Forestry
100	Lower North R.	303(d)	Fair	Nutrient enrichment, Siltation, Other habitat alteration, Pathogens	Mining, Pasture grazing, Animal husbandry, Forestry, Crop runoff
120	Hurricane Cr.	303(d)	No recent data; 1997 NPS priority	Metals, Pathogens, Nutrient enrichment, Sedimentation, Other habitat alteration, Turbidity	Mining, Land development

a. 303(d): currently on ADEM’s 2002 §303(d) list of impaired waters; TA: approved TMDL

Table 5. List of impaired sub-watersheds.

Sub-watershed		303(d)/ TMDL Waterbody	Lowest Station Assessment	Suspected Cause(s)	Suspected nonpoint source(s)
Lower Black Warrior R. (0316-0113)					
030	Big Sandy Cr.		Fair	Sedimentation, Habitat degradation	Animal husbandry, Forestry
070	Gabriel Cr.		No recent data; 1997 NPS priority	Sedimentation, Habitat degradation	Crop runoff, Animal husbandry, Forestry
110	Minter Cr.		Fair	Sedimentation, Nutrient enrichment	Animal husbandry, Aquaculture, Pasture grazing, Forestry
120	Big Brush Cr.		Poor	Sedimentation, Habitat degradation, Nutrient enrichment, Pathogens	Pasture grazing, Aquaculture, Crop runoff, Urban
140	Dollarhide Cr.		Poor	Sedimentation, DO/OE, Nutrient enrichment	Aquaculture, Crop runoff, Pasture grazing, Urban, Septic tank failure
160	B. Prairie Cr.		Poor	Sedimentation, Nutrient enrichment, Pathogens	Aquaculture, Row crops, Pasture runoff , Point sources
170	L. Prairie Cr.		Fair	Sedimentation, Habitat alteration, Nutrient enrichment, OE/DO	Aquaculture, Row crops, Pasture runoff

a. 303(d): currently on ADEM’s 2002 §303(d) list of impaired waters; TA: approved TMDL

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ASSESSMENT SUMMARIES OF IMPAIRED SUB-WATERSHEDS

Cahaba River CU (0315-0202)

The Cahaba is a major tributary of the Alabama River containing 17 sub-watersheds and draining approximately 1,824 mi^2 in 8 counties (ADEM 2003b). Stretching for 191 miles, the Cahaba River is Alabama's longest free-flowing river. Nationwide, the Cahaba River has the most fish species per mile of any river of its size (TNC 2002). It supports 10 fish, mussel, and snail species currently listed as threatened or endangered (Federal Register 1998). The Upper Cahaba River is located within the Ridge and Valley (67) Ecoregion (Griffith et al. 2001), with its headwaters north and east of Birmingham. The Lower Cahaba River basin crosses the Fall Line and is located in the Southeastern Plains (65) Ecoregion (Griffith et al. 2001). The river flows through Birmingham, Alabama's largest city, and is a public water supply to approximately one-fourth of the State's population.

Landuse: Sixteen miles of the Little Cahaba River and 162 miles of the Cahaba River are classified as Outstanding Alabama Waters (ADEM 2003e). A 13.3 mi. segment of the Upper Cahaba River is designated Public Water Supply. Four segments of the Cahaba River, draining 1,027 mi^2, are currently on Alabama's 2002 §303(d) list of impaired waters for nutrient enrichment, siltation, and pathogens (Appendix C-2). Three segments have been listed for "other habitat alteration", which implies impaired aquatic communities caused by degraded habitat quality. In the Cahaba River, the cumulative stresses of excessive nutrients and sedimentation have contributed to impacts to threatened and endangered species. ADEM is currently developing siltation, pathogen, and nutrient targets to determine the Total Maximum Daily Load for these pollutants within the Cahaba River (ADEM 2003d, ADEM 2003f). Segments of Lee Branch, Patton Creek, and Shades Creek are also listed as impaired (Appendix C-2). Total maximum daily loads (TMDLs) of pathogens have been developed and approved for segments of Cooley Creek, Mill Creek, Mud Creek, Shades Creek, and Dry Creek (Appendix C-1).

Percent land cover estimated by local SWCD (ASWCC 1998)

Forest	**Row crop**	**Pasture**	**Mining**	**Urban**	**Open Water**	**Other**
65%	3%	13%	1%	15%	1%	2%

NPS impairment potential: There was a *moderate* potential for NPS impairment in 2 sub-watersheds. Pasture grazing, forestry, and sedimentation were the NPS concerns in the CU. There was a *moderate* or *high* potential for impairment from urban sources within 7 sub-watersheds. Sedimentation from land development was also a concern (Appendix I)

Number of sub-watersheds with (M)oderate or (H)igh ratings for each nonpoint source category (Appendix D).

Category	Overall Potential	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry (11 reported)	Sediment
Moderate	2	0	1	1	6	0	2	2
High	0	0	0	0	0	1	1	6

Number of sub-watersheds with (M)oderate or (H)igh ratings for each point source category (Appendix D).

Category	Overall Potential	% Urban	Development	Septic tank failure
Moderate	3	2	2	4
High	4	6	5	1

Historical data/studies: The majority of assessments conducted within the Cahaba River CU were from the 15 projects and programs and listed below. The most recent field studies by EPA Region IV in 2002 verified that the Cahaba River continues to exhibit numerous impairments of its aquatic life use (O'Neil 2002, Howard et al. 2002). These results have been supported by extreme diurnal swings of dissolved oxygen concentrations in the lower parts of the Cahaba River where nuisance growths of periphyton have been observed during low flow. Causes have been attributed to siltation (embeddedness and bed load) from urbanized areas and nutrient/eutrophication from urban runoff and municipal WWTPs (O'Neil 2002, USEPA 2003). Excessive sedimentation has been a primary factor in habitat degradation within Cahaba River (Howard et al. 2002, O'Neil 2002, Hartfield 2002). Two methods of siltation loading have been observed in the basin: acute sediment loadings are discrete, short events occurring during high flows; chronic sediment loadings describe long-term channel instability caused by magnified stream flows from impervious surface runoff. The worst siltation impacts were observed at Cahaba River at Bains Bridge, Little Shades Creek, Patton Creek, and at bridge crossings throughout the basin.

Fecal coliform samples collected 1999 through 2003 by ADEM and Jefferson County indicated very high pathogen concentrations in certain segments after rain events and during high flows. Pathogen sources include urban runoff, failing sanitary sewers, and failing septic systems (ADEM 2003b).

2002 NPS screening assessment: Seven sub-watersheds were targeted for assessment during the 2002 NPS Screening Assessment because they were recommended as NPS priority sub-watersheds in 1997, had a *moderate* potential for impairment from nonpoint sources, were on ADEM's 2002 §303(d) list of impaired waters, or recent data were unavailable. Appendix F lists the 12 stations assessed.

Sub-watershed assessments: Current and historical assessments were combined to provide a comprehensive assessment. Habitat, chemical/physical, and biological conditions were assessed in 15 sub-watersheds (Appendix G). Habitat quality was assessed as *excellent* or *good* at 26 stations and *fair* at 2 stations. Macroinvertebrate assessments were conducted at 28 stations. Results of these assessments indicated the macroinvertebrate community to be in *excellent* or *good* condition at 17 (61%) stations and *fair* or *poor* at 3 stations (39%). Fish communities were assessed as *good* at 13 stations, *fair or fair/poor* at 3 stations, and *poor* at 4 stations.

Types of assessments and assessment guidelines for projects that have generated monitored assessment information.

Project	Assessment Type[a]
ADEM's §303(d) Waterbody Monitoring Program[b]	H, C, B
ADEM's Reservoir Monitoring Program	C, B
ADEM's Fish Tissue Monitoring Program	C
ADEM's State Park Assessment Project (ADEM 1999d)	H, C, B
ADEM's Ambient Monitoring Program[b]	H, C, B
University Tributary Nutrient Project[b] (ADEM 2000d)	C
ADEM's Periphyton Bioassessment Pilot Study[b] (ADEM 2004d)	H, C, B
GSA's Cahaba River Bioassessment (O'Neil 2002)	H, B
USEPA's Biological and Water Quality Studies of the Cahaba River (Howard et al. 2002)	H, C, B
UAB's Assessment of the Cahaba River Using GIS (Angus et al. 1998)	B
1998 Cahaba River WQDS (ADEM 1999k)	H, C, B
Nutrient utilization and primary production during low flow conditions in the Cahaba River, Alabama (Blancher and Sklenar 1999)	C
Water quality conditions in the Cahaba River and likely pollutant sources (Pitt 2000b)	C
Report on Fishes and Macroinvertebrates of the Upper Cahaba River (Howell and Davenport 2001)	B
Jefferson County's Cahaba River Water Quality Assessment Program	H, C, B
Periphyton standing crop in the Cahaba River, Alabama, during low-flow conditions, 2001 (TAI 2001)	H, B
Big Black Creek Water Quality Assessment, 1999-2000 (ADEM 2000e)	H, C, B

[a]H=habitat; C=chemical/physical; B=biological [b]Data and summary of project included in Appendices

Overall condition for each station was rated as the lowest assessment result obtained (Fig. 13, Appendix G). Eighteen stations (47%) were assessed as *excellent* or *good*. Fourteen (37%) stations were assessed as *fair*. Six (16%) stations were assessed as *poor*.

Sub-watershed status: Four sub-watersheds were assessed as impaired (Fig. 13, Table 6). A summary of the information available for each of these is provided in the following section. Each summary discusses landuse, nonpoint source impairment potential, assessments conducted within the sub-watershed, and nonpoint source priority status based on available data. Appendices are located at the end of the report.

List of impaired sub-watersheds (a. TA: approved TMDL).

Sub-watershed	303(d)/ TMDL Stream[a]	Lowest Station Assessment	Suspected Cause(s)	Suspected nonpoint source(s)
Cahaba R (0315-0202)				
050 Cahaba R.		Poor	Sedimentation, Nutrient enrichment	Pasture grazing, Mining, Urban development
070 Cahaba R.		Fair/Poor	Sedimentation, Nutrient enrichment, OE/DO	Mining, Historical forestry
150 Cahaba R.		Fair	Sedimentation	Pasture grazing, Crop runoff, Forestry
170 Cahaba R.	TA	Poor	Pathogens, Sedimentation, Nutrient enrichment	Pasture grazing, Aquaculture, Septic tank failure, Streambank erosion

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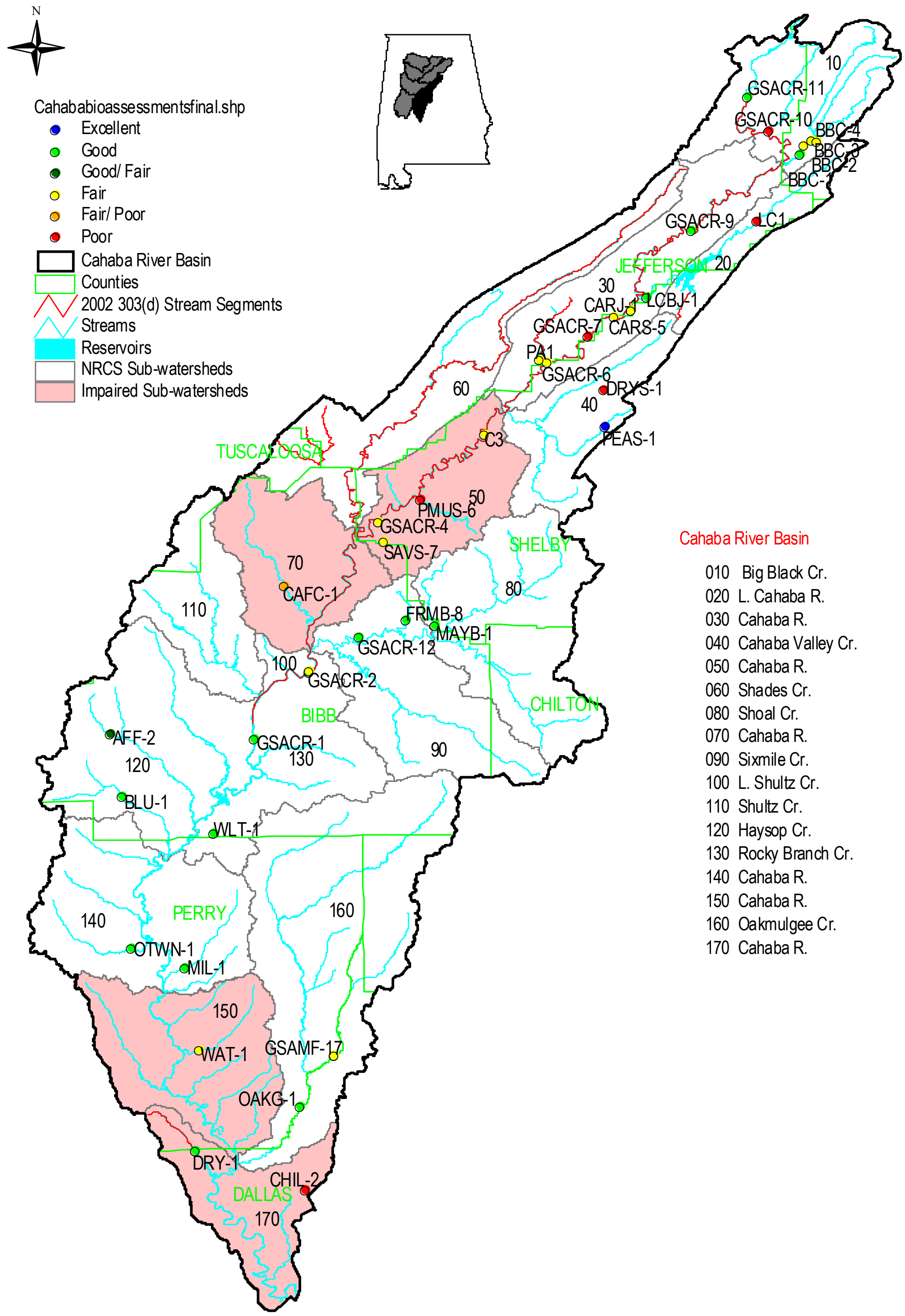
Fig. 15. Impaired sub-watersheds and §303(d)-listed stream and reservoir segments. Overall results of bioassessments conducted 1998-2002 are also shown.



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Sub-Watershed: Cahaba River NRCS Sub-Watershed Number 050

Landuse: The Cahaba River sub-watershed drains approximately 86 mi^2 in Shelby, Bibb, and Jefferson Counties. Land cover was mainly forest, mixed with pasture lands and urban areas. This segment of the Cahaba River is designated as an Outstanding Alabama Water. A total of 17 construction/stormwater authorizations, 5 mining, and 1 semi-public/private NPDES permits have been issued within the sub-watershed (Appendix C).

Percent land cover estimated by local SWCD (Appendix A, ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
53%	1%	19%	4%	19%	3%	2%

NPS impairment potential: Impairment from urban runoff and development was the main concern within the sub-watershed (Appendix D), with developing urban lands contributing an estimated 38.2 tons/ac/yr (88%) to the total annual sediment load (Appendix I). However, mining was prevalent within the watershed of the site established on Piney Murry Creek. Sand and gravel pits and gullies contributed approximately 2.7 tons/ac/yr and 1.6 tons/ac/yr, respectively, to the annual sediment load within the sub-watershed. Pasture runoff was also a concern.

Ratings for each NPS category based on values estimated during the SWCD sub-watershed assessment.

Category	Overall Potential	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Value	12	0.01 AU/ac	0.00%	1%	19%	4%	ur	43.4 tons/ac/yr
NPS Potential	M	L	L	L	M	M	ur	H
Appendix	D	H	H	A	A	A	I	I

Assessments: Piney Murry Creek and Savage Creek were monitored during the 2002 NPS screening assessment (Appendix F). Appendix E summarizes the locations monitored and evaluated throughout the sub-watershed.

<u>Beaverdam Creek</u>: At CA01U3-29, Beaverdam Creek is a small, shaded riffle-run stream located in the Southern Limestone/Dolomite Valleys and Low Rolling Hills (67f) subecoregion (Appendix T-1). Bottom substrates were a mixture of cobble, gravel, and sand. Results of water quality sampling did not detect water quality impairment (Appendix T-2).

Assessment stations located within the sub-watershed since 1997. Descriptions provided in Appendix E-1.

Station	Assessment Type	Date	Location	Area (mi^2)	Classification
C3 EPACR-7 CAH-2 GSACR-5 SU-9 UAB-15	Habitat, Biological, Chemical	1974-1996, 2002	Cahaba R. west of Helena at Shelby CR 52	335	OAW
GSACR-4	Habitat, Biological,	2002	Cahaba R. off of Shelby CR 251	367	OAW
PMUS-6	Habitat, Biological, Chemical	2002	Piney Murry Cr. at Shelby CR 270	14	F&W
SAVS-7	Habitat, Biological, Chemical	2002	Savage Cr. at Shelby CR 10	8	F&W
CA01U3-29	Habitat, Chemical	1999	Beaverdam Cr. approximately 1/8 mi. west of Shelby CR 17 nr mouth of Dry Cr	8	F&W

Piney Murry Creek: At PMUS-6, Piney Murry Creek is a riffle-run stream located in the Southern Sandstone Ridges (67h) subecoregion (Appendix J). Habitat condition was assessed as *excellent* for this stream type. Eight EPT families were collected at the site, indicating the macroinvertebrate community to be in *fair* condition (Appendix K). Conductivity, alkalinity, hardness, and nitrate+nitrite-nitrogen were above background levels in May of 2002 (Appendix M).

Savage Creek: At SAVS-7, Savage Creek is a riffle-run stream located in the Southern Sandstone Ridges (67h) subecoregion (Appendix J). Habitat condition was assessed as *good* for this stream type. However, sediment deposition, primarily silt, was noted to be a problem. Nine EPT families were collected at the site, indicating the macroinvertebrate community to be in *good* condition (Table 22a). Alkalinity and hardness were above background levels in May of 2002 (Appendix M).

Cahaba River: At GSACR-5, Cahaba River is a riffle-run stream characterized by bedrock and cobble riffles and gravel, cobble, and rubble runs (O'Neil 2002). Pools were a mixture of sand, silt, and deposited organic material. Total taxa richness and darter species was exceptional, but the total omnivores and herbivores was high, signifying an unbalanced fish community. Overall biological condition was assessed as *fair* (O'Neil 2002, Appendix G).

This reach (EPACR-7) was extensively monitored during EPA's Biological and Water Quality Studies, March/April, July, and September, 2002 (Howard et al. 2002). Sedimentation and nutrient enrichment were found to impact the biological communities at the site.

Data were collected at this reach (C-3) in conjunction with ADEM's §303(d) monitoring program, January of 2002 through April of 2003 (Appendix P-3). Mean concentrations of total phosphorus, dissolved reactive phosphorus, and nitrate+nitrite-nitrogen were 5-16X least-impaired ecoregional reference conditions. The mean hardness was 104.4 mg/L. Organic nitrogen (TKN), conductivity, total dissolved solids, and total suspended solids were periodically elevated. Fecal coliform concentrations were ≥1,000 colonies/100 mL during May of 2002 and April of 2003. A WWTP is upstream of the site and a sewage smell in the sediments was observed. Similar results were obtained during ADEM's Ambient Monitoring Program from June of 2000 through August of 2002 (Appendix R).

Intensive water quality sampling conducted during ADEM's Ambient Monitoring Program on the Cahaba River at C3 indicated elevated nutrient concentrations and periodically elevated total suspended solid concentrations (Appendix R).

At GSACR-4, Cahaba River is a riffle-run stream located in the Southern Sandstone Ridges (Appendix E). The reach was dominated by cobble and bedrock runs. Riffle habitat was less available, and characterized by cobble, gravel, and sand. Pools were sand-covered bedrock. The fish community was assessed as *fair* at this location. (O'Neil 2002, Appendix G).

Sub-watershed status: Biological conditions were impaired at Piney Murry Creek, Savage Creek, and the Cahaba River (Appendix G). Habitat quality at Savage Creek and the Cahaba River were affected by sedimentation. SWCD estimates also indicated mining and pasture runoff to be potential sources of impairment within the sub-watershed. Elevated conductivities at Piney Murry and Savage Creek may be caused by mining within the sub-watershed. Biological conditions at Cahaba River locations were impacted by sedimentation and nutrient enrichment. SWCD landuse estimates indicate the impairment to be from urban sources.

Sub-Watershed: Cahaba River NRCS Sub-Watershed Number 070

***Landuse**:* The Cahaba River sub-watershed drains approximately 93 mi^2 in Bibb, Shelby, and Tuscaloosa Counties. Landuse within the sub-watershed was primarily forest mixed with mining. This segment of the Cahaba River is designated as an Outstanding Alabama Water. Seven current construction/stormwater authorizations and 5 mining NPDES permits have been issued in the sub-watershed (Appendix C).

Percent land cover estimated by local SWCD (Appendix A, ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
75%	0%	5%	15%	5%	0%	0%

NPS impairment potential: Overall potential for impairment from nonpoint sources was *moderate*. The nonpoint source categories of primary concern were mining and sedimentation. Mining contributed 87% of the total sediment load estimated for the sub-watershed. Watershed reconnaissance also indicated historical forest harvesting to be a potential source of sediment. Cahaba River was given a 3rd priority sub-watershed rating by the SWCD for resource concerns listed in Appendix I. Potential for impairment from urban sources was estimated as *low* (Appendix D).

Ratings for each NPS category based on values estimated during the SWCD sub-watershed assessment.

Category	Overall Potential	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Value	14	0.02 AU/ac	0.00%	0%	5%	15%	ur	31.0 tons/ac/yr
NPS Potential	M	L	L	L	L	H	ur	H
Appendix	D	H	H	A	A	A	I	I

Assessments: An assessment was not conducted within the sub-watershed during the 2002 NPS screening assessment (Appendix F). Assessments of Caffee Creek, Cane Creek, and the Cahaba River were conducted during §303(d) Monitoring Program (Appendix E). Caffee Creek was also assessed during ADEM's Periphyton Bioassessment Pilot Project (Appendix E).

Assessment stations located within the sub-watershed. Descriptions provided in Appendix E-1.

Station	Assessment Type	Date	Location	Area (mi^2)	Classification
CAFC-1	Chemical, Habitat, Biological	2002	Caffee Cr. at Bibb CR 24	14	F&W
CNC-1	Chemical	2002	Cane Cr. at Bibb CR 21	12	F&W
CABB-2	Chemical	2002	Cahaba R. at Jefferson CR 24	593	OAW

Caffee Creek: At CAFC-1, Caffee Creek is a small, sand-bottomed stream located in the Southern Sandstone Ridges (67h) subecoregion (Appendix P-1). In May of 2002, habitat quality was assessed as *excellent* for this stream type although sediment deposition and embeddedness were noted at the site. Twelve EPT families were collected at the reach, indicating the macroinvertebrate community to be in good condition (Appendix P-2). The fish community was assessed as fair/poor (Appendix P-2). Intensive water quality data collected from January through August of 2002 showed periodically elevated nutrient concentrations (TP, NO_3+NO_2-N, NH_3-N, and TKN), conductivity, and hardness values (Appendix P-3).

Cane Creek: Cane Creek is located within the Southern Sandstone Ridges (67h) subecoregion (Appendix E). Intensive water quality data were collected from Cane Creek at CNC-1, May through September of 1999 (Appendix P-3). Dissolved oxygen concentrations were <5.0 mg/L during 2 (40%) of 5 sampling events. Total Kjeldhal nitrogen were elevated during 2 (40%) of 5 sampling events. Fecal coliform counts were 820 colonies/100mL during the June 1999 sampling event.

Cahaba River: Intensive water quality data were collected from the Cahaba River at CABB-2 from January through August of 2002. Results of water quality data are presented in Appendix P-3.

Sub-watershed status: A fish community assessment conducted at one location on Caffee Creek indicated biological impairment. Intensive water quality data indicated periodically high total suspended solids and nutrient concentrations. Dissolved oxygen concentrations measured at one location on Cane Creek were below 5.0 mg/L during 2 of 5 sampling events. Conductivity values and Total Kjeldahl nitrogen concentrations were elevated at the site. Conductivity values, total suspended solids, and nutrient concentrations were also elevated at one location on the Cahaba River.

Sub-watershed: Cahaba River NRCS Sub-Watershed Number 150

***Landuse**:* The Cahaba River sub-watershed drains 125 mi^2 in Perry and Dallas Counties. Land cover was mainly forest mixed with some pasture and crop lands. The entire length of the Cahaba River in this sub-watershed is designated as an Outstanding Alabama Water (ADEM 2003e). One municipal NPDES permit has been issued in the sub-watershed (Appendix B).

Percent land cover estimated by local SWCD (Appendix A, ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
65%	10%	20%	0%	5%	0%	0%

NPS impairment potential: Cahaba River was identified as a NPS priority sub-watershed in 1996 (O'Neil and Shepard 1997). GSA found the chemical/physical, habitat, and biological conditions of the tributary, Rice Creek, to be impaired by nonpoint runoff from the community of Marion, discharge from a WWTP, excessive sediment transport, excessive nutrients, and high bacteria concentrations.

Based on information from the 1998 SWCD sub-watershed assessments, the main NPS concerns in the Cahaba River sub-watershed were runoff from crops, pastures, and forestry (Appendix D). Cahaba River was given a 3rd priority sub-watershed rating by the local SWCD for resource concerns including excessive erosion of cropland and roads and roadbanks, overgrazed pastures, access of livestock to streams and bacteria in surface waters (Appendix I).

Ratings for each NPS category based on values estimated during the SWCD sub-watershed assessment.

Category	Overall Potential	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Value	13	0.05 AU/ac	0.00%	10%	20%	0%	28%	1.0 ton/ac/yr
NPS Potential	L	L	L	M	M	L	M	L
Appendix	D	H	H	A	A	A	I	I

Assessments: One sampling location was assessed during ADEM's 2002 NPS screening assessment of the BWC Basin Group (Appendix F). Waters Creek was reassessed at a sampling reach established in 1996 by GSA (Appendix E).

Assessment stations located within the sub-watershed. Descriptions provided in Appendix E-1.

Station	Assessment Type	Date	Location	Area (mi^2)	Classification
WAT-1	Chemical, Habitat, Biological	2002	Waters Cr. at AL Hwy 14	15	S

<u>Waters Creek</u>: Located in the Fall Line Hills (65i) subecoregion, Waters Creek at WAT-1 was characterized by small sand and gravel riffles (Appendix J). Habitat quality was

assessed as *good* during the 1996 and 2002 assessments (Appendix J, O'Neil and Shepard 1997). However, sediment deposition was noted as a problem at the site during the 2002 assessment. The macroinvertebrate community was generally in *good* condition during both assessments (Appendix K, O'Neil and Shepard 1997). Fish assessments conducted in 1996 and 2002 indicated impaired biological conditions (Appendix K, O'Neil and Shepard 1997). Screening-level water quality data suggested slightly elevated total organic carbon concentrations (Appendix M).

Sub-watershed status: Cahaba River is recommended as a priority NPS sub-watershed due to the condition of the fish community of Waters Creek at WAT-1. The primary NPS concerns within the sub-watershed were runoff from crops, pastures, and forestry areas.

Sub-Watershed: Cahaba River NRCS Sub-Watershed Number 170

Landuse: The Cahaba River sub-watershed drains 78 mi^2 in Perry and Dallas Counties. Land cover was mainly forest and pasture (Appendix A). Within this sub-watershed, the Cahaba River is designated as an Outstanding Alabama Water for its entire length (ADEM 2003e). A 4.5 mile segment of Dry Creek is impaired by pathogens from agricultural sources (Appendix C-1). ADEM's TMDL for this pollutant was approved during 2003 and implementation is pending. Two current construction/stormwater authorizations, one mining, and 2 semi-public/private NPDES permits have been issued in the sub-watershed (Appendix B).

Percent land cover estimated by local SWCD (Appendix A, ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
65%	3%	29%	0%	2%	1%	1%

NPS impairment potential: The Cahaba River was identified as a NPS priority sub-watershed in 1996 (O'Neil and Shepard 1997). Based on the 1998 SWCD sub-watershed assessments, the main NPS concerns were aquaculture, pasture runoff, and septic tank failure (Appendix D). Cahaba River was given 2nd and 4th priority sub-watershed ratings by the Perry and Dallas County SWCDs, respectively. Resource concerns included excessive erosion of cropland and roads, overgrazed pastures, access of livestock to streams, and bacteria in surface waters (Appendix I).

Ratings for each NPS category based on values estimated during the SWCD sub-watershed assessment.

Category	Overall Potential	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Value	11	0.12 AU/ac	0.60%	3%	29%	0%	19%	3.6 tons/ac/yr
NPS Potential	L	L	M	L	M	L	L	L
Appendix	D	H	H	A	A	A	I	I

Assessments: Childers Creek and Dry Creek were assessed during the 2002 NPS screening assessment of the BWC Basin Group (Appendix F). These sites were previously assessed by GSA during the 1996 NPS assessment of the Lower Cahaba River Basin (Appendix E, Shepard and O'Neil 1997). The Cahaba River has also been intensively monitored in conjunction with ADEM's Reservoir Monitoring Program (Appendix E).

Assessment stations located within the sub-watershed. Descriptions provided in Appendix E-1.

Station	Assessment Type	Date	Location	Area (mi^2)	Classification
CHIL-2	Habitat Biological Chemical	2002	Childers Cr. at AL Hwy 219	5	F&W
DRY-1	Habitat Biological Chemical	2002	Dry Cr. at Dallas CR 201	9	F&W
Dannelly6	Biological Chemical	2000	Cahaba R. approx. 0.5 mi us of confluence with Dannelly Reservoir	1825	OAW

Cahaba River: Intensive water quality samples were collected monthly during April through October of 2000 near the mouth of the Cahaba River (Dannelly6) to evaluate nutrient and sediment loading as a source of water quality impairment to Dannelly Reservoir (ADEM unpublished res data). The mean total suspended solid concentration at the Cahaba River embayment was 38.3 mg/L, the highest mean concentration obtained from reservoir locations within the Alabama River basin. Mean concentrations of chlorophyll *a* (9.62 mg/L), total phosphorus (0.027 mg/L), and total nitrogen (0.521 mg/L) were relatively low in comparison to other tributaries of the Alabama River.

Childers Creek: Sand comprised approximately 90% of the stream bottom of Childers Creek at CHIL-2 (Appendix J). Habitat quality was assessed as *fair* due to poor bank stability and a lack of instream habitat and riparian buffer. The macroinvertebrate community was assessed as *poor* (Appendix K). Cattle had direct access to the creek at several points along the reach. Anaerobic sediments and heavy erosion were noted at the site. Total suspended solids, total Kjeldahl nitrogen, and chlorides were elevated (Appendix M).

Dry Creek: Located in the Blackland Prairie (65a) subecoregion, Dry Creek is a clay-bottomed, glide-pool stream (Appendix J). Cattle had direct access to Dry Creek at DRY-1. Moderate erosion and filamentous green algae observed at the site suggested in-stream scouring and nutrient enrichment to be potential problems. Instream habitat was limited by the large proportion of hard-pan clay and low flow. The macroinvertebrate community was assessed as *good* (Appendix K).

Water quality data collected during May of 2002 showed elevated concentrations of total dissolved solids and chlorides (Appendix M). The fecal coliform count was 210 colonies/100 mL (Appendix M).

Sub-watershed status: A 4.5 mile segment of Dry Creek is impaired by pathogens from pasture grazing. ADEM's TMDL for this pollutant was approved during 2003. Habitat and biological conditions in Childers and Dry Creek were assessed as impaired during assessments conducted in 2002. Pasture grazing, aquaculture, and septic tank failure were the main NPS concerns in the sub-watershed.

Mulberry Fork CU (0316-0109)

The Mulberry Fork CU contains 20 sub-watersheds and drains approximately 1,371 mi^2 in 8 counties. The CU is located within the Southern Table Plateaus (68d), Dissected Plateau (68e), and Shale Hills (68f) subecoregions of the Ridge Southwestern Appalachian (68) Ecoregion (Griffith et al. 2001).

Landuse: Based on the conservation assessment worksheets completed (1998) by the local SWCDs, the primary landuses throughout the Mulberry Fork CU were forest, pasture, and mining. Nine waterbodies located in 7 sub-watersheds are currently on ADEM's 2002 §303(d) list of impaired waters (Appendix C-2). TMDLs have been developed and approved for 10 pollutants in Long Branch, Duck River, Eightmile Creek, Brogen River, and Thacker Creek (Appendix C-1).

Percent land cover estimated by local SWCD (ASWCC 1998)

Forest	**Row crop**	**Pasture**	**Mining**	**Urban**	**Open Water**	**Other**
63%	3%	19%	6%	3%	1%	4%

NPS impairment potential: There was a *moderate* or *high* potential for NPS impairment in 13 sub-watersheds. Forestry, poultry and cattle production, pasture grazing, sedimentation, mining, and crop runoff were all NPS concerns in the CU. There was a *moderate* or *high* potential for impairment from urban sources within 9 sub-watersheds.

Number of sub-watersheds with (M)oderate or (H)igh ratings for each nonpoint source category (Appendix D).

Category	**Overall Potential**	**Animal husbandry**	**Aqua-culture**	**Row crop**	**Pasture**	**Mining**	**Forestry**	**Sediment**
Moderate	5	1	0	7	7	5	8	9
High	8	9	0	0	3	3	10	0

Number of sub-watersheds with (M)oderate or (H)igh ratings for each point source category (Appendix D).

Category	**Overall Potential**	**% Urban**	**Development**	**Septic tank failure**
Moderate	8	4	5	6
High	1	1	0	5

Historical data/studies: The majority of assessments conducted within the Mulberry Fork CU were from 8 programs and projects conducted by the ADEM and the Geological Survey of Alabama (GSA).

These programs produced monitored assessment data based on chemical, physical, and/or biological data collected using commonly accepted and well-documented methods. The results of monitored assessments were used in this report to assess habitat, biological, and chemical conditions within a sub-watershed.

Evaluated assessments were conducted in conjunction with ADEM's ALAMAP

Program (Appendix T). Evaluated assessments are based on observed conditions, limited water quality data, water quality data older than 5 years, or estimated impacts from observed or suspected activities. A summary of 5 projects or programs completed or funded by ADEM, is provided in the appendices. The summaries include lead agency, project objectives, data collected, and applicable quality assurance manuals.

Types of assessments and assessment guidelines for projects that have generated monitored assessment information.

Project	Assessment Type[a]
ADEM's Ecoregional Reference Reach Program[b]	H, C, B
ADEM's §303(d) Waterbody Monitoring Program[b]	H, C, B
ADEM's Reservoir Monitoring Program	C, B
ADEM's Fish Tissue Monitoring Program	C
ADEM's Ambient Monitoring Program[b]	H, C, B
University Tributary Nutrient Project[b] (ADEM 2000d)	C
ADEM's Periphyton Bioassessment Pilot Study[b] (ADEM 2004d)	H, C, B
GSA's Assessment of Mulberry Fork, 1999-2002 (Shepard et al. 2001, Shepard et al. 2002)	H, B

[a]H=habitat; C=chemical/physical; B=biological
[b]Data and summary of project included in Appendices

2002 NPS Screening Assessment: Fourteen sub-watersheds were targeted for assessment during the 2002 NPS Screening Assessment because they were recommended as NPS priority sub-watersheds in 1997, had a *moderate* or *high* potential for impairment from nonpoint sources, were on ADEM's 2002 §303(d) list of impaired waters, or recent data were unavailable. Appendix F lists the 22 stations assessed.

Sub-watershed assessments: Current and historical monitoring data were combined to provide a comprehensive assessment. Habitat, chemical/physical, and biological indicators of water quality were monitored in 16 sub-watersheds (Appendix G). Habitat quality was generally *excellent* or *good* throughout the sub-watershed. The macroinvertebrate community was assessed as *excellent* or *good* at 7 (29%) stations and *fair* or *poor* at 17 stations (71%). Fish communities were assessed as *fair or fair/poor* at 19 (43%) stations and *poor* or *poor/very poor* at 25 (57%) stations.

Overall condition for each station was rated as the lowest assessment result obtained (Appendix G). One station (2%) was assessed as *good*. Twenty-three (43%) stations were assessed as *fair*. Twenty-nine (55%) stations were assessed as *poor*.

Sub-watershed status: Thirteen sub-watersheds were identified as impaired (Table 5). A summary of the information available for each of these sub-watersheds is provided in the following section. Each summary discusses landuse, nonpoint source impairment potential and assessments conducted within the sub-watershed. The summaries point out significant data and reference appropriate tables and appendices. Appendices referenced in the summaries are located at the end of the report.

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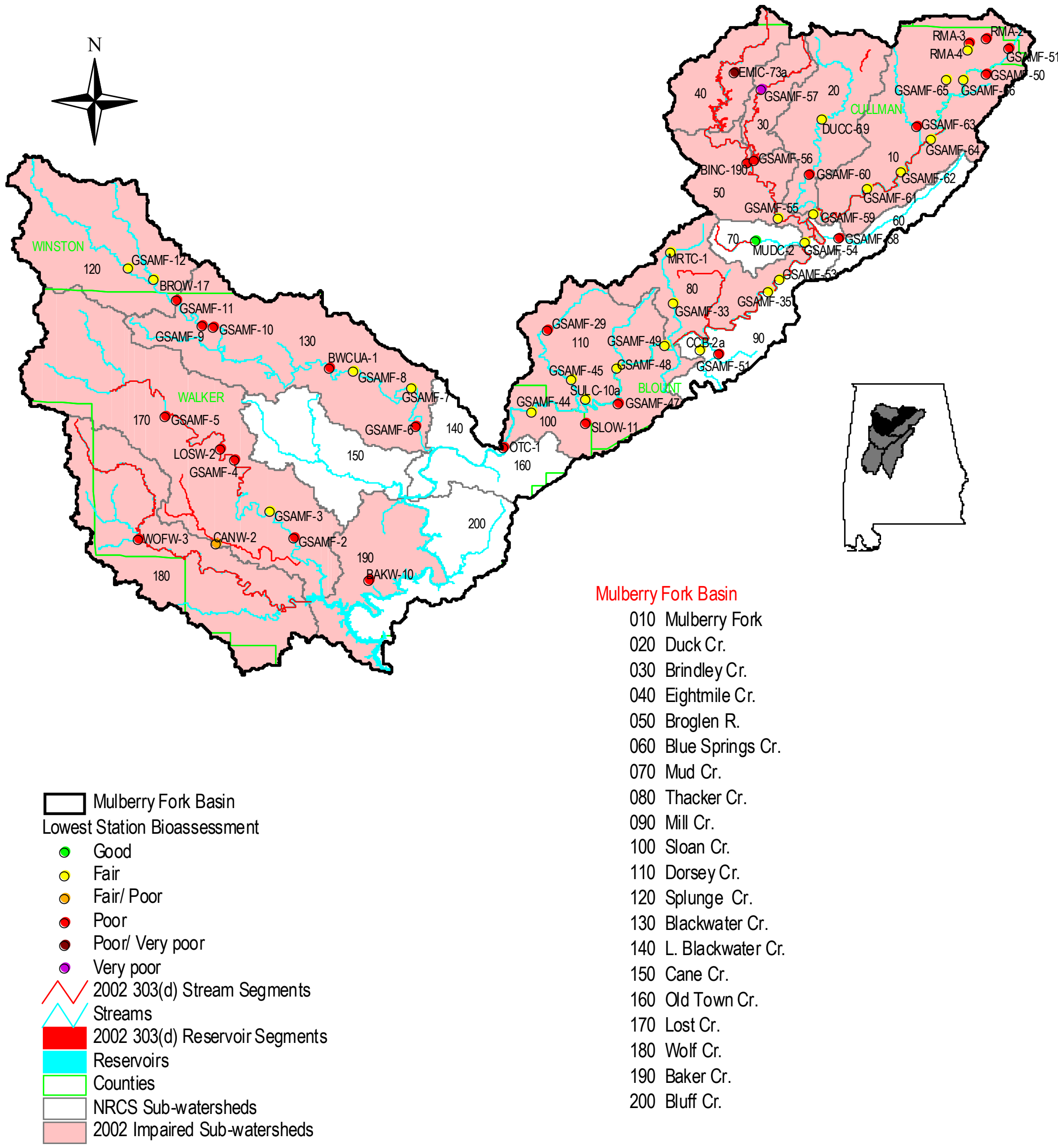
Fig. 16. 2002 NPS priority sub-watersheds and §303(d)-listed stream and reservoir segments. Overall results of bioassessments conducted 1998-2002 are also shown.



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List of impaired sub-watersheds in the Mulberry Fork CU.

Sub-watershed		303(d)/ TMDL Stream[a]	Lowest Station Assessment	Suspected Cause(s)	Suspected nonpoint source(s)
010	Mulberry Fork		Poor	Sedimentation, Reduced flow, Unstable banks, Nutrient enrichment, OE/DO, Pathogens	Animal husbandry, Crop runoff, Pasture grazing, Forestry
020	Duck Cr.	TA	Poor	Reduced flow, sedimentation, DO/OE, Nutrient enrichment, Pathogens, Pesticides	Animal husbandry, Crop runoff, Pasture grazing, Forestry
030	Brindley Cr.	303(d)	Very poor	Sedimentation, OE/DO, Nutrient enrichment, Pathogens, pH, Reduced flow	Animal husbandry, Crop runoff, Pasture grazing, Forestry, Development
040	Eightmile Cr.	TA 303(d)	Fair	Pathogens, Sedimentation, Nutrient enrichment, OE/DO	WWTP, Urban runoff, Animal husbandry, Pasture grazing, Crop runoff, Forestry
050	Broglen R.	TA 303(d)	Poor	Sedimentation, Other habitat alteration OE/DO, Nutrient enrichment, Pathogens	WWTP, Urban runoff, Animal husbandry, Pasture grazing, Crop runoff, Forestry
080	Thacker Cr.	TA	Poor	Pathogens, Ammonia, Nutrient enrichment, OE/DO, Sedimentation, Other habitat alteration	Animal husbandry, Pasture grazing, Forestry
100	Sloan Cr.		Poor	OE/DO, Nutrient enrichment, Sedimentation	Forestry, Septic tank failure
110	Dorsey Cr.		Poor	Sedimentation, OE/DO, Nutrient enrichment	Animal husbandry, Pasture grazing, Mining, Forestry
120	Splunge Cr.		Fair	Sedimentation	Septic tank failure, Pasture grazing, Animal production, Forestry
130	Blackwater Cr.		Poor	Sedimentation, pH	Animal husbandry, Mining, Pasture grazing, Forestry, Septic tank failure
170	Lost Cr.	303(d)	Poor	Sedimentation, OE/DO, Metals, pH, Other habitat alteration	Mining, Forestry, Septic tank failure
180	Wolf Cr.		Poor	Sedimentation, Other habitat alteration, pH, OE/DO	Mining, Forestry
190	Baker Cr.		Poor	Sedimentation	Mining, Forestry, Septic tank failure

a. 303(d): currently on ADEM's 2002 §303(d) list of impaired waters; TA: approved TMDL

Sub-Watershed: Mulberry Fork **NRCS Sub-Watershed Number 010**

Landuse: Mulberry Fork drains approximately 130 mi^2 in Cullman, Blount, Marshall, and Morgan Counties. Land cover was a mixture of forest, pasture, and crop land (Appendix A). A total of 14 current construction/stormwater authorizations, NPDES permits, and CAFO registrations have been issued in the sub-watershed (Appendix B).

Percent land cover estimated by local SWCD (Appendix A, ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
39%	11%	38%	<1%	4%	1%	6%

NPS impairment potential: The overall potential for impairment from nonpoint sources was estimated as *high*. The potential for impairment from animal husbandry, primarily poultry, and pasture runoff was estimated as *high*. Runoff from crop and forestry lands constituted *moderate* potentials for NPS impairment. The potential for impairment from urban sources was estimated as *low* (Appendix D). Mulberry Fork was given 2nd and 3rd priority sub-watershed ratings by the local SWCDs for resource concerns listed in Appendix I.

Ratings for each NPS category based on values estimated during the SWCD sub-watershed assessment.

Category	NPS Score	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Value	15	2.32 AU/ac	0.00%	11%	38%	<1%	28%	1.7 tons/ac/yr
NPS Potential	M	H	L	M	H	L	M	L
Appendix	D	H	H	A	A	A	I	I

Assessments: Hurricane Creek, Pan Creek, and Warrior Creek were monitored during ADEM's 2002 screening assessment of the BWC basin group (Appendix F). Fish IBI assessments were conducted at these sites and 3 locations on Mulberry Fork during GSA's Mulberry Fork Assessment (Shepard et al. 2001, Shepard et al. 2002, Appendix E). Hurricane Creek was evaluated at a 2nd site during ADEM's 1999 ALAMAP Program.

Assessment stations located within the sub-watershed. Descriptions are provided in Appendix E-1.

Station	Assessment Type	Date	Location	Area (mi^2)	Classification
GSAMF-48[a] GSAMF-65[b] GSAMF-48[c]	Habitat, Biological, Chemical	2000 2002	Hurricane Cr. at Harmony	15	F&W
BW07U3-51	Habitat, Chemical	1999	Hurricane Cr. Approx. 0.3 mi. us of confluence with Mulberry Fork	16	F&W
GSAMF-42[a] GSAMF-59[b]	Habitat, Biological, Chemical	2000	Mulberry Fork at Blount CR 47	192	F&W
GSAMF-47[a] GSAMF-64[b]	Habitat, Biological, Chemical	2000	Mulberry Fork at US Hwy 278	67	F&W
GSAMF-49[a] GSAMF-66[b]	Habitat, Biological, Chemical	2000	Mulberry Fork at Blount CR 73	20	F&W
GSAMF-46[a] GSAMF-63[b] GSAMF-46[c]	Habitat, Biological, Chemical	2000 2002	Pan Cr. approximately 2 mi. NE of Holly Pond	10	F&W
GSAMF-50[a] GSAMF-67[b] GSAMF-50[c]	Habitat, Biological, Chemical	2000 2002	Warrior Cr. at Strawberry Bridge	7	F&W
GSAMF-51[a] GSAMF-68[b] GSAMF-51[c]	Habitat, Biological, Chemical	2000 2002	Warrior Cr. at Thrasher Crossroads	3	F&W

a. GSA Fish IBI assessment location as reported in Shepard et al. (2001); b. GSA Fish IBI assessment location as reported in Shepard et al. (2002); c. ADEM macroinvertebrate assessment location

Hurricane Creek: Hurricane Creek is a small tributary of Mulberry Fork. Landuse within the watershed has been reported to be agricultural, primarily poultry, cattle, and row crops (Shepard et al. 2001, Shepard et al. 2002). At GSAMF-48, Hurricane Creek was a riffle-run stream located within the Southern Table Plateaus (68d) subecoregion (Appendix J). During the 2002 NPS screening assessment, bottom substrates at the reach were primarily boulder, cobble, and gravel. A habitat assessment conducted in 2000 found the reach to be impacted by heavy sand deposits, low flow conditions, and unstable banks (Shepard et al. 2001, Shepard et al. 2002). ADEM collected 12 EPT families at the site, indicating the macroinvertebrate community to be in *good* condition (Appendix K). A fish IBI assessment conducted by GSA in 2000 indicated the community to be in *fair* condition (Appendix G, Shepard et al. 2001, Shepard et al. 2002).

ADEM collected water quality data at the reach in June of 2002 (Appendix M). Total phosphorus concentrations were above ecoregional reference conditions. Concentrations of nitrate+nitrite-nitrogen were within the range expected at ADEM's least-impaired reference sites.

Hurricane Creek was evaluated at BW07U3-51 during ADEM's 1999 ALAMAP Program (Appendix T). The reach was characterized by boulder, cobble, and gravel substrates mixed with some sand, silt, and clay (Appendix T-1). Habitat quality was assessed as *excellent*. Total dissolved solids were elevated, but other parameters were similar to ecoregional reference conditions (Appendix T-2).

Pan Creek: Landuse within the Pan Creek watershed has been reported to be mainly pastureland, poultry, cattle, and row crops (Shepard et al. 2001, Shepard et al. 2002). At GSAMF-46, Pan Creek is a riffle-run stream located within the Southern Table Plateaus (68d) subecoregion (Appendix J). During the 2002 NPS screening assessment, bottom substrates at the reach were primarily boulder and sand with some cobble and gravel. Sand deposits were noted at the site (Appendix J). A habitat assessment conducted in 2000 found the reach to be impacted by sand and silt deposits and low flow conditions (Shepard et al. 2001, Shepard et al. 2002). ADEM collected 9 EPT families at the site, indicating the macroinvertebrate community to be in *good* condition (Appendix K). A fish IBI assessment conducted by GSA in 2000 indicated the community to be in *poor* condition (Appendix G, Shepard et al. 2001, Shepard et al. 2002).

ADEM collected water quality data at the reach in June of 2002 (Appendix M). Chlorophyll *a* concentrations were elevated, but the dissolved reactive phosphorus concentration was within the range expected at ADEM's least-impaired reference sites.

Warrior Creek: Warrior Creek was sampled at two locations during ADEM's 2002 NPS screening assessment (Appendix F). At GSAMF-50, Warrior Creek was a riffle-run stream located within the Southern Table Plateaus (68d) subecoregion (Appendix J). During the 2002 NPS screening assessment, bottom substrates at the reach were a mixture of bedrock, boulder, cobble, gravel, and sand. Habitat quality was affected by sediment deposition and a lack of adequate riparian buffer. ADEM assessed habitat quality as *good* for this stream type (Appendix J). ADEM collected 9 EPT families at the site, indicating the macroinvertebrate community to be in *good* condition (Appendix K). A fish IBI assessment conducted by GSA in 2000 indicated the community to be in *poor* condition (Appendix G, Shepard et al. 2001, Shepard et al. 2002).

ADEM collected water quality data at the reach in June of 2002 (Appendix M). Nitrogen concentrations (TKN, NO_3+NO_2-N) were higher than concentrations expected at ADEM's ecoregional reference reaches. The fecal coliform count was > 660 colonies/100 mL.

At GSAMF-51, bottom substrates were primarily cobble, gravel, and sand (Appendix J). Habitat quality was affected by sediment deposition and unstable banks. ADEM assessed habitat quality as *good* for this stream type (Appendix J). A habitat assessment conducted in 2000 also found the reach to be impacted by sand deposits (Shepard et al. 2001, Shepard et al. 2002). Shepard et al. (2002) suggested an upstream cow watering area as a potential source of the sediment. ADEM collected 7 EPT families at the site, indicating the macroinvertebrate community to be in *fair* condition (Appendix K). A fish IBI assessment conducted by GSA in 2000 indicated the community to be in *poor* condition (Appendix G, Shepard et al. 2001, Shepard et al. 2002).

ADEM collected water quality data at the reach in June of 2002 (Appendix M). Nitrogen and phosphorus concentrations (TKN, NO_2+NO_3-N, TP, DRP) were elevated in comparison to ADEM's ecoregional reference reaches. The fecal coliform count was greater than 660 colonies/100 mL. Five-day carbonaceous biochemical oxygen demand was also elevated.

Mulberry Fork: Mulberry Fork was assessed at 3 locations during GSA's Mulberry Fork assessment (Shepard et al. 2001, Shepard et al. 2002, Appendix E). Mulberry Fork at these 3 locations drains highly agricultural areas and landuse is predominantly poultry, cattle, and crop production. Habitat at GSAMF-66 and GSAMF-59 was affected by heavy sediment deposition. Eutrophication and nutrient enrichment were problems at GSAMF-59. Fish IBI assessments conducted by GSA in 2000 indicated the community at all 3 locations to be in *fair* condition (Appendix G, Shepard et al. 2001, Shepard et al. 2002).

Sub-watershed status: Impaired biological conditions were detected at sampling locations on Pan Creek, Hurricane Creek, Warrior Creek, and Mulberry Fork. Nutrient concentrations and total dissolved solids were elevated at Warrior Creek and Hurricane Creek. Chlorides and total dissolved solids were elevated during one sampling event at Pan Creek. Based on local SWCD sub-watershed assessments, the primary NPS concerns within the Mulberry Fork sub-watershed were animal husbandry, runoff from crop and pasturelands, and forestry activities.

Sub-Watershed: Duck Creek NRCS Sub-Watershed Number 020

Landuse: The Duck Creek sub-watershed drains approximately 63 mi^2 in Cullman County. Pasture, forest, and crop land were the main land cover types within the sub-watershed. One construction/stormwater authorization, one semi-public/private NPDES permit, and 10 CAFO registrations have been issued in the sub-watershed (Appendix B). A 2.0 mile segment of Long Branch is impaired by ammonia, organic enrichment/dissolved oxygen, and pathogens from pasture grazing and intensive animal feeding operations. The entire length of Duck Creek is impaired by organic enrichment/low dissolved oxygen from pasture grazing and intensive animal feeding operations. The TMDLs for these pollutants were approved in 2003. Implementation is pending.

Percent land cover estimated by local SWCD (Appendix A, ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
36%	11%	45%	0%	2%	1%	4%

NPS impairment potential: Duck Creek was identified as a NPS priority sub-watershed in 1997. A roadside survey conducted by ADEM in 1997 indicated the sub-watershed to have the highest concentration of poultry operations (ADEM 1999a).

Based on the 1998 SWCD sub-watershed assessment information, the main NPS concerns within the sub-watershed were animal husbandry and runoff from pasture, crop, and forestry lands. Poultry broilers comprised 92% of the total animal units estimated for the sub-watershed (Appendix H). The overall potential for NPS impairment was estimated as *high*. Duck Creek was given a 1st priority sub-watershed rating by the local SWCD. Resource concerns included excessive erosion on cropland, nutrients, pesticides, bacteria in surface waters, and livestock in streams (Appendix I).

Ratings for each NPS category based on values estimated during the SWCD sub-watershed assessment.

Category	Overall Potential	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Value	21	3.39 AU/ac	0.00%	11%	45%	0%	34%	1.1 tons/ac/yr
NPS Potential	H	H	L	M	H	L	M	L
Appendix	D	H	H	A	A	A	I	I

Assessments: Duck River was assessed at one location during the 2002 NPS screening assessment (Appendix F). A second location was assessed during GSA's assessment of Mulberry Fork (Appendix E, Shepard et al. 2001, Shepard et al. 2002). One location on Duck River has been evaluated annually in conjunction with ADEM's ALAMAP Program. Smith Branch was evaluated during ADEM's 1998 ALAMAP Program (Appendix E, Appendix T).

Assessment stations located within the sub-watershed. Descriptions are provided in Appendix E-1.

Station	Assessment Type	Date	Location	Area (mi^2)	Classification
DUCC-69	Biological, Habitat, Chemical	2002	Duck R. at Cullman CR 51	30	F&W
GSAMF-43[a] GSAMF-60[b]	Biological, Habitat, Chemical	2000	Duck R. at Cullman CR 38	57	F&W
BW05U3-5 BW1U4-5 BW1U1-5 BW1U6-5	Habitat, Chemical	1999 2000 2001 2002	Duck R. approx. 0.8 mi ds of AL Hwy 69	17	F&W
BW05U2-5	Habitat, Chemical	1998	Smith Branch approx. 0.1 mi us of confluence with Duck R.	1	F&W

a. GSA Fish IBI assessment location as reported in Shepard et al. (2001); b. GSA Fish IBI assessment location as reported in Shepard et al. (2002)

Duck River: At DUCC-69, Duck River was a low-gradient stream characterized by bedrock and boulder substrates covered with sand and silt (Appendix J). Habitat quality was slightly affected by sediment deposition and unstable banks. Sediment deposition was also noted during a habitat assessment conducted during 2000 (Shepard et al. 2001, Shepard et al. 2002). Five EPT families were collected at the site, indicating the macroinvertebrate community to be in *fair* condition (Appendix K). The fish community was also assessed as *fair* (Appendix K). A fish IBI assessment conducted downstream at GSAMF-60 indicated the fish community to be in *poor* condition (Appendix G).

Screening level water quality data were collected at DUCC-69 during June of 2002 (Appendix M). Nutrient concentrations (NO_2+NO_3-N, TP, TOC) were elevated.

Habitat quality and water quality samples have been collected annually at BW05U3-5 since 1999 (Appendix T-1 and Appendix T-2). Habitat quality has been consistently assessed as *excellent* (Appendix T-1). Dissolved oxygen concentrations have ranged from 4.2 mg/L in August of 2000 to 9.1 mg/L in August of 2001 (Appendix T-2). Five-day carbonaceous biochemical oxygen demand ranged from 0.5 mg/L in August of 2001 to 3.0 mg/L in August of 2000. The concentration of nitrate+nitrite-nitrogen was 2.4 mg/L in August of 2001.

Smith Branch: Habitat quality and water quality samples were collected at BW05U2-5 during August of 1998 (Appendix T-1 and Appendix T-2).

Sub-watershed status: A 2.0 mile segment of Long Branch is impaired by ammonia, organic enrichment/dissolved oxygen, and pathogens from pasture grazing and intensive animal feeding operations. The entire length of Duck Creek, a tributary of Duck River, is impaired by organic enrichment/low dissolved oxygen from pasture grazing and intensive animal feeding operations. The TMDLs for these pollutants were approved in 2003. Habitat and biological conditions were assessed as impaired on Duck River at DUCC-69. The main NPS concerns within the sub-watershed were poultry production and runoff from pasture, crop, and forestry lands.

Sub-Watershed: Brindley Creek **NRCS Sub-Watershed Number 030**

Landuse: The Brindley Creek sub-watershed drains approximately 25 mi^2 in Cullman County. Land cover was a mixture of pasture, forest, and crop land. Four current construction/stormwater authorizations, one industrial NPDES permit, and 3 CAFO registrations have been issued in the sub-watershed (Appendix B). An 18.8 mile segment of Brindley Creek is on ADEM's 2002 §303(d) list of impaired waters for not meeting its "Public Water Supply" water use classification. It is listed for pathogens, ammonia, nutrients, and dissolved oxygen impairments caused by urban runoff (Appendix C-2).

Percent land cover estimated by local SWCD (Appendix A, ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
39%	14%	40%	0%	1%	1%	5%

NPS impairment potential: Impaired habitat and biological conditions at one location identified Brindley Creek as a NPS priority sub-watershed in 1997 (ADEM 1999a). Based on SWCD landuse estimates, animal husbandry, runoff from crop and pasture lands, forestry, and urban development were potential sources of NPS impairment within the sub-watershed (Appendix D).

Ratings for each NPS category based on values estimated during the SWCD sub-watershed assessment.

Category	Overall Potential	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Value	21	3.71 AU/ac	0.00%	14%	40%	0%	37%	1.8 tons/ac/yr
NPS Potential	H	H	L	M	H	L	M	L
Appendix	D	H	H	A	A	A	I	I

Assessments: An assessment was not conducted within the sub-watershed during the 2002 NPS screening assessment. However, four locations on Brindley Creek have been assessed during ADEM's §303(d) Monitoring Program (Appendix E, Appendix P). A fifth location on Brindley Creek was monitored during GSA's Mulberry Fork Assessment (Appendix E, Shepard et al. 2001, Shepard et al. 2002).

Brindley Creek: At BINC-190, Brindley Creek is a riffle-run stream located in the Southern Table Plateau (68d) subecoregion (Appendix J). Habitat quality was impacted by sediment deposition and unstable banks. A habitat assessment conducted at GSAMF-57 found the site to be characterized by cobble, gravel, and sand substrates covered by a layer of silt (Shepard et al. 002). A macroinvertebrate assessment at BINC-190 found the site to be in good condition (Appendix K). Results of fish IBI assessments indicated the fish communities to be in *poor* and *poor/very poor* condition conducted at BINC-190 and GSAMF-57, respectively (Appendix K, Shepard et al. 2002). Sedimentation, nutrient enrichment, and low dissolved oxygen were noted as potential causes of the impairment (Appendix M, Shepard et al. 2002).

Assessment stations located within the sub-watershed. Descriptions are provided in Appendix E-1.

Station	Assessment Type	Date	Location	Area (mi^2)	Classification
BINC-190	Habitat, Biological, Chemical	2001 2002 2003	Brindley Cr. at CR just us of confluence with Eightmile Cr.	25	PWS
BINC-191	Chemical	2001 2002 2003	Brindley Cr. at reservoir forebay	26	PWS
BINC-192	Chemical	2002 2003	Brindley Cr. at AL Hwy 69	12	PWS
BINC-193	Chemical	2001 2002 2003	Brindley Cr. at unnamed CR	5	PWS
GSAMF-40 GSAMF-57	Habitat, Biological, Chemical	2001	Brindley Cr. at Cullman CR 1476	10	PWS

Intensive water quality data were collected at 4 locations on Brindley Creek from November of 2001 through April of 2003 (Appendix P-3). Brindley Creek at BINC-193 and BINC-192 were located upstream of the drinking water reservoir (Appendix E). At these stations, results indicated nutrient enrichment and sedimentation impacts. Fecal coliform counts were >2,000 colonies/100 mL at during two (13%) of 15 sampling events at BINC-193 and during one (6%) of 16 sampling events at BINC-192 and exceeded the "Public Water Supply" water use classification of a geometric mean <200 colonies/100 mL at both sites. The pH was <6.5 su during 2 (13%) of 15 and 2 (11%) of 17 sampling events. Intensive water quality monitoring at the dam forebay (BINC-191) indicated nutrient enrichment impairments. The pH was <6.5 su during 3 (19%) of 16 and 2 (11%) of 17 sampling events. Fecal coliform counts were lower at the downstream most station below the dam (BINC-190), but nutrient concentrations, particularly NO_3+NO_2-N were high.

Sub-watershed status: Brindley Creek is currently on ADEM's §303(d) list for impairments caused by pathogens, ammonia, nutrients, and low dissolved oxygen concentrations. The fish community was impaired at two sites on Brindley Creek. Intensive water quality sampling suggested sedimentation and nutrient enrichment as possible causes of the impairment. Poultry production, runoff from crop and pasture lands, forestry, and urban development were potential sources of NPS impairment within the sub-watershed.

Sub-Watershed: Eightmile Creek NRCS Sub-Watershed Number 040

Landuse: The Eightmile Creek sub-watershed drains approximately 43 mi^2 in Cullman and Morgan Counties. Forest, pasture, and urban areas comprised 85% of the sub-watershed. A total of 7 current construction/stormwater authorizations, NPDES permits, and CAFO registrations have been issued in the sub-watershed (Appendix B). A 23.0 mile segment of Eightmile Creek is impaired by ammonia, organic enrichment/dissolved oxygen, and pathogens originating from pasture grazing and urban runoff (Appendix C-2). TMDLs for two of these pollutants (ammonia and organic enrichment/dissolved oxygen) have been approved by EPA (Appendix C-1). The stream is also affected by withdrawals for water supply and discharges of treated wastewater.

Percent land cover estimated by local SWCD (Appendix A, ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
40%	6%	35%	0%	10%	4%	6%

NPS impairment potential: Based on local SWCD information, the main NPS concerns within the sub-watershed were poultry production and runoff from pasture, crop, and forestry areas (Appendix D). Eightmile Creek was identified as a NPS priority sub-watershed in 1997 (ADEM 1999a) and was given a 4th priority sub-watershed rating in 1998 by the SWCD. Resource concerns are listed in Appendix I.

Ratings for each NPS category based on values estimated during the SWCD sub-watershed assessment.

Category	Overall Potential	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Value	19	3.79 AU/ac	0.00%	6%	35%	0%	38%	2.6 tons/ac/yr
NPS Potential	H	H	L	M	M	L	M	L
Appendix	D	H	H	A	A	A	I	I

Assessments: ADEM assessed the aquatic macroinvertebrate and fish communities at one location on Eightmile Creek (Appendix F). GSA has assessed a second location on Eightmile Creek (Appendix E).

Assessment stations located within the sub-watershed. Descriptions are provided in Appendix E-1.

Station	Assessment Type	Date	Location	Area (mi^2)	Classification
EMIC-73a	Chemical, Habitat, Biological	2002	Eightmile Cr. at Mount View	12	PWS
GSAMF-39 [a] GSAMF-56[b]	Chemical, Habitat, Biological	2000	Eightmile Cr. at confluence with Brindley Cr.	36	F&W

a. GSA Fish IBI assessment location as reported in Shepard et al. (2001); b. GSA Fish IBI assessment location as reported in Shepard et al. (2002)

Eightmile Creek: Located in the Southern Table Plateau (68d), Eightmile Creek at EMIC-73a is characterized by bedrock, boulder, and cobble riffles (Appendix J). Impacts from sedimentation and embeddedness were evident (Appendix J). Ten EPT families were collected, indicating the macroinvertebrate community to be in *good* condition (Appendix K). The fish community was assessed as *poor/very poor* (Appendix K). Water quality samples collected in June of 2002 indicated nitrogen (TKN) and total phosphorus (TP) concentrations to be elevated (Appendix M). The fecal coliform count was 470 colonies/100 mL.

An assessment conducted of Eightmile Creek at GSAMF-56 in August of 2000 also indicated sedimentation impacts (Shepard et al. 2001, Shepard et al. 2002). The fish community was assessed as *poor* (Shepard et al. 2001, Shepard et al. 2002).

Sub-watershed status: The main NPS concerns within the sub-watershed were poultry production and runoff from pasture, crop, and forestry areas. A 23.0 mile segment of Eightmile Creek is impaired by ammonia, organic enrichment/dissolved oxygen, and pathogens originating from pasture grazing and urban runoff. Fish IBI assessments conducted in 2000 and 2002 indicated impaired biological conditions at two stream reaches on Eightmile Creek. Habitat assessment information and water quality data suggested sedimentation and nutrient enrichment to be possible causes of the impairment.

Sub-Watershed: Broglen River NRCS Sub-Watershed Number 050

Landuse: The Broglen River sub-watershed drains approximately 45 mi^2 in Cullman County. Land cover was dominated by forest and pasture land. A total of 23 current construction/stormwater authorizations and NPDES permits have been issued in the sub-watershed (Appendix B). The TMDL for a 12.0 mile segment of Broglen River impaired by pathogens from urban and agricultural sources has been approved by EPA (Appendix C-1). A 18.4 mile segment of Mulberry Fork is listed for not meeting its "Fish and Wildlife" water use classification due to impairments from siltation and other habitat alteration (Appendix C-2).

Percent land cover estimated by local SWCD (Appendix A, ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
39%	9%	31%	0%	14%	1%	6%

NPS impairment potential: NPS concerns within the sub-watershed included poultry production, runoff from crop and pastureland, and forestry (Appendix D). The city of Cullman is located within the Broglen River sub-watershed, making impairment from urban runoff and development a concern.

Ratings for each NPS category based on values estimated during the SWCD sub-watershed assessment.

Category	Overall Potential	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Value	12	2.70 Au/ac	0.00%	9%	31%	0%	37%	1.4 tons/ac/yr
NPS Potential	M	H	L	M	M	L	M	L
Appendix	D	H	H	A	A	A	I	I

Assessments: An assessment was not conducted within the sub-watershed during the 2002 NPS screening assessment. Broglen River has been monitored in conjunction with ADEM's Ambient Monitoring Program (Appendix E, Appendix R). GSA has conducted fish IBI assessments at locations on Broglen River and Mulberry Fork (Appendix E, Shepard et al. 2001, Shepard et al. 2002).

Assessment stations located within the sub-watershed. Descriptions are provided in Appendix E-1.

Station	Assessment Type	Date	Location	Area (mi^2)	Classification
BR-1 GSAMF-38[a] GSAMF-55[b]	Habitat, Biological, Chemical	1974- 2002 2000	Broglen R. at AL Hwy 91	108	F&W
GSAMF-37[a] GSAMF-54[b]	Habitat, Biological, Chemical	2000	Mulberry Fork at Blount CR 10	330	F&W

a. GSA Fish IBI assessment location as reported in Shepard et al. (2001); b. GSA Fish IBI assessment location as reported in Shepard et al. (2002)

Broglen River: Broglen River is located within the Southern Table Plateaus (68d) subecoregion (Appendix E). A habitat assessment conducted in 2000 by GSA estimated substrates to be composed of boulders and bedrock deeply embedded with sand (Shepard et al. 2001, Shepard et al. 2002). The fish community was assessed as *fair* (Appendix G). Specific conductance was high at the site, possibly due to upstream wastewater discharges from the city of Cullman (Shepard et al. 2001, Shepard et al. 2002). Intensive water quality data have been collected from the Broglen River at BR-1 since 1974 (ADEM, In press). Water quality data collected since 1998 are provided in Appendix R. Mean concentrations of total dissolved solids, total phosphorus, and nitrate+nitrite-nitrogen were above background levels.

Mulberry Fork: Mulberry Fork at GSAMF-54 is located within the Southern Table Plateaus (68d) subecoregion (Appendix E). Although habitat quality was better at Mulberry Fork, the site was impacted by eutrophication. The fish community was assessed as *fair* (Appendix G, Shepard et al. 2001, Shepard et al. 2002).

Sub-watershed status: NPS concerns within the sub-watershed included poultry production, runoff from crop and pastureland, and forestry. Impairment from urban runoff and development was also a concern. EPA has approved the TMDL for a segment of Broglen River impaired by pathogens from urban and agricultural sources. A 18.4 mile segment of Mulberry Fork is currently on Alabama's 2002 §303(d) list for impairments from siltation and other habitat alteration. Results of a fish IBI assessment conducted in 2000 support these listings.

Sub-Watershed: Thacker Creek **NRCS Sub-Watershed Number 080**

Landuse: The Thacker Creek sub-watershed drains approximately 57 mi^2 in Cullman County. Land cover was mainly forest mixed with pasture land. Four current construction/stormwater authorizations and one municipal NPDES permit have been issued in the sub-watershed (Appendix B). A 9.5 mile segment of Thacker Creek is impaired by ammonia, pathogens, and organic enrichment/dissolved oxygen. EPA has approved the TMDL for each of these pollutants (Appendix C-1). Implementation of the TMDLs is pending. Two segments of Mulberry Fork are on ADEM's 2002 §303(d) list for impairments caused by nutrients, siltation, and other habitat alteration (Appendix C-2). Agriculture, municipal, and industrial activities are listed as the sources of impairment.

Percent land cover estimated by local SWCD (Appendix A, ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
82%	1%	10%	3%	3%	<1%	1%

NPS impairment potential: Thacker Creek was identified as a NPS priority sub-watershed in 1997 because of impaired habitat, chemical/physical, and biological conditions at 4 sampling reaches on Thacker Creek (Appendix E, ADEM 1999a). Percent landuse estimated during the 1998 SWCD sub-watershed assessments indicated potential impairment from poultry production and forestry (Appendix D).

Ratings for each NPS category based on values estimated during the SWCD sub-watershed assessment.

Category	Overall Potential	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Value	15	2.20 Au/ac	0.00%	1%	10%	3%	78%	1.5 tons/ac/yr
NPS Potential	M	H	L	L	L	L	H	L
Appendix	D	H	H	A	A	A	I	I

Assessments: One location on Marriott Creek was monitored during the 2002 NPS screening assessment (Appendix F) and GSA's Mulberry Fork Assessment (Appendix E). A second location on Marriott Creek has been monitored as part of ADEM's Ecoregional Reference Reach Program. One location on Mulberry Fork was evaluated during ADEM's 1998 ALAMAP Program.

Marriott Creek: Marriott Creek has been monitored at MRTC-1 since 1994 in conjunction with ADEM's Ecoregional Reference Reach Program (Appendix O). Located within the Dissected Plateau (68e) subecoregion, Marriott Creek at MRTC-1 is a small riffle-run stream (Appendix O-1). Bedrock is the primary substrate and tends to limit instream habitat, especially during low flows (Appendix O-1). Attached algae was common. The macroinvertebrate and fish communities were assessed as *fair* (Appendix O- 2). Construction was noted upstream of the site during the 2002 assessment. Intensive water

Assessment stations located within the sub-watershed. Descriptions are provided in Appendix E-1.

Station	Assessment Type	Date	Location	Area (mi^2)	Classification
GSAMF-33[a] GSAMF-50[b] GSAMF-33[c]	Chemical, Habitat, Biological	2001 2002	Marriott Cr. nr. I 65	24	F&W
MRTC-1	Chemical, Habitat, Biological	2001	Marriott Cr. at unnamed rd. S of Cullman CR 18	9	F&W
BW04U2-37	Habitat, Chemical	1998	Mulberry Fork approx. 3.8 mi. us of confluence with Marriott Cr.	417	F&W

a. GSA Fish IBI assessment location as reported in Shepard et al. (2001); b. GSA Fish IBI assessment location as reported in Shepard et al. (2002); c. ADEM macroinvertebrate assessment location

quality data collected at this station from March through December of 2002 are provided in Appendix O-3.

At GSAMF-33, the habitat quality of Marriott Creek had been impacted by the construction of I-65. The substrate was a mixture of cobble, gravel, and sand (Appendix J, Shepard et al. 2002). Six EPT families were collected, indicating the macroinvertebrate community to be in *fair* condition (Appendix K). A fish assessment conducted by GSA in May of 2001 showed the community to be in *poor* condition (Appendix G, Shepard et al. 2001, Shepard et al. 2002). Attached algae was abundant, suggesting impacts caused by nutrient enrichment. Conductivity, hardness, and total dissolved solids were elevated at GSAMF-33 during June of 2002 (Appendix M).

Mulberry Fork: Mulberry Fork was evaluated at BW04U2-37 during ADEM's 1998 ALAMAP Program (Appendix E). Data are provided in Appendix T-1 and T-2.

Sub-watershed status: Approved TMDLs have been developed for ammonia, pathogens, and organic enrichment/dissolved oxygen impacts on Thacker Creek. Two segments of Mulberry Fork are on ADEM's 2002 §303(d) list for impairments caused by nutrients, siltation, and other habitat alteration. The sources listed as causing the impairment are agricultural runoff and municipal and industrial discharges. Macroinvertebrate and fish assessments conducted in 2001 and 2002 indicated impaired biological conditions at two locations on Marriott Creek. Nutrient enrichment and sedimentation were suspected causes of the impairment. Based on the 1998 SWCD sub-watershed assessment, poultry production and forestry were the main NPS concerns within the sub-watershed.

Sub-Watershed: Sloan Creek NRCS Sub-Watershed Number 100

Landuse: The Sloan Creek sub-watershed drains approximately 45 mi^2 in Blount, Walker, and Jefferson Counties. Forest comprised 76% of SWCD percent land cover estimates. Two current construction/stormwater authorizations have been issued in the sub-watershed (Appendix B).

Percent land cover estimated by local SWCD (Appendix A, ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
76%	3%	11%	4%	1%	<1%	4%

NPS impairment potential: The main NPS concerns within the sub-watershed were runoff from mining and forestry lands. Sand and gravel pits, mined lands, gullies and streambanks were the main sources of sedimentation (Appendix I).

Ratings for each NPS category based on values estimated during the SWCD sub-watershed assessment.

Category	Overall Potential	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Value	13	0.13 AU/ac	0.00%	3%	11%	4%	33%	6.8 tons/ac/yr
NPS Potential	L	L	L	L	L	M	M	M
Appendix	D	H	H	A	A	A	I	I

Assessments: Old Town Creek and Sloan Creek were monitored during the 2002 NPS screening assessment of the BWC basin group (Appendix F). Old Town Creek was also monitored during ADEM's 1999 §303(d) Monitoring Program (Appendix E). Three locations on Mulberry Fork have been previously assessed as part of GSA's assessment of Mulberry Fork (Shepard et al. 2001, Shepard et al. 2002) and the statewide tributary loading study conducted by the University of Alabama (Appendix E). An unnamed tributary to Mulberry Fork was evaluated during ADEM's ALAMAP Program (Appendix E).

Old Town Creek: In 2002, Old Town Creek at OTC-1 was a relatively wide and open glide-pool stream characterized by sand, silt, and gravel substrates (Appendix J). The macroinvertebrate community was assessed as *poor* (Appendix K). Filamentous algae was common, suggesting nutrient enrichment as a potential cause of the impairment. Deposits of sand and sludge were noted and sediments were characterized by an anaerobic smell. Conductivity, alkalinity, hardness, total dissolved solids, and nitrogen concentrations (TKN, NO_3+NO_2-N) were elevated during June of 2002 (Appendix M).

Intensive water quality sampling was conducted once on Old Town Creek at OTC-1 and OTC-2 during May of 1999 as part of ADEM's §303(d) Monitoring Program (Appendix P). Both sites are located within the Shale Hills (68f) subecoregion (Appendix

Assessment stations located within the sub-watershed. Descriptions are provided in Appendix E-1.

Station	Assessment Type	Date	Location	Area (mi^2)	Classification
OTC-1	Chemical, Habitat, Biological	1999 2002	Old Town Cr. at Walker CR 81	18	F&W
OTC-2	Chemical	1999	Old Town CR. at Walker CR 22	4	F&W
GSAMF-31[a] GSAMF-48[b]	Habitat, Biological, Chemical	2000	Mulberry Fork approx. 0.3 mi ds of Rice Cr.	478	F&W
GSAMF-30[a] GSAMF-47[b] MUFUA-1	Habitat, Biological, Chemical	1998-1999 2000 2002	Mulberry Fork at Blount CR 17	488	F&W
GSAMF-27[a] GSAMF-44[b]	Habitat, Biological, Chemical	1999 2002	Mulberry Fork approx. 4 mi. N of Empire	533	F&W
SLOW-11	Habitat, Biological, Chemical	2002	Sloan Cr. at unnamed CR	3	F&W

a. GSA Fish IBI assessment location as reported in Shepard et al. (2001); b. GSA Fish IBI assessment location as reported in Shepard et al. (2002)

E). Nitrate+nitrite-nitrogen was elevated at OTC-1. Total Kjeldahl nitrogen was above background levels at OTC-2.

<u>Sloan Creek</u>: Sloan Creek, located in the Dissected Plateau (68e) subecoregion, was assessed during June of 2002. At SLOW-11, Sloan Creek was characterized by gravel and cobble riffles and sand (Appendix J). Although overall habitat quality was similar to reference conditions, sediment deposits and eroded and unstable streambanks were present. The macroinvertebrate community was assessed as *poor* (Appendix J). Total dissolved solids were elevated at Sloan Creek during one sampling event in June of 2002 (Appendix M).

<u>Mulberry Fork</u>: Five fish IBI assessments have been conducted by GSA at 3 locations on Mulberry Fork (Appendix E, Shepard et al. 2001, Shepard et al. 2002). All three stations were located below the confluence of Duck River and above the confluence with Sipsey Fork. Landuse in this section of the sub-watershed is pine, mixed forest, and pasture (Shepard et al. 2001, Shepard et al. 2002). Affects of sedimentation, eutrophication and nutrient enrichment were evident at the sites. At GSAMF-48, the upstream-most station, the fish community was assessed as *fair* in October of 2000 (Appendix G). Two separate assessments were completed at each of the two downstream stations and resulted in overall assessment ratings of *fair* (Appendix G, Shepard et al. 2001, Shepard et al. 2002).

Intensive water quality data were collected from Mulberry Fork at MUFUA-1 (GSAMF-47) from November of 1998 through October of 1999 (Appendix S). Nutrient concentrations (TP, TKN, NO_3+NO_2-N), total suspended solids, and total dissolved solids were elevated, supporting GSA's bioassessment results.

Sub-watershed status: Impaired biological conditions were detected during 7 separate assessments conducted at 5 different locations within the sub-watershed. Sedimentation and nutrient enrichment were likely causes of the impairments. SWCD landuse estimates identified runoff from forestry lands, and septic tank failure as the main concerns within the sub-watershed. Sedimentation from gullies, sand and gravel pits, mined areas, and streambanks was also a concern.

Sub-Watershed: Dorsey Creek NRCS Sub-Watershed Number 110

Landuse: The Dorsey Creek sub-watershed drains approximately 74 mi^2 in Cullman and Walker Counties. Land cover was a mixture of forest, pasture, and mining lands. Two current construction/stormwater authorizations, 5 mining NPDES permits, and 6 CAFO registrations have been issued in the sub-watershed (Appendix B).

Percent land cover estimated by local SWCD (Appendix A, ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
53%	2%	22%	18%	2%	<1%	1%

NPS impairment potential: Dorsey Creek was identified as a NPS priority sub-watershed in 1997 due to impaired habitat, chemical/physical, and biological conditions at one sampling reach on Sullivan Creek (ADEM 1999a).

Based on the 1998 SWCD landuse estimates, the overall potential for impairment from nonpoint sources was estimated as *high.* The primary NPS concerns were poultry production, pasture grazing, mining, and forestry (Appendix D). Active, inactive, and reclaimed strip mines are common throughout the sub-watershed (Appendix B).

Ratings for each NPS category based on values estimated during the SWCD sub-watershed assessment.

Category	NPS Score	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Value	21	2.07 AU/ac	0.00%	2%	22%	18%	51	1.7 tons/ac/yr
NPS Potential	H	H	L	L	M	H	M	L
Appendix	D	H	H	A	A	A	I	I

Assessments: Intensive monitoring data were collected at locations on Dorsey and Sullivan Creeks during the 2002 NPS screening assessment (Appendix F). Dorsey Creek was monitored at two locations during GSA's Mulberry Fork Assessment (Appendix E, Shepard et al. 2001, Shepard et al. 2002).

Dorsey Creek: At GSAMF-29, Dorsey Creek was located in the Dissected Plateau (68e) subecoregion (Appendix J). Nine EPT families were collected, indicating the macroinvertebrate community to be in *fair* condition (Appendix K). A fish IBI assessment conducted during May of 2001 showed the fish community to be in *poor* condition (Appendix G, Shepard et al. 2001, Shepard et al. 2002). During an assessment conducted in June of 2002, substrate composition was a mixture of bedrock, boulder, cobble, and sand (Appendix J). Habitat quality was impacted by sediment deposition, unstable banks, and the lack of an adequate riparian buffer. Poultry and cattle had access to the site. Alkalinity, hardness, total dissolved solids, and nitrate-nitrite nitrogen were elevated at the site during the June 2002 sampling event (Appendix M).

Assessment stations located within the sub-watershed. Descriptions are provided in Appendix E-1.

Station	Assessment Type	Date	Location	Area (mi^2)	Classification
GSAMF-29[a] GSAMF-46[b] GSAMF-29[c]	Habitat, Biological, Chemical	2001 2002	Dorsey Cr. approx. 3 mi. E of Wilburn	11	F&W
GSAMF-28[a] GSAMF-45[b]	Habitat, Biological, Chemical	2000	Dorsey Cr. at AL Hwy 91	26	F&W
SULC-10a	Habitat, Biological, Chemical	2002	Sullivan Cr. at unnamed Cullman CR nr. Arkadelphia	9	F&W

a. GSA Fish IBI assessment location as reported in Shepard et al. (2001); b. GSA Fish IBI assessment location as reported in Shepard et al. (2002); c. ADEM macroinvertebrate assessment location

The GSA conducted a fish assessment on Dorsey Creek at GSAMF-45, near its confluence with Mulberry Fork (Appendix E, Shepard et al. 2001, Shepard et al. 2002). The streambed was covered with deposited sand and silt. The fish community was assessed as *fair* (Appendix G, Shepard et al. 2001, Shepard et al. 2002). Conductivity was elevated at both sites, suggesting some impacts from mining (Appendix M, Shepard et al. 2002).

Sullivan Creek: Located in the Dissected Plateau (68e) subecoregion, Sullivan Creek is a bedrock-bottomed, riffle-run stream (Appendix J). Cattle pastures were present on both banks. During 2002, several large ponds were under construction upstream of the sampling site. The macroinvertebrate community was assessed as *fair* (Appendix K). In comparison to data collected at ADEM's ecoregional reference sites, water quality data showed high conductivity and concentrations of total dissolved solids, dissolved reactive phosphorus, and total organic carbon at the site (Appendix M).

Sub-watershed status: Dorsey Creek was identified as a NPS priority sub-watershed in 1997. Impaired habitat, chemical/physical, and biological conditions were evident at 4 locations on Dorsey and Sullivan Creeks during assessments conducted 2000-2002. Biological communities in both streams were adversely impacted by sedimentation and nutrient enrichment. High conductivity values and total dissolved solid concentrations suggested mining impacts. Poultry production, pasture grazing, and forestry were also common throughout the sub-watershed.

Sub-Watershed: Splunge Creek NRCS Sub-Watershed Number 120

Landuse: The Splunge Creek sub-watershed drains approximately 96 mi^2 in Walker and Winston Counties. Land cover was mainly forest mixed with pasture land. A total of 3 NPDES permits have been issued in the sub-watershed (Appendix B).

Percent land cover estimated by local SWCD (Appendix A, ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
80%	1%	12%	3%	1%	<1%	3%

NPS impairment potential: Impaired habitat, chemical/physical, and biological conditions identified Splunge Creek as a NPS priority sub-watershed in 1997 (ADEM 1999a). SWCD landuse estimates indicated the potential for NPS impairment to be relatively *low* (Appendix D). However, reconnaissance of the sub-watershed in 1997 showed potential for NPS impairment from cattle production and erosion from forestry areas (ADEM 1999a).

Ratings for each NPS category based on values estimated during the SWCD sub-watershed assessment.

Category	NPS Score	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Value	7	0.09 AU/ac	0.00%	1%	12%	3%	4%	2.2 tons/ac/yr
NPS Potential	L	L	M	L	L	L	L	L
Appendix	D	H	H	A	A	A	I	I

Assessments: Brown Creek was monitored during the 2002 NPS screening assessment of the BWC basin group (Appendix F). One location on Splunge Creek was monitored during GSA's Mulberry Fork Assessment (Appendix E, Shepard et al. 2001, Shepard et al. 2002). Blackwater Creek was evaluated in 1998 during ADEM's ALAMAP Program (Appendix E).

Assessment stations located within the sub-watershed. Descriptions are provided in Appendix E-1.

Station	Assessment Type	Date	Location	Area (mi^2)	Classification
BROW-17	Habitat, Biological, Chemical	2002	Brown Cr. off of Winston CR 37	22	F&W
GSAMF-10 GSAMF-12	Habitat, Biological, Chemical	2001	Splunge Cr. at Winston CR 37	29	F&W
BW02A2-41	Habitat, Chemical	1998	Splunge Cr. nr Winston CR 37.	29	F&W

Brown Creek: At BROW-17, Brown Creek was a shaded, riffle-run stream located within the Dissected Plateau (68e) subecoregion (Appendix J). Sand and silt comprised 60% of bottom substrates, suggesting sedimentation impacts. Seven EPT families were collected at the site, indicating the macroinvertebrate community to be in *fair* condition (Appendix K). Screening-level water quality data indicated slightly elevated total organic carbon concentrations in June of 2002 (Appendix M).

Splunge Creek: Splunge Creek was monitored at GSAMF-12 during May of 2001 as part of GSA's assessment of Mulberry Fork (Appendix E, Shepard et al. 2001, Shepard et al. 2002). The site, located in the Dissected Plateau (68e) subecoregion (Appendix E), was characterized by gravel and sand substrates (Shepard et al. 2001, Shepard et al. 2002). The fish community was assessed as *fair* (Appendix G, Shepard et al. 2001, Shepard et al. 2002).

Splunge Creek was evaluated at BW02A2-41 during ADEM's 1998 ALAMAP Program (Appendix T). The site, located in the Dissected Plateau (68e) subecoregion (Appendix E), was characterized by silt, sand, and detritus (Appendix T-1). A lack of instream habitat, heavy sedimentation, and unstable banks resulted in a habitat assessment rating of *fair* (Appendix T-1). Results of water quality sampling conducted in August of 1998 are presented in Appendix T-2.

Sub-watershed status: Splunge Creek was identified as a NPS priority sub-watershed in 1997. In 2002, impaired habitat and biological conditions were detected at locations on Brown Creek and Splunge Creek. Reconnaissance of the sub-watershed in 1997 showed potential for NPS impairment from cattle production and erosion from forestry areas.

Sub-Watershed: Blackwater Creek NRCS Sub-Watershed Number 130

Landuse: The Blackwater Creek sub-watershed drains approximately 143 mi^2 in Walker and Winston Counties. Land cover was primarily forest and pasture land. Four current construction/stormwater authorizations, 4 mining and 4 semi public/private NPDES permits, and 4 CAFO registrations have been issued in the sub-watershed (Appendix B).

Percent land cover estimated by local SWCD (Appendix A, ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
57%	<1%	30%	8%	1%	1%	3%

NPS impairment potential: Based on SWCD landuse information, there was a *high* potential for NPS impairment from poultry production, pasture grazing, mining, forestry, and septic tank failure (Appendix D). Gullies and mined lands contributed 4.9 tons/ac/yr (46%) and 2.6 tons/ac/yr (24%), respectively, to the total estimated annual sediment load within the sub-watershed (Appendix I). Blackwater Creek was given a 3rd priority sub-watershed rating by the local SWCD. Resource concerns are listed in Appendix I.

Ratings for each NPS category based on values estimated during the SWCD sub-watershed assessment.

Category	NPS Score	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Value	19	2.11 AU/ac	0.00%	0%	30%	9%	42	10.6 tons/ac/yr
NPS Potential	H	H	M	L	M	M	M	M
Appendix	D	H	H	A	A	A	I	I

Assessments: Intensive monitoring data were collected at one location on Blackwater Creek during the 2002 NPS screening assessment of the BWC Basin Group (Appendix F). Blackwater Creek has been previously monitored at 5 locations in conjunction with a statewide tributary nutrient loading study conducted by the University of Alabama and GSA's Mulberry Fork assessment (Appendix E). Two locations on Buck Creek were monitored during ADEM's 1999 §303(d) Monitoring Program. Bunkum Creek was evaluated at one location during ADEM's ALAMAP Program. (Appendix E).

Blackwater Creek: At BWCUA-1, Blackwater Creek is a relatively large riffle-run stream located within the Shale Hills (68f) subecoregion (Appendix J). Bottom substrates were predominantly bedrock and boulder. Habitat quality was assessed as *excellent*. Twelve EPT families were collected at the site in June of 2002, indicating the macroinvertebrate community to be in *good* condition (Appendix K). The fish community was assessed as *poor* (Appendix K).

Fish IBI assessments were conducted at 4 additional locations during GSA's assessment of Locust Fork (Appendix E). Habitat quality was generally good throughout the sub-watershed, with bedrock, boulder, and cobble substrates free of sand and silt deposits (Shepard et al. 2001, Shepard et al. 2002). The fish communities at the 3 downstream

Assessment stations located within the sub-watershed. Descriptions are provided in Appendix E-1.

Station	Assessment Type	Date	Location	Area (mi^2)	Classification
GSAMF-9	Habitat, Biological, Chemical	2002	Blackwater Cr. at Walker CR 25	151	F&W
BWCUA-1[a] BWCUA-1[b]	Habitat, Biological, Chemical	1998-1999 2002	Blackwater Cr. at AL Hwy 257	181	F&W
GSAMF-8	Habitat, Biological, Chemical	2001	Blackwater Cr. at Harris Bridge	197	F&W
GSAMF-7	Habitat, Biological, Chemical	2000 2002	Blackwater Cr. at AL Hwy 69	213	F&W
GSAMF-6	Habitat, Biological, Chemical	2001 2002	Blackwater Cr. approx. 2 mi. SE of Boldo	229	F&W
BCK-1	Chemical	1999	Buck Cr. at AL Hwy 5	12	F&W
BCK-2	Habitat, Chemical	1999, 2000	Buck Cr. at Slicklizzard Rd.	3	F&W
BW10U4-55	Habitat, Chemical	2000	Bunkum Cr	1	F&W

a. Location sampled during the Statewide Tributary Nutrient Loading Study (Appendix S); b. ADEM macroinvertebrate assessment location

stations (GSAMF-8, GSAMF-7, and GSAMF-6) were assessed as *fair* (Appendix G, Shepard et al. 2001, Shepard et al. 2002). The fish community at GSAMF-9 was assessed as *poor* (Appendix G, Shepard et al. 2001, Shepard et al. 2002). Slightly acidic pH readings at GSAMF-7 and GSAMF-8 may have been caused by runoff from several strip mines (Shepard et al. 2001, Shepard et al. 2002).

Intensive water quality data were collected from Blackwater Creek at BWCUA-1 from November of 1998 through October of 1999 (Appendix S). Conductivity, turbidity, total dissolved solids, and nitrogen concentrations (NO_3+NO_2-N, TKN) were periodically elevated.

Buck Creek: Habitat quality of Buck Creek was evaluated at BCK-2 during January of 2000 (Appendix P-1). At BCK-2, Buck Creek is a small, shaded riffle-run stream located within the Shale Hills (68f) subecoregion (Appendix P-1). Bottom substrates were predominantly sand, silt, and detritus. Habitat quality was impacted by poor instream habitat and unstable banks.

Screening level water quality data were collected from Buck Creek at BCK-1 and BCK-2 during May of 1999 (Appendix P-3). The fecal coliform count was 480 colonies/100 mL at BCK-1. Nitrogen concentrations were slightly elevated at both stations.

Bunkum Creek: At BW10U4-55, Bunkum Creek is a small, riffle-run stream located within the Dissected Plateau (68e) subecoregion (Appendix T-1). Sand, gravel, and detritus were the predominant substrates. Habitat quality was assessed as *poor* due to poor instream habitat and embeddedness, sediment deposition, unstable banks, and a lack of riparian buffer (Appendix T-1). Chemical data are provided in Appendix T-2. The dissolved oxygen concentration was 4.1 mg/L. However, stream flow was very low and may have contributed to the low dissolved oxygen concentration during the 2000 assessment. The fecal coliform count and biochemical oxygen demand were elevated.

Sub-watershed status: Biological impairment was detected at 5 locations on Blackwater Creek. Sedimentation and acidic pH from strip mines were noted as potential causes of the impairment.

Sub-Watershed: Lost Creek **NRCS Sub-Watershed Number 170**

Landuse: The Lost Creek sub-watershed drains approximately 204 mi^2 in Walker, Fayette, and Winston Counties. Land cover was mainly forest mixed with mining and pasture lands. Eight current construction/stormwater authorizations and 25 mining, 3 municipal, and one industrial process wastewater NPDES permits have been issued in the sub-watershed (Appendix B). Cane Creek, Black Creek, and two segments of Lost Creek are on ADEM's 2002 §303(d) list for impairments caused by abandoned surface mines (Appendix C-2).

Percent land cover estimated by local SWCD (Appendix A, ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
63%	0%	14%	15%	1%	<1%	6%

NPS impairment potential: NPS concerns identified during the 1998 SWCD assessment included mining, forestry, and septic tank failure (Appendix D). Gullies and mined areas contributed 72% of the estimated annual sediment load (12.6 tons/ac/yr) (Appendix I). Lost Creek was given a 1st priority sub-watershed rating by the local SWCD for resource concerns including road bank erosion, nutrients and bacteria in surface waters, overgrazed pastures, and livestock in streams (Appendix I).

Ratings for each NPS category based on values estimated during the SWCD sub-watershed assessment.

Category	NPS Score	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Value	15	0.16 AU/ac	0.00%	0%	14%	15%	52	12.6 tons/ac/yr
NPS Potential	M	L	L	L	L	H	M	M
Appendix	D	H	H	A	A	A	I	I

Assessments: Two locations on Lost Creek were scheduled for assessment during the 2002 NPS screening assessment (Appendix F). Nonwadeable conditions prevented completion of an assessment at LOSW-5 (Appendix J). One location on Cane Creek was also assessed (Appendix F). Intensive monitoring data were collected at 11 sites on Cane Creek and Lost Creek during ADEM's §303(d) Monitoring Program (Appendix E, Appendix P) and GSA's Mulberry Fork Assessment (Appendix E, Shepard et al. 2001, Shepard et al. 2002). The Lost Creek embayment has been intensively monitored during ADEM's Reservoir and Fish Tissue Monitoring Programs (Appendix E).

Cane Creek: At CANW-2, Cane Creek is a low-gradient stream located within the Shale Hills (68f) subecoregion (Appendix J). The site is characterized by cobble and gravel substrates. Despite deposits of sand and silt, habitat quality was assessed as *excellent*. Bioassessments indicated the macroinvertebrate community to be in *fair* condition and the fish community to be in *fair/poor* condition (Appendix J).

Assessment stations located within the sub-watershed. Descriptions are provided in Appendix E-1.

Station	Assessment Type	Date	Location	Area (mi^2)	Classification
CANW-3	Chemical	2002	Cane Cr. at AL Hwy 69 and 18	13	F&W
CANW-2	Habitat, Chemical, Biological	2002	Cane Cr. at Dixie Springs Rd.	18	LWF
CANW-1	None conducted	2002	Cane Cr. close to mouth	64	F&W
LOSW-5	Chemical	2002	Lost Cr. at US Hwy 78	28	F&W
LOSW-4	Chemical	2002	Lost Cr. at Ripley Cutoff Rd.	66	F&W
LOSW-3 GSAMF-5	Habitat, Biological, Chemical	2001 2002	Lost Cr. at Wire Rd.	78	F&W
LOSW-2	Habitat, Biological, Chemical	2002	Lost Cr. at AL Hwy 124	115	F&W
LOSW-1	Chemical	2002	Lost Cr. at AL Hwy 69	134	F&W
GSAMF-2	Habitat, Biological, Chemical	2001	Lost Cr. at mouth of Indian Cr.	164	F&W
GSAMF-3	Habitat, Biological, Chemical	2000	Lost Cr. at Browns Bridge	143	F&W
GSAMF-4	Habitat, Biological, Chemical	2001	Lost Cr. at McClain Bridge	123	F&W
Bankhead5 LOS1	Biological, Chemical	2002	Lost Cr. at Lost Cr. embayment, approx. 0.5 mi. ds of Walker CR 53 bridge	347	F&W
BW11U4-59	Habitat, Chemical	2000	Jess Cr. nr unnamed Walker CR, just ds of confluence with intermittent tributary	2	F&W

Intensive water quality data were collected from Cane Creek at CANW-2 and CANW-3 from January of 2002 through July of 2002 (Appendix P-3). Sampling at CANW-1 was discontinued due to nonwadeable conditions. Conductivity and hardness at CANW-2 and CANW-3 were elevated compared to reference conditions. Turbidity measurements and fecal coliform counts were elevated during the winter season. Dissolved oxygen concentrations were 3.1 and 4.1 mg/L at CANW-2 and CANW-3, respectively, during the June 2002 sampling event.

<u>Lost Creek</u>: At LOSW-2, Lost Creek was a moderate gradient stream located within the Shale Hills (68f) subecoregion (Appendix J). Sand comprised 47% of the available stream bottom. Five EPT families were collected, indicating the macroinvertebrate community to be in *poor* condition (Appendix K).

Fish community assessments were conducted at 4 locations on Lost Creek during GSA's Assessment of Mulberry Fork (Appendix G, Shepard et al. 2001, Shepard et al. 2002). The fish community was assessed as *poor* at GSAMF-2, GSAMF-4, and GSAMF-5 and *fair* at GSAMF-3. Embeddedness and sedimentation were noted as problems throughout the sub-watershed (Shepard et al. 2001, Shepard et al. 2002).

Intensive water quality monitoring was conducted at 5 sites on Lost Creek during ADEM's 2002 §303(d) Monitoring Program (Appendix P-3). Results indicated high conductivities and elevated hardness concentrations at all 5 sampling reaches. Nutrient concentrations (TP, DRP, NH_3-N, TKN) were also periodically elevated.

The Lost Creek embayment was intensively monitored from April through October of 2002 to estimate nutrient and sediment loading rates to Bankhead Reservoir (ADEM 2004b). Mean concentrations of total nitrogen and phosphorus were similar to other tributaries sampled during ADEM's Intensive Water Quality Survey of Black Warrior River Reservoirs (ADEM 2004b). However, comparison to 1998 data suggest that total phosphorus concentrations have increased. Mean chlorophyll *a* concentrations in the Lost Creek embayment were the third highest of the 14 tributary embayments sampled in the Black Warrior Basin. Total suspended solids were also higher in 2002 than in 1998.

Sub-watershed status: Impaired biological conditions were detected on Cane and Lost Creek during assessments conducted in 2001 and 2002. Sedimentation was a problem throughout the sub-watershed, with gullies and mined areas contributing 72% of the annual sediment load (12.6 tons/ac/yr). Fecal coliform counts and nutrient concentrations were elevated at one location on Lost Creek. Intensive water quality data suggest that phosphorus and sediment loading from Lost Creek has increased in recent years. Cane Creek, Black Creek, and two segments of Lost Creek are on ADEM's 2002 §303(d) list for impairments caused by abandoned surface mines.

Sub-Watershed: Wolf Creek NRCS Sub-Watershed Number 180

Landuse: The Wolf Creek sub-watershed drains approximately 135 mi^2 in Fayette, Tuscaloosa, and Walker Counties. Land cover was estimated to be 93% forest. One current construction/stormwater authorization and one mining NPDES permit have been issued in the sub-watershed (Appendix B). A 37.2 mile segment of Wolf Creek is on ADEM's §303(d) list for siltation and other habitat alterations caused by abandoned surface mines (Appendix C-2).

Percent land cover estimated by local SWCD (Appendix A, ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
93%	0%	2%	2%	0%	<1%	3%

NPS impairment potential: Wolf Creek was identified as a NPS priority sub-watershed in 1997 because of impaired habitat, physical/chemical, and biological conditions at several sampling reaches on Wolf Creek (ADEM 1999a). SWCD landuse estimates indicated forestry to be a potential source of NPS impairment within the sub-watershed, corroborating results of a roadside survey conducted by ADEM in 1997 (Appendix D, ADEM 1999a). Erosion of gullies contributed 5.0 tons/ac/yr to the estimated annual sediment load (Appendix I).

Ratings for each NPS category based on values estimated during the SWCD sub-watershed assessment.

Category	NPS Score	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Value	13	0.00 AU/ac	0.00%	0%	2%	2%	59%	10.0 tons/ac/yr
NPS Potential	L	L	L	L	L	L	H	M
Appendix	D	H	H	A	A	A	I	I

Assessments: Wolf Creek has been monitored at 3 locations as part of ADEM's NPS Screening and §303d Monitoring Programs and GSA's Mulberry Fork Assessment, 1999-2002 (Appendix F, Appendix E, Shepard et al. 2001, Shepard et al. 2002).

Assessment stations located within the sub-watershed. Descriptions are provided in Appendix E-1.

Station	Assessment Type	Date	Location	Area (mi^2)	Classification
WOFW-1	Habitat, Biological, Chemical	2002	Wolf Cr. at Walker CR 35	100	F&W
WOFW-2 GSAMF-1	Chemical	2002	Wolf Cr. at AL Hwy 18	45	F&W
WOFW-3	Chemical	2002	Wolf Cr. at AL Hwy 102	10	F&W

Wolf Creek: Bioassessments completed at two sites located within the Wolf Creek Wildlife Management Area indicated impaired biological conditions (Appendix G). Habitat quality was affected by sedimentation at both locations (Appendix J; Shepard et al.

2002).

Intensive water quality data were collected at 3 sites in conjunction with ADEM's §303(d) Monitoring Program (Appendix E, Appendix P). Conductivity and hardness values were elevated at the two downstream-most stations, suggesting mining impacts. Low dissolved oxygen concentrations and high carbonaceous biochemical oxygen demand (CBOD5) were detected at these two sites during June of 2002. Although dissolved oxygen was higher at the WOFW-3, located upstream of the other two sites and within the Management Area site, the carbonaceous biochemical oxygen demand was high during June of 2002. Nutrient concentrations were periodically elevated at WOFW-1 and WOFW-3. The fecal coliform count was 900 colonies/100 mL at WOFW-2 during March. The pH was <6.0 su at 2 sites during the February, 2002 sampling event.

Sub-watershed status: A 37.2 mile segment of Wolf Creek is on Alabama's §303(d) list for siltation and other habitat alterations caused by abandoned surface mines. Habitat, physical/chemical, and biological conditions were assessed as impaired at several sampling reaches on Wolf Creek in 2002. Monitoring conducted in 2002 showed high conductivities and hardness values at two reaches, suggesting mining impacts and supporting its impaired status on Alabama's 2002 §303(d) list. Nutrient enrichment was detected at two locations on Wolf Creek. Forestry was also a concern within the sub-watershed.

Sub-Watershed: Baker Creek NRCS Sub-Watershed Number 190

Landuse: The Baker Creek sub-watershed drains approximately 58 mi^2 in Walker County. Land cover was a mixture of forest and mining land. Three current construction/stormwater authorizations and 9 mining and 1 industrial process wastewater NPDES permits have been issued in the sub-watershed (Appendix B).

Percent land cover estimated by local SWCD (Appendix A, ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
66%	0%	6%	19%	1%	<1%	8%

NPS impairment potential: SWCD landuse estimates indicated mining, forestry, and septic tank failure to be potential sources of NPS impairment within the sub-watershed (Appendix D). Gullies and mined land contributed 10.5 tons/ac/yr (72%) to the estimated annual sediment load within the sub-watershed (Appendix I). Baker Creek was given a 4th priority sub-watershed rating by the local SWCD. Resource concerns are listed in Appendix I.

Ratings for each NPS category based on values estimated during the SWCD sub-watershed assessment.

Category	NPS Score	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Value	15	0.01 AU/ac	0.00%	0%	6%	19%	49%	14.6 tons/ac/yr
NPS Potential	M	L	L	L	L	H	M	M
Appendix	D	H	H	A	A	A	I	I

Assessments: One location on Baker Creek was monitored during ADEM's 2002 NPS Screening Assessment (Appendix F).

Assessment stations located within the sub-watershed. Descriptions are provided in Appendix E-1.

Station	Assessment Type	Date	Location	Area (mi^2)	Classification
BAKW-10	Habitat, Biological, Chemical	2002	Baker Cr. at AL Hwy 269	13	F&W

Baker Creek: Located within the Shale Hills (68f) subecoregion, Baker Creek at BAKW-10 is characterized by deep pools and gravel riffles (Appendix J). Substrates were a mixture of sand, organic silt, gravel, and clay. Despite sediment deposition and a lack of instream habitat, habitat quality was rated as *good*. A bioassessment completed at the site indicated the macroinvertebrate community to be in *poor* condition (Appendix G). One-time water quality sampling conducted in June of 2002 indicated relatively high alkalinity, hardness, and conductivity (Appendix M). Concentrations of nitrate+nitrite-nitrogen and total dissolved solids were also elevated (Appendix M).

Sub-watershed status: Impaired biological conditions were detected at BAKW-10. Potential causes of the impairment included sedimentation, limited habitat availability, and high ammonia concentrations. SWCD landuse estimates indicated mining, forestry, and septic tank failure to be potential sources of NPS impairment within the sub-watershed

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Sipsey Fork CU (0316-0110)

The Sipsey Fork CU of the Black Warrior River Basin contains 13 sub-watersheds, draining approximately 996 mi^2 of northwest Alabama. A significant portion of the CU lies within the boundaries of the Bankhead National Forest and a large portion of the headwaters are in the Sipsey Wilderness Area. The headwaters of Sipsey Fork and its tributaries are designated an Outstanding National Resource Water (ADEM 2003e) and is Alabama's only stretch of Wild and Scenic River (www.nps.gov/rivers). Rock Creek and Crooked Creek are currently on ADEM's 2002 §303(d) list of impaired waters for pathogens from pasture grazing and intensive animal feeding operations (Appendix C). The CU drains portions of the southern Table Plateaus (68d) and the Dissected Plateau (68e) subecoregions of the Southwestern Appalachians (68) Ecoregion.

Landuse: Based on the conservation assessment worksheets completed (1998) by the local SWCDs, the primary landuses throughout the Sipsey Fork CU were forest and pasture.

Percent land cover estimated by local SWCD (ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
70%	1%	19%	2%	1%	3%	2%

NPS impairment potential: The primary NPS concerns within the Sipsey Fork CU were pasture grazing, animal husbandry, mining, and forestry. Four sub-watersheds were estimated to have a *moderate* or *high* potential for impairment from nonpoint sources.

Number of sub-watersheds with (M)oderate or (H)igh ratings for each nonpoint source category (Appendix D).

Category	Overall Potential	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry (9 reported)	Sediment
Moderate	3	3	0	1	4	4	4	1
High	1	3	0	0	3	0	0	0

Number of sub-watersheds with (M)oderate or (H)igh ratings for each point source category (Appendix D).

Category	Overall Potential	Urban	Development	Septic tank failure
Moderate	2	1	1	4
High	0	0	0	1

Historical data/studies: The majority of assessments conducted within the Sipsey Fork CU were from 6 programs and projects conducted by the ADEM and the Geological Survey of Alabama (GSA). These programs produced monitored assessment data, including chemical, physical, and/or biological data collected using commonly accepted and well-documented methods. Results from these programs were used in this report to assess habitat, biological, and chemical conditions within a sub-watershed.

Evaluated assessments were conducted in conjunction with ADEM's ALAMAP Program (Appendix T). Evaluated assessments are based on observed conditions, limited water quality data, water quality data older than 5 years, or estimated impacts from observed or suspected activities. A summary of 4 projects or programs completed or funded by ADEM, is provided in the appendices. The summaries include lead agency, project objectives, data collected, and applicable quality assurance manuals.

Types of assessments and assessment guidelines for projects that have generated monitored assessment information.

Project	Assessment Type[a]
ADEM's Ecoregional Reference Reach Program[b]	H, C, B
ADEM's Reservoir Monitoring Program	C, B
ADEM's Fish Tissue Monitoring Program	C
University Tributary Nutrient Project[b] (ADEM 2000d)	C
ADEM's Periphyton Bioassessment Pilot Study[b] (ADEM 2004d)	H, C, B
GSA's Assessment of Mulberry Fork, 1999-2002 (Shepard et al. 2001, Shepard et al. 2002)	H, B

[a]H=habitat; C=chemical/physical; B=biological
[b]Data and summary of project included in Appendices

2002 NPS Screening Assessment: Five sub-watersheds were targeted for assessment during the 2002 NPS Screening Assessment because they were recommended as NPS priority sub-watersheds in 1997, had a *moderate* or *high* potential for impairment from nonpoint sources, or recent data were unavailable. Appendix F lists the 10 stations assessed.

Sub-watershed assessments: Current and historical monitoring data were combined to provide a comprehensive assessment. Habitat, chemical/physical, and biological indicators of water quality were monitored in 8 sub-watersheds (Appendix G). Habitat quality was assessed as *excellent* or *good* at all 12 stations assessed. Macroinvertebrate assessments were conducted at 14 stations. Results of these assessments indicated the macroinvertebrate community to be in *excellent* or *good* condition at 8 stations (57%) and *fair* conditions at 6 stations (43%). ADEM and GSA conducted IBI assessments at 34 locations within the Sipsey Fork CU. Fish communities were assessed as *good* at 4 (12%) stations, *fair* at 12 (35%) stations, and *fair/poor* or *poor* at 13 (38%) stations. Six locations were assessed by both agencies (Appendix G). Four of these locations were assessed as *fair/poor* or *poor* by both agencies (12%). Additional monitoring is recommended at two locations that were assessed as *good* by GSA and *fair* (SF-2) or *fair/poor* (INMW-1) by ADEM.

Overall condition for each station was rated as the lowest assessment result obtained (Appendix G). Four stations (12%) were assessed as *good*. Twenty-eight (88%) stations were assessed as *fair*, *fair/poor*, or *poor*.

Sub-watershed status: Impaired biological conditions were detected at locations in 7 sub-watersheds (Fig. 17). Two are also listed on ADEM's 2002 §303(d) list of impaired waters. A summary of the information available for each of the 7 NPS priority sub-watersheds is provided in the following section. Each summary discusses landuse, nonpoint source impairment potential, assessments conducted within the sub-watershed, and nonpoint source priority status based on available data. Appendices referenced in the summaries are located at the end of the report.

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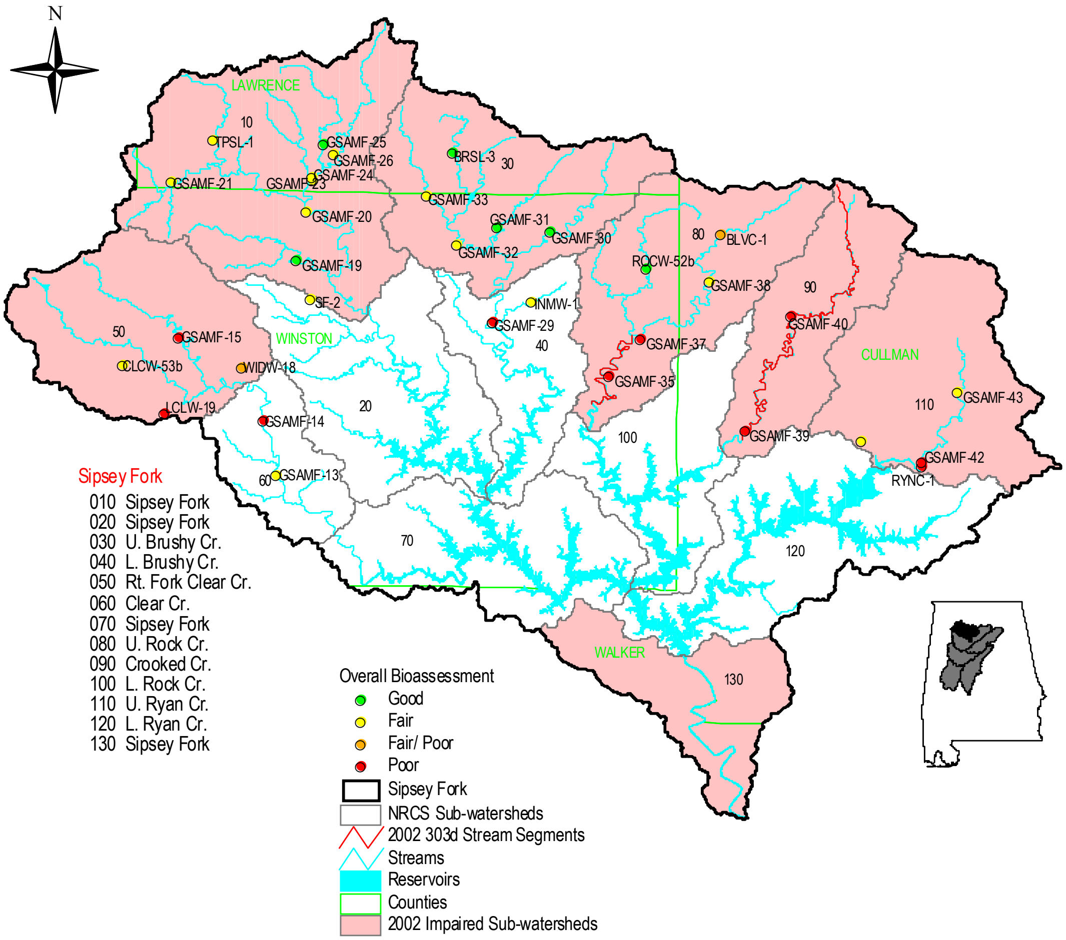
Fig. 17. 2002 NPS priority sub-watersheds and §303(d)-listed stream and reservoir segments. Overall results of bioassessments conducted 1998-2002 are also shown.



List of impaired sub-watersheds in the Sipsey Fork CU (TA: approved TMDL).

Sub-watershed	TMDL	Station Assessment	Suspected Cause(s)	Suspected nonpoint source(s)
010 Sipsey Fork		Fair	Sedimentation	Unknown
030 Upper Brushy Cr.		Poor	Reason unclear	Animal husbandry, Pasture grazing
050 Right Fork Clear Cr.		Poor	Sedimentation, historic water quality problems	Pasture grazing, Mining
080 U. Rock Cr.	TA	Poor	Sedimentation, Pathogens, OE/DO	Pasture grazing, Animal husbandry
090 Crooked Cr.	TA	Poor	Sedimentation, Pathogens, OE/DO, Ammonia, Nutrient enrichment	Animal husbandry, Pasture grazing, Forestry
110 U. Ryan Cr.		Poor	Sedimentation, Nutrient enrichment, Pathogens, Flow modification	Animal husbandry, crop runoff, Pasture grazing, Forestry, Urban, Development
130 Sipsey Fork		1997 NPS priority	Sedimentation, Nutrient enrichment	Animal husbandry, Pasture grazing, Mining, Forestry, Septic tank failure

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Sub-Watershed: Sipsey Fork **NRCS Sub-Watershed Number 010**

Landuse: The Sipsey Fork sub-watershed drains approximately 130 mi^2 in Lawrence, Winston, and Franklin Counties. Percent land cover was estimated to be 94% forest and primarily contained within the Bankhead National Forest. No current construction/ stormwater authorizations or NPDES permits have been issued in the sub-watershed (Appendix B). Upper Sipsey Fork is designated as an Outstanding National Resource Water (ADEM 2003e). It is also Alabama's only officially designated "Wild and Scenic" River.

Percent land cover estimated by local SWCD (Appendix A, ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
94%	1%	3%	1%	0%	<1%	1%

NPS impairment potential: The potential for impairment from all rural and urban categories was *low* (Appendix D).

Ratings for each NPS category based on values estimated during the SWCD sub-watershed assessment.

Category	NPS Score	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Value	7	0.03 AU/ac	0.00%	1%	3%	1%	16%	0.6 tons/ac/yr
NPS Potential	L	L	L	L	L	L	L	L
Appendix	D	H	H	A	A	A	I	I

Assessments: An assessment was not conducted during the 2002 NPS Screening Assessment. Nine locations have been monitored within the sub-watershed in conjunction with ADEM's Reference Reach Program, 2002 Periphyton Bioassessment Pilot Project (Appendix Q), and GSA's Mulberry Fork Assessment (Appendix E). Hagood Creek was evaluated during ADEM's 1998 ALAMAP Program (Appendix T).

Borden Creek: Two locations on Borden Creek were monitored during GSA's Assessment of Mulberry and Sipsey Fork (Shepard et al. 2002). The fish communities at both locations were assessed as *fair* (Appendix G). Borden Creek at GSAMF-26 was characterized by heavily embedded substrates (Shepard et al. 2002).

Braziel Creek: Braziel Creek was monitored during GSA's Assessment of Mulberry and Sipsey Fork (Shepard et al. 2002). The fish community was assessed as *fair* (Appendix G). Borden Creek at GSAMF-24 was characterized by heavily embedded substrates (Shepard et al. 2002).

Caney Creek: Caney Creek was monitored during GSA's Assessment of Sipsey and Mulberry Fork (Shepard et al. 2002). The fish community was assessed as *good* (Appendix G).

Assessment stations located within the sub-watershed. Descriptions are provided in Appendix E-1.

Station	Assessment Type	Date	Location	Area (mi^2)	Classification
GSAMF-26	Habitat, Biological, Chemical	2002	Borden Cr. at FSR 208	15	ONRW/F&W
GSAMF-15[a] GSAMF-23[b]	Habitat, Biological, Chemical	2001	Borden Cr. at FSR 229	37	ONRW/F&W
GSAMF-24	Habitat, Biological, Chemical	2002	Braziel Cr. at confluence with Borden Cr.	8	ONRW/F&W
GSAMF-19	Habitat, Biological, Chemical	2002	Caney Cr. approx. 2 mi. NE of Pleasant Hill	15	ONRW/F&W
GSAMF-25	Habitat, Biological, Chemical	2002	Flannigan Cr. at FSR 208	9	ONRW/F&W
GSAMF-21	Habitat, Biological, Chemical	2002	Hubbard Cr. at FSR 210	11	ONRW/F&W
SF-2 GSAMF-13[a] GSAMF-18[b]	Habitat, Biological, Chemical	2001 2002	Sipsey Fork at AL Hwy 33	125	ONRW/F&W
GSAMF-14[a] GSAMF-20[b]	Habitat, Biological, Chemical	2001	Sipsey Fork at Winston CR 60	90	ONRW/F&W
TPSL-1 GSAMF-22	Habitat, Biological, Chemical	2002	Thompson Cr. at FSR 208	16	ONRW/F&W
BW01A2-59	Habitat, chemical	1998	Hagood Cr. approx. 3.3 mi. us of confluence with Braziel Cr. and Borden Cr.	3	ONRW/F&W

a. GSA Fish IBI assessment location as reported in Shepard et al. (2001); b. GSA Fish IBI assessment location as reported in Shepard et al. (2002)

<u>Flannigan Creek</u>: Flannigan Creek was monitored during GSA's Assessment of Mulberry Fork (Shepard et al. 2002). The fish community was assessed as *good* (Appendix G).

<u>Hubbard Creek</u>: Hubbard Creek was monitored during GSA's Assessment of Mulberry Fork (Shepard et al. 2002). The fish community was assessed as *fair* (Appendix G).

<u>Sipsey Fork</u>: Sipsey Fork was monitored at two locations during ADEM's Reference Reach Program (Appendix O) and 2002 Periphyton Bioassessment Project (Appendix Q) and GSA's Assessment of Mulberry Fork (Shepard et al. 2002). At SF-2, Sipsey Fork is a low-gradient, relatively deep creek located in the Dissected Plateau (68e) subecoregion (Appendix O-1). Sedimentation impacts were noted by both ADEM and GSA (Appendix O-1, Shepard et al. 2002). The macroinvertebrate community was assessed as *good* (Appendix O-2). During 2002, the fish community was assessed as *fair* by both ADEM

and GSA (Appendix G). The fish community was also assessed as *fair* at GSAMF-20 (Appendix G).

Thompson Creek: At TPSL-1, Thompson Creek is a riffle-run stream located in the Dissected Plateau (68e) subecoregion (Appendix O-1). Bottom substrates are a mixture and gravel, cobble, and sand. Eight EPT families were collected at the site, indicating the macroinvertebrate community to be in *fair* condition (Appendix O-2). During 2002, ADEM and GSA assessed the fish community as *fair* (Appendix O-2).

ADEM collected intensive water quality data in 1999 and 2002 (Appendix O-3). Hardness and nutrient concentrations (TP, DRP, NH_3-N, TKN) were periodically elevated. Chlorophyll a exceeded background conditions during the March, May, and October 2002 sampling events. Total organic carbon was elevated in March and April of 2002.

Sub-watershed status: Impaired biological conditions were detected at 8 sites within the sub-watershed (Appendix G). Sedimentation impacts were noted at sampling reaches on Braziel Creek and Sipsey Fork. Sub-watershed assessments conducted by the local SWCD did not suggest a source of the impairment. Further monitoring within the sub-watershed is recommended.

Sub-Watershed: Upper Brushy Creek NRCS Sub-Watershed Number 030

Landuse: The Upper Brushy Creek sub-watershed, located primarily within the Bankhead National Forest, drains approximately 88 mi^2 in Lawrence and Winston Counties. Land cover was estimated to be 97% forest. A total 1 current construction/stormwater authorization and 2 CAFO registrations have been issued in the sub-watershed (Appendix B).

Percent land cover estimated by local SWCD (Appendix A, ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
97%	<1%	2%	0%	<1%	0%	<1%

NPS impairment potential: Based on local SWCD information, the relative potential for impairment from all rural and urban categories was *low* (Appendix D). However, Upper Brushy Creek was given a 5th priority sub-watershed rating by the Lawrence County SWCD for resource concerns listed in Appendix I. Reconnaissance of the sub-watershed in 1997 showed pasture to comprise approximately 10% of the total land area (ADEM 1999j). Poultry and cattle production were also evident in the Collier and Capsey Creek drainages (ADEM 1999j, Shepard et al. 2002).

Ratings for each NPS category based on values estimated during the SWCD sub-watershed assessment.

Category	NPS Score	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Value	7	0.06 AU/ac	0.00%	<1%	2%	0%	15%	0.5 tons/ac/yr
NPS Potential	L	L	L	L	L	L	L	L
Appendix	D	H	H	A	A	A	I	I

Assessments: An assessment was not conducted within the Upper Brushy Creek sub-watershed during the 2002 NPS screening assessment of the BWC basin group. Beech Creek, Brushy Creek, Capsey Creek, Collier Creek, and Rush Creek have been previously monitored in conjunction with GSA's Assessment of Sipsey and Mulberry Fork (Shepard et al. 2001, Shepard et al. 2002), ADEM's Ecoregional Reference Reach Program, and the 2002 Periphyton Bioassessment Pilot Project (Appendix Q).

<u>Beech Creek</u>: At GSAMF-33, Beech Creek is located within the Dissected Plateau (68e) subecoregion (Appendix E). The reach was assessed during GSA's Mulberry Fork Assessment (Shepard et al. 2002). Substrates were a mixture of cobble, gravel, and sand (Shepard et al. 2002). The fish community was assessed as *fair* (Appendix G).

<u>Brushy Creek</u>: Brushy Creek was assessed at BRSL-3 during ADEM's 2002 Reference Reach Program (Appendix E). Located within the Dissected Plateau (68e) subecoregion, Brushy Creek at BRSL-3 was characterized by riffle-run geomorphology and boulder, cobble, gravel, and sand substrates (Appendix O-1). Similar results were obtained during

Assessment stations located within the sub-watershed. Descriptions are provided in Appendix E-1.

Station	Assessment Type	Date	Location	Area (mi^2)	Classification
GSAMF-33	Habitat, Biological, Chemical	2002	Beech Cr. at FSR 245	10	F&W
BRSL-3 GSAMF-34	Habitat, Biological, Chemical	2002	Brushy Cr. at us of north loop of Lawrence CR 73	9	F&W
GSAMF-17[a] GSAMF-29[b]	Habitat, Biological, Chemical	2001	Brushy Cr. nr. mouth of Capsey Cr.	60	F&W
GSAMF-30	Habitat, Biological, Chemical	2002	Capsey Cr. at FSR 266	20	F&W
GSAMF-32	Habitat, Biological, Chemical	2002	Collier Cr. at end of FSR 253	7	F&W
GSAMF-31	Habitat, Biological, Chemical	2002	Rush Cr. at FSR 245	12	F&W

a. GSA Fish IBI assessment location as reported in Shepard et al. (2001); b. GSA Fish IBI assessment location as reported in Shepard et al. (2002)

GSA's Mulberry Fork Assessment (Shepard et al. 2002). The macroinvertebrate and fish communities was assessed as *good* and *fair/poor*, respectively (Appendix O-2). GSA assessed the fish community as *poor* (Appendix G). Water quality data collected at the site are presented in Appendix O-3.

At GSAMF-29, Brushy Creek is located within the Dissected Plateau (68e) subecoregion (Appendix E). The reach was assessed during GSA's Mulberry Fork Assessment (Shepard et al. 2002). Substrates were a mixture of boulder, cobble, gravel, and sand (Shepard et al. 2002). The fish community was assessed as *fair* (Appendix G).

<u>Capsey Creek</u>: Capsey Creek was assessed at GSAMF-30 during GSA's Mulberry Fork Assessment (Shepard et al. 2002, Appendix E). Substrates were a mixture of bedrock, boulder, cobble, gravel, and sand (Shepard et al. 2002). The fish community was assessed as *good* (Appendix G).

<u>Collier Creek</u>: Substrate composition of Collier Creek at GSAMF-32 was very similar to Capsey Creek at GSAMF-30 (Shepard et al. 2002). However, the fish community was assessed as *fair* (Appendix G).

<u>Rush Creek</u>: At GSAMF-31, Rush Creek is located within the Dissected Plateau (68e) subecoregion (Appendix E). The reach was assessed during GSA's Mulberry Fork Assessment (Shepard et al. 2002). Substrates were a mixture of bedrock, boulder, cobble, gravel, and sand (Shepard et al. 2002). The fish community was assessed as *good* (Appendix G).

Sub-watershed status: Fish communities were found to be impaired at sites on Brushy Creek, Collier Creek, and Beech Creek. The cause of the impairment was not identified. Further investigation is recommended.

Sub-Watershed: Right Fork Clear Creek NRCS Sub-Watershed Number 050

Landuse: Right Fork of Clear Creek drains approximately 84 mi^2 in Winston County. The SWCD estimated percent land cover as 68% forest and 17% pasture. A total of 10 construction/stormwater authorizations and NPDES permits have been issued in the sub-watershed (Appendix B).

Percent land cover estimated by local SWCD (Appendix A, ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
68%	1%	17%	8%	2%	<1%	4%

NPS impairment potential: Right Fork Clear Creek was identified as a NPS priority sub-watershed in 1997 due to impaired habitat and biological conditions at sampling reaches established on Clear Creek (CLCW-53b) and Right Fork Clear Creek (CLCW-53c) (ADEM 1999a). The 1998 SWCD sub-watershed assessments suggested mining and pasture runoff to be NPS concerns (Appendix D). The potential for impairment from forestry activities was not determined (Appendix I).

Ratings for each NPS category based on values estimated during the SWCD sub-watershed assessment.

Category	NPS Score	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Value	10	0.19 AU/ac	0.00%	1%	17%	8%	ur	1.7 tons/ac/yr
NPS Potential	L	L	H	L	M	L	ur	L
Appendix	D	H	H	A	A	A	I	I

Assessments: Clear Creek, Little Clear Creek, Right Fork Clear Creek, and Widow Creek were monitored during the 2002 NPS Screening Assessment (Appendix F). Clear Creek and Right Fork Clear Creek were also monitored during GSA's Mulberry Fork Assessment (Appendix E, Shepard et al. 2002).

Clear Creek: At CLCW-53b, Clear Creek is a low-gradient, clay-bottomed stream located in the Dissected Plateau (68e) subecoregion (Appendix J). Bank erosion was evident during the May 2002 site visit. Substrate composition was estimated to be 65% sand and silt due to heavy sediment deposits at the site. Six EPT families were collected, indicating the macroinvertebrate community to be in *fair* condition (Appendix K). A fish IBI assessment conducted by GSA in 2002 indicated the fish community to also be in *fair* condition (Appendix G).

Water quality data collected at CLCW-53b during June of 2002 are presented in Appendix M.

Assessment stations located within the sub-watershed. Descriptions are provided in Appendix E-1.

Station	Assessment Type	Date	Location	Area (mi^2)	Classification
CLCW-53b GSAMF-16	Habitat, Biological, Chemical	2002	Clear Cr. at unnamed rd. nr. Winston CR 28	20	F&W
CLCW-53c GSAMF-15	Habitat, Biological, Chemical	2002	Right Fork Clear Cr. at Winston CR 32	21	F&W
LCLW-19	Habitat, Biological, Chemical	2002	Little Clear Cr. at Winston CR 369	8	F&W
WIDW-18	Habitat, Biological, Chemical	2002	Widow Cr. at AL Hwy 278	8	F&W

<u>Right Fork Clear Creek</u>: Bottom substrates in Right Fork Clear Creek at CLCW-53b were dominated by sand deposits (Appendix J, Shepard et al. 2002). Ten EPT families were collected, indicating the macroinvertebrate community to be in *fair* condition (Appendix K). ADEM and GSA assessed the fish community as *fair/poor* and *poor,* respectively (Appendix G).

Water quality data collected at CLCW-53c during June and July of 2002 are summarized in Appendix M. The chlorophyll *a* concentration during June was 1.87 mg/L.

<u>Little Clear Creek</u>: At LCLW-19, Little Clear Creek is a low-gradient stream in the Dissected Plateau (68e) subecoregion (Appendix J). Sand, silt, and cobble were the dominant substrate types. Habitat quality was impacted by heavy sand deposits. Eleven EPT families were collected, indicating the macroinvertebrate community to be in *good* condition (Appendix K). The fish community was in *poor* condition (Appendix K).

Water quality data collected at LCLW-19 during June and July of 2002 are presented in Appendix M.

<u>Widow Creek</u>: At WIDW-18, Widow Creek is a riffle-run stream in the Dissected Plateau (68e) subecoregion (Appendix J). Substrate was a mixture of bedrock, boulder, cobble, sand and silt. Habitat quality was impacted by sand deposits. Fourteen EPT families were collected, indicating the macroinvertebrate community to be in *good* condition (Appendix K). However, the fish community was assessed as *fair/poor* (Appendix K). Ammonia and nitrate+nitrite-nitrogen concentrations were elevated during June of 2002 (Appendix M).

Sub-watershed status: Impaired biological conditions were detected at sites on Clear Creek, Right Fork Clear Creek, Little Clear Creek, and Widow Creek. Historical water quality problems have been suggested as the cause for the lack of Tuscaloosa darters (*Etheostoma douglasi*) within the Clear Creek drainage (Shepard et al. 2002). Substrate composition at both reaches was dominated by heavy deposits sand (ADEM 1999a). A source of the sedimentation was not determined.

Sub-Watershed: Upper Rock Creek NRCS Sub-Watershed Number 080

Landuse: The Upper Rock Creek sub-watershed drains approximately 87 mi^2 in Cullman, Winston, and Lawrence Counties. Forest and pasture comprised 95% of land cover within the sub-watershed. One current construction/stormwater authorization, one semi-public/private NPDES permit, and 3 CAFO registrations have been issued in the sub-watershed (Appendix B). A 5.0 mile segment of Rock Creek is impaired by pathogens and organic enrichment/dissolved oxygen from agricultural sources (Appendix C-1). ADEM's TMDL for these pollutants have been approved by EPA.

Percent land cover estimated by local SWCD (Appendix A, ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
57%	2%	38%	0%	1%	<1%	2%

NPS impairment potential: Upper Rock Creek was identified as a NPS priority sub-watershed in 1997 (ADEM 1999a). Poultry and cattle production and pasture runoff were identified as NPS concerns during the 1998 SWCD sub-watershed assessment (Appendix D). Upper Rock Creek was given a 1st priority sub-watershed rating by the Winston County SWCD. Resource concerns are listed in Appendix I.

Ratings for each NPS category based on values estimated during the SWCD sub-watershed assessment.

Category	NPS Score	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Value	6	1.45 AU/ac	0.00%	2%	38%	0%	23%	1.1 tons/ac/yr
NPS Potential	L	M	L	L	H	L	L	L
Appendix	D	H	H	A	A	A	I	I

Assessments: One reach on Rock Creek was monitored during the 2002 NPS Screening Assessment (Appendix F). Three locations on Blevens Creek and two additional locations on Rock Creek were assessed in conjunction with ADEM's Ecoregional Reference Reach Program and GSA's Mulberry Fork Assessment (Appendix E).

Rock Creek: At ROCW-52b, Rock Creek is a moderate-gradient stream located in the Southern Table Plateaus (68d) subecoregion (Appendix J). Bottom substrates were generally a mixture of bedrock, boulder, cobble, and gravel (Appendix J, Shepard et al. 2002). Eleven EPT families were collected, indicating the macroinvertebrate community to be in *good* condition (Appendix K). A fish IBI assessment conducted by GSA in 2001 indicated the fish community to be in *poor* condition (Appendix G). Water quality data collected in June of 2002 did not indicate a cause of the impairment (Appendix M).

Rock Creek at GSAMF-35 was assessed during GSA's Mulberry Fork Assessment (Appendix E, Shepard et al. 2002). Bottom substrates were estimated to be 95% sand. The fish community was assessed as *poor* (Appendix G).

Assessment stations located within the sub-watershed. Descriptions are provided in Appendix E-1.

Station	Assessment Type	Date	Location	Area (mi^2)	Classification
ROCW-52b GSAMF-19[a] GSAMF-36[b]	Habitat, Biological, Chemical	2001 2002	Rock Cr. at Winston CR 80	13	F&W
GSAMF-18[a] GSAMF-35[b]	Habitat, Biological, Chemical	2001	Rock Cr. at Winston CR 66	79	F&W
BLVC-1	Habitat, Biological, Chemical	2002	Blevens Cr. at Cullman CR west of CR 31	9	F&W
GSAMF-21[a] GSAMF-38[b]	Habitat, Biological, Chemical	2001	Blevens Cr. at Cullman CR 1043	28	F&W
GSAMF-20[a] GSAMF-37[b]	Habitat, Biological, Chemical	2001	Blevens Cr. at Winston CR 39	44	F&W

a. GSA Fish IBI assessment location as reported in Shepard et al. (2001); b. GSA Fish IBI assessment location as reported in Shepard et al. (2002)

Blevens Creek: At BLVC-1, Blevens Creek is a riffle-run stream located in the Southern Table Plateaus (68d) subecoregion (Appendix O-1). The site was assessed during 1998 and 2002 as part of ADEM's Ecoregional Reference Reach Program (Appendix O). Bottom substrates were generally a mixture of boulder, cobble, gravel, and sand (Appendix O-1). Thirteen EPT families were collected in 1998, indicating the macroinvertebrate community to be in *excellent* condition (Appendix K). In 2002, the invertebrate and fish communities were assessed as *good* and *fair/poor*, respectively (Appendix K).

Intensive water quality data were collected at BLVC-1 during 1999 and 2002 (Appendix O-3). Total suspended solids, total dissolved solids, fecal coliform counts, and nutrient concentrations (DRP, NO_3+NO_2-N, TKN) were elevated above least-impaired ecoregional reference conditions.

Blevens Creek has been assessed at 2 additional locations in conjunction with GSA's Assessment of Mulberry Fork (Shepard et al. 2001, Shepard et al. 2002). At GSAMF-38, Blevens Creek is a bedrock, boulder, and cobble stream. The fish community at this location was assessed as *fair* (Appendix G). Bedrock comprised a smaller percentage of bottom substrates at GSAMF-37 (Shepard et al. 2001, Shepard et al. 2002). The fish community was assessed as *poor* at this location (Appendix G).

Sub-watershed status: Rock Creek is one of the most highly agricultural areas in Alabama. Estimates of poultry and cattle production and pasture runoff were the highest in the Sipsey Fork CU. A 5.0 mile segment of Rock Creek is impaired by pathogens and organic enrichment/dissolved oxygen from agricultural sources. ADEM's TMDL for these pollutants have been approved by EPA. Assessments conducted during 2001 and 2002 indicated impaired biological conditions at 5 reaches on Rock Creek and Blevens Creek.

Sub-Watershed: Crooked Creek NRCS Sub-Watershed Number 090

Landuse: The Crooked Creek sub-watershed drains approximately 58 mi^2 in Cullman County. Forest and pasture land were the dominant land cover types within the sub-watershed. One construction/stormwater authorization, one semi-public/private NPDES permit, and 2 CAFO registrations have been issued in the sub-watershed (Appendix B). A 28.0 mile segment of Crooked Creek is impaired by ammonia, pathogens and organic enrichment/dissolved oxygen from intensive animal feeding operations and pasture grazing (Appendix C-1). ADEM's TMDLs for these pollutants have been approved by EPA. Implementation of these TMDLs is pending.

Percent land cover estimated by local SWCD (Appendix A, ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
51%	2%	43%	0%	2%	<1%	2%

NPS impairment potential: The overall potential for impairment from nonpoint sources was estimated as *moderate.* The main NPS concerns were poultry production and runoff from pasture and forestry lands. The potential for impairment from urban sources was *low*.

Ratings for each NPS category based on values estimated during the SWCD sub-watershed assessment.

Category	NPS Score	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Value	17	2.74 AU/ac	0.00%	2%	43%	0%	49%	0.9 tons/ac/yr
NPS Potential	M	H	L	L	H	L	M	L
Appendix	D	H	H	A	A	A	I	I

Assessments: Crooked Creek was monitored at 2 locations during the 2002 NPS Screening Assessment (Appendix F). These locations were also assessed during GSA's Mulberry Fork Assessment (Appendix E).

Assessment stations located within the sub-watershed. Descriptions are provided in Appendix E-1.

Station	Assessment Type	Date	Location	Area (mi^2)	Classification
CROC-54a GSAMF-23[a] GSAMF-40[b]	Biological Habitat Chemical	2001 2002	Crooked Cr. at Cullman CR 1043	23	F&W
GSAMF-22[a] GSAMF-39[b] GSAMF-22[c]	Biological Habitat Chemical	2001 2002	Crooked Cr. at Cullman CR 940	54	F&W

a. GSA Fish IBI assessment location as reported in Shepard et al. (2001); b. GSA Fish IBI assessment location as reported in Shepard et al. (2002)

<u>Crooked Creek</u>: At CROC-54a, Crooked Creek is a riffle-run stream in the Southern Table Plateau (68d) subecoregion. Sediment deposition was noted during assessments conducted by ADEM and GSA (Appendix J, Shepard et al. 2001, Shepard et al. 2002). Seven EPT

families were collected by ADEM in June of 2002, indicating the macroinvertebrate community to be in *fair* condition (Appendix K). The fish community was assessed as *fair/poor* and *poor* by ADEM and GSA, respectively (Appendix K, Appendix G, Shepard et al. 2001).

ADEM assessed Crooked Creek at GSAMF-22 (Appendix F). In June of 2002, habitat quality was impacted by some sediment deposition and unstable banks (Appendix J). Six EPT families were collected, indicating the macroinvertebrate community to be in *fair* condition (Appendix K). The fish community was assessed as *poor* in May of 2001 (Appendix G, Shepard et al. 2001, Shepard et al. 2002).

One-time water quality sampling detected elevated turbidity, fecal coliform counts, and concentrations of total dissolved solids and nutrients (TKN, NO_2+NO_3-N and TP) at CROC-54a and elevated turbidity, total dissolved solids, and nutrients (TKN, NO_2+NO_3-N, TP, DRP, and TOC) at GSAMF-22 (Appendix M).

Sub-watershed status: A 28.0 mile segment of Crooked Creek is impaired by ammonia, pathogens and organic enrichment/dissolved oxygen from intensive animal feeding operations and pasture grazing. ADEM's TMDLs for these pollutants have been approved by EPA. Assessments conducted during 2001 and 2001 indicated the macroinvertebrate and fish communities to be impaired at two reaches on Crooked Creek. Habitat assessments and water quality sampling suggested sedimentation and nutrient enrichment as potential causes of the impairment.

Sub-Watershed: Upper Ryan Creek **NRCS Sub-Watershed Number 110**

Landuse: The Upper Ryan Creek sub-watershed drains approximately 85 mi^2 in Cullman County. Forest and pasture land were the dominant land cover types within the sub-watershed. A total of 20 current construction/stormwater authorizations, NPDES permits, and CAFO registrations have been issued in the sub-watershed (Appendix B).

Percent land cover estimated by local SWCD (Appendix A, ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
42%	6%	38%	0%	10%	1%	3%

NPS impairment potential: Based on the 1998 SWCD sub-watershed assessment results, the main NPS concerns within the sub-watershed were poultry and cattle production, runoff from crop and pasture lands, and forestry (Appendix D). Impairment from urban runoff and development were also concerns within the sub-watershed. The sub-watershed was given a 5th priority rating by the local SWCD. Resource concerns included crop erosion, poor management of animal waste, low dissolved oxygen, nutrients, and bacteria in surface waters, and livestock in streams (Appendix I).

Ratings for each NPS category based on values estimated during the SWCD sub-watershed assessment.

Category	NPS Score	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Value	19	2.45 AU/ac	0.00%	7%	38%	0%	40%	1.0 ton/ac/yr
NPS Potential	H	H	L	M	H	L	M	L
Appendix	D	H	H	A	A	A	I	I

Assessments: Rock Creek and Ryan Creek were monitored during the 2002 NPS screening assessment (Appendix F). Ryan Creek and Rock Creek have also been monitored in conjunction with ADEM's §303(d) Monitoring Program, the 2002 Periphyton Bioassessment Pilot Project, and GSA's Mulberry Fork Assessment (Appendix E).

Assessment stations located within the sub-watershed. Descriptions are provided in Appendix E-1.

Station	Assessment Type	Date	Location	Area (mi^2)	Classification
GSAMF-26[a] GSAMF-43[b]	Habitat, Biological, Chemical	2001	Ryan Cr. at Cullman CR 436	23	F&W
GSAMF-25[a] GSAMF-42[b]	Habitat, Biological, Chemical	2001	Ryan Cr. at Cullman CR 438	49	F&W
RYNC-1 GSAMF-24[a] GSAMF-41[b]	Habitat, Biological, Chemical	2001 2002	Ryan Cr. approx. 0.3 mi S of Cullman CR 438	62	F&W
RYNC-2	Habitat, Chemical	2002	Ryan Cr. at Cullman CR 36	43	F&W
RYNC-3	Habitat, Chemical	2002	Ryan Cr. at US Hwy 278	18	F&W
ROCC-15	Habitat, Biological, Chemical	2002	Rock Cr. at Cullman CR 436	16	F&W

a. GSA Fish IBI assessment location as reported in Shepard et al. (2001); b. GSA Fish IBI assessment location as reported in Shepard et al. (2002)

Ryan Creek: Ryan Creek is located within the Dissected Plateau (68e) subecoregion (Appendix E). At RYNC-1, Ryan Creek was characterized by bedrock, boulder, and cobble substrates (Appendix J). Habitat quality at the reach was affected by sedimentation (Appendix J, Shepard et al. 2002). Eleven EPT families were collected, indicating the macroinvertebrate community to be in *good* condition (Appendix K). The fish community was assessed as *poor* by both ADEM and GSA (Appendix K, Appendix G).

GSA conducted fish bioassessments at two additional locations on Ryan Creek (Appendix E, Shepard et al. 2001, Shepard et al. 2002). Habitat quality at these sites was less affected by sedimentation. However, the fish community was assessed as *poor* at GSAMF-42 and *fair* at GSAMF-43 (Appendix G).

Intensive water quality monitoring was conducted at 3 locations on Ryan Creek, January through August of 2002 (Appendix P-3). Results showed elevated nutrient concentrations. Turbidity and conductivity were also periodically higher than background levels. On March 21, 2001, fecal coliform counts were >1200 colonies/100 mL at all 3 reaches. Fecal coliform counts were elevated at RYNC-1 and RYNC-2 during the June 26 sampling event. At RYNC-1, the geometric mean of fecal coliform counts was 221 colonies/100 mL, March 11-April 2, 2002.

Screening-level water quality sampling showed elevated concentrations of total dissolved solids and nutrients (NH_3-N, TOC) at Rock Creek (Appendix M).

Rock Creek: Rock Creek is located within the Dissected Plateau (68e) subecoregion (Appendix E). At ROCC-15, Rock Creek was a riffle run stream characterized by boulder, cobble, and sand substrates (Appendix J). Habitat quality at the reach was affected by unstable banks (Appendix J, Shepard et al. 2002). Ten EPT families were collected, indicating the macroinvertebrate community to be in *fair* condition (Appendix K).

Screening-level water quality sampling showed elevated concentrations of total dissolved solids and nutrients (NH_3-N, TOC) at Rock Creek (Appendix M).

Sub-watershed status: Assessments indicated impaired macroinvertebrate or fish communities at 4 locations on Ryan and Rock Creeks. Locations on Ryan Creek were impacted by sedimentation, pathogens, and nutrient enrichment. The main NPS concerns within the sub-watershed were poultry and cattle production, runoff from crop and pasture lands, and forestry.

Sub-Watershed: Sipsey Fork NRCS Sub-Watershed Number 130

Landuse: The Sipsey Fork sub-watershed encompasses 53 mi^2 in Walker and Cullman Counties. Land cover was mainly forest mixed with some pasture land. A total of 4 mining NPDES permits have been issued in the sub-watershed (Appendix B).

Percent land cover estimated by local SWCD (Appendix A, ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
67%	1%	24%	4%	<1%	1%	3%

NPS impairment potential: The 1998 SWCD sub-watershed assessments estimated poultry and cattle production, pasture runoff, mining, forestry, and septic tank failure to be NPS concerns within the sub-watershed (Appendix D). Sipsey Fork was given a 5th priority sub-watershed rating by the Walker County SWCD for resource concerns listed in Appendix I.

Ratings for each NPS category based on values estimated during the SWCD sub-watershed assessment.

Category	NPS Score	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Value	15	0.92 AU/ac	0.00%	1%	24%	5%	46%	7.1 tons/ac/yr
NPS Potential	M	M	L	L	M	M	M	L
Appendix	D	H	H	A	A	A	I	I

Assessments: Bridge construction at the sampling reach prevented assessment of Mill Creek during ADEM's 2002 NPS Screening Assessment of the BWC Basin Group (Appendix F).

Assessment stations located within the sub-watershed. Descriptions are provided in Appendix E-1.

Station	Assessment Type	Date	Location	Area (mi^2)	Classification
MILW-18a	None conducted	2002	Mill Cr. at unnamed Winston CR	19	F&W

Mill Creek: One station on Mill Creek was monitored during the 1997 assessment (Appendix E). Bottom substrate at the site was composed primarily of sand, silt, and detritus with small amounts of bedrock, boulder, cobble, and gravel. Habitat quality was assessed as *moderately impaired* due to sediment deposition, lack of bank vegetative stability, and poor riparian zone protection (ADEM 1999a). Chemical impairment was indicated by high total dissolved solids (1,317 mg/L), conductivity (1,205 μmhos), chlorides (289 mg/L), sulfates (493 mg/L), and nitrate+nitrite-nitrogen (4.67 mg/L) (ADEM 1999a). A source of the impairment was not determined.

Sub-watershed status: The Sipsey Fork sub-watershed was identified as a NPS priority sub-watershed in 1997 due to impaired habitat, chemical/physical, and biological conditions at Mill Creek (ADEM 1999a). Poultry and cattle production, pasture runoff, mining, forestry, and septic tank failure were estimated to be main NPS concerns within the sub-watershed.

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Locust Fork CU (0316-0111)

The Locust Fork CU contains 15 sub-watersheds and drains approximately 1,211 mi^2 in 6 counties. The CU is located within the Southern Limestone/Dolomite Valley and Low Rolling Hills (67f), Southern Table Plateaus (68d), Dissected Plateau (68e), and Shale Hills (68f) subecoregions of the Ridge and Valley (67) and Southwestern Appalachian (68) Ecoregions (Griffith et al. 2001).

Three segments of Locust Fork are listed on ADEM's §303(d) list of impaired waters (Appendix C-2). Endangered or threatened species have been identified by the EPA within two of these segments (ADEM 1999, Federal Register 1998). Siltation, nutrients, and habitat alteration are listed as impairments for the protection of these listed species. The third segment is listed for not meeting its "Fish and Wildlife" water use classification due to organic enrichment/dissolved oxygen impacts from urban sources. ADEM is in the process of developing a nutrient target for Locust Fork to address nutrient impacts within the river (ADEM 2002i). Four additional waterbodies are also on ADEM's §303(d) list of impaired waters (Appendix C-2).

Landuse: Based on the conservation assessment worksheets completed (1998) by the local SWCDs, the primary landuses throughout the Locust Fork CU were forest, pasture, and urban areas. Pesticide/herbicide use was estimated for 590,993 acres in 12 sub-watersheds. Within these areas, approximately 95,750 acres of crop and pastureland (16% of total area reported) were treated with pesticides and/or herbicides.

Percent land cover estimated by local SWCD (ASWCC 1998)

Forest	**Row crop**	**Pasture**	**Mining**	**Urban**	**Open Water**	**Other**
55%	8%	15%	3%	13%	1%	4%

NPS impairment potential: There was a *moderate* potential for NPS impairment in 5 sub-watersheds. Crop and pasture runoff, sedimentation, forestry, mining, and animal husbandry were the primary NPS concerns in the CU. There was a *moderate* or *high* potential for impairment from urban sources within 7 sub-watersheds.

Number of sub-watersheds with (M)oderate or (H)igh ratings for each nonpoint source category (Appendix D).

Category	Overall Potential	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Moderate	5	4	0	7	9	4	4	5
High	0	0	0	2	0	0	1	1

Number of sub-watersheds with (M)oderate or (H)igh ratings for each point source category (Appendix D).

Category	**Overall Potential**	**% Urban**	**Development**	**Septic tank failure**
Moderate	4	6	4	5
High	3	2	2	2

Historical data/studies: The majority of assessments conducted within the Locust Fork CU were from 10 programs and projects conducted by the ADEM and the Geological Survey of Alabama (GSA).

Monitored assessment data, including chemical, physical, and/or biological data, were collected during these programs using commonly accepted and well-documented methods. Results of monitored assessments were used in this report to assess habitat, biological, and chemical conditions within a sub-watershed.

Evaluated assessments were conducted in conjunction with ADEM's ALAMAP Program (Appendix T). Evaluated assessments are based on observed conditions, limited water quality data, water quality data older than 5 years, or estimated impacts from observed or suspected activities. A summary of 5 projects or programs, completed or funded by ADEM, is provided in the appendices. The summaries include lead agency, project objectives, data collected, and applicable quality assurance manuals.

Types of assessments and assessment guidelines for projects that have generated monitored assessment information.

Project	Assessment Type[a]	Assessment Guidelines (Y/N)
ADEM's Ecoregional Reference Reach Program[b]	H, C, B	Y
ADEM's §303(d) Waterbody Monitoring Program[b]	H, C, B	Y
ADEM's Reservoir Monitoring Program	C, B	Y
ADEM's Fish Tissue Monitoring Program	C	Y
ADEM's Ambient Monitoring Program[b]	H, C, B	Y
University Tributary Nutrient Project[b]	C	Y
ADEM's Periphyton Bioassessment Pilot Study[b]	H, C, B	Y
USGS's Assessment of Water-Quality and Biological Conditions in Village and Valley Creeks	H, C, B	Y
GSA's Water Quality Assessment of Locust Fork	C	N
2001 Chitwood Creek WQDS	H, C, B	Y

[a]H=habitat; C=chemical/physical; B=biological
[b]Data and summary of project included in Appendices

2002 NPS Screening Assessment: Seven sub-watersheds were targeted for assessment during the 2002 NPS Screening Assessment because they were recommended as NPS priority sub-watersheds in 1997, had a *moderate* potential for impairment from nonpoint sources, were on ADEM's 2002 §303(d) list of impaired waters, or recent data were unavailable. Appendix F lists the 10 stations assessed.

Sub-watershed assessments: Current and historical monitoring data were combined to provide a comprehensive assessment. Habitat, chemical/physical, and biological indicators of water quality were monitored in 9 sub-watersheds (Appendix G). Habitat quality was assessed as *excellent* or *good* at 27 stations and *fair* or *impaired* at 3 stations. Macroinvertebrate assessments were conducted at 29 stations. Results of these assessments indicated the macroinvertebrate community to be in *excellent* or *good* condition at 10 (34%) stations and *fair* or *poor* at 19 stations (66%). Fish communities were assessed as *good* at one station, *fair or fair/poor* at 3 stations, and *poor* or *poor/very poor* at 4 stations.

Overall condition for each station was rated as the lowest assessment result obtained (Appendix G). Five stations (17%) were assessed as *excellent* or *good*. Eleven (38%) stations were assessed as *fair*. Thirteen (45%) stations were assessed as *poor*.

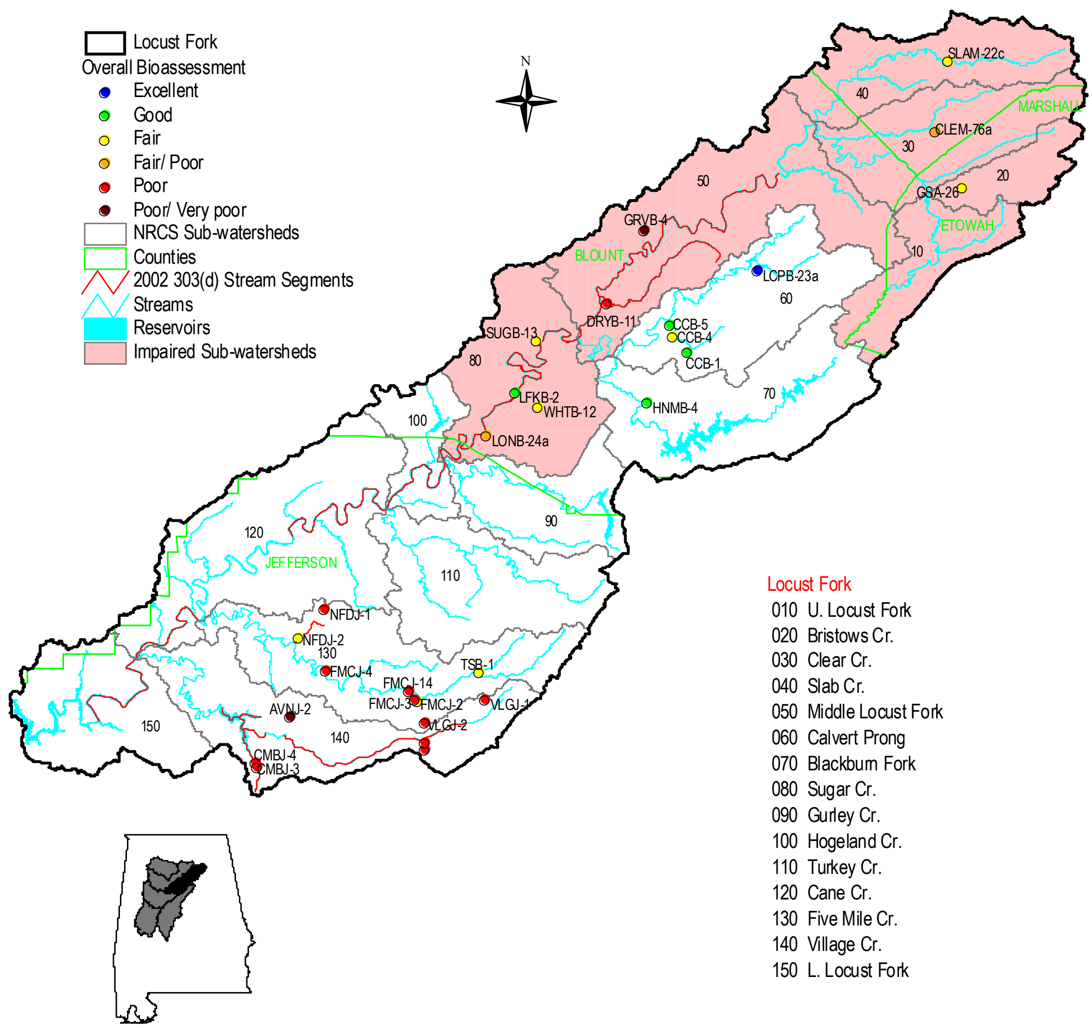
Sub-watershed status: Biological conditions were assessed as impaired in 6 sub-watersheds (Table 6). A summary of the information available for each of these sub-watersheds is provided in the following section. Each summary discusses landuse, nonpoint source impairment potential, assessments conducted within the sub-watershed, and nonpoint source priority status based on available data. Appendices referenced in the summaries are located at the end of the report.

List of impaired sub-watersheds in the Locust Fork CU.

Sub-watershed		**303(d)/ TMDL Waterbody**	**Lowest Station Assessment**	**Suspected Cause(s)**	**Suspected nonpoint source(s)**
010	U. Locust Fork		No recent data; 1997 NPS priority	OE/DO, pH, Sedimentation	Animal husbandry, Pasture grazing, Mining, Septic tank failure
020	Bristows Cr.		Fair	Nutrient enrichment	Crop runoff, Pasture grazing, Septic tank failure
030	Clear Cr.		Fair/poor	Sedimentation, Nutrient enrichment	Animal husbandry, Crop runoff, Pasture grazing, Urban, Septic tank failure, Development
040	Slab Cr.		Fair	Sedimentation, Nutrients	Animal husbandry, Row crops, Pasture runoff, Urban, Septic tank failure
050	Middle Locust Fork	TA 303(d)	Poor/Very poor	Nutrients, Ammonia, OE/DO, Pathogens, Sedimentation, Other habitat alteration	Animal husbandry, Crop runoff, Pasture grazing, Mining, Septic tank failure, WWTP
080	Sugar Cr.		Fair/poor	Sedimentation, Ammonia	Crop runoff, Pasture grazing, Mining

a. 303(d): on Alabama's 2002 §303(d) list of impaired waters; TA: approved TMDL.

Fig. 18. 2002 NPS priority sub-watersheds and §303(d)-listed stream and reservoir segments. Overall results of bioassessments conducted 1998-2002 are also shown.



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Upper Locust Fork — NRCS Sub-Watershed Number 010

Landuse: The Upper Locust Fork sub-watershed drains approximately 47 mi^2 in Blount and Etowah Counties. The local SWCD estimated land cover to be primarily forest and pasture land. No current construction/stormwater authorizations, NPDES permits, or CAFO registrations have been issued in the sub-watershed (Appendix B).

Percent land cover estimated by local SWCD (Appendix A, ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
61%	4%	29%	3%	<1%	<1%	3%

NPS impairment potential: The 1998 SWCD sub-watershed assessments estimated poultry and cattle production, pasture runoff, and septic tank failure to be NPS concerns within the sub-watershed (Appendix D).

Ratings for each NPS category based on values estimated during the SWCD sub-watershed assessment.

Category	NPS Score	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Value	11	0.52 AU/ac	0.00%	4%	29%	3%	6%	3.6 tons/ac/yr
NPS Potential	L	M	H	L	M	L	L	L
Appendix	D	H	H	A	A	A	I	I

Assessments: Low flow conditions prevented an assessment of Locust Fork at GSA-27 during ADEM's 2002 NPS Screening Assessment of the BWC Basin Group (Appendix F).

Assessment stations located within the sub-watershed. Descriptions are provided in Appendix E-1.

Station	Assessment Type	Date	Location	Area (mi^2)	Classification
GSA-27	Habitat, Biological, Chemical	2001	Locust Fork at Dee Nix Road	19	F&W

Locust Fork: Upper Locust Fork was identified as a NPS priority sub-watershed in 1997 (based on GSA's 1997 assessment (Appendix E, Shepard et al. 1997). Habitat quality was assessed as *fair*, with bottom substrates composed primarily of sand and silt-bottomed pools (Shepard et al. 1997). Results of the fish IBI assessment indicated the fish community to be in *poor* condition. Chemical/physical data collected by GSA also indicated impairment caused by organic enrichment and low dissolved oxygen concentrations from upstream poultry production (Shepard et al. 1997). Elevated dissolved solids and a lowered pH were attributed to a surface mine within the sub-watershed.

Sub-watershed status: Locust Fork at GSA-27 was assessed as impaired in 1997. The site should be reassessed during normal flow conditions to document current conditions.

Sub-Watershed: Bristows Creek NRCS Sub-Watershed Number 020

Landuse: The Bristows Creek sub-watershed drains approximately 25 mi^2 in Etowah County. Land cover was mainly forest mixed with some crop and pasture lands. Eight current construction/stormwater authorizations, 2 mining, and one semi-public/private NPDES permits have been issued in the sub-watershed (Appendix B).

Percent land cover estimated by local SWCD (Appendix A, ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
60%	14%	20%	2%	0%	1%	3%

NPS impairment potential: Bristow Creek was identified as a priority sub-watershed in 1997 due to biological impairment at one site on Locust Fork (Shepard et al. 1997, ADEM 1999a). Based on the 1998 SWCD sub-watershed assessments, runoff from crop and pasturelands and septic tank failure were NPS concerns within the sub-watershed (Appendix D).

Ratings for each NPS category based on values estimated during the SWCD sub-watershed assessment.

Category	NPS Score	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Value	6	0.16 AU/ac	0.00%	14%	20%	2%	4%	4.4 tons/ac/yr
NPS Potential	L	L	L	M	M	L	L	L
Appendix	D	H	H	A	A	A	I	I

Assessments: During the 2002 NPS screening assessment, ADEM monitored Bristows Creek at a sampling reach established by GSA in 1997 (Appendix E, Appendix F).

Assessment stations located within the sub-watershed. Descriptions are provided in Appendix E-1.

Station	Assessment Type	Date	Location	Area (mi^2)	Classification
GSA-26	Habitat, Biological, Chemical	2002	Bristows Cr. at Pine Grove	20	F&W

Bristows Creek: The substrate at Bristows Creek was composed of cobble, gravel, and sand (Appendix J). Habitat quality was assessed as *good*. Based on the results of ADEM's screening-level assessment, the macroinvertebrate community was in *fair* condition (Appendix K). One-time water quality sampling conducted in June of 2002 showed elevated conductivity, alkalinity, hardness, total dissolved solids, and nutrients (NO_2+NO_3-N, TP) (Appendix M).

Sub-watershed status: Bristow Creek was identified as a priority sub-watershed in 1997 and 2002 due to biological impairment at one site on Locust Fork (Shepard et al. 1997, ADEM 1999a). Runoff from crop and pasturelands and septic tank failure were NPS concerns within the sub-watershed.

Sub-Watershed: Clear Creek NRCS Sub-Watershed Number 030

Landuse: The Clear Creek sub-watershed drains approximately 73 mi^2 in Blount, Etowah, and Marshall Counties. Forest, pasture, and crop land comprised 89% of the SWCD land cover estimates. Eighteen CAFO registrations and one current construction/stormwater authorization have been issued in the sub-watershed (Appendix B).

Percent land cover estimated by local SWCD (Appendix A, ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
35%	21%	33%	<1%	6%	2%	2%

NPS impairment potential: Clear Creek was also identified as a priority sub-watershed in 1997 (ADEM 1999a). Based on the 1998 SWCD sub-watershed assessments, the primary NPS concerns were cattle and poultry production and runoff from crop and pasture lands (Appendix D). There was a *high* potential for impairment from urban sources (Appendix D). Clear Creek was given 4th and 5th priority sub-watershed ratings by the Etowah and Marshall County SWCDs. Resource concerns are listed in Appendix I.

Ratings for each NPS category based on values estimated during the SWCD sub-watershed assessment.

Category	NPS Score	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Value	15	1.43 AU/ac	0.00%	21%	33%	<1%	9%	3.5 tons/ac/yr
NPS Potential	M	M	L	H	M	L	L	L
Appendix	D	H	H	A	A	A	I	I

Assessments: One station on Clear Creek was monitored during the 2002 NPS screening assessment of the BWC basin group (Appendix F). Big Mud Creek was evaluated during ADEM's 1998 ALAMAP Program (Appendix E).

Assessment stations located within the sub-watershed. Descriptions are provided in Appendix E-1.

Station	Assessment Type	Date	Location	Area (mi^2)	Classification
CLEM-76a	Habitat, Biological, Chemical	2002	Clear Cr. at Marshall CR 96	23	F&W
BW06U2-38	Habitat, Chemical	1998	Big Mud Cr. approx. 6 mi. us of confluence with Locust Fork	6	F&W

Clear Creek: At CLEM-76a, Clear Creek was a riffle-run stream located in the Southern Table Plateaus (68d) subecoregion (Appendix J). Substrate was a mixture of boulder, cobble, gravel, and sand. Habitat quality was affected by sedimentation, but comparison to a 1997 assessment suggests the amount of silt may have decreased (Appendix J, ADEM 1999a). The presence of filamentous algae at the site indicated continued nutrient enrichment problems. The macroinvertebrate and fish communities were assessed as *good* and *fair/poor*, respectively (Appendix K). In May of 2002, one-time water quality sampling showed elevated conductivity, total dissolved solids, chlorides, and nutrients (NO_2+NO_3-N, NH_3-N, TKN, DRP) (Appendix M).

Big Mud Creek: At BW06U2-38, Big Mud Creek was a low-gradient stream in the Southern Table Plateaus (68d) subecoregion (Appendix T-1). Substrates were composed of sand, bedrock, boulder, and organic materials. Habitat quality was affected by sediment deposition and unstable banks. Results of one-time water quality sampling conducted in August of 1998 are provided in Appendix T-2.

Sub-watershed status: Biological conditions were assessed as impaired within the Clear Creek sub-watershed in 1997 and 2002. Comparison to 1997 assessment data suggest that sedimentation impacts have decreased. Nutrient enrichment continues to be a problem at the site, however.

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Sub-Watershed: Slab Creek NRCS Sub-Watershed Number 040

Landuse: The Slab Creek sub-watershed drains approximately 70 mi^2 in Blount and Marshall Counties. Land cover was an even mixture of forest, pasture, and crop land. Three current construction/stormwater authorizations, 4 NPDES permits, and 6 CAFO registrations have been issued in the sub-watershed (Appendix B).

Percent land cover estimated by local SWCD (Appendix A, ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
38%	20%	31%	1%	7%	4%	1%

NPS impairment potential: Based on local SWCD information, the main NPS concerns in the Slab Creek sub-watershed were cattle and poultry production, pasture grazing, and crop runoff (Appendix D). Additionally, Slab Creek was given a 3rd priority sub-watershed rating by the Marshall County SWCD for resource concerns including nutrient, pesticides, and bacteria in surface waters, excessive erosion and sediment from cropland, and inadequate management of animal waste (Appendix I). The potential for impairment from urban sources was *moderate* (Appendix D). Slab Creek was identified as a NPS priority sub-watershed in 1997 due to impaired habitat quality and biological condition caused by sedimentation, bank erosion, and nutrient enrichment (ADEM 1999a).

Ratings for each NPS category based on values estimated during the SWCD sub-watershed assessment.

Category	NPS Score	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Value	15	1.09 AU/ac	0.00%	20%	31%	1%	16%	2.3 tons/ac/yr
NPS Potential	M	M	L	H	M	L	L	L
Appendix	D	H	H	A	A	A	I	I

Assessments: Slab Creek was monitored during ADEM's 2002 NPS Screening Assessment (Appendix F). A 2nd location was monitored during GSA's Water Quality Assessment of Locust Fork (Appendix E).

Assessment stations located within the sub-watershed. Descriptions are provided in Appendix E-1.

Station	Assessment Type	Date	Location	Area (mi^2)	Classification
SLAM-22c	Habitat, Biological, Chemical	2002	Slab Cr. at unnamed Marshall CR nr. Douglas	23	F&W
GSA-21	Chemical	1997	Slab Cr. at Marshall CR 39	67	F&W

Slab Creek: At SLAM-22c, Slab Creek is a low-gradient, sand-bottomed stream in the Southern Table Plateaus (68d) subecoregion (Appendix J). Habitat, biological, and chemical conditions were surprisingly consistent between the two years. Habitat quality was assessed as *fair* (moderately impaired), with sand and silt comprising 80% of the bottom substrate during both 1997 and 2002 (ADEM 1999a, Appendix J). Four and 5 EPT families were collected during 1997 and 2002, respectively, showing the macroinvertebrate community to be in *fair* condition (Appendix K). Chemical impairment was again indicated by elevated nutrients (NO_2+NO_3-N, NH_3-N, TP, DRP), conductivity, total dissolved solids, and chlorides (ADEM 1999a, Appendix M). Fecal coliform concentrations were also elevated above least-impaired ecoregional reference conditions (340 colonies/100 mL in 1997 and 360 colonies/100 mL in 2002) (ADEM 1999a, Appendix M).

Water quality data were collected from Slab Creek at GSA-21 on October 23, 2000 during GSA's water quality assessment of the Locust Fork watershed (Appendix E, O'Neil and Shepard 2001).

Sub-watershed status: Slab Creek was identified as a NPS priority sub-watershed in 1997 due to impaired habitat quality and biological condition caused by sedimentation, bank erosion, and nutrient enrichment. Similar conditions were observed during the 2002 NPS screening assessment, identifying Slab Creek as a NPS priority sub-watershed. Cattle and poultry production, pasture grazing, and crop runoff were the main NPS concerns in the sub-watershed.

Sub-Watershed: Middle Locust Fork NRCS Sub-Watershed Number 050

Landuse: The Middle Locust Fork sub-watershed drains approximately 138 mi^2 in Blount and Etowah Counties. Land cover was forest with some pasture and crop lands. Three current construction/stormwater authorizations, 7 NPDES permits, and 13 CAFO registrations have been issued in the sub-watershed (Appendix B). Dry Creek is on ADEM's 2002 §303(d) list for only partially meeting its "Fish and Wildlife" water use classification. It is listed for several impairments caused by pasture grazing (Appendix C-2). A 21.8 mile segment of Locust Fork is listed for siltation and other habitat alteration caused by agricultural runoff and abandoned surface mines (Appendix C-2). Graves Creek is impaired by organic enrichment/dissolved oxygen from pasture grazing and industrial sources. ADEM's TMDL to reduce these pollutants has been approved by EPA (Appendix C-1).

Percent land cover estimated by local SWCD (Appendix A, ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
51%	13%	19%	5%	4%	<1%	7%

NPS impairment potential: The overall potential for impairment from nonpoint sources was estimated as *moderate*. The main NPS concerns within the Middle Locust Fork sub-watershed were poultry and cattle production, runoff from crop and pasture lands, and mining (Appendix D). Middle Locust Fork was given a 1st priority sub-watershed rating by the local SWCD. Resource concerns were not listed in the sub-watershed assessment. Middle Locust Fork was identified as a NPS priority sub-watershed in 1997 due to habitat and biological impairments caused by organic enrichment and low dissolved oxygen, bank erosion and sedimentation (ADEM 1999a).

Ratings for each NPS category based on values estimated during the SWCD sub-watershed assessment.

Category	NPS Score	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Value	15	0.55 AU/ac	0.00%	13%	19%	5%	18%	3.6 tons/ac/yr
NPS Potential	M	M	L	M	M	M	L	L
Appendix	D	H	H	A	A	A	I	I

Assessments: Bioassessments were conducted at locations on Dry and Graves Creek during the 2002 NPS Screening Assessment and ADEM's Periphyton Bioassessment Pilot Project (Appendix F, Appendix E). Intensive water quality monitoring was conducted at 4 locations on Graves Creek and 2 locations on Dry Creek during ADEM's §303(d) Monitoring Program. Four locations on Locust Fork and one location on Whipporwill Creek were monitored during GSA's Water Quality Assessment of Locust Fork. Two locations on Dry Creek have been evaluated during ADEM's ALAMAP Program. (Appendix E)

Assessment stations located within the sub-watershed. Descriptions are provided in Appendix E-1.

Station	Assessment Type	Date	Location	Area (mi^2)	Classification
DRYB-10	Chemical	2002	Dry Cr. at US Hwy 231	8	F&W
DRYB-11	Habitat, Biological, Chemical	2002	Dry Cr. at Phillip's Rd.	21	F&W
BW06U3-38	Habitat, Chemical	1999	Dry Cr. approx. 0.5 mi us of confluence with Locust Fork	21	F&W
BW3U5-44	Habitat, Chemical	2001	Dry Cr. approx. 0.2 mi us of AL Hwy 75	1	F&W
GRVB-1	Chemical	2000	Graves Cr. at Blount CR 31	3	F&W
GRVB-2	Chemical	2000	Graves Cr. at Blount CR 26	6	F&W
GRVB-3	Chemical	2000	Graves Cr. at unnamed Blount CR (Hamilton Mountain Rd)	10	F&W
GRVB-4	Habitat, Biological, Chemical	2000, 2002	Graves CR. at Martis Mill Rd.	13	F&W
GSA-16	Chemical	2000	Locust Fork at Swann Bridge	310	F&W
GSA-18	Chemical	2000	Locust Fork at Blount CR 26	269	F&W
GSA-19	Chemical	2000	Locust Fork at Blount CR 30	254	F&W
GSA-21	Chemical	2000	Locust Fork at US Hwy 278	219	F&W
GSA-24	Chemical	2000	Locust Fork at Blount CR 36	123	F&W
GSA-20	Chemical	2000	Whipporwill Cr. at unnamed Blount CR	22	F&W

Dry Creek: At DRYB-11, Dry Creek is a moderate-gradient stream located in the Southern Table Plateaus (68d) subecoregion (Appendix J). ADEM conducted NPS screening assessments of Dry Creek at DRYB-11 in 1997 and 2002 (DRYB-75a) (Appendix E, Appendix F). Habitat quality at Dry Creek was assessed as *good* (slightly impaired) during the 1997 and 2002 assessments (Appendix J, ADEM 1999a). Although instream habitat appeared to be stable and sediment deposition was limited, there was little riparian buffer remaining between the creek and pastures existing on both banks. Also, although fencing kept cattle out of the creek, grazing areas were located within the flood zone and below the high water mark of the creek. Six and 5 EPT families were collected at the site during 1997 and 2002, respectively, indicating the macroinvertebrate community to be in *fair* (moderately impaired) condition (Appendix K, ADEM 1999a).

Intensive water quality data were collected from Dry Creek at DRYB-11 and DRYB-10 from January to September of 2002 (Appendix P-3). Dissolved oxygen concentrations were below the dissolved oxygen criteria of 5.0 mg/L at both sites during September of 2002. The pH at DRYB-11 was measured at 9.1 s.u. during June and July of 2002. Fecal coliform counts were >1,000 colonies/100mL in 12 (38%) of the 32 samples collected from Dry Creek. Fecal coliform counts were above the Fish and Wildlife water use classification criteria of 2,000 colonies/100mL during 3 (20%) of 15 sampling events at DRYB-11. Conductivity, hardness, carbonaceous biochemical oxygen demand (CBOD5), and nutrient concentrations (TP, DRP, NO_3+NO_2-N, NH_3-N, TKN) were above normal at both sites.

Graves Creek: During the 2002 NPS screening assessment, Graves Creek was monitored at GRVB-4, downstream of reaches established by ADEM and GSA during 1997 (Appendix E). The reach is directly downstream of an unnamed tributary receiving treated effluent from a WWTP. Located in the southern Table Plateaus (68d) subecoregion, Graves Creek at GRVB-4 was characterized by bedrock covered with the aquatic macrophyte, *Podostemum* spp. Some boulders and sand were also present (Appendix J). The macroinvertebrate community was assessed as *good* at this location (Appendix K). However, the fish community was in *poor/very poor* condition at this reach.

Intensive water quality data were collected at four sites on Graves Creek from January to September of 2002 (ADEM 303d data). Samples collected from an unnamed tributary at TYWW-1, downstream of a point source discharge , and Graves Creek at GRVB-4 below the confluence with the unnamed tributary were characterized by conductivities, nutrient concentrations (TP, NO_3+NO_2-N, and NH_3-N), and hardness values significantly higher than background levels. Average total phosphorus and nitrate+nitrite-nitrogen concentrations were 248X and 86X background levels at the unnamed tributary and 72X and 27X background levels at GRVB-4. Dissolved oxygen concentrations <5.0 mg/L were measured at 3 sites on Graves Creek. The pH at one site on Dry Creek was measured at 9.1 s.u. during 2 sampling events. Fecal coliform concentrations were >2,000 colonies/100mL at GRVB-4 due to a rain event during the March of 2001 sampling event.

Graves Creek at GRVB-3, GRVB-2, and GRVB-1 are upstream of point source influences. Landuse upstream of these stations is primarily small farms and pastures (Shepard et al. 1997). Although conductivities and nutrient concentrations were lower at these upstream stations, there was evidence of organic enrichment and low dissolved oxygen concentrations and eutrophication. At GRVB-3, dissolved oxygen concentrations were measured at 3.0 mg/L and 4.0 mg/L during September and October of 2000. Rain prior to the March 2001 sampling event increased the fecal coliform count to >2,400 colonies/100 mL. Nutrient concentrations (TP, NO_3+NO_2-N, and TKN) were elevated during 6 (67%) of 9 sampling events. Conductivity and hardness values were also elevated. At GRVB-2, dissolved oxygen concentrations were measured at 2.0 mg/L during July and September of 2000 and 4.0 mg/L during May of 2000. Increased flows during March of 2001, resulted in a fecal coliform count of >2,400 colonies/100 mL. Nutrient concentrations (TP, NO_3+NO_2-N, and TKN) were elevated during 7 (78%) of 9 sampling events. Conductivity and hardness values were also elevated. At the upstream most station, GRVB-1, dissolved oxygen was measured at 4.0 mg/L during 3 (33%) of 9 sampling events. Nutrient concentrations (TP, NO_3+NO_2-N, and TKN) were elevated during 7 (78%) of 9 sampling events. Conductivities and hardness values were also elevated.

Sub-watershed status: Impaired biological conditions were detected on Graves Creek and Dry Creek during 2000 and 2002. During 2002, ADEM collected intensive water quality data that verified impairment on Graves Creek caused by organic enrichment/dissolved oxygen. ADEM's TMDL to reduce this pollutant has been approved by EPA. Implementation of the TMDL is pending.

Dry Creek is on ADEM's 2002 §303(d) list for only partially meeting its "Fish and Wildlife" water use classification. It is listed for nutrients, ammonia, organic enrichment/dissolved oxygen, and pathogens from pasture grazing. Intensive water quality sampling conducted during 2002 support this listing.

Sub-Watershed: Sugar Creek NRCS Sub-Watershed Number 080

Landuse: The Sugar Creek sub-watershed encompasses 88 mi^2 in Blount and Jefferson Counties. Land cover was primarily forest and pasture land. Five current construction/ stormwater authorizations, one mining and 3 semi-public/private NPDES permits have been issued in the sub-watershed (Appendix B).

Percent land cover estimated by local SWCD (Appendix A, ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
57%	8%	19%	7%	3%	0%	6%

NPS impairment potential: Sugar Creek was identified as a NPS priority sub-watershed in 1997 due to impaired habitat quality and biological condition caused by sedimentation, bank erosion, and elevated total dissolved solids, sulfates, and conductivity (ADEM 1999a). Based on the 1998 SWCD sub-watershed assessments, the main NPS concerns in the Sugar Creek sub-watershed were pasture grazing, crop runoff, mining, and some cattle production (Appendix D).

Ratings for each NPS category based on values estimated during the SWCD sub-watershed assessment.

Category	NPS Score	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Value	13	0.13 AU/ac	0.00%	8%	19%	7%	20%	4.9 tons/ac/yr
NPS Potential	L	L	L	M	M	M	L	L
Appendix	D	H	H	A	A	A	I	I

Assessments: Longs Branch, Sugar Creek, and Whites Creek were monitored during the 2002 NPS screening assessment (Appendix F). Longs Branch and Locust Fork were evaluated during GSA's water quality assessment of Locust Fork (O'Neil and Shepard 2001, Appendix E).

Assessment stations located within the sub-watershed. Descriptions are provided in Appendix E-1.

Station	Assessment Type	Date	Location	Area (mi^2)	Classification
LONB-24a	Habitat, Biological, Chemical	2002	Longs Branch at unnamed Blount CR	17	F&W
GSA-11	Chemical	2001	Longs Branch at Blount CR 22	16	F&W
SUGB-13	Habitat, Biological, Chemical	2002	Sugar Cr. at Blount CR 45	7	F&W
WHTB-12	Habitat, Biological, Chemical	2002	Whites Cr. at unnamed Blount CR	4	F&W
GSA-13	Chemical	2001	Locust Fork at Blount CR 13	546	F&W

Longs Branch: Longs Branch at LONB-24a has been monitored during ADEM's 1997 and 2002 NPS assessments of the Black Warrior River basin (Appendix F, Appendix E). At LONB-24a, Longs Branch is a moderate-gradient stream in the Shale Hills (68f) subecoregion (Appendix J). Percent sand and silt was lower at Longs Branch (LONB-24a) in 2002 than in 1997, suggesting a decrease in embeddedness and sediment deposition at the site (Appendix J, ADEM 1999a). The biological communities also appear to be improving slightly (Appendix K). Seven EPT were collected in 1997, indicating the community to be in *fair* (moderately impaired) condition (ADEM 1999a). In 2002, 12 EPT families were collected, indicating the community to be in *good* condition (Appendix K). A fish assessment conducted by GSA in 1997 indicating the fish community to be in *poor* condition (Shepard et al. 1997, ADEM 1999a). In 2002, the fish community was assessed as *fair/poor* (Appendix K).

Chemical impairment was indicated during 1997 and 2002 by elevated conductivity, hardness, and total dissolved solids (ADEM 1999a, Appendix M). Chlorides and ammonia concentrations were also elevated at the site.

Sugar Creek: The substrate composition of Sugar Creek at SUGB-13 was primarily bedrock with some boulder, cobble, and sand (Appendix J). Habitat quality was assessed as *good* despite marginal bank stability and a limited riparian buffer. Fourteen EPT were collected, indicating the community to be in *excellent* condition (Appendix K). The fish community was assessed as *fair* (Appendix K). Conductivity, alkalinity, and chlorides were elevated during a one-time water quality assessment conducted in May of 2002 (Appendix M).

Whites Creek: The substrate composition of Whites Creek at WHTB-13 was a mixture of bedrock, boulder, and cobble. Habitat quality was assessed as *excellent* due to diverse stable substrate, good bank stability and a good riparian buffer (Appendix J). However, very little sand and few leafpacks were present at the site, suggesting some scouring of the substrates. A slight WWTP smell was noted in the leafpacks and snags. Eight EPT taxa were collected, indicating the macroinvertebrate community to be in *fair* condition (Appendix K). One-time water quality sampling conducted in May of 2002 did not detect chemical impairment.

Sub-watershed status: Sugar Creek was identified as a NPS priority sub-watershed in 2002 due to impaired habitat quality and biological conditions at Locust Fork, Long Branch, Sugar Creek, and Whites Creek. Sedimentation and nutrient enrichment were potential causes of the impairments. The main NPS concerns in the Sugar Creek sub-watershed were pasture grazing, crop runoff, mining, and some cattle production (Appendix D).

Upper Black Warrior River CU (0316-0112)

The Upper Black Warrior River CU encompasses 1,253 mi^2 in Mobile and Baldwin Counties in southcentral Alabama. It contains 12 sub-watersheds and is located primarily within the Fall Line Hills (65i) and Shale Hills (68f) subecoregions. The Southeastern Floodplains and Low Terraces (65p) subecoregion encompasses the Black Warrior River and its floodplain.

Landuse: Based on the 1998 conservation assessment worksheets completed by the local SWCDs, the Upper Black Warrior River CU was mainly forest with some urban areas. Seven stream segments located within 5 sub-watersheds are currently on ADEM's 2002 CWA §303(d) list of impaired waters (Appendix C-2).

Percent land cover estimated by local SWCD (ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
69%	2%	4%	6%	13%	1%	5%

NPS impairment potential: Mining and forestry were the primary NPS concern within the Upper Black Warrior River CU. Sedimentation from mining, developing urban areas, and gullies was also a concern within the CU.

Number of sub-watersheds with (M)oderate or (H)igh ratings for each nonpoint source category (Appendix D).

Category	Overall Potential	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry (5 reported)	Sediment
Moderate	3	0	0	0	0	2	2	4
High	1	0	0	0	0	4	2	5

Number of sub-watersheds with (M)oderate or (H)igh ratings for each point source category (Appendix D).

Category	Overall Potential	% Urban	Development	Septic tank failure
Moderate	1	1	2	1
High	3	3	2	0

Historical data/studies: The majority of assessments conducted within the Upper Black Warrior River CU were from 5 projects conducted by the ADEM and the U.S. Geological Survey (USGS).

These data include both monitored and evaluated assessments. Monitored assessments are based on chemical, physical, and/or biological data collected using commonly accepted and well-documented methods. Evaluated assessments are based on observed conditions, limited water quality data, water quality data older than 5 years, or estimated impacts from observed or suspected activities.

Results of monitored assessments were used in this report to assess habitat, biological, and chemical conditions within a sub-watershed. Monitored assessments were conducted during 5 projects and programs. Evaluated assessments were conducted in conjunction with ADEM's ALAMAP Program (Appendix T). A summary of each project, including lead agency, project objectives, data collected, and applicable quality assurance manuals, is provided in the appendices.

Types of assessments and assessment guidelines for projects that have generated monitored assessment information.

Project	**Assessment Type[a]**	**Assessment Guidelines (Y/N)**
ADEM's Ecoregional Reference Reach Program[b]	H, C, B	Y
ADEM's §303(d) Waterbody Monitoring Program[b]	H, C, B	Y
ADEM's Reservoir Monitoring Program[b]	C, B	Y
ADEM's Fish Tissue Monitoring Program	C	Y
ADEM's Ambient Monitoring Program[b]	H, C, B	Y
University Tributary Nutrient Project[b]	C	Y
ADEM's Periphyton Bioassessment Pilot Study[b]	H, C, B	Y

[a]H=habitat; C=chemical/physical; B=biological
[b]Data and summary of project included in Appendices

Assessments conducted during the 2002 NPS Screening Assessment: Three sub-watersheds were targeted for assessment during the 2002 NPS Screening Assessment because they were recommended as NPS priority sub-watersheds in 1997, were on the 2002 §303(d) list of impaired waters for nonpoint source impairments, or recent data were unavailable. Appendix F lists the 3 stations assessed.

Sub-watershed assessments: Current and historical monitoring data were combined to provide a comprehensive assessment. Habitat, chemical/physical, and biological indicators of water quality have been monitored in 7 sub-watersheds (Appendix G). Habitat quality was assessed as *excellent* or *good* at 9 stations and *poor* or *impaired* at 3 stations. Macroinvertebrate assessments were conducted at 12 stations. Results of these assessments indicated the macroinvertebrate community to be *fair, poor, or impaired* condition at all 12 stations. Fish communities were assessed as *good* at one station and *poor* or impaired at 4 (80%) stations.

Overall condition for each station was rated as the lowest assessment result obtained (Appendix G). Four (33%) stations were assessed as *fair*. Six (50%) stations were assessed as *poor* and 2 (17%) stations were assessed as *impaired*.

Sub-watershed status: Impaired biological conditions were detected within 4 sub-watersheds (Table 6). A summary of the information available for each of these sub-watersheds is provided in the following section.

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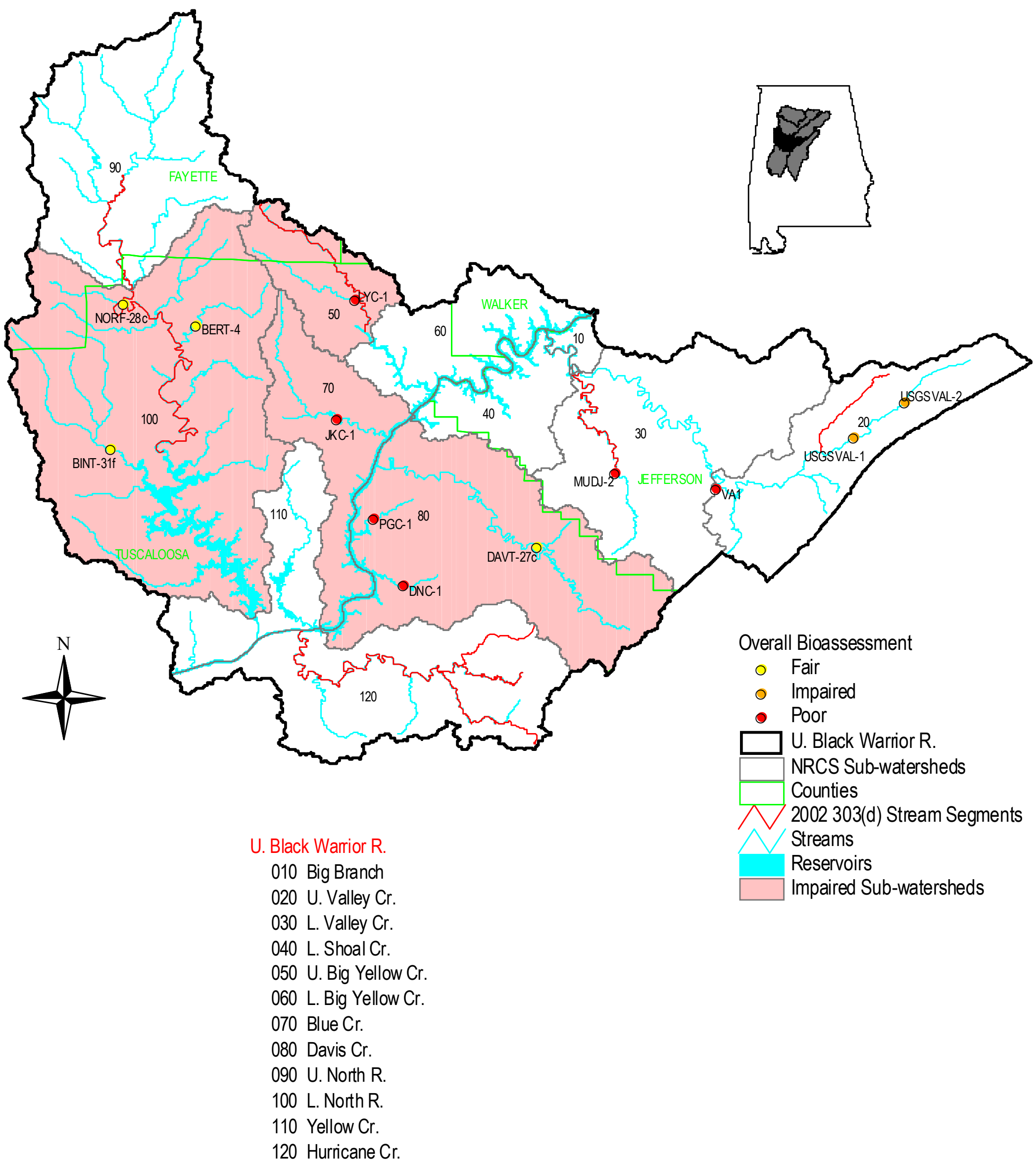
Fig. 19. Impaired sub-watersheds and §303(d)-listed stream and reservoir segments. Overall results of bioassessments conducted 1998-2002 are also shown.



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List of impaired sub-watersheds in the U. Black Warrior R. CU.

Sub-watershed	303(d)/ TMDL[a]	Station Assessment	Suspected Cause(s)	Suspected nonpoint source(s)
010 U. Locust Fk.		No recent data; 1997 NPS priority	OE/DO, pH, Sedimentation	Animal husbandry, Pasture grazing, Mining, Septic tank failure
020 Bristows Cr.		Fair	Nutrient enrichment	Crop runoff, Pasture grazing, Septic tank failure
030 Clear Cr.		Fair/poor	Sedimentation, Nutrient enrichment	Animal husbandry, Crop runoff, Pasture grazing, Urban, Septic tank failure, Development
040 Slab Cr.		Fair	Sedimentation, Nutrients	Animal husbandry, Row crops, Pasture runoff, Urban, Septic tank failure
050 M. Locust Fk.	TA 303(d)	Poor/Very poor	Nutrients, Ammonia, OE/DO, Pathogens, Sedimentation, Other habitat alteration	Animal husbandry, Crop runoff, Pasture grazing, Mining, Septic tank failure, WWTP
080 Sugar Cr.		Fair/poor	Sedimentation, Ammonia	Crop runoff, Pasture grazing, Mining

a. 303(d): currently on ADEM's 2002 §303(d) list of impaired waters; TA: approved TMDL

Sub-Watershed: Upper Big Yellow Creek NRCS Sub-Watershed Number 050

Landuse: The Upper Big Yellow Creek sub-watershed drains approximately 46 mi^2 in Tuscaloosa, Fayette, and Walker Counties. Land cover within the sub-watershed was primarily forest. No current stormwater authorizations, NPDES permits, or CAFO registrations have been issued in the sub-watershed (Appendix B). A 20.7 mile segment of Big Yellow Creek is on ADEM's 2002 CWA §303(d) list of impaired waterbodies for not meeting its "Swimming" and "Fish and Wildlife" water use classifications (Appendix C-2). It is listed for high metals concentrations from abandoned surface mines.

Percent land cover estimated by local SWCD (Appendix A, ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
88%	1%	8%	1%	<1%	<1%	2%

NPS impairment potential: The overall potential for impairment from rural nonpoint sources was estimated as *low* (Appendix D). The potential for impairment from sedimentation was estimated as *low*. The primary sediment sources were mining (2.0 tons/ac/yr), dirt roads and roadbanks (1.6 tons/ac/yr), and woodlands (1.1 tons/ac/yr) (Appendix I).

Ratings for each NPS category based on values estimated during the SWCD sub-watershed assessment.

Category	NPS Score	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Value	6	0.01 AU/ac	0.00%	1%	8%	1%	ur	5.9 tons/ac/yr
NPS Potential	L	L	L	L	L	L	ur	L
Appendix	D	H	H	A	A	A	I	I

Assessments: Upper Big Yellow Creek was not monitored during the 2002 NPS screening assessment of the BWC basin group (Appendix F). Little Yellow Creek and Big Yellow Creek have been previously assessed in conjunction with ADEM's §303(d) Monitoring Program (Appendix E).

Assessment stations located within the sub-watershed. Descriptions are provided in Appendix E-1.

Station	Assessment Type	Date	Location	Area (mi^2)	Classification
LYC-1 LYCT-1	Habitat, Biological, Chemical	1999, 2002	Little Yellow Cr. at AL Hwy 69	15	F&W
BYC-1 BYET-65a	Habitat, Biological, Chemical	1999 2002	Big Yellow Cr. at AL Hwy 69	14	F&W

Little Yellow Creek: In 1999, a macroinvertebrate assessment of Little Yellow Creek at LYC-1 was conducted to evaluate biological impacts caused by high metals concentrations (Appendix E). Bottom substrates were primarily bedrock with some sand and clay (Appendix P-1). Habitat quality was assessed as *poor* due to a lack of instream habitat, sediment deposition, and a limited riparian zone (Appendix P-1). The macroinvertebrate community was also assessed as *poor* (Appendix P-2).

Intensive water quality data were collected at LYC-1 from May through September of 1999 (Appendix P-3). Although conductivity and total phosphorus concentrations were periodically elevated, metals concentrations were not above background levels. Similar results were obtained during 2002 at a second site on Little Yellow Creek (LYCT-1) (Appendix P-3).

Big Yellow Creek: Intensive water quality data have been collected from one location on Big Yellow Creek during 1999 and 2002 (Appendix P-3 and Appendix P-4). The dissolved oxygen concentration was relatively low (4.0 mg/L) during 1 (25%) of 4 sampling events in 1999 and 3 (38%) of 8 of sampling events in 2002. The dissolved oxygen concentration was 0.0 mg/L during April of 2002. Nutrient concentrations were similar to background levels during the 1999 sampling. However, total phosphorus and ammonia were periodically elevated in July and August of 2002.

Sub-watershed status: The macroinvertebrate community was assessed as *poor* at one location on Little Yellow Creek. A segment of Big Yellow Creek is on ADEM's 2002 CWA §303(d) list of impaired waterbodies due to impairments caused by high metals concentrations from abandoned surface mines. Intensive sampling conducted in 1999 and 2002 did not detect elevated metals concentrations at Little Yellow Creek or Big Yellow Creek. However, conductivity and nutrient concentrations (TP, NH_3-N) were periodically elevated. Dissolved oxygen concentrations were low at one location on big Yellow Creek. Habitat quality was impaired at Little Yellow Creek.

Sub-Watershed: Blue Creek NRCS Sub-Watershed Number 070

Landuse: The Blue Creek sub-watershed drains approximately 68 mi^2 in Tuscaloosa County. The SWCD estimated percent land cover as 85% forest and 13% mining areas. A total of 4 mining NPDES permits have been issued in the sub-watershed (Appendix B).

Percent land cover estimated by local SWCD (Appendix A, ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
85%	0%	0%	13%	1%	1%	1%

NPS impairment potential: The potential for NPS impairment from mining and sedimentation was estimated as *high.* Sediment from mining contributed 87% of the total estimated annual sediment load within the sub-watershed. The potential for impairment from urban development was estimated as *low*.

Ratings for each NPS category based on values estimated during the SWCD sub-watershed assessment.

Category	NPS Score	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Value	14	0.00 AU/ac	0.00%	0%	0%	13%	ur	26.7 tons/ac/yr
NPS Potential	M	L	L	L	L	H	ur	H
Appendix	D	H	H	A	A	A	I	I

Assessments: An assessment of the Blue Creek sub-watershed was not conducted during the 2002 NPS Screening Assessment. Intensive water quality data was collected at one location on Blue Creek during a statewide Tributary Nutrient Loading Project. Jock Creek and Little Bear Creek were monitored during ADEM’s 1999 §303(d) Monitoring Program. Intensive water quality data was collected on the Black Warrior River from two locations within the Holt Reservoir in conjunction with ADEM’s Reservoir Monitoring Program. McDuff Spring Branch and Pewter Creek have been evaluated during ADEM’s ALAMAP Program.

<u>Jock Creek</u>: At JKC-1, Jock Creek was a cobble-gravel stream located in the Shale Hills (68f) subecoregion (Appendix P-1). Habitat quality at the site was affected by unstable banks. The macroinvertebrate community was assessed as *poor* (Appendix P-2). The pH at Jock Creek was measured at 6.4 during 1 of 4 sampling events. The concentration of total phosphorus was slightly elevated during the same sampling event. Conductivity was elevated at the site.

<u>Little Bear Creek</u>: Little Bear Creek at LBC-1 is located in the Shale Hills (68f) subecoregion (Appendix E). Intensive water quality data collected from May through September of 1999 are presented in Appendix P-3.

Assessment stations located within the sub-watershed. Descriptions are provided in Appendix E-1.

Station	Assessment Type	Date	Location	Area (mi^2)	Classification
JKC-1	Habitat, Biological, Chemical	1999	Jock Cr. at mouth	3	F&W
LBC-1	Chemical	1999	L. Bear Cr. at mouth	3	F&W
BLCUA01	Chemical	1998-1999	Blue Cr. at Old Watermelon Rd.	38	F&W
Holt2	Biological, Chemical		Black Warrior R. at directly us of Pegues Cr.	4150	F&W
Holt3	Biological, Chemical		Black Warrior R. approx. 0.5 mi ds of confluence with Big Indian Cr.	3981	F&W
BW02U3-43	Habitat, Chemical	1999	McDuff Spring Br. ds of AL Hwy 69	<1	F&W
BW4U5-50	Habitat, Chemical	2001	Pewter Cr. approx. 2 mi. us of confluence with Blue Cr.	2	F&W

Blue Creek: Intensive water quality data were collected from Blue Creek at BLCUA01 from November of 1998 through October of 1999 (Appendix S). The reach is located within the Shale Hills (68f) subecoregion (Appendix E). Mean conductivity at the site was 557.5 µS/cm, 5 times greater than ecoregional reference conditions. Mean total dissolved solids was 482 mg/L, 7.5 times greater than values measured at least-impaired reference reaches. Nutrient concentrations were relatively low for this subecoregion.

Black Warrior River: Intensive water quality samples were collected monthly during April through October, 2002 in the upper- (Holt3) and mid- (Holt2) reservoir to evaluate nutrient and sediment loading as a source of water quality impairment to Holt Reservoir (ADEM 2004b). These data indicated increasing eutrophic conditions throughout the reservoir. Concentrations of total nitrogen, total phosphorus, and chlorophyll a have increased since 1998, while dissolved oxygen concentrations have decreased (ADEM 2004b).

McDuff Spring Branch: At BW02U3-43, McDuff Spring Branch is a small stream located within the Shale Hills (68d) subecoregion (Appendix T-1). Bottom substrates were a mixture of bedrock, boulder, cobble, and gravel. Habitat quality was assessed as *excellent* (Appendix T-1). Water quality data collected in August of 1999 are provided in Appendix T-2.

Sub-watershed status: Mining and sedimentation from mining were the main NPS concerns in the Blue Creek sub-watershed. The macroinvertebrate community was assessed as *poor* at one location on Jock Creek. Water quality sampling on Jock Creek and Blue Creek suggested potential impacts from mining sources. Intensive water quality samples collected in 2002 indicated increasing eutrophic conditions throughout Holt Reservoir.

Sub-Watershed: Davis Creek NRCS Sub-Watershed Number 080

Landuse: The Davis Creek sub-watershed drains approximately 171 mi^2 in Tuscaloosa, Bibb, and Jefferson Counties. Land cover within the sub-watershed was 83% forest. A total of 10 current construction/stormwater authorizations and 24 mining NPDES permits have been issued in the sub-watershed (Appendix B).

Percent land cover estimated by local SWCD (Appendix A, ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
83%	<1%	3%	8%	2%	1%	5%

NPS impairment potential: Davis Creek was identified as a priority sub-watershed in 1997 (ADEM 1999a). A roadside survey conducted in 1997 indicated the sub-watershed to be susceptible to NPS impairment from roadside erosion and silviculture. Based on the 1998 SWCD sub-watershed assessments, mining was the primary NPS concern, contributing 83% of the estimated total of 14.5 tons/ac/yr sediment load within the sub-watershed (Appendix D).

Ratings for each NPS category based on values estimated during the SWCD sub-watershed assessment.

Category	NPS Score	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Value	10	<0.01 AU/ac	0.00%	<1%	3%	7%	ur	14.5 tons/ac/yr
NPS Potential	L	L	L	L	L	M	ur	M
Appendix	D	H	H	A	A	A	I	I

Assessments: Davis Creek was monitored during the 2002 NPS screening assessment of the BWC basin group (Appendix F). Intensive water quality monitoring has also been conducted on Davis Creek in conjunction with the University Reservoir Tributary Loading Study. Prudes Creek, Pegues Creek, Daniel Creek, and Hanna Mill Creek were monitored during ADEM's 1999 §303(d) Monitoring Program. Two locations on the Black Warrior River have been sampled during ADEM's Fish Tissue Monitoring Program. (Appendix E)

Davis Creek: Davis Creek at DAVT-27c was a bedrock-bottomed, riffle-run stream located in the Shale Hills (68f) subecoregion (Appendix J). Habitat quality was assessed as *excellent* (Appendix J). Five EPT families were collected, indicating the macroinvertebrate community to be in *fair* condition (Appendix K). In May of 2002, one-time water quality sampling showed elevated conductivity and total dissolved solids, suggesting mining impacts (Appendix M).

Intensive water quality data were collected from Davis Creek at DACUA01 from November of 1998 through October of 1999. Results are presented in Appendix S. Conductivity and total dissolved solids were consistently elevated.

Assessment stations located within the sub-watershed. Descriptions are provided in Appendix E-1.

Station	Assessment Type	Date	Location	Area (mi^2)	Classification
DAVT-27c	Habitat, Biological, Chemical	2002	Davis Cr. nr. Friendship Church in Tuscaloosa Co.	55	F&W
DACUA01	Chemical	1998-1999	Davis Cr. at Tuscaloosa CR 59	87	F&W
PDC-1	Chemical	1999	Prudes Cr. approx. 0.3 mi us of mouth	5	F&W
PGC-1	Habitat, Biological, Chemical	1999	Pegues Cr. approx. 2.1 mi us of confluence with Black Warrior R.	10	F&W
DNC-1	Chemical	1999	Daniel Cr. approx. 3.0 mi. us of confluence with Black Warrior R.	14	F&W
HNC-1	Chemical	1999	Hanna Mill Cr. approx. 0.9 mi us of confluence with Davis Cr.	7	F&W
HOL2	Chemical		Holt Reservoir us of Old Lock 15 Public Access Area	4175	F&W
HOL3	Chemical		Holt Reservoir at RM 353	4205	F&W

Pegues Creek: Pegues Creek at PGC-1 was a riffle-run stream located in the Shale Hills (68f) subecoregion (Appendix P-1). Substrate was mainly gravel with some cobble and silt. Habitat quality was impacted by embeddedness, sediment deposition, and eroded banks. Six EPT families were collected, indicating the macroinvertebrate community to be in *poor* condition (Appendix P-2).

Intensive water quality data were collected from Pegues Creek at PGC-1 from May through September of 1999 (Appendix P-3). Mean conductivity was 779 µmhos at 25^oC, 7 times greater than values measured at least-impaired ecoregional reference sites. Chromium, iron, and manganese were periodically elevated (Appendix P-4).

Daniel Creek: Daniel Creek at DNC-1 is a cobble-gravel stream located in the Shale Hills (68f) subecoregion (Appendix P-1). Habitat quality was assessed as *excellent*. Three EPT families were collected, indicating the macroinvertebrate community to be in *poor* condition (Appendix P-2).

Intensive water quality data were collected from Daniel Creek at DNC-1 from May through September of 1999 (Appendix P-3). Total dissolved solids were not measured, but mean conductivity was 1,922 µmhos at 25^oC, approximately 19 times greater than values measured at least-impaired ecoregional reference sites (ADEM 2004d). Chromium, iron, and manganese were periodically elevated (Appendix P-4).

Prudes Creek: Intensive water quality data were collected from Prudes Creek at PDC-1 from May through September of 1999 (Appendix P-3). Total dissolved solids were not collected, but conductivity was slightly elevated during all 3 sampling events. The concentrations of chromium and manganese were periodically elevated (Appendix P-4).

Hanna Mill Creek: Intensive water quality data were collected from Hanna Mill Creek at HNC-1 in May and July of 1999 (Appendix P-3). Conductivity was elevated during both sampling events. The concentrations of iron, manganese, and zinc were periodically elevated (Appendix P-4).

Sub-watershed status: Since 1997, impaired macroinvertebrate communities were detected at locations on Davis Creek, Daniel Creek, and Pegues Creek. Intensive water quality sampling indicated high conductivity, total dissolved solids, and metals throughout the sub-watershed, suggesting mining as the source of impairment. These results are supported by the 1998 SWCD sub-watershed assessments that estimated mining and sedimentation from mining to be the primary concerns within the sub-watershed. However, a roadside survey conducted in 1997 indicated the sub-watershed to be susceptible to NPS impairment from roadside erosion and silviculture.

Sub-Watershed: Lower North River NRCS Sub-Watershed Number 100

Landuse: The Lower North River sub-watershed drains approximately 284 mi^2 in Fayette and Tuscaloosa Counties. Land cover within the sub-watershed was estimated to be 82% forest. A total of 24 current construction/stormwater authorizations, one non-coal mining/stormwater (<5 acres) authorizations, and 4 NPDES permits have been issued in the sub-watershed (Appendix B). A 38.0 mile segment of the North River is on ADEM's 2002 CWA §303(d) list of impaired waterbodies for only partially meeting its water use classification (Appendix C-2). The segment is listed for nutrient enrichment, siltation, and other habitat alteration caused by runoff from abandoned surface mines.

Percent land cover estimated by local SWCD (Appendix B, ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
82%	5%	6%	<1%	2%	3%	2%

NPS impairment potential: Biological impairment detected at sites on Binion Creek, Carroll Creek, and Cripple Creek identified Lower North River as a 1997 NPS priority sub-watershed (ADEM 1999a). Roadside surveys conducted in 1997, upstream of each assessment site, indicated cattle production, silviculture, and roadside erosion to be prevalent throughout the sub-watershed (ADEM 1999a).

Based on the 1998 SWCD sub-watershed assessments, the potential for NPS impairment within the sub-watershed was estimated as *low* (Appendix D). However, Lower North River was given a 1st priority sub-watershed rating by the Tuscaloosa County SWCD for crop and roadside erosion, excessive sediment from roads and urban development, overgrazed pastures, inadequate management of animal wastes, and access of livestock to streams (Appendix I).

Ratings for each NPS category based on values estimated during the SWCD sub-watershed assessment.

Category	NPS Score	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Value	6	0.06AU/ac	0.00%	5%	6%	<1%	ur	4.0 tons/ac/yr
NPS Potential	L	L	L	L	L	L	ur	L
Appendix	D	H	H	A	A	A	I	I

Assessments: Binion Creek was assessed at one location during the 2002 NPS screening assessment of the BWC basin group (Appendix F). Intensive water quality sampling has also been conducted at stations on Bear Creek, Binion Creek, North River, and the Black Warrior River as part of ADEM's Ecoregional Reference, §303(d), and Reservoir Monitoring Programs (Appendix E).

Assessment stations located within the sub-watershed. Descriptions are provided in Appendix E-1.

Station	Assessment Type	Date	Location	Area (mi^2)	Classification
BW6U6-54	Habitat, Chemical	2002	Barbee Cr. approx. ½ mi S of Tuscaloosa CR 40	4	F&W
BERT-4	Habitat, Biological, Chemical	2002	Bear Cr. at Oregonia Rd	12	F&W
BW5U6-45	Habitat, Chemical	2002	Binion Cr. approx. ¼ mi ds of unnamed CR	8	F&W
BINT-31f	Habitat, Biological, Chemical	2002	Binion Cr. at unnamed Tuscaloosa CR	61	F&W
Tuscaloosa5	Biological, Chemical		Binion Cr. immediately us of US Hwy 43	72	F&W
NRRT-1	Chemical	2002	North R. at Tuscaloosa CR 38	223	F&W
Tuscaloosa2 TUS2	Biological, Chemical		North R. directly ds of confluence with Binion Cr.	360	F&W
Tuscaloosa4	Biological, Chemical		North R. immediately us of Bull Slough crossing	362	F&W
Tuscaloosa3	Biological, Chemical		North R. 1 mi ds of AL Hwy 69	372	F&W
Tuscaloosa1 TUS1	Biological, Chemical		North R. at dam forebay of Lake Tuscaloosa	423	F&W

Binion Creek: Located in the Shale Hills (68f) subecoregion, Binion Creek at BINT-31f was a sandy-bottomed, glide pool stream (Appendix J). Habitat quality was impaired by sediment deposition and unstable banks. The macroinvertebrate and fish communities were assessed as *fair* and *good*, respectively (Appendix K). One time water quality sampling conducted in June of 2002 did not indicate a cause of the impairment (Appendix M).

Intensive water quality data were collected monthly from the Binion Creek embayment at Tuscaloosa5 to determine the sediment and nutrient loading to Tuscaloosa Reservoir (ADEM 2004b). The site is located within the Fall Line Hills (65i) subecoregion (Appendix E). Concentrations of total nitrogen, total phosphorus, chlorophyll *a* and total suspended solids were among the lowest of the Black Warrior tributaries (ADEM 2004b).

Binion Creek at BW5U6-45 was evaluated during ADEM's 2002 ALAMAP Program (Appendix E). At BW5U6-45, Binion Creek was a small, shaded, bedrock-bottom stream located within the Fall Line Hills (65i) subecoregion (Appendix T-1). The reach was characterized by poor instream habitat and riffle quality. Dissolved oxygen was measured at 0.5 mg/L during a one-time water quality sampling event in August of 2002 (Appendix T-2).

Bear Creek: Bear Creek at BERT-4 has been intensively monitored in conjunction with ADEM's Ecoregional Reference Reach Program (Appendix E). Located in the Shale Hills (68f) subecoregion, Bear Creek at BERT-4 is characterized by cobble/gravel riffles

(Appendix O-1). In June of 2002, 7 EPT families were collected, indicating a *fair* macroinvertebrate community (Appendix O-2). Intensive water quality sampling conducted from March through November of 2002 did not indicate a cause of the impairment (O-3).

North River: North River at NRRT-1 is located in the Fall Line Hills (65i) subecoregion (Appendix E). Intensive water quality sampling was collected on the North River at NRRT-1 from January through August of 2002 (Appendix P-3). Results showed fecal coliform concentrations >2,000 colonies/100 mL during the May sampling event. Nutrient concentrations and conductivity were periodically elevated.

Intensive water quality samples were collected monthly during April through October, 2002 in the upper- (Tuscaloosa2 and Tuscaloosa4), mid- (Tuscaloosa3), and lower- (Tuscaloosa1) reservoir to evaluate nutrient and sediment loading as a source of water quality impairment to Tuscaloosa Reservoir (ADEM 2004b). Mean concentrations of total nitrogen and total phosphorus were among the lowest on the Black Warrior River during the 2002 sampling season (ADEM 2004b). However, total phosphorus concentrations have nearly doubled since 1998. Total suspended solids have also increased throughout the reservoir since 1998.

Barbee Creek: At BW6U6-54, Barbee Creek was a moderate gradient, bedrock-bottomed stream located in the Fall Line Hills (65i) subecoregion (Appendix T-1). Results of water quality sampling conducted during August of 2002 are located in Appendix T-2.

Sub-watershed status: Macroinvertebrate assessments conducted during 2002 indicated impaired macroinvertebrate communities at locations on Bear and Binion Creek. Sedimentation was observed at both sites. Roadside surveys conducted in 1997, upstream of each assessment site, indicated cattle production, silviculture, and roadside erosion to be prevalent throughout the sub-watershed. A 38.0 mile segment of the North River is on ADEM's 2002 CWA §303(d) list of impaired waterbodies for nutrient enrichment, siltation, and other habitat alteration caused by runoff from abandoned surface mines.

Total phosphorus concentrations and total suspended solids have increased throughout the Tuscaloosa Reservoir since 1998. However, monitoring within the Binion Creek and the Tuscaloosa Reservoir has indicated the potential for nutrient and sediment loading from these sources to be relatively low.

Sub-Watershed: Hurricane Creek NRCS Sub-Watershed Number 120

Landuse: The Hurricane Creek sub-watershed drains approximately 128 mi^2 in Tuscaloosa County. Land cover was mainly forest and urban areas. A total of 96 current construction/stormwater authorizations, 5 mining, and 1 semi-public/private NPDES permits have been issued within the sub-watershed (Appendix B). Three streams are on Alabama's 2002 CWA §303(d) list for impairments from abandoned surface mines (Appendix C-2). A 10-mile segment of Little Hurricane Creek is listed for high metals concentrations and pathogens. North Fork of Hurricane Creek is listed for high metals concentrations. Hurricane Creek is impaired by high metals concentrations, pathogens, and turbidity.

Percent land cover estimated by local SWCD (Appendix A, ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
42%	14%	8%	0%	32%	1%	3%

NPS impairment potential: Biological impairment detected at sites on Hurricane Creek identified Lower North River as a 1997 NPS priority sub-watershed (ADEM 1999a). Chemical assessments and roadside surveys conducted in 1997, upstream of each assessment site, suggested mining activity, silviculture, and development to be the primary stressors throughout the sub-watershed (ADEM 1999a).

Based on the 1998 SWCD sub-watershed assessments, impairment from urban runoff and development was the main concern within the sub-watershed (Appendix D). Mining was also a concern, contributing 9 tons/ac/yr (67%) to the annual 13.5 tons/ac/yr sediment load (Appendix I). Lower North River was given a 5th priority sub-watershed rating by the Tuscaloosa County SWCD for excessive sediment from roads, roadbanks, and urban development, inadequate management of animal wastes, and access of livestock to streams (Appendix I).

Ratings for each NPS category based on values estimated during the SWCD sub-watershed assessment.

Category	Overall Potential	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Value	10	0.03 AU/ac	0.00%	1%	2%	8%	ur	13.5 tons/ac/yr
NPS Potential	L	L	L	L	L	M	ur	M
Appendix	D	H	H	A	A	A	I	I

***Assessments**:* An assessment has not been conducted within the Hurricane Creek sub-watershed since 1998 (ADEM 1999a).

Sub-watershed status: Hurricane Creek was identified as a NPS priority sub-watershed in 1997. Segments of Hurricane Creek, Little Hurricane Creek, and North Fork Hurricane Creek are on Alabama's 2002 §303(d) list for impairments caused by abandoned surface mines. Biological impairment was detected at 3 sites on Hurricane Creek. Habitat quality was found to be impaired by a lack of instream habitat, sediment deposition, and narrow riparian buffers. Roadside surveys and local SWCD landuse estimates indicated mining, silviculture, and urban runoff and development to be the main NPS concerns within the sub-watershed.

Lower Black Warrior River CU (0316-0113)

The Lower Black Warrior River CU contains 19 sub-watersheds located within 1,458 mi^2 area in southwest Alabama. The entire CU lies below the Fall Line and drains portion of both the Fall Line Hills (65i) and the Blackbelt (65a and 65b) region. Low-gradient, habitat poor, glide/pool streams are common in the area. Streams in the Blackbelt region will go dry or become quite low during the summer, while streams located in the Fall Line Hills (65i) subecoregion flow year round due to extensive sand and gravel aquifers in the region (Mettee et al. 1996).

Landuse: Based on the conservation assessment worksheets completed (1998) by the local SWCDs, the primary land-uses throughout the Lower Black Warrior River CU were forest and pasture. Pesticide/herbicide use was estimated for 14 sub-watersheds (401,871 acres). Within these sub-watersheds, approximately 24,200 acres of crop and pastureland (6% of total area reported) were treated with pesticides and/or herbicides.

Percent land cover estimated by local SWCD (ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
56%	7%	27%	0%	8%	1%	2%

NPS impairment potential: Potential for NPS impairment was *moderate* within 4 of the 7 sub-watersheds in the CU. Crop runoff, pasture grazing, aquaculture, forestry, and sedimentation were the primary NPS concerns. Impairment from both urban runoff and development was a concern in 5 sub-watersheds.

Number of sub-watersheds with (M)oderate or (H)igh ratings for each nonpoint source category (Appendix D).

Category	Overall Potential	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Moderate	4	0	3	8	2	0	4	3
High	0	0	3	1	5	0	0	0

Number of sub-watersheds with (M)oderate or (H)igh ratings for each point source category (Appendix D).

Category	Overall Potential	% Urban	Development	Septic tank failure
Moderate	5	3	3	3
High	0	4	0	0

Historical data/studies: The majority of assessments conducted within the Lower Black Warrior River CU were from 5 projects conducted by the ADEM and the U.S. Geological Survey (USGS).

These data include both monitored and evaluated assessments. Monitored assessments are based on chemical, physical, and/or biological data collected using commonly accepted and well-documented methods. Evaluated assessments are based on observed conditions, limited water quality data, water quality data older than 5 years, or estimated impacts from observed or suspected activities.

Results of monitored assessments were used in this report to assess habitat, biological, and chemical conditions within a sub-watershed. Monitored assessments were conducted during 6 projects and programs. Evaluated assessments were conducted in conjunction with ADEM's ALAMAP Program (Appendix T). A summary of each project, including lead agency, project objectives, data collected, and applicable quality assurance manuals, is provided in the appendices.

Projects that have generated monitored assessment information.

Project	Appendix
ADEM's Ecoregional Reference Reach Program	O
ADEM's §303(d) Waterbody Monitoring Program	P
ADEM's Reservoir Monitoring Program	ADEM 2004b
ADEM's Ambient Monitoring Program	R
USGS's Surface Water Monitoring Program	USGS 2003b
University Tributary Loading Study	S

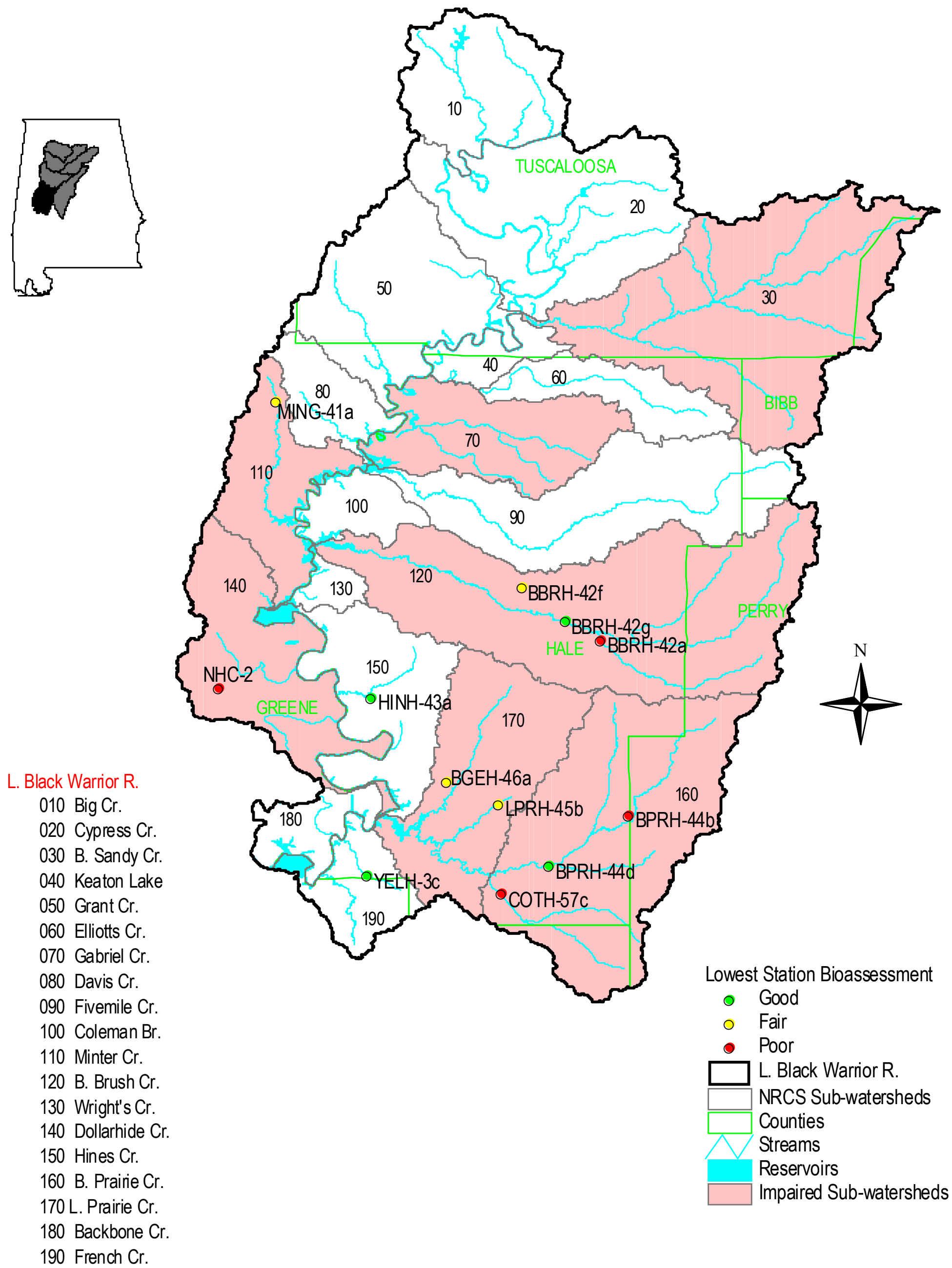
2002 NPS Screening Assessment: Eight sub-watersheds were targeted for assessment during the 2002 NPS Screening Assessment because they were recommended as NPS priority sub-watersheds in 1997, had a *moderate* potential for impairment from nonpoint sources, or recent data were unavailable. Appendix F lists the 14 stations assessed.

Sub-watershed assessments: Current and historical monitoring data were combined to provide a comprehensive assessment. Habitat, chemical/physical, and biological indicators of water quality were monitored in 8 sub-watersheds (Appendix G). Habitat quality was assessed as *excellent* or *good* at 8 stations and *fair* at 4 stations. Macroinvertebrate assessments indicated the macroinvertebrate community to be in *excellent* or *good* condition at 6 stations (50%) and *fair* or *poor* at 6 stations (50%). Fish communities were assessed as *good* or *good/fair* at 2 stations, *fair* at 2 stations, and *poor* at one station.

Overall condition for each station was rated as the lowest assessment result obtained (Appendix G). Five stations (36%) were assessed as *good* or *good/fair*. Five (36%) stations were assessed as *fair*. Four (28%) stations were assessed as *poor*.

Sub-watershed status: Biological conditions were impaired in 7 sub-watersheds (Table 6). A summary of the information available for each of these sub-watersheds is provided in the following section. Each summary discusses landuse, nonpoint source impairment potential, assessments conducted within the sub-watershed, and nonpoint source priority status based on available data. Appendices referenced in the summaries are located at the end of the report.

Fig. 20. 2002 impaired sub-watersheds in the Lower Black Warrior River CU. Overall results of bioassessments conducted 1998-2002 are also shown.



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List of impaired sub-watersheds in the L. Black Warrior R. CU.

Sub-watershed		Lowest Station Assessment	Suspected Cause(s)	Suspected nonpoint source(s)
030	Big Sandy Cr.	Fair	Sedimentation, Habitat degradation	Animal husbandry, Forestry
070	Gabriel Cr.	No recent data; 1997 NPS priority	Sedimentation, Habitat degradation	Crop runoff, Animal husbandry, Forestry
110	Minter Cr.	Fair	Sedimentation, Nutrient enrichment	Animal husbandry, Aquaculture, Pasture grazing, Forestry
120	Big Brush Cr.	Poor	Sedimentation, Habitat degradation, Nutrient enrichment, Pathogens	Pasture grazing, Aquaculture, Crop runoff, Urban
140	Dollarhide Cr.	Poor	Sedimentation, DO/OE, Nutrient enrichment	Aquaculture, Crop runoff, Pasture grazing, Urban, Septic tank failure
160	B. Prairie Cr.	Poor	Sedimentation, Nutrient enrichment, Pathogens	Aquaculture, Row crops, Pasture runoff , Point sources
170	L. Prairie Cr.	Fair	Sedimentation, Habitat alteration, Nutrient enrichment, OE/DO	Aquaculture, Row crops, Pasture runoff

Sub-Watershed: Big Sandy Creek NRCS Sub-Watershed Number 030

Landuse: The Big Sandy Creek sub-watershed drains approximately 175 mi^2 in Bibb, Hale, and Tuscaloosa Counties. Land cover within the sub-watershed was predominantly forest. Thirteen current construction/stormwater authorizations and two mining NPDES permits have been issued in the sub-watershed (Appendix B).

Percent land cover estimated by local SWCD (Appendix A, ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
90%	2%	5%	0%	<1%	1%	1%

NPS impairment potential: Big Sandy Creek was identified as a 1997 NPS priority sub-watershed (ADEM 1999a). A roadside survey conducted upstream of the station showed the sub-watershed to be susceptible to NPS impairment from cattle production, forestry, and roadside erosion (ADEM 1999a). However, information from the 1998 SWCD sub-watershed assessments estimated the potential for impairment from all rural NPS categories was as *low* (Appendix D).

Ratings for each NPS category based on values estimated during the SWCD sub-watershed assessment.

Category	NPS Score	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Value	7	0.02 AU/ac	0.00%	2%	5%	0%	1%	3.1 tons/ac/yr
NPS Potential	L	L	L	L	L	L	L	L
Appendix	D	H	H	A	A	A	I	I

Assessments: Big Sandy Creek at BSAT-59b was reassessed during the 2002 NPS screening assessment of the BWC basin group (Appendix F). Intensive water quality sampling was conducted on Big Sandy Creek at two additional locations during the University Tributary Loading Study and ADEM's Reservoir Monitoring Program (Appendix E). South Sandy Creek at SSB-1 has also been monitored during ADEM's Ecoregional Reference Reach Program (Appendix E).

Big Sandy Creek: Big Sandy Creek at BSAT-59b was a glide-pool stream located within the Fall Line Hills (65i) subecoregion (Appendix J). Sand and silt comprised 90% of the stream bottom. Habitat quality was again impaired by heavy deposition, poor bank condition, a lack of adequate pool habitat, and a lack of riparian vegetation. Although the macroinvertebrate community was assessed as *good*, the fish community was in *fair* condition (Appendix K). Conductivity measurements, alkalinity, hardness, and chloride concentrations were elevated (Appendix M).

Big Sandy Creek at BSCUA01 is located within the Southeastern Floodplains and Low Terraces (65p) subecoregion (Appendix E). The site was intensively monitored from November of 1998 through October of 1999. Results are presented in Appendix S.

Assessment stations located within the sub-watershed. Descriptions are provided in Appendix E-1.

Station	Assessment Type	Date	Location	Area (mi^2)	Classification
BSAT-59b	Habitat, Biological, Chemical	2002	Big Sandy Cr. us of confluence with Lye Branch at unnamed Tuscaloosa CR	18	F&W
BSCUA01	Chemical	1998-1999	Big Sandy Cr. at AL Hwy 69	174	F&W
Warrior5	Biological, Chemical	2002	Big Sandy Cr. approx. 0.5 mi. us of confluence with Black Warrior R.	178	F&W
SSB-1	Habitat, Biological, Chemical	2002	South Sandy Cr. at Talladega NFR 731	21	F&W

Intensive water quality data were collected monthly from the Big Sandy Creek embayment at Warrior5 to determine the sediment and nutrient loading to Warrior Reservoir (ADEM 2004b). The site is located within the Southeastern Floodplains and Low Terraces (65p) subecoregion (Appendix E). Mean total suspended solid concentrations were the highest of all of the Black Warrior tributaries (ADEM 2004b)

South Sandy Creek: South Sandy Creek at SSB-1 has been intensively monitored in conjunction with ADEM's Ecoregional Reference Reach Program (Appendix E). Located in the Fall Line Hills (65i) subecoregion, South Sandy Creek at SSB-1 is a low-gradient, sandy bottomed stream (Appendix O-1). During the 2002 sampling, habitat quality was slightly impacted by sediment deposition. The macroinvertebrate community was in excellent condition while the fish community was assessed as good/fair (Appendix O-2). Results of chemical data are presented in Appendix O-3.

Sub-watershed status: Big Sandy Creek was identified as a NPS priority sub-watershed in 1997 due to impaired conditions detected in Big Sandy Creek at BSAT-59b. Although information from the 1998 SWCD sub-watershed assessments indicated the potential for NPS impairment to be *low*, a roadside survey showed the sub-watershed to be susceptible to impairment from cattle production, forestry, and roadside erosion. In 2002, habitat quality was again impaired by heavy deposition, poor bank condition, a lack of adequate pool habitat, and a lack of riparian vegetation. The fish community was assessed as *fair*. Intensive water quality sampling conducted within the Big Sandy Creek embayment suggested the tributary to be a significant source of sediment to the Warrior Reservoir.

Sub-watershed: Gabriel Creek NRCS Sub-Watershed Number 070

Landuse: The Gabriel Creek sub-watershed drains approximately 68 mi^2 in Hale County. Land cover within the sub-watershed was predominantly forest with some pasture and crop lands. One current construction/stormwater authorization and 2 mining NPDES permits have been issued in the sub-watershed (Appendix B).

Percent land cover estimated by local SWCD (Appendix A, ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
75%	10%	15%	0%	0%	0%	0%

NPS impairment potential: Gabriel Creek was identified as a NPS priority sub-watershed in 1997 (ADEM 1999a). Roadside surveys conducted in 1997 indicated Millians Creek to be highly susceptible to impairment from cattle production, forestry, and roadside erosion. Information from the 1998 SWCD sub-watershed assessments indicated crop runoff to be the main NPS concern within the sub-watershed, but overall potential for impairment from nonpoint sources was *low* (Appendix D). Gabriel Creek was given a 4th priority sub-watershed rating by the local SWCD. Resource concerns within the sub-watershed included excessive sediment from roads, overgrazed pastures and poor crop soil, bacteria in surface waters, and livestock in streams (Appendix I).

Ratings for each NPS category based on values estimated during the SWCD sub-watershed assessment.

Category	NPS Score	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Value	9	0.02 AU/ac	0.00%	10%	15%	0%	12%	2.3 tons/ac/yr
NPS Potential	L	L	L	M	L	L	L	L
Appendix	D	H	H	A	A	A	I	I

Assessments: An assessment has not been conducted within the Gabriel Creek sub-watershed since 1997 (Appendix E).

Sub-watershed status: Gabriel Creek was identified as a NPS priority sub-watershed in 1997. Habitat quality at Gabriel and Millians Creek was impaired by a lack of instream habitat, sediment deposition, eroded stream banks, and small riparian buffers. Biological impairment was detected at both creeks. Roadside surveys and local SWCD landuse estimates indicated crop runoff, cattle production, forestry, and roadside erosion to be the main NPS concerns within the sub-watershed.

Sub-Watershed: Minter Creek NRCS Sub-Watershed Number 110

Landuse: The Minter Creek sub-watershed drains approximately 52 mi^2 in Greene County. Forest was the predominant land cover. No current construction/stormwater authorizations, NPDES permits, or CAFO registrations have been issued in the sub-watershed (Appendix B).

Percent land cover estimated by local SWCD (Appendix A, ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
72%	3%	21%	0%	1%	2%	1%

NPS impairment potential: Based on the 1998 SWCD landuse information, the overall potential for impairment from all rural and urban nonpoint sources was estimated as *low*, but aquaculture, pasture runoff, and forestry were NPS concerns within the sub-watershed (Appendix D). Sediment from sand and gravel pits contributed approximately 3.5 tons/ac/yr (73%) to the estimated total annual sediment load (Appendix I). Minter Creek was given a 5th priority sub-watershed rating by the local SWCD for erosion from roads and agricultural land, overgrazed pastures, and livestock in streams (Appendix I).

Ratings for each NPS category based on values estimated during the SWCD sub-watershed assessment.

Category	NPS Score	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Value	13	0.05 AU/ac	0.48%	3%	21%	0%	35%	4.8 tons/ac/yr
NPS Potential	L	L	M	L	M	L	M	L
Appendix	D	H	H	A	A	A	I	I

Assessments: Minter Creek was assessed at one location during the 2002 Basinwide NPS screening assessment of the BWC Basin Group (Appendix F).

Assessment stations located within the sub-watershed. Descriptions are provided in Appendix E-1.

Station	Assessment Type	Date	Location	Area (mi^2)	Classification
MING-41a	Habitat, Biological, Chemical	2002	Minter Cr. at Greene CR 165	18	F&W

Minter Creek: Minter Creek at MING-41a was a low-gradient, sandy-bottomed stream located within the Fall Line Hills (65i) subecoregion (Appendix J). Habitat quality was impaired by heavy sedimentation and unstable and eroding banks (Appendix J). Seven EPT families were collected, indicating the macroinvertebrate community to be in *fair* condition (Appendix K). Total dissolved solids, chlorides, and nutrient concentrations (NH_3-N, NO_2+NO_3-N, TP, DRP) were elevated (Appendix M).

Sub-watershed status: The macroinvertebrate community was assessed as fair at one location on Minter Creek. Habitat condition was impaired by sedimentation and bank erosion. Screening-level water quality data suggested elevated total dissolved solids and nutrient concentrations. Aquaculture, pasture runoff, and forestry were NPS concerns within the sub-watershed.

Sub-Watershed: Big Brush Creek NRCS Sub-Watershed Number 120

Landuse: The Big Brush Creek sub-watershed drains approximately 201 mi^2 in Hale and Perry Counties. Land cover within the sub-watershed was predominantly forest with some pasture land. One municipal NPDES permit has been issued in the sub-watershed (Appendix B).

Percent land cover estimated by local SWCD (Appendix A, ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
69%	4%	20%	0%	7%	<1%	0%

NPS impairment potential: The overall potential for impairment from all rural and urban nonpoint sources was estimated as *low*, but runoff from pasture land and urban areas were NPS concerns. Watershed reconnaissance conducted during 2002 showed aquaculture to be increasing within the sub-watershed. Big Brush Creek was given 3rd and 5th priority sub-watershed ratings by the local SWCDs for resource concerns including excessive erosion of cropland and roads, overgrazed pastures, livestock in streams, and bacteria in surface waters (Appendix I). Big Brush Creek was identified as a NPS priority sub-watershed in 1997.

Ratings for each NPS category based on values estimated during the SWCD sub-watershed assessment.

Category	NPS Score	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Value	9	0.01 AU/ac	0.00%	4%	21%	0%	15%	2.0 tons/ac/yr
NPS Potential	L	L	L	L	M	L	L	L
Appendix	D	H	H	A	A	A	I	I

Assessments: Polecat Creek, Sparks Creek, and Big Brush Creek were monitored during the 2002 NPS screening assessement of the BWC basin group (Appendix F). Big Brush Creek has also been monitored in conjunction with a statewide tributary loading study and ADEM’s Reservoir Monitoring Program (Appendix E).

Polecat Creek: At BBRH-42a, Polecat Creek is a low-gradient, sandy-bottomed stream located in the Fall Line Hills (65i) subecoregion (Appendix J). Habitat quality was affected by sedimentation and eroded stream banks. Four EPT families were collected, indicating the macroinvertebrate community to be in *poor* condition (Appendix K). Chlorides were elevated in May of 2002 (Appendix M).

Assessment stations located within the sub-watershed. Descriptions are provided in Appendix E-1.

Station	Assessment Type	Date	Location	Area (mi^2)	Classification
BBRH-42a	Habitat, Biological, Chemical	2002	Polecat Creek at Hale CR 51	26	F&W
BBRH-42f	Habitat, Biological, Chemical	2002	Sparks Cr. at AL Hwy 25	22	F&W
BBRH-42g	Habitat, Biological, Chemical	2002	Big Brush Cr. at AL Hwy 69	58	F&W
BBCUA01	Chemical	1998-1999	Big Brush Cr. at AL Hwy 60	190	F&W
Warrior7	Biological, Chemical	2002	Big Brush Cr. approx. 0.5 mi. us of confluence with Black Warrior R.	202	F&W

Sparks Creek: Sparks Creek at BBRH-42f is a sand-bottom, glide-pool stream located in the Fall Line Hills (65i) subecoregion (Appendix J). Habitat quality was affected by sedimentation and eroded stream banks. Seven EPT families were collected, indicating the macroinvertebrate community to be in *fair* condition (Appendix K). Chlorides, total dissolved solids, and dissolved reactive phosphorus were elevated in May of 2002 (Appendix M).

Big Brush Creek: At BBRH-42g, Big Brush Creek is located in the Fall Line Hills (65i) subecoregion (Appendix E). The fish community was in *good* condition during an assessment conducted in July of 2002 (Appendix J). Fecal coliform counts were 1,190 colonies/100mL during May of 2002 (Appendix M). Chlorides and CBOD5 were also elevated at this site.

Intensive water quality sampling was conducted on Big Brush Creek at BBCUA01 from November of 1998 through October of 1999. These data are presented in Appendix S.

Monthly intensive water quality data were collected April through October of 2002 from the Big Brush Creek embayment at Warrior7 to evaluate sediment and nutrient loading to Warrior Reservoir (ADEM 2004b). The site is located within the Southeastern Floodplains and Low Terraces (65p) subecoregion (Appendix E). Data are currently unavailable.

Sub-watershed status: Big Brush Creek was identified as a NPS priority sub-watershed in 1997. In 2002, the macroinvertebrate community was assessed as impaired at Polecat Creek and Sparks Creek. Habitat quality was impaired by sedimentation and eroded stream banks at both locations. Screening-level water quality data suggested pathogens and nutrient enrichment to be potential problems within the sub-watershed. Runoff from pasture land and urban areas were NPS concerns. Watershed reconnaissance conducted during 2002 showed aquaculture to be increasing within the sub-watershed.

Sub-Watershed: Dollarhide Creek NRCS Sub-Watershed Number 140

Landuse: The Dollarhide Creek sub-watershed drains approximately 86 mi^2 in Greene County. Land cover within the sub-watershed was predominantly pasture land and forest. A total of 2 NPDES permits have been issued in the sub-watershed (Appendix B).

Percent land cover estimated by local SWCD (Appendix A, ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
34%	6%	40%	0%	10%	5%	5%

NPS impairment potential: There were *moderate* potentials for rural and urban NPS impairment within the sub-watershed. Dollarhide Creek was given a 4th priority sub-watershed rating by the local SWCD for resource concerns including erosion of roads and agricultural land, nutrients in surface waters, overgrazed pastures, and livestock in streams (Appendix I).

Ratings for each NPS category based on values estimated during the SWCD sub-watershed assessment.

Category	NPS Score	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Value	17	0.04 AU/ac	0.59%	6%	40%	0%	19%	4.3 tons/ac/yr
NPS Potential	M	L	M	M	H	L	L	L
Appendix	D	H	H	A	A	A	I	I

Assessments: Needham Creek was monitored at one site during the 2002 NPS screening assessment of the BWC basin group (Appendix F). The location was previously assessed during ADEM's 1999 §303(d) Monitoring Program (Appendix E).

Assessment stations located within the sub-watershed. Descriptions are provided in Appendix E-1.

Station	Assessment Type	Date	Location	Area (mi^2)	Classification
NHC-2	Habitat, Biological, Chemical	1999, 2000 2002	Needham Cr. at US Hwy 43	7	F&W

Needham Creek: At NHC-2, Needham Creek was a small clay-bottomed stream located in the Blackland Prairie (65a) subecoregion (Appendix J). Flow was reduced to relatively large pools connected by very small bedrock and gravel riffles. Habitat was assessed as *fair* due to eroded banks and poor instream habitat. Similar results were obtained during a habitat assessment conducted in February of 2000 (Appendix P-1). Two EPT families were collected, indicating the macroinvertebrate community to be in *poor* condition (Appendix K). Conductivity and total dissolved solids were elevated during May of 2002 (Appendix M). Alkalinity and hardness values were also elevated.

During 1999, intensive water quality monitoring was conducted from Needham Creek at NHC-2 from June to August of 1999 (Appendix P-3). Dissolved oxygen and pH were below “Fish and Wildlife” water use classification criteria during 1 (25%) of 4 sampling events. Turbidity, CBOD5, and nutrient concentrations were elevated during the June sampling event. TKN was also elevated during the May and July sampling events.

Sub-watershed status: Aquaculture, crop runoff, and pasture grazing were the main NPS concerns within the Dollarhide Creek sub-watershed. Habitat was assessed as *fair* due to eroded banks and poor instream habitat. The macroinvertebrate community was assessed as *poor*. However, low flow conditions may be partially responsible for the biological impairment. Intensive water quality data collected in 1999 suggested nutrient enrichment to be another potential cause of the impairment. Further monitoring is recommended for this sub-watershed.

Sub-Watershed: Big Prairie Creek NRCS Sub-Watershed Number 160

Landuse: The Big Prairie Creek sub-watershed drains approximately 162 mi^2 in Hale, Marengo, and Perry Counties. Land cover within the sub-watershed was a mixture of pasture and forest. Six construction/stormwater authorizations and one municipal NPDES permit have been issued in the sub-watershed (Appendix B).

Percent land cover estimated by local SWCD (Appendix A, ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
31%	8%	55%	0%	5%	2%	<1%

NPS impairment potential: The overall potential for NPS impairment was estimated to be *moderate*. The main NPS concerns within the sub-watershed were aquaculture and runoff from pasture and croplands. Impairment from urban sources was estimated as *low* (Appendix D). Big Prairie Creek was given a 4th priority sub-watershed rating by the Perry County SWCD. Resource concerns within the sub-watershed included erosion of crop and agricultural lands, roads and roadbanks, bacteria in surface waters, overgrazing of pastures, and cattle in streams (Appendix I).

Ratings for each NPS category based on values estimated during the SWCD sub-watershed assessment.

Category	NPS Score	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Value	17	0.11 AU/ac	4.80%	8%	55%	0%	8%	2.4 tons/ac/yr
NPS Potential	M	L	H	L	H	L	L	L
Table	15c	19c	19c	12c	12c	12c	20c	20c

Assessments: Big Prairie Creek and Cottonwood Creek were monitored during ADEM's 2002 NPS Screening Assessment of the BWC River Basins (Appendix F). Bridge construction prevented assessment of one location on Dry Creek (Appendix F).

<u>Big Prairie Creek</u>: At BRPH-44d, Big Prairie Creek is a low-gradient, sand-bottomed stream located in the Blackland Prairie (65a) subecoregion (Appendix J). Habitat quality was impaired by heavy sedimentation, poor instream habitat, and eroded banks. Seven EPT families were collected, indicating the macroinvertebrate community to be in *good* condition (Appendix K). The fish community was assessed as *poor* on Big Prairie Creek at BPRH-44b (Appendix J). One-time water quality sampling was conducted at BRRH-44d on May 8th of 2002 (Appendix M). Fecal coliform counts were >780 colonies/100 mL. Nutrient concentrations (TKN, NO_2+NO_3-N, DRP) were elevated.

Assessment stations located within the sub-watershed. Descriptions are provided in Appendix E-1.

Station	Assessment Type	Date	Location	Area (mi^2)	Classification
BPRH-44a	None conducted	2002	Dry Cr. at AL Hwy 61	24	F&W
BPRH-44b	Habitat, Biological, Chemical	2002	Big Prairie Cr. at Perry CR 20	32	F&W
BPRH-44d	Habitat, Biological, Chemical	2002	Big Prairie Cr. at AL Hwy 25	100	F&W
COTH-57c	Habitat, Biological, Chemical	2002	Cottonwood Cr. at Hale CR 12	42	F&W

Cottonwood Creek: At COTH-57c, Cottonwood Creek was a low-gradient, clay, gravel, and sand-bottomed stream located in the Blackland Prairie (65a) subecoregion (Appendix J). Water quality at the site was severely impacted by permitted runoff from land application activities upstream of the sampling reach (ADEM in house memo). One-time water quality sampling was conducted at COTH-57c on May 8th of 2002 (Appendix M). The dissolved oxygen concentration was measured at 2.2 mg/L. Nutrient concentrations were very high (NH_3-N=7.0 mg/L; TKN=7.4 mg/L; TP=2.1 mg/L, DRP=0.5 mg/L). Conductivity, total dissolved solids, alkalinity, and hardness were also elevated. Habitat quality was impaired from heavy sedimentation, poor instream habitat, and eroded banks. Algal mats and decaying algae were common at the site. No EPT families were collected, indicating the macroinvertebrate community to be in *very poor* condition (Appendix K).

Sub-watershed status: The fish community was assessed as *poor* at one location on Big Prairie Creek. The condition of the macroinvertebrate community was assessed as *good* at a 2nd location, but total suspended solids, chlorides, and nutrient concentrations (TKN, NO_2+NO_3-N, DRP) were elevated at one location on Big Prairie Creek. Fecal coliform concentrations were >780 colonies/100mL of surface water. Water quality at one site on Cottonwood Creek was found to be severely impacted by permitted runoff from land application activities upstream of the sampling reach. Habitat quality was also impaired from heavy sedimentation, poor instream habitat, and eroded banks.

Sub-Watershed: Little Prairie Creek NRCS Sub-Watershed Number 170

Landuse: The Little Prairie Creek sub-watershed drains approximately 96 mi^2 in Hale County. Land cover within the sub-watershed was predominantly pasture. One semi-public/private NPDES permit has been issued in the sub-watershed (Appendix B).

Percent land cover estimated by local SWCD (Appendix A, ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
5%	15%	75%	0%	5%	0%	0%

NPS impairment potential: The potential for impairment from aquaculture and pasture runoff was *high*. There was a *moderate* potential for impairment from cropland runoff. Little Prairie Creek was given a 2nd priority sub-watershed rating by the local SWCD for resource concerns including excessive erosion of crop and agricultural lands, and roads/ roadbanks, overgrazing of pastures, and cattle in streams (Appendix I).

Ratings for each NPS category based on values estimated during the SWCD sub-watershed assessment.

Category	NPS Score	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Value	17	0.04 AU/ac	9.78%	15%	75%	0%	2%	3.8 tons/ac/yr
NPS Potential	M	L	L	M	H	L	L	H
Table	D	H	H	A	A	A	I	I

Assessments: Big German Creek and Little Prairie Creek were monitored during ADEM's 2002 NPS Screening Assessment of the BWC River Basins (Appendix F).

Assessment stations located within the sub-watershed. Descriptions are provided in Appendix E-1.

Station	Assessment Type	Date	Location	Area (mi^2)	Classification
BGEH-46a	Habitat, Biological, Chemical	2002	Big German Cr. at Hale CR 16	28	F&W
LPRH-45b	Habitat, Biological, Chemical	2002	Little Prairie Cr. at Hale CR 9	24	F&W

Big German Creek: At BGEH-46a, Big German Creek is a low-gradient stream located in the Blackland Prairie (65a) subecoregion (Appendix J). The bottom substrate was primarily sand overlying hardpan clay. Habitat quality was impaired by poor instream habitat, eroded banks, and a historically straightened stream channel. Six EPT families were collected, indicating the macroinvertebrate community to be in *good* condition (Appendix K). The fish community was assessed as *fair* (Appendix K). Nutrient concentrations (NO_2+NO_3-N, DRP) were elevated on May 8th of 2002 (Appendix M). The dissolved oxygen concentration was 4.9 mg/L on July 12th of 2002.

Little Prairie Creek: At LPRH-45b, Little Prairie Creek was a clay-bottomed stream located in the Blackland Prairie (65a) subecoregion (Appendix J). Habitat quality was impaired by poor in-stream habitat, sediment deposition, a straightened stream channel, and unstable banks. The reach was flanked on both sides by cropland. Vegetation, primarily shrubs and trees, was actively being removed up to the top of the stream bank. Five EPT families were collected, indicating the macroinvertebrate community to be in *fair* condition (Appendix K). Nutrient concentrations (TKN, NO_2+NO_3-N, DRP) were elevated during a one-time water quality sampling event on May 8th of 2002 (Appendix M).

Sub-watershed status: Impaired biological conditions were detected at locations on Big German Creek and Little Prairie Creek. The concentration of dissolved oxygen was measured as 4.9 mg/L at Big German Creek during the July, 2003 sampling event. Chlorides and nutrient concentrations were elevated at Big German Creek and Little Prairie Creek during 2003.

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APPENDICES

Appendix A. Land use percentages for the Black Warrior and Cahaba River Basins. Values based on local SWCD Conservation Assessment Worksheet landuse estimates (ASWCC 1998).

Sub-watershed	Percent Total Landuse						
	Open Water	Urban	Mines	Forest	Pasture	Row Crops	Other
Cahaba River (0315-0202)							
010	1	9	1	81	5	1	3
020	7	33	1	34	20	1	5
030	1	54	<1	36	4	<1	4
040	6	64	<1	14	4	2	10
050	3	19	4	53	19	1	2
060	1	41	1	47	8	<1	3
070	0	5	15	75	5	0	0
080	2	22	1	53	16	2	3
090	2	0	<1	71	24	3	<1
100	0	0	0	90	10	0	0
110	2	7	1	75	13	1	1
120	1	5	0	75	15	4	0
130	1	5	0	81	13	1	1
140	1	0	0	84	10	5	0
150	0	5	0	65	20	10	0
160	1	0	0	86	9	3	1
170	1	2	0	65	29	3	1
Mulberry Fork (0316-0109)							
010	1	5	<1	39	38	11	6
020	1	3	0	36	45	11	4
030	1	1	0	39	40	14	5
040	4	10	0	40	35	6	6
050	1	14	0	39	31	9	6
060	0	12	0	41	28	9	10
070	1	16	0	42	27	10	5
080	<1	3	3	82	10	1	1
090	0	2	1	80	10	4	4
100	<1	1	4	76	11	3	4
110	<1	2	18	53	22	2	1
120	<1	1	3	80	12	1	3
130	1	1	9	57	30	0	3
140	<1	2	8	68	18	0	3
150	1	11	5	69	11	0	3
160	<1	2	6	88	2	0	3
170	<1	1	15	63	14	0	6
180	<1	0	2	93	2	0	3
190	<1	1	19	66	6	0	8
200	<1	2	6	81	4	0	6
Sipsey Fork (0316-0110)							
010	<1	0	1	94	3	1	1
020	3	1	1	81	11	<1	3
030	0	<1	0	97	2	<1	<1
040	7	1	0	77	10	<1	5
050	<1	2	8	69	17	1	4
060	<1	<1	2	92	2	2	2

Appendix A, cont. Land use percentages for the Black Warrior and Cahaba River Basins. Values based on local SWCD Conservation Assessment Worksheet landuse estimates (ASWCC 1998).

Sub-watershed	Percent Total Landuse						
	Open Water	Urban	Mines	Forest	Pasture	Row Crops	Other
Sipsey Fork (0316-0110)							
070	7	<1	5	77	7	<1	4
080	<1	1	0	57	38	2	2
090	<1	2	0	51	43	2	2
100	11	0	7	50	27	2	3
110	1	10	0	42	38	7	3
120	13	0	2	52	29	1	3
130	1	<1	5	67	24	1	3
Locust Fork (0316-0111)							
010	<1	<1	3	61	29	4	3
020	1	0	2	60	20	14	3
030	2	6	<1	35	33	21	2
040	4	7	1	38	31	20	1
050	<1	5	5	51	19	13	7
060	0	13	1	50	18	11	7
070	5	2	1	63	16	9	6
080	0	3	7	57	19	8	6
090	1	8	4	69	12	2	3
100	1	13	1	52	22	7	5
110	1	9	2	75	10	1	3
120	2	5	5	60	15	10	3
130	1	40	3	52	2	0	3
140	1	68	3	25	1	0	3
150	1	1	7	85	2	2	3
Upper Black Warrior River (0316-0112)							
010	1	2	15	80	1	0	1
020	1	72	1	13	10	0	3
030	1	5	20	70	2	1	1
040	0	0	2	94	1	0	3
050	<1	<1	1	88	8	1	2
060	<1	<1	15	81	2	0	2
070	1	1	13	85	0	0	1
080	1	2	7	83	3	<1	5
090	<1	9	0	63	4	3	21
100	3	2	<1	82	6	5	2
110	2	57	1	28	4	1	8
120	1	27	8	58	2	1	3
Lower Black Warrior River (0316-0113)							
010	1	32	0	42	8	14	3
020	<1	33	0	46	6	5	11
030	1	<1	0	91	5	2	1
040	<1	16	0	62	6	12	4
050	2	1	0	79	9	9	1
060	0	14	0	65	1	20	0
070	0	0	0	75	15	10	0
080	1	1	0	80	15	2	1
090	1	0	0	86	9	4	0

Appendix A, cont. Land use percentages for the Black Warrior and Cahaba River Basins. Values based on local SWCD Conservation Assessment Worksheet landuse estimates (ASWCC 1998).

Sub-watershed	Percent Total Landuse						
	Open Water	Urban	Mines	Forest	Pasture	Row Crops	Other
Lower Black Warrior River (0316-0113)							
100	0	5	0	80	10	5	0
110	2	1	0	72	21	3	1
120	<1	7	0	69	21	4	0
130	0	0	0	95	5	0	0
140	5	11	0	34	40	6	5
150	0	0	0	20	70	10	0
160	2	5	0	31	55	8	<1
170	0	5	0	5	75	15	0
180	10	0	0	78	5	5	2
190	<1	16	1	13	64	4	2

Appendix B. Number of current construction/stormwater authorizations, noncoal mining (<5 acres)/stormwater authorizations, NPDES permits, and CAFO registrations issued within sub-watersheds of the Cahaba and Black Warrior River Basins.

		# of Authorizations / #NPDES permits										
Cataloging Unit	Sub-watershed	Total # Permits and Authorizations	Construction/ Stormwater Authorizations (a)	Non-Coal Mining <5 Acres / Stormwater Authorizations (a)	Mining NPDES (a)	Municipal NPDES (b)	Semi Public/ Private NPDES (b)	Industrial Process Wastewater - NPDES Majors (b)	Process Wastewater- NPDES Minors (b)	Industrial SW/ Treated GW (b)	SID Stormwater NPDES (b)	CAFOs (a)
0315-0202	010	63	59			1		2			1	
	020	48	43		1	3			1			
	030	121	109			4	8					
	040	86	76		5	3	1				1	
	050	23	17		5		1					
	060	109	98	1	2		3				5	
	070	12	7		5							
	080	34	20	1	9	2			1		1	
	090	2			1				1			
	100											
	110	6	5		1							
	120	5	2		1	1			1			
	130	1	1									
	140											
	150	1				1						
	160	1			1							
	170	5	2		1		2					
0316-0109	010	14	3			2						9
	020	12	1				1					10
	030	8	4					1				3
	040	7	2						1			4
	050	23	12			1					1	9
	060	1				1						
	070	5	4			1						
	080	4	1			1	1	1				
	090	2			1		1					
	100	2	2									
	110	13	2		5							6
	120	3	0?		1		1		1			
	130	18	4		4		4					6
	140	4			4							

(a) from ADEM Mining and NPS Unit, Field Operations, database retrieval (9/16/03); (b) from ADEM Water Division, NPDES database retrieval (9/26/03)

Appendix B, cont. Number of current construction/stormwater authorizations, noncoal mining (<5 acres)/stormwater authorizations, NPDES permits, and CAFO registrations issued within sub-watersheds of the Cahaba and Black Warrior River Basins.

Cataloging Unit	Sub-watershed	Total Number of Permits and Authorizations	Construction/ Stormwater Authorizations (a)	Non-Coal Mining <5 Acres / Stormwater Authorizations (a)	Mining NPDES (a)	Municipal NPDES (b)	Semi Public/ Private NPDES (b)	Industrial Process Wastewater - NPDES Majors (b)	Process Wastewater- NPDES Minors (b)	Industrial SW/ Treated GW	SID Stormwater NPDES (b)	Registra tions (a)
		# of Authorizations / #NPDES permits										
0316-0109	150	19	5		10	1	1		1		1	
	160	2	4?		2							
	170	29	8?		25	3			1			
	180	2	1		1							
	190	13	3		9			1				
	200	5	2		1	2						
0316-0110	010											
	020	11	8		2		1					
	030	3	1									2
	040	3	3									
	050	10	7		1				1		1	
	060	3	1		1	1						
	070	9				1	1					7
	080	5	1				1					3
	090	4	1				1					2
	100	4	2									2
	110	20	10			1	1				1	7
	120	11	6		2		1					2
	130	4			4							
0316-0111	010	5	1		1		1					2
	020	3	3									
	030	19	1									18
	040	13	3			1			1		2	6
	050	23	3		1	2	2	2				13
	060	10	4	1		1						4
	070	16	4	1	1		2					8
	080	9	5		1		3					
	090	9	6		2		1					
	100	18	15		2				1			
	110	38	25		1	1	7		1		3	

(a) from ADEM Mining and NPS Unit, Field Operations, database retrieval (9/16/03); (b) from ADEM Water Division, NPDES database retrieval (9/26/03)

Appendix B, cont. Number of current construction/stormwater authorizations, noncoal mining (<5 acres)/stormwater authorizations, NPDES permits, and CAFO registrations issued within sub-watersheds of the Cahaba and Black Warrior River Basins.

		# of Authorizations / #NPDES permits										
Cataloging Unit	Sub-watershed	Total Number of Permits and Authorizations	Construction/ Stormwater Authorizations (a)	Non-Coal Mining <5 Acres / Stormwater Authorizations (a)	Mining NPDES (a)	Municipal NPDES (b)	Semi Public/ Private NPDES (b)	Industrial Process Wastewater - NPDES Majors (b)	Process Wastewater- NPDES Minors (b)	Industrial SW/ Treated GW	SID Stormwater NPDES (b)	Registrations (a)
0316-0111	120	32	15		13	1	2		1			
	130	56	39		2	2	6	2	1		4	
	140	45	29		7	1		2	5		1	
	150	13	2		10				1			
0316-0112	010	3	1		1		1					
	020	42	31		2	1		4			4	
	030	30	17		13							
	040	2			2							
	050											
	060	1			1							
	070	4			4							
	080	35	10		24		1					
	090	14	8		5	1						
	100	29	24	1	3		1					
	110	37	35	1						1		
	120	96	66	1	12		3		4	8	2	
0316-0113	010	28	21	1	3	1				2		
	020	56	33	1	8	1		1	9	2	1	
	030	15	13		2							
	040	6	1		1	1		1	2			
	050	5	4				1					
	060	1	1									
	070	3	1		2							
	080	2	2									
	090	2	2									
	100	1				1						
	110											
	120	2				1					1	
	130	1	1									
	140	2				1		1				
	150	1	1									
	160	7	6			1						
	170	1					1					
	180											
	190	4	2		1				1			

(a) from ADEM Mining and NPS Unit, Field Operations, database retrieval (9/16/03); (b) from ADEM Water Division, NPDES database retrieval (9/26/03)

Appendix C-1. List of approved TMDLs within the Cahaba and the Black Warrior River basins.

Waterbody	Sub-watershed	Miles impaired	Use[1]	Support Status	Suspected Sources	Causes of Impairment
Cahaba River (0315-0202)						
Cooley Creek	060	3.8	F&W	Partial	Pasture grazing, Onsite wastewater systems	Pathogens
Mill Creek	060	5.4	F&W	Partial	Pasture grazing	Pathogens
Mud Creek	060	3.7	F&W	Partial	Pasture grazing	Pathogens
Shades Creek	060	55.0	F&W	Non	Collection system failure, Hwy/bridge construction, Land development, Urban runoff/storm sewers, Removal of riparian vegetation, Bank modification	Pathogens
Dry Creek	170	4.5	F&W	Non	Pasture grazing	Pathogens
Mulberry Fork (0316-0109)						
Long Branch	020	2.0	F&W	Partial	Intensive animal feeding operation, Pasture grazing	Ammonia
Long Branch	020	2.0	F&W	Partial	Intensive animal feeding operation, Pasture grazing	OE/DO
Long Branch	020	2.0	F&W	Partial	Intensive animal feeding operation, Pasture grazing	Pathogens
Duck Creek	020	6.4	F&W	Non	Intensive animal feeding operation, Pasture grazing	OE/DO
Eightmile Creek	040	23.0	F&W, PWS	Partial	Urban runoff, Pasture grazing	Ammonia
Eightmile Creek	040	23.0	F&W, PWS	Partial	Urban runoff, Pasture grazing	OE/DO
Broglen River	050	12.0	F&W	Partial	Urban runoff, Pasture grazing	OE/DO
Thacker Creek	080	9.5	F&W	Non	Pasture grazing	Ammonia
Thacker Creek	080	9.5	F&W	Non	Pasture grazing	OE/DO
Thacker Creek	080	9.5	F&W	Non	Pasture grazing	Pathogens
Sipsey Fork (0316-0110)						
Rock Creek	080	5.0	F&W	Partial	Pasture grazing	OE/DO
Rock Creek	080	5.0	F&W	Partial	Pasture grazing	Pathogens
Crooked Creek	090	28.0	F&W	Partial	Intensive animal feeding operation, Pasture grazing	Ammonia
Crooked Creek	090	28.0	F&W	Partial	Intensive animal feeding operation, Pasture grazing	OE/DO
Crooked Creek	090	28.0	F&W	Partial	Intensive animal feeding operation, Pasture grazing	Pathogens
Locust Fork (0316-0111)						
Graves Creek	050	11.2	F&W	Partial	Pasture grazing, Industrial	OE/DO

1. Water use classification: A&I=Agriculture and Industry, F&W=Fish and Wildlife, H=Shellfish harvesting, LWWF=Limited Warmwater Fishery, PWS=Public Water Supply, S=Swimming

Appendix C-2. List of waterbodies within the Cahaba and the Black Warrior River basins on ADEM's 2002 CWA §303(d) list due to unknown or nonpoint source impacts. Sources and causes of impairment are listed (ADEM 2002c). Segments shown in italics are included on the §303(d) list with source(s) other than rural nonpoint.

Waterbody	Sub-watershed	Miles impaired	Use[1]	Support Status	Suspected Sources	Causes of Impairment
Cahaba River (0315-0202)						
Cahaba River		*17.4*	*F&W*	*Partial*	*Urban runoff/storm sewers, Municipal*	*Nutrients, Siltation*
Lee Branch	*020*	*2.5*	*F&W*	*Non*	*Urban runoff/storm sewers*	*Pathogens*
Patton Creek	*030*	*5.0*	*F&W*	*Partial*	*Urban runoff/storm sewers*	*OE/DO*
Cahaba River		*36.9*	*OAW, PWS*	*Partial*	*Urban runoff/storm sewers*	*Siltation, Other habitat alteration*
Cahaba River		*26.5*	*OAW, F&W*	*Partial*	*Municipal, Urban runoff/storm sewers, Land development*	*Nutrients, Siltation, Pathogens, Other habitat alteration*
Shades Creek	*060*	*55.0*	*F&W*	*Non*	*Collection system failure, Hwy/bridge construction, Land development, Urban runoff/storm sewers, Removal of riparian vegetation, Bank modification*	*Siltation, Other habitat alteration, Turbidity*
Cahaba River		*24.0*	*OAW*	*Partial*	*Municipal, Urban runoff/storm sewers, Land development*	*Nutrients, Siltation, Other habitat alteration*
Mulberry Fork (0316-0109)						
Brindley Creek	*030*	*18.8*	*PWS*	*Non*	*Urban runoff/storm sewers*	*Ammonia, Nutrients, OE/DO, Pathogens*
Eightmile Creek	040	23.0	F&W, PWS	Partial	Urban runoff, Pasture grazing	Pathogens
Broglen River	050	12.0	F&W	Partial	Urban runoff, Pasture grazing	Pathogens
Mulberry Fork	050	18.4	F&W	Non	Agriculture	Siltation, Other habitat alteration
Mud Creek	*070*	*4.7*	*F&W*	*Non*	*Urban runoff/storm sewers*	*OE/DO*
Mulberry Fork	080	2.5	F&W	Non	Agriculture, Industrial, Municipal	Nutrients
Mulberry Fork	080	20.0	F&W	Non	Agriculture, Industrial, Municipal	Nutrients, Siltation, Other habitat alteration

Appendix C-2, cont. List of waterbodies within the Cahaba and the Black Warrior River basins on ADEM's 2002 CWA §303(d) list due to unknown or nonpoint source impacts. Sources and causes of impairment are listed (ADEM 2002c). Segments shown in italics are included on the §303(d) list with source(s) other than rural nonpoint.

Waterbody	Sub-watershed	Miles impaired	Use[1]	Support Status	Suspected Sources	Causes of Impairment
Mulberry Fork (0316-0109)						
Cane Creek	170	14.7	F&W, LWWF	Partial	Surface mining-abandoned, Municipal	Metals, Nutrients, pH, OE/DO, Siltation
Black Branch	170	2.9	F&W	Non	Surface mining-abandoned	Metals, pH, Siltation, Other habitat alteration
Lost Creek	170	12.8	F&W	Partial	Surface mining-abandoned	Siltation, Other habitat alteration
Lost Creek	170	17.3	F&W	Partial	Surface mining-abandoned	Siltation, Other habitat alteration
Wolf Creek	180	37.2	F&W	Partial	Surface mining-abandoned	Siltation, Other habitat alteration
Locust Fork (0316-0111)						
Dry Creek	050	11.2	F&W	Partial	Pasture grazing	Nutrients, Ammonia, OE/DO, Pathogens
Locust Fork	050	21.8	F&W	Partial	Agriculture, Surface mining-abandoned	Siltation, Other habitat alteration
Locust Fork	120	47.3	F&W	Partial	Agriculture, Surface mining-abandoned	Nutrients, Siltation, Other habitat alteration
Newfound Creek	*130*	*3.0*	*F&W*	*Partial*	*Urban runoff/storm sewers*	*Biology*
Camp Branch	140	10.0	F&W	Non	Surface mining-abandoned, Subsurface mining-abandoned, Mill tailings-abandoned, Mine tailings-abandoned, Landfills	pH, Siltation, Other habitat alteration
Village Creek	*140*	*12.6*	*LWWF*	*Non*	*Industrial, Municipal, Urban runoff/storm sewers, Surface mining-abandoned, Subsurface mining-abandoned, Mill tailings-abandoned, Mine tailings-abandoned*	*Metals, pH, Siltation*
Bayview Lake	*140*	*440 ac.*	*LWWF*	*Non*	*Municipal, Urban runoff/storm sewers, Industrial, Spills, Surface mining-abandoned*	*Siltation*
Locust Fork	*150*	*16.3*	*F&W*	*Partial*	*Urban runoff/storm sewers*	*OE/DO*

Appendix C-2, cont. List of waterbodies within the Cahaba and the Black Warrior River basins on ADEM's 2002 CWA §303(d) list due to unknown or nonpoint source impacts. Sources and causes of impairment are listed (ADEM 2002c). Segments shown in italics are included on the §303(d) list with source(s) other than rural nonpoint.

Waterbody	Sub-watershed	Miles impaired	Use[1]	Support Status	Suspected Sources	Causes of Impairment
Upper Black Warrior River (0316-0112)						
Opossum Creek	*020*	*7.1*	*A&I*	*Non*	*Industrial, Urban runoff/storm sewers*	*OE/DO*
Mud Creek	030	5.1	F&W	Non	Unknown source	pH, Siltation
Big Yellow Creek	050	20.7	S, F&W	Non	Surface mining-abandoned	Metals
North River	100	38.0	F&W	Partial	Surface mining-abandoned	Nutrients, Siltation, Other habitat alteration
Hurricane Creek	120	31.4	F&W	Non	Surface mining-abandoned, Land development	Metals (Al, Fe), Pathogens, Turbidity
Little Hurricane Creek	120	10.0	F&W	Non	Surface mining-abandoned	Metals (Al, As, CU, CrT, Fe), Pathogens
North Fork, Hurricane Creek	120	6.4	F&W	Non	Surface mining-abandoned	Metals (Al)

1. Water use classification: A&I=Agriculture and Industry, F&W=Fish and Wildlife, H=Shellfish harvesting, LWWF=Limited Warmwater Fishery, PWS=Public Water Supply, S=Swimming

Appendix D. Estimates of (H)igh, (M)oderate, or (L)ow NPS impairment potential for sub-watersheds in the BWC Basin Group. Source categories are based on information provided by the local Soil and Water Conservation Districts (SWCD) on Conservation Assessment Worksheets completed in 1998 and from Construction Stormwater Authorization information provided by the Mining and NPS Section of ADEM. The presence of a CWA §303(d) stream segment within a sub-watershed raised the sub-watershed to the top of the prioritization ranking.

CU	Sub-watershed	Overall NPS Impairment Score	Potential NPS Impairment	Potential Sources of Impairment										
				Rural Landuses							Urban / Suburban / Residential Landuses			
				Animal Husbandry	Aquaculture	Row Crops	Pasture Runoff	Mining	Forestry Practices	Sedimentation	Urban	Development	Septic Tank Failure	Urban Impairment Potential
Raw Data Appendix				H	H	A	A	A	I	I	A	B	I	
0315-0202	010	9	L	L	L	L	L	L	L	M	M	H	L	M
	020	13	L	L	L	L	M	L	L	H	H	H	H	H
	030	11	L	L	L	L	L	L	L	H	H	H	L	H
	040	10	L	L	L	L	L	L	ur	H	H	H	M	H
	050	12	M	L	L	L	M	L	ur	H	H	M	L	M
	060	9	L	L	L	L	L	L	L	M	H	H	L	H
	070	14	M	L	L	L	L	H	ur	H	L	L	L	L
	080	13	L	L	L	L	M	L	L	H	H	M	L	M
	090	9	L	L	L	L	M	L	L	L	L	L	L	L
	100	6	L	L	L	L	L	L	ur	L	L	L	M	L
	110	6	L	L	L	L	L	L	ur	L	M	L	L	L
	120	6	L	L	L	L	L	L	ur	L	L	L	L	L
	130	7	L	L	L	L	L	L	L	L	L	L	L	L
	140	11	L	L	L	L	L	L	H	L	L	L	M	L
	150	13	L	L	L	M	M	L	M	L	L	L	L	L
	160	9	L	L	L	L	L	L	M	L	L	L	L	L
	170	11	L	L	M	L	M	L	L	L	L	L	M	L
0316-0109	010	19	H	H	L	M	H	L	M	L	L	L	L	L
	020	21	H	H	L	M	H	L	H	L	L	L	L	L
	030	21	H	H	L	M	H	L	H	L	L	M	L	L
	040	19	H	H	L	M	M	L	H	L	M	L	M	M
	050	19	H	H	L	M	M	L	H	L	M	M	L	M
	060	11	L	L	L	M	M	L	L	L	M	L	H	M
	070	19	H	H	L	M	M	L	H	L	H	M	L	M
	080	15	M	H	L	L	L	L	H	L	L	L	L	L
	090	9	L	L	L	L	L	L	M	L	L	L	L	L
	100	13	L	L	L	L	L	L	H	M	L	L	M	L
	110	21	H	H	L	L	M	H	H	L	L	L	L	L
	120	7	L	L	L	L	L	L	L	L	L	L	M	L

ur= unreported

Appendix D, cont. Estimates of (H)igh, (M)oderate, or (L)ow NPS impairment potential for sub-watersheds in the BWC Basin Group. Source categories are based on information provided by the local Soil and Water Conservation Districts (SWCD) on Conservation Assessment Worksheets completed in 1998 and from Construction Stormwater Authorization information provided by the Mining and NPS Section of ADEM. The presence of a CWA §303(d) stream segment within a sub-watershed raised the sub-watershed to the top of the prioritization ranking.

CU	Sub-watershed	Overall NPS Impairment Score	Potential NPS Impairment	Potential Sources of Impairment										
				Rural Landuses							Urban / Suburban / Residential Landuses			
				Animal Husbandry	Aquaculture	Row Crops	Pasture Runoff	Mining	Forestry Practices	Sedimentation	Urban	Development	Septic Tank Failure	Urban Impairment Potential
Raw Data Appendix				H	H	A	A	A	I	I	A	B	I	
0316-0109	130	19	H	H	L	L	M	M	M	M	L	L	H	M
	140	17	M	M	L	L	M	M	M	M	L	L	H	M
	150	13	L	L	L	L	L	M	M	M	M	M	H	H
	160	13	L	L	L	L	L	M	M	M	L	L	H	M
	170	15	M	L	L	L	L	H	M	M	L	L	M	L
	180	13	L	L	L	L	L	L	H	M	L	L	L	L
	190	15	M	L	L	L	L	H	M	M	L	M	M	M
	200	15	M	L	L	L	L	M	H	M	L	L	M	L
0316-0110	010	7	L	L	L	L	L	L	L	L	L	L	L	L
	020	6	L	L	L	L	L	L	ur	L	L	L	L	L
	030	7	L	L	L	L	L	L	L	L	L	L	L	L
	040	6	L	L	L	L	L	L	ur	L	L	L	M	L
	050	10	L	L	L	L	M	M	ur	L	L	L	L	L
	060	6	L	L	L	L	L	L	ur	L	L	L	M	L
	070	11	L	L	L	L	L	M	L	M	L	L	M	L
	080	13	L	M	L	L	H	L	L	L	L	L	L	L
	090	17	M	H	L	L	H	L	M	L	L	L	L	L
	100	13	L	M	L	L	M	M	L	L	L	L	L	L
	110	19	H	H	L	M	H	L	M	L	M	M	L	M
	120	15	M	H	L	L	M	L	M	L	L	L	M	L
	130	15	M	M	L	L	M	M	M	L	L	L	H	M
0316-0111	010	11	L	M	L	L	M	L	L	L	L	L	M	L
	020	11	L	L	L	M	M	L	L	L	L	L	M	L
	030	15	M	M	L	H	M	L	L	L	M	M	H	H
	040	15	M	M	L	H	M	L	L	L	M	L	H	M
	050	15	M	M	L	M	M	M	L	L	L	L	M	L
	060	11	L	L	L	M	M	L	L	L	M	L	M	M
	070	11	L	L	L	M	M	L	L	L	L	L	L	L
	080	13	L	L	L	M	M	M	L	L	L	L	L	L

Appendix D, cont. Estimates of (H)igh, (M)oderate, or (L)ow NPS impairment potential for sub-watersheds in the BWC Basin Group. Source categories are based on information provided by the local Soil and Water Conservation Districts (SWCD) on Conservation Assessment Worksheets completed in 1998 and from Construction Stormwater Authorization information provided by the Mining and NPS Section of ADEM. The presence of a CWA §303(d) stream segment within a sub-watershed raised the sub-watershed to the top of the prioritization ranking.

CU	Sub-watershed	Overall NPS Impairment Score	Potential NPS Impairment	Potential Sources of Impairment										
				Rural Landuses							Urban / Suburban / Residential Landuses			
				Animal Husbandry	Aquaculture	Row Crops	Pasture Runoff	Mining	Forestry Practices	Sedimentation	Urban	Development	Septic Tank Failure	Urban Impairment Potential
Raw Data Appendix				H	H	A	A	A	I	I	A	B	I	
0316-0111	090	11	L	L	L	L	L	L	M	M	M	L	L	L
	100	13	L	L	L	M	M	L	M	L	M	H	M	H
	110	11	L	L	L	L	L	L	M	M	M	M	L	M
	120	15	M	L	L	M	L	M	M	M	L	M	L	L
	130	9	L	L	L	L	L	L	L	M	H	H	L	H
	140	11	L	L	L	L	L	L	L	H	H	M	L	M
	150	15	M	L	L	L	L	M	H	M	L	L	L	L
0316-0112	010	19	H	L	L	L	L	H	H	H	L	M	L	L
	020	11	L	L	L	L	L	L	L	H	H	M	L	M
	030	17	M	L	L	L	L	H	M	H	L	L	L	L
	040	13	L	L	L	L	L	L	H	M	L	L	L	L
	050	6	L	L	L	L	L	L	ur	L	L	L	L	L
	060	14	M	L	L	L	L	H	M	H	L	L	L	L
	070	14	M	L	L	L	L	H	ur	H	L	L	L	L
	080	10	L	L	L	L	L	M	ur	M	L	L	L	L
	090	8	L	L	L	L	L	L	ur	M	M	L	L	L
	100	6	L	L	L	L	L	L	ur	L	L	L	L	L
	110	6	L	L	L	L	L	L	ur	L	H	H	L	H
	120	10	L	L	L	L	L	M	ur	M	H	H	M	H
0316-0113	010	8	L	L	L	M	L	L	ur	L	H	M	L	M
	020	6	L	L	L	L	L	L	ur	L	H	M	L	M
	030	7	L	L	L	L	L	L	L	L	L	L	L	L
	040	11	L	L	L	M	L	L	L	M	H	M	L	M
	050	11	L	L	M	M	L	L	L	L	L	L	L	L
	060	11	L	L	L	H	L	L	L	L	M	L	L	L
	070	9	L	L	L	M	L	L	L	L	L	L	L	L
	080	9	L	L	L	L	L	L	M	L	L	L	L	L
	090	7	L	L	L	L	L	L	L	L	L	L	L	L
	100	7	L	L	L	L	L	L	L	L	L	L	L	L

ur= unreported

Appendix D cont. Estimates of (H)igh, (M)oderate, or (L)ow NPS impairment potential for sub-watersheds in the BWC Basin Group. Source categories are based on information provided by the local Soil and Water Conservation Districts (SWCD) on Conservation Assessment Worksheets completed in 1998 and from Construction Stormwater Authorization information provided by the Mining and NPS Section of ADEM. The presence of a CWA §303(d) stream segment within a sub-watershed raised the sub-watershed to the top of the prioritization ranking.

CU	Sub-watershed	Overall NPS Impairment Score	Potential NPS Impairment	Potential Sources of Impairment										
				Rural Landuses							Urban / Suburban / Residential Landuses			
				Animal Husbandry	Aquaculture	Row Crops	Pasture Runoff	Mining	Forestry Practices	Sedimentation	Urban	Development	Septic Tank Failure	Urban Impairment Potential
Raw Data Appendix				H	H	A	A	A	I	I	A	B	I	
0316-0113	110	13	L	L	M	L	M	L	M	L	L	L	L	L
	120	9	L	L	L	L	M	L	L	L	M	L	L	L
	130	9	L	L	L	L	L	L	M	L	L	L	L	L
	140	17	M	L	M	M	H	L	L	M	M	L	M	M
	150	13	L	L	L	M	H	L	L	L	L	L	L	L
	160	17	M	L	H	M	H	L	L	L	L	L	L	L
	170	17	M	L	H	M	H	L	L	L	L	L	L	L
	180	9	L	L	L	L	L	L	M	L	L	L	M	L
	190	17	M	L	H	L	H	L	L	M	H	L	M	M

ur= unreported

Appendix E. Stations assessed in the Black Warrior and Cahaba River Basins since 1992.

CU	Sub	County	Station	Stream	Station Description	Program	Most recent data	Eco-region	Lat Dec	Lon Dec
0202	010	Jefferson	CABJ-8	Cahaba R.	Cahaba R. at US Hwy 11	303(d) Monitoring Program	2002	67h	33.61900	-86.60394
0202	010	Jefferson	EPACRAT-1	Cahaba R.	Cahaba R. at US Hwy 11	EPA Cahaba R. Study	2002	67h	33.61900	-86.60394
0202	010	Jefferson	CABJ-9	Cahaba R.	Cahaba R. at CR 10 at Whites Chapel	303(d) Monitoring Program	2002	67f	33.60192	-86.60282
0202	010	Jefferson	C1	Cahaba R.	Cahaba R. at CR 10 at Whites Chapel	Ambient Monitoring Program	2002	67f	33.60192	-86.60282
0202	010	Jefferson	EPACRBT-1	Cahaba R.	Cahaba R. at CR 10 at Whites Chapel	EPA Cahaba R. Study	2002	67f	33.60192	-86.60282
0202	010	Jefferson	UAB-7	Cahaba R.	Cahaba R. at CR 10 at Whites Chapel	UAB's Biological Communities of the Cahaba R	1998	67f	33.60192	-86.60282
0202	010	Jefferson	BBC-1	Big Black Cr	Big Black Cr. at CR 10 near Whites Chapel	1999 Black Cr. Study	1999	67h	33.59586	-86.53164
0202	010	St. Clair	BBC-2	Big Black Cr	Big Black Cr. at old coal wash	1999 Black Cr. Study	1999	67h	33.60556	-86.52733
0202	010	St. Clair	BBC-3	Big Black Cr	Big Black Cr. northeast end of landfill	1999 Black Cr. Study	1999	67h	33.61192	-86.51942
0202	010	St. Clair	BBC-4	Big Black Cr	Big Black Cr. ds of Unnamed Trib.	1999 Black Cr. Study	1999	67h	33.61078	-86.51228
0202	010	Jefferson	GSACR-11	Cahaba R.	Cahaba R. at I-59	GSA Cahaba R. Bioassessment	2002	67f	33.66024	-86.58980
0202	010	Jefferson	GSACR-10	Cahaba R.	Cahaba R. at Camp Coleman, approximately 2 mi east of Trussville	GSA Cahaba R. Bioassessment	2002	67h	33.62256	-86.56667
0202	010	Jefferson	EPACR-1	Cahaba R.	Cahaba R. at CR 132	EPA Cahaba R. Study	2002	67f	33.64344	-86.59681
0202	010	Jefferson	EPALCC-1	Little Cahaba R	Little Cahaba R. off Camp Coleman Road	EPA Cahaba R. Study	2002	67h	33.62650	-86.56636
0202	010	Jefferson	EPAUT-1	Unnamed tributary to Little Cahaba R.	Unnamed trib to Little Cahaba R. off of Camp Coleman Road	EPA Cahaba R. Study	2002	67h	33.62644	-86.56744
0202	010	Jefferson	USGSCAJ-1	Cahaba R.	Cahaba R. us of Oak St. bridge, approximately 0.5 mi east of CR 10 in north Trussville	USGS Landuse Gradient Study	1999	67f	33.63056	-86.60278
0202	010	Jefferson	02423120	Cahaba R.	Cahaba R. us of Oak St. bridge, approximately 0.5 mi east of CR 10 in north Trussville	USGS Sampling Station	2000	67f	33.63056	-86.60278
0202	020	Jefferson	DRYJ-10	Dry Cr	Dry Cr above Leeds WWTP	303(d) Monitoring Program	2002	67f	33.52385	-86.56454
0202	020	Jefferson	LCBS-3	Little Cahaba R	Little Cahaba at AL Hwy 411 below WWTP	303(d) Monitoring Program	2002	67f	33.57222	-86.51853
0202	020	Jefferson	EPALCR-2	Little Cahaba R	Little Cahaba at AL Hwy 411 below WWTP	EPA Cahaba R. Study	2002	67f	33.57177	-86.51926
0202	020	Jefferson	LC1	Little Cahaba R	Little Cahaba R. south of Leeds ~1 mile below leeds WWTP	303(d) Monitoring Program	2002	67f	33.52128	-86.57939
0202	020	Jefferson	LC1	Little Cahaba R	Little Cahaba R. south of Leeds ~1 mile below leeds WWTP	Ambient Monitoring Program	2002	67f	33.52128	-86.57939
0202	020	Jefferson	CA01	Little Cahaba R	Little Cahaba R. south of Leeds ~1 mile below leeds WWTP	Clean Water Strategy	1996	67f	33.52128	-86.57939

Appendix E. Stations assessed in the Black Warrior and Cahaba River Basins since 1992.

CU	Sub	County	Station	Stream	Station Description	Program	Most recent data	Eco-region	Lat Dec	Lon Dec
0202	020	Jefferson	USGSLCJ-1	Little Cahaba R.	Little Cahaba R. approximately 0.3 mi SW of AL Hwy 119	USGS Landuse Gradient Study	1999	67f	33.53444	-86.56250
0202	020	Jefferson	02423397	Little Cahaba R.	Little Cahaba R. approximately 0.3 mi SW of AL Hwy 119	USGS Sampling Station	1995	67f	33.53444	-86.56250
0202	020	Jefferson	LCRUA01	Little Cahaba R.	Little Cahaba R. at Bailey Rd approximately 0.7 miles us of Lake Purdy	99-00 University Tributary Nutrient Loading Study	1999	67f	33.49972	-86.61417
0202	020	Shelby	Purdy1	Cahaba R.	Deepest point, main R. channel, dam forebay .	ADEM Reservoir Monitoring Program	2002	67f	33.45945	-86.66727
0202	020	Jefferson	Purdy2	Cahaba R.	Upper reservoir. Deepest point, main R. channel, immed. us of Irondale Bridge.	ADEM Reservoir Monitoring Program	2002	67f	33.48107	-86.62878
0202	020	Jefferson	USGSLCR-1	Little Cahaba R.	Little Cahaba R. near Jefferson Park	USGS Assessment of Village and Valley Cr.	2002	67f	33.49972	-86.61417
0202	020	Jefferson	02423400	Little Cahaba R.	Little Cahaba R. near Jefferson Park	USGS Sampling Station	1986	67f	33.49972	-86.61417
0202	020	Jefferson	PUR1	Lake Purdy	Lake Purdy lake wide sampling	Fish Tissue Monitoring	2002	67f	33.45917	-86.66667
0202	020	Jefferson	EPALCR-1	Little Cahaba R.	Little Cahaba R. at CR 10	EPA Cahaba R. Study	2002	67f	33.52823	-86.57051
0202	020	St. Clair	USGSLCSC-1	Little Cahaba R	Little Cahaba R. near junction of I-20 and Hwy 411 in Moody	USGS Landuse Gradient Study	2001	67f	33.57053	-86.52127
0202	030	Jefferson	CABJ-5	Cahaba R.	Cahaba R at Liberty Park Way	303(d) Monitoring Program	2002	67h	33.48562	-86.70727
0202	030	Jefferson	CABJ-6	Cahaba R.	Cahaba R at Grants Mill Road	303(d) Monitoring Program	2002	67h	33.51135	-86.65240
0202	030	Jefferson	GSACR-9	Cahaba R.	Cahaba R at Grants Mill Road	GSA Cahaba R. Bioassessment	2002	67h	33.51135	-86.65240
0202	030	Jefferson	UAB-9	Cahaba R.	Cahaba R at Grants Mill Road	UAB's Biological Communities of the Cahaba R	1998	67h	33.51135	-86.65240
0202	030	Jefferson	CABJ-7	Cahaba R.	Cahaba R. at AL Hwy 78	303(d) Monitoring Program	2002	67h	33.54324	-86.61696
0202	030	Jefferson	CAH3	Cahaba R.	Cahaba R. at AL Hwy 78	Fish Tissue Monitoring	2003	67h	33.54324	-86.61696
0202	030	Jefferson	UAB-8	Cahaba R.	Cahaba R. at AL Hwy 78	UAB's Biological Communities of the Cahaba R	1998	67h	33.54324	-86.61696
0202	030	Shelby	LCBJ-1	Little Cahaba R	L-C at Cahaba Beach Road below Lake Purdy	303(d) Monitoring Program	2002	67h	33.43671	-86.70297
0202	030	Jefferson	PATJ-2	Patton Cr	Patton Cr at Dam Forebay	303(d) Monitoring Program	2002	67h	33.37902	-86.81684
0202	030	Jefferson	PATJ-3	Patton Cr	Patton Cr in the east curve of Reservior ~1/2 miles from dam	303(d) Monitoring Program	2002	67h	33.37150	-86.81668
0202	030	Jefferson	PATJ-3	Patton Cr	Patton Cr in the east curve of Reservior ~1/2 miles from dam	303(d) Monitoring Program	2003	67h	33.37150	-86.81668
0202	030	Jefferson	PATJ-4	Patton Cr	Patton Cr. at Kestwick Dr, just below Golf Course	303(d) Monitoring Program	2002	67h	33.36680	-86.82184
0202	030	Shelby	PA1a	Patton Cr	Patton Cr. 1/4 Mile us from confluence with Cahaba R.	Ambient Montoring Program	2002	67h	33.36056	-86.81944
0202	030	Shelby	C2	Cahaba R.	Cahaba R. at Caldwell Ford Bridge at CR 29	303(d) Monitoring Program	2002	67h	33.41528	-86.74000

Appendix E. Stations assessed in the Black Warrior and Cahaba River Basins since 1992.

CU	Sub	County	Station	Stream	Station Description	Program	Most recent data	Eco-region	Lat Dec	Lon Dec
0202	030	Shelby	C2	Cahaba R.	Cahaba R. at Caldwell Ford Bridge at CR 29	Ambient Montoring Program	2002	67h	33.41528	-86.74000
0202	030	Shelby	EPACRAH-1	Cahaba R.	Cahaba R. at Caldwell Ford Bridge at CR 29	EPA Cahaba R. Study	2002	67h	33.41528	-86.74000
0202	030	Shelby	CA2U5-27	Little Cahaba R, UT to	Tributary to Little Cahaba R. approx. 1/8 mile us of Little Cahaba R.	ALAMAP Monitoring Program	2001	67h	33.43968	-86.69557
0202	030	Shelby	CARS-5	Cahaba R.	~1.75 mi ds of R.view WWTP discharge nr Caldwell Mill Rd crossing, ds of lowhead dam (~CR-2 of 1995)	WQDS-Cahaba R.	1995	67h	33.41551	-86.73952
0202	030	Shelby	CAHS-1	Cahaba R.	Cahaba R. at Bains Bridge (Old Montomery Hwy) Co. Hwy 175	303(d) Monitoring Program	2003	67h	33.36331	-86.81360
0202	030	Shelby	EPACR-6	Cahaba R.	Cahaba R. at Bains Bridge (Old Montomery Hwy) Co. Hwy 175	EPA Cahaba R. Study	2002	67h	33.36331	-86.81360
0202	030	Shelby	GSACR-6	Cahaba R.	Cahaba R. at Bains Bridge (Old Montomery Hwy) Co. Hwy 175	GSA Cahaba R. Bioassessment	2002	67h	33.36331	-86.81360
0202	030	Shelby	SU-6	Cahaba R.	Cahaba R. at Bains Bridge (Old Montomery Hwy) Co. Hwy 175	Samford U's Bioassessment of the U Cahaba R	2001	67h	33.36331	-86.81360
0202	030	Shelby	UAB-14	Cahaba R.	Cahaba R. at Bains Bridge (Old Montomery Hwy) Co. Hwy 175	UAB's Biological Communities of the Cahaba R	1998	67h	33.36331	-86.81360
0202	030	Jefferson	PA-1A	Patton Cr.	Patton Cr. at AL Hwy 150 (Trend Station)	303(d) Monitoring Program	2003	67h	33.36679	-86.82198
0202	030	Jefferson	PA-1A	Patton Cr.	Patton Cr. at AL Hwy 150 (Trend Station)	Ambient Monitoring Program	2002	67h	33.36679	-86.82198
0202	030	Jefferson	PA1A	Patton Cr.	Patton Cr. at AL Hwy 150 (Trend Station)	Periphyton Bioassessment Pilot Project	2002	67h	33.36679	-86.82198
0202	030	Jefferson	PATJ-4	Patton Cr.	Patton Cr. at Patton Chapel Rd	303(d) Monitoring Program	2003	67h	33.38894	-86.82718
0202	030	Jefferson	EPACRBH-1	Cahaba R.	Cahaba R. off of unnamed road off of Rocky Ridge Rd. at Acton Ford? (GSA description: Cahaba R. nr. Altadena)	EPA Cahaba R. Study	2002	67h	33.39300	-86.76728
0202	030	Jefferson	GSACR-7	Cahaba R.	Cahaba R. off of unnamed road off of Rocky Ridge Rd. at Acton Ford? (GSA description: Cahaba R. nr. Altadena)	GSA Cahaba R. Bioassessment	2002	67h	33.39300	-86.76728
0202	030	Jefferson	CARJ-1	Cahaba R.	Cahaba R. ~100 FT US OF R.view WWTP discharge ds of lowhead dam (~CR-1 of 1995)	WQDS-Cahaba R.	1998	67h	33.42240	-86.71963
0202	030	Jefferson	CARJ-2	Cahaba R.	Cahaba R. ~50 ft ds of R.view WWTP discharge	WQDS-Cahaba R.	1998	67h	33.42242	-86.71963
0202	030	Jefferson	USGSPAJ-1	Patton Cr.	Patton Cr. near Bluff Park, AL	USGS Landuse Gradient Study	1999	67h	33.38870	-86.82755
0202	030	Jefferson	02423515	Patton Cr.	Patton Cr. near Bluff Park, AL	USGS Sampling Station	1998	67h	33.38870	-86.82755
0202	030	Shelby	CARS-3	Cahaba R.	Cahaba R. ~0.75 mi ds of R.view WWTP dishcarge and ~100 ft us of an unnamed trib and Hoover-Inverness WWTP discharge	WQDS-Cahaba R.	1998	67h	33.41389	-86.72846
0202	030	Shelby	CARS-4	Cahaba R.	Cahaba R. ~100 ft ds of Hoover Inverness WWTP discharge	WQDS-Cahaba R.	1998	67h	33.41295	-86.72952
0202	030	Shelby	CR-2	Cahaba R.	Cahaba R. ~1.75 mi ds of R.view WWTP discharge nr Caldwell Mill Rd crossing, ds of lowhead dam (~CR-2 of 1995)	Cahaba R. Intensive Study	1995	67h	33.41551	-86.73952
0202	030	Shelby	GSACR-8	Cahaba R.	Cahaba R. ~1.75 mi ds of R.view WWTP discharge nr Caldwell Mill Rd crossing, ds of lowhead dam (~CR-2 of 1995)	GSA Cahaba R. Bioassessment	2002	67h	33.41551	-86.73952
0202	030	Shelby	SU-3	Cahaba R.	Cahaba R. ~1.75 mi ds of R.view WWTP discharge nr Caldwell Mill Rd crossing, ds of lowhead dam (~CR-2 of 1995)	Samford U's Bioassessment of the U Cahaba R	2001	67h	33.41551	-86.73952

Appendix E. Stations assessed in the Black Warrior and Cahaba River Basins since 1992.

CU	Sub	County	Station	Stream	Station Description	Program	Most recent data	Eco-region	Lat Dec	Lon Dec
0202	030	Shelby	UAB-11	Cahaba R.	Cahaba R. ~1.75 mi ds of R.view WWTP discharge nr Caldwell Mill Rd crossing, ds of lowhead dam (~CR-2 of 1995)	UAB's Biological Communities of the Cahaba R	1998	67h	33.41551	-86.73952
0202	040	Shelby	BC04	Buck Cr.	Buck Cr. off Shelby CR 52	Clean Water Strategy	1996	67f	33.28561	-86.81619
0202	040	Shelby	EPABC-1	Buck Cr.	Buck Cr. off Shelby CR 52	EPA Cahaba R. Study	2002	67f	33.28561	-86.81619
0202	040	Shelby	B-1	Buck Cr.	Buck Cr. above dam in Helena off Hwy 261 (RM2.4)	303(d) Monitoring Program	2003	67f	33.29733	-86.84306
0202	040	Shelby	B-1	Buck Cr.	Buck Cr. above dam in Helena off Hwy 261 (RM2.4)	Ambient Montoring Program	2003	67f	33.29694	-86.84264
0202	040	Shelby	EPABC-2	Buck Cr.	Buck Cr. above dam in Helena off Hwy 261 (RM2.4)	EPA Cahaba R. Study	2002	67f	33.29694	-86.84264
0202	040	Shelby	DRYS-1	Dry Brook	Dry Brook at Shelby CR 35	1998 State Parks Project	1998	67h	33.33386	-86.75117
0202	040	Shelby	PEAS-1	Peavine Cr	Peavine Cr. at Shelby CR 11	1998 State Parks Project	1998	67f	33.28469	-86.23486
0202	040	Shelby	CA01U2-46	Peavine Cr	Peavine Cr. approx. 2.3 miles us of confluence with Buck Cr..	ALAMAP Monitoring Program	1998	67h	33.26390	-86.79820
0202	040	Shelby	BKH-1	Buck Cr.	Buck Cr. off of Industrial Park Drive	WQDS-1991 Buck Cr.	1991	67f	33.29888	-86.83576
0202	040	Shelby	BKH-3	Buck Cr.	Buck Cr. ds of WWTP at Tacoa	WQDS-1991 Buck Cr.	1991	67h	33.29963	-86.85274
0202	040	Shelby	USGSBUS-1	Buck Cr.	Buck Cr. at Buck Cr. Park at Alabaster, AL	USGS Landuse Gradient Study	1999	67f	33.23831	-86.82486
0202	040	Shelby	02423536	Buck Cr.	Buck Cr. at Buck Cr. Park at Alabaster, AL	USGS Sampling Station	2000	67f	33.23831	-86.82486
0202	040	Shelby	USGSCVS-2	Cahaba Valley Cr	Cahaba Valley Cr. at Cross Cr. Road at Pelham, AL	USGS Landuse Gradient Study	1999	67g	33.18480	-86.48230
0202	040	Shelby	EPABC-3	Buck Cr.	Buck Cr. at CR 44	EPA Cahaba R. Study	2002	67f	33.24389	-86.82211
0202	040	Shelby	EPABC-4	Buck Cr.	Buck Cr. at Keystone Road, off of CR 64	EPA Cahaba R. Study	2002	67f	33.26539	-86.81628
0202	040	Shelby	USGSCVS-1	Cahaba Valley Cr	Cahaba Valley Cr. at Indian Trail Road near Indian Springs, AL	USGS Landuse Gradient Study	1999	67f	33.34437	-86.75930
0202	040	Shelby	0242354650	Cahaba Valley Cr	Cahaba Valley Cr. at Indian Trail Road near Indian Springs, AL	USGS Sampling Station	2000	67f	33.34437	-86.75930
0202	050	Shelby	C3	Cahaba R.	Cahaba R. west of Helena on CR 52 Bridge	303(d) Monitoring Program	2002	67h	33.28442	-86.88256
0202	050	Shelby	C3	Cahaba R.	Cahaba R. west of Helena on CR 52 Bridge	Ambient Montoring Program	2002	67h	33.28442	-86.88256
0202	050	Shelby	EPA-CR7	Cahaba R.	Cahaba R. west of Helena on CR 52 Bridge	EPA Cahaba R. Study	2002	67h	33.28442	-86.88256
0202	050	Shelby	CAH2	Cahaba R.	Cahaba R. west of Helena on CR 52 Bridge	Fish Tissue Monitoring	2003	67h	33.28442	-86.88256
0202	050	Shelby	GSACR-5	Cahaba R.	Cahaba R. west of Helena on CR 52 Bridge	GSA Cahaba R. Bioassessment	2002	67h	33.28442	-86.88256
0202	050	Shelby	SU-9	Cahaba R.	Cahaba R. west of Helena on CR 52 Bridge	Samford U's Bioassessment of the U Cahaba R	2001	67h	33.28442	-86.88256

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CU	Sub	County	Station	Stream	Station Description	Program	Most recent data	Eco-region	Lat Dec	Lon Dec
0202	050	Shelby	UAB-15	Cahaba R.	Cahaba R. west of Helena on CR 52 Bridge	UAB's Biological Communities of the Cahaba R	1998	67h	33.28442	-86.88256
0202	050	Shelby	PMUS-6	Piney Murry Cr.	Piney Murry Cr. at CR 270	NPS Screening Program	2002	67h	33.21078	-86.95475
0202	050	Shelby	CA04	Savage Cr.	Savage Cr. at CR 10	Clean Water Strategy	1996	67h	33.16419	-86.99590
0202	050	Shelby	SAVS-7	Savage Cr.	Savage Cr. at CR 10	NPS Screening Program	2002	67h	33.16419	-86.99590
0202	050	Shelby	CA01U3-29	Beaverdam Cr	Beaverdam Cr. approx. 1/8 mile west of Shelby CR 17.	ALAMAP Monitoring Program	1999	67f	33.22510	-86.86330
0202	050	Shelby	GSACR-4	Cahaba R.	Cahaba R. off of Shelby CR 251	GSA Cahaba R. Bioassessment	2002	67h	33.18557	-87.00092
0202	050	Shelby	CA02	Savage Cr.	Savage Cr. at mouth	Clean Water Strategy	1996	67h	33.16917	-87.00860
0202	050	Shelby	CA03	Savage Cr., Unnamed trib to	Unnamed trib to Glade Branch of Savage Cr. near Eddings Town at CR 54	Clean Water Strategy	1996	67h	33.13694	-86.98330
0202	060	Jefferson	USGSSHJ-2	Shades Cr.	Shades Cr. at Lakeshore Dr. near Mountain Brook, AL	USGS Landuse Gradient Study	1999	67h	33.48056	-86.75944
0202	060	Jefferson	02423576	Shades Cr.	Shades Cr. at Lakeshore Dr. near Mountain Brook, AL	USGS Sampling Station	2000	67h	33.48056	-86.75944
0202	060	Shelby	0242354750	Cahaba Valley Cr	Cahaba Valley Cr. at Cross Cr. Road at Pelham, AL	USGS Sampling Station	1998	67g	33.18480	-86.48230
0202	060	Bibb	BIBCO	Bibb County Lake	Bibb County Public Fishing Lake	Fish Tissue Monitoring	1994	65i	33.03300	-87.15850
0202	060	Jefferson	SH1	Shades Cr	Shades Cr. at AL Hwy 150	Ambient Montoring Program	2	67h	33.42861	-86.84667
0202	060	Jefferson	SH1a	Shades Cr	Shades Cr. at AL Hwy 150 near parkwood.	Ambient Montoring Program	2002	67g	33.35528	-86.89056
0202	060	Jefferson	EPASC-1	Shades Cr.	Shades Cr. at CR 12	EPA Cahaba R. Study	2002	67h	33.22108	-87.03267
0202	060	Jefferson	USGSLSJ-1	Little Shades Cr.	Little Shades Cr. at AL Hwy 150 near Bessemer, AL	USGS Landuse Gradient Study	1999	67g	33.38095	-86.92855
0202	060	Jefferson	02423620	Little Shades Cr.	Little Shades Cr. at AL Hwy 150 near Bessemer, AL	USGS Sampling Station	1980	67g	33.38095	-86.92855
0202	060	Jefferson	USGSTSJ-1	Unnamed tributary to Shades Cr.	Unnamed tributary to Shades Cr. at Fedex off Oxmoor Road near Oxmoor, AL	USGS Landuse Gradient Study	1999	67g	33.44350	-86.83956
0202	060	Jefferson	USGSSHJ-1	Shades Cr.	Shades Cr. at Samford University at Homewood, AL	USGS Landuse Gradient Study	1999	67f	33.46111	-86.79333
0202	060	Jefferson	02423581	Shades Cr.	Shades Cr. at Samford University at Homewood, AL	USGS Sampling Station	1998	67f	33.27400	-86.47360
0202	070	Bibb	CNC-1	Cane Cr	Cane Cr. at Bibb CR 21; approx. 2.5 miles us of confluence with Cahaba R.	303(d) Monitoring Program	1999	67h	33.17180	-87.04940
0202	070	Jefferson	CABB-2	Cahaba R.	Cahaba R. at CR 24	303(d) Monitoring Program	2002	67h	33.09625	-87.05493
0202	070	Bibb	CAFC-1	Caffee Cr	Caffee Cr at Co Hwy 24	303(d) Monitoring Program	2002	67h	33.11502	-87.10585
0202	070	Bibb	CAFC-1	Caffee Cr	Caffee Cr at Co Hwy 24	Periphyton Bioassessment Pilot Project	2002	67h	33.11502	-87.10585

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CU	Sub	County	Station	Stream	Station Description	Program	Most recent data	Eco-region	Lat Dec	Lon Dec
0202	080	Bibb	MAYB-1	Mayberry Cr	Mayberry Cr. at unnamed Bibb County Rd (May be 24)off of Bibb CR 10.	Periphyton Bioassessment Pilot Project	2002	67h	33.07125	-86.93853
0202	080	Bibb	MAYB-1	Mayberry Cr	Mayberry Cr. at unnamed Bibb County Rd (May be 24)off of Bibb CR 10.	Reference Reach Program	2003	67h	33.07125	-86.93853
0202	080	Chilton	CA01U1	Mahan Cr.	Mahan Cr. approx. 10.7 miles us of confluence with Little Cahaba R..	ALAMAP Monitoring Program	1997	65i	32.96420	-86.83020
0202	080	Shelby	CA3U5-30	Shoal Cr	Shoal Cr. approx. 1/4 mile ds of Shelby CR 22 crossing.	ALAMAP Monitoring Program	2001	67f	33.14629	-86.84689
0202	080	Shelby	USGSSPS-1	Spring Cr.	Spring Cr. at CR 16 near Moores Crossroads, AL	USGS Landuse Gradient Study	2003	67f	33.12869	-86.80927
0202	080	Shelby	USGSDRS-1	Dry Cr.	Dry Cr. at Spring Cr. Road (CR 12) near Montevallo, AL	USGS Landuse Gradient Study	1999	67f	33.10487	-86.83754
0202	090	Bibb	FRMB-8	Fourmile Cr	Fourmile Cr. at Bibb CR 10 NW of Brierfield	Periphyton Bioassessment Pilot Project	2002	67f	33.07702	-86.97035
0202	090	Bibb	FRMB-8	Fourmile Cr	Fourmile Cr. at Bibb CR 10 NW of Brierfield	Reference Reach Program	2002	67f	33.07702	-86.97035
0202	090	Bibb	GSACR-12	Little Cahaba R.	Cahaba R. at Bibb CR 65	GSA Cahaba R. Bioassessment	2002	67f	33.05750	-87.02319
0202	100	Bibb	GSACR-2	Cahaba R.	Cahaba R. at Bibb CR 26	GSA Cahaba R. Bioassessment	2002	67f	33.01913	-87.07853
0202	100	Bibb	GSACR-3	Cahaba R.	Cahaba R. at Bibb CR 24	GSA Cahaba R. Bioassessment	2002	67f	33.01934	-87.07832
0202	100	Bibb	SU-10	Cahaba R.	Cahaba R. at Bibb CR 24	Samford U's Bioassessment of the U Cahaba R	2001	67f	33.01934	-87.07832
0202	120	Bibb	AFF-1	Affonee Cr	Affonee Cr. at unnamed CR southeast of Harrisburg	1996 GSA Cahaba NPS Screening Project	1996	65p	32.86798	-87.21127
0202	120	Bibb	AFF-2	Affonee Cr	Affonee Cr. at CR 16	1996 GSA Cahaba NPS Screening Project	1996	65i	32.95031	-87.29941
0202	120	Bibb	AFF-2	Affonee Cr	Affonee Cr. at CR 16	NPS Screening Program	2002	65i	32.95031	-87.29941
0202	120	Bibb	BLU-1	Blue Girth Cr	Blue Girth Cr. at unnamed CR 0.5 mi north of CR 80	1996 GSA Cahaba NPS Screening Project	1996	65i	32.87965	-87.28692
0202	120	Bibb	BLU-1	Blue Girth Cr	Blue Girth Cr. at unnamed CR 0.5 mi north of CR 80	NPS Screening Program	2002	65i	32.87965	-87.28692
0202	120	Bibb	HAY-1	Haysop Cr	Haysop Cr. at AL Hwy 5	1996 GSA Cahaba NPS Screening Project	1996	65i	32.93081	-87.18067
0202	120	Bibb	HAY-2	Haysop Cr	Haysop Cr. at unnamed CR	1996 GSA Cahaba NPS Screening Project	1996	65i	33.03079	-87.23512
0202	120	Bibb	HAY-3	Haysop Cr	Haysop Cr. tributary at CR 4	1996 GSA Cahaba NPS Screening Project	1996	65i	32.96280	-87.20017
0202	130	Bibb	CAH-7	Cahaba R.	Cahaba R at US Hwy 82	1996 GSA Cahaba NPS Screening Project	1996	65p	32.94456	-87.13983
0202	130	Bibb	CABB-1	Cahaba R.	Cahaba R at US Hwy 82	303(d) Monitoring Program	2002	65p	32.94456	-87.13983
0202	130	Bibb	CAH1	Cahaba R.	Cahaba R at US Hwy 82	Fish Tissue Monitoring	2003	65p	32.94456	-87.13983
0202	130	Bibb	EPACR-11	Cahaba R.	Cahaba R at US Hwy 82	USEPA 2002 Cahaba R. Study	2002	65p	32.94456	-87.13983

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CU	Sub	County	Station	Stream	Station Description	Program	Most recent data	Eco-region	Lat Dec	Lon Dec
0202	130	Bibb	GSACR-1	Cahaba R.	Cahaba R at US Hwy 82	GSA Cahaba R. Bioassessment	2002	65p	32.94456	-87.13983
0202	130	Bibb	GUL-1	Gulley Cr	Gulley Cr. at AL Hwy 219	1996 GSA Cahaba NPS Screening Project	1996	65i	32.90062	-87.12365
0202	130	Bibb	SAN-1	Sandy Cr.	Sandy Cr. at AL Hwy 219	1996 GSA Cahaba NPS Screening Project	1996	65p	32.92483	-87.12863
0202	130	Bibb	WLT-1	Walton Cr.	Walton Cr. at CR 51	1996 GSA Cahaba NPS Screening Project	1996	65i	32.83971	-87.18488
0202	130	Bibb	WLT-1	Walton Cr.	Walton Cr. at CR 51	NPS Screening Program	2002	65i	32.83971	-87.18488
0202	130	Perry	CA1U5-10	Cahaba R.	Cahaba R. approx. 1/2 mile ds of Bibb/Perry County Line.	ALAMAP Monitoring Program	2001	65p	32.82715	-87.21284
0202	140	Perry	GOO-1	Goose Cr	Goose Cr. at AL Hwy 14	1996 GSA Cahaba NPS Screening Project	1996	65p	32.66424	-87.22064
0202	140	Perry	MIL-1	Mill Cr.	Mill Cr. at AL Hwy 183	1996 GSA Cahaba NPS Screening Project	1996	65p	32.68851	-87.21752
0202	140	Perry	MIL-1	Mill Cr.	Mill Cr. at AL Hwy 183	NPS Screening Program	2002	65p	32.68851	-87.21752
0202	140	Perry	OTWN-1	Old Town Cr.	Old Town Cr. at AL Hwy 175	1996 GSA Cahaba NPS Screening Project	1996	65i	32.71137	-87.27714
0202	140	Perry	OTWN-1	Old Town Cr.	Old Town Cr. at AL Hwy 175	NPS Screening Program	2002	65i	32.71137	-87.27714
0202	140	Perry	POP-1	Potato Patch Cr.	Potato Patch Cr. at unnamed CR	1996 GSA Cahaba NPS Screening Project	1996	65p	32.76363	-87.24817
0202	140	Perry	TAY-1	Taylor Cr.	Taylor Cr. at AL Hwy 5	1996 GSA Cahaba NPS Screening Project	1996	65p	32.81076	-87.26309
0202	140	Perry	WAL-1	Wallace Cr.	Wallace Cr. at 0.5 mi west of Heiberger, us site unnumbered dirt road	1996 GSA Cahaba NPS Screening Project	1996	65i	32.75707	-87.29213
0202	140	Perry	CAH-5	Cahaba R.	Cahaba R. at AL Hwy 183	1996 GSA Cahaba NPS Screening Project	1996	65p	32.66797	-87.24194
0202	140	Perry	02424500	Cahaba R.	Cahaba R. at AL Hwy 183	USGS Sampling Station		65p	32.66797	-87.24194
0202	150	Perry	POS-1	Possum Cr.	Possum Cr. at AL Hwy 14	1996 GSA Cahaba NPS Screening Project	1996	65p	32.49728	-87.14700
0202	150	Perry	RIC-1	Rice Cr.	Rice Cr. at CR 4	1996 GSA Cahaba NPS Screening Project	1996	65p	32.55728	-87.25377
0202	150	Perry	RIC-2	Rice Cr.	Rice Cr. at CR 30	1996 GSA Cahaba NPS Screening Project	1993	65i	32.60242	-87.28611
0202	150	Perry	RIC-3	Rice Cr.	Rice Cr. at Tutweiler Rd., 0.5 mi northwest of intersection of AL Hwy 5 and AL Hwy 14	1996 GSA Cahaba NPS Screening Project	1996	65i	32.64232	-87.30200
0202	150	Perry	RIC-4	Rice Cr.	Rice Cr. tributary 1 mi southeast of Marion nr Pinecrest Cemetery	1996 GSA Cahaba NPS Screening Project	1996	65i	32.60282	-87.30215
0202	150	Perry	WAT-1	Waters Cr.	Waters Cr. at AL Hwy 14	NPS Screening Program	2002	65p	32.59709	-87.20137
0202	150	Perry	WAT-1	Waters Cr.	Waters Cr. at AL Hwy 14	1996 GSA Cahaba NPS Screening Project	1996	65p	32.59709	-87.20137
0202	150	Perry	WEL-1	Wells Cr.	Wells Cr. at AL Hwy 14	1996 GSA Cahaba NPS Screening Project	1996	65p	32.63791	-87.21661

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0202	150	Perry	SIL-1	Silver Cr.	Silver Cr. at AL Hwy 14	1996 GSA Cahaba NPS Screening Project	1996	65p	32.52877	-87.17823
0202	150	Bibb	CAH-6	Cahaba R.	Cahaba R. southeast of Harrisburg	1996 GSA Cahaba NPS Screening Project	1996	65p	32.85722	-87.18611
0202	150	Bibb	C4	Cahaba R.	Cahaba R. southeast of Harrisburg	Ambient Monitoring Program	2002	65p	32.85722	-87.18611
0202	150	Perry	CAH-4	Cahaba R.	Cahaba R. at CR 6	1996 GSA Cahaba NPS Screening Project	1996	65p	32.52930	-87.19941
0202	150	Perry	02424590	Cahaba R.	Cahaba R. at CR 6	USGS Sampling Station	2002	65p	32.52930	-87.19941
0202	160	Dallas	OAK-1	Oakmulgee Cr.	Oakmulgee Cr. at AL Hwy 219	1996 GSA Cahaba NPS Screening Project	1996	65i	32.53445	-87.08922
0202	160	Chilton	OAK-2	Oakmulgee Cr.	Oakmulgee Cr. at AL Hwy 183	1996 GSA Cahaba NPS Screening Project	1996	65i	32.81030	-86.99250
0202	160	Dallas	OAK-3	Little Oakmulgee Cr.	Little Oakmulgee Cr. at unnamed CR	1996 GSA Cahaba NPS Screening Project	1996	65i	32.59165	-87.05039
0202	160	Dallas	OAKG-3	Little Oakmulgee Cr.	Little Oakmulgee Cr. at unnamed CR	NPS Screening Program	2002	65i	32.59165	-87.05039
0202	160	Perry	OAK-4	Beaverdam Cr	Beaverdam Cr. at unnamed CR	1996 GSA Cahaba NPS Screening Project	1996	65i	32.78074	-87.12462
0202	160	Perry	OAKG-4	Beaverdam Cr	Beaverdam Cr. at unnamed CR	NPS Screening Program	2002	65i	32.78074	-87.12462
0202	160	Bibb	SAN-2	Sandy Cr.	Sandy Cr. at CR 29	1996 GSA Cahaba NPS Screening Project	1996	65i	32.91096	-87.02759
0202	160	Perry	CA1U6-30	Holsombeck Cr	N 32.819027933 W 87.03645242	ALAMAP Monitoring Program	2002	65i	32.81903	-87.03645
0202	170	Dallas	CHIL-1	Childers Cr	Childers Cr. at AL Hwy 22	1996 GSA Cahaba NPS Screening Project	1996	65p	32.37185	-87.10193
0202	170	Dallas	CHIL-2	Childers Cr	Childers Cr. at AL Hwy 219	1996 GSA Cahaba NPS Screening Project	1996	65a	32.44200	-87.08343
0202	170	Dallas	CHIL-2	Childers Cr	Childers Cr. at AL Hwy 219	NPS Screening Program	2002	65a	32.44200	-87.08343
0202	170	Dallas	DRY-1	Dry Cr	Dry Cr. at CR 201	1996 GSA Cahaba NPS Screening Project	1996	65a	32.48515	-87.20550
0202	170	Dallas	DRY-1	Dry Cr	Dry Cr. at CR 201	NPS Screening Program	2002	65a	32.48515	-87.20550
0202	170	Dallas	Dannelly6	Cahaba R.	Deepest point, main R. channel, Cahaba R. embayment, approx. 0.5 miles us of lake confluence.	ADEM Reservoir Monitoring Program	2000	65p	32.32894	-87.09368
0202	170	Dallas	CAH-1	Cahaba R.	Cahaba R. at its mouth	1996 GSA Cahaba NPS Screening Project	1996	65p	32.31890	-87.09356
0202	170	Dallas	CAH-2	Cahaba R.	Cahaba R. at AL Hwy 22	1996 GSA Cahaba NPS Screening Project	1996	65p	32.36009	-87.13380
0202	170	Dallas	CAH-3	Cahaba R.	Cahaba R. at US Hwy 80	1996 GSA Cahaba NPS Screening Project	1996	65p	32.44478	-87.17986
0202	170	Dallas	02425000	Cahaba R.	Cahaba R. at US Hwy 80	USGS Sampling Station	2002	65p	32.44478	-87.17986
0202	170	Dallas	CHIL-3	Childers Cr	Childers Cr. at CR 65	1996 GSA Cahaba NPS Screening Project	1996	65i	32.47312	-87.05979

Appendix E. Stations assessed in the Black Warrior and Cahaba River Basins since 1992.

CU	Sub	County	Station	Stream	Station Description	Program	Most recent data	Eco-region	Lat Dec	Lon Dec
0109	010	Cullman	MULC-1	Mulberry Fork	Mulberry Fork at AL Hwy 67	1996-Mulberry Fork Intensive Survey	1996	68d	34.21795	-86.54151
0109	010	Cullman	GSAMF-46	Pan Cr.	Pan Cr. approx. 2 mi NE of Holly Pond	GSA Mulberry Fork Assessment, 1999-2001	2001	68d	34.18847	-86.57756
0109	010	Cullman	GSAMF-63	Pan Cr.	Pan Cr. approx. 2 mi NE of Holly Pond	GSA Mulberry Fork Assessment, 1999-2002	2002	68d	34.18847	-86.57756
0109	010	Cullman	GSAMF-46	Pan Cr.	Pan Cr. approx. 2 mi NE of Holly Pond	NPS Screening Program	2002	68d	34.18847	-86.57756
0109	010	Blount	GSAMF-47	Mulberry Fork	Mulberry Fork at US Hwy 278	GSA Mulberry Fork Assessment, 1999-2001	2001	68d	34.17364	-86.56114
0109	010	Blount	GSAMF-64	Mulberry Fork	Mulberry Fork at US Hwy 278	GSA Mulberry Fork Assessment, 1999-2002	2002	68d	34.17364	-86.56114
0109	010	Cullman	GSAMF-48	Hurricane Cr	Hurricane Cr. at Harmony	GSA Mulberry Fork Assessment, 1999-2001	2001	68d	34.24194	-86.54250
0109	010	Cullman	GSAMF-65	Hurricane Cr	Hurricane Cr. at Harmony	GSA Mulberry Fork Assessment, 1999-2002	2002	68d	34.24194	-86.54250
0109	010	Cullman	GSAMF-48	Hurricane Cr	Hurricane Cr. at Harmony	NPS Screening Program	2002	68d	34.24194	-86.54250
0109	010	Blount	GSAMF-49	Mulberry Fork	Mulberry Fork at CR 73	GSA Mulberry Fork Assessment, 1999-2001	2001	68d	34.24253	-86.52339
0109	010	Blount	GSAMF-66	Mulberry Fork	Mulberry Fork at CR 73	GSA Mulberry Fork Assessment, 1999-2002	2002	68d	34.24253	-86.52339
0109	010	Blount	GSAMF-50	Warrior Cr.	Warrior Cr. at Strawberry Bridge	GSA Mulberry Fork Assessment, 1999-2001	2001	68d	34.24944	-86.49683
0109	010	Blount	GSAMF-67	Warrior Cr.	Warrior Cr. at Strawberry Bridge	GSA Mulberry Fork Assessment, 1999-2002	2002	68d	34.24944	-86.49683
0109	010	Blount	GSAMF-50	Warrior Cr.	Warrior Cr. at Strawberry Bridge	NPS Screening Program	2002	68d	34.24944	-86.49683
0109	010	Cullman	GSAMF-51	Warrior Cr.	Warrior Cr. at Thrasher Crossroads	GSA Mulberry Fork Assessment, 1999-2001	2001	68d	34.27814	-86.47058
0109	010	Cullman	GSAMF-68	Warrior Cr.	Warrior Cr. at Thrasher Crossroads	GSA Mulberry Fork Assessment, 1999-2002	2002	68d	34.27814	-86.47058
0109	010	Cullman	GSAMF-51	Warrior Cr.	Warrior Cr. at Thrasher Crossroads	NPS Screening Program	2002	68d	34.27814	-86.47058
0109	010	Cullman	BW07U3-51	Hurricane Cr	Hurricane Cr. approx. 1/4 mile us of confluence with Mulberry Fork of Black Warrior R..	ALAMAP Monitoring Program	1999	68d	34.14060	-86.60480
0109	010	Blount	GSAMF-59	Mulberry Fork	Mulberry Fork at CR 47	GSA Mulberry Fork Assessment, 1999-2002	2002	68d	34.08669	-86.69739
0109	010	Cullman	RMA-1	Tibb Cr	Tibb Cr. ~0.25 mi us of Arab WWTP discharge	WQDS-Riley Maze	1998	68d	34.29600	-86.49322
0109	010	Cullman	RMA-2	Riley Maze Cr	Riley Maze Cr. ~100 ft ds of Arab WWTP discharge	WQDS-Riley Maze	1998	68d	34.29058	-86.49689
0109	010	Cullman	RMA-3	Riley Maze Cr	Riley Maze Cr. ~1.25 mi ds of Arab WWTP dishcarge at New Harmony Road crossing	WQDS-Riley Maze	1998	68d	34.28450	-86.51719
0109	010	Cullman	RMA-4	Riley Maze Cr	Riley Maze Cr. ~1.75 mi ds of ArabWWTP discharge at Red Hill Road Crossing	WQDS-Riley Maze	1998	68d	34.27692	-86.51875
0109	020	Cullman	DUCC-69	Duck Cr	Duck Cr. at Cullman CR 51	NPS Screening Program	2002	68d	34.19629	-86.68747

Appendix E. Stations assessed in the Black Warrior and Cahaba River Basins since 1992.

CU	Sub	County	Station	Stream	Station Description	Program	Most recent data	Eco-region	Lat Dec	Lon Dec
0109	020	Cullman	DUCC-69c	Duck Cr	Duck Cr. at Cullman CR 51	NPS Screening Program	1997	68d	34.19629	-86.68747
0109	020	Cullman	DUCC-69	Duck Cr	Duck Cr. at Cullman CR 51	Periphyton Bioassessment Pilot Project	2002	68d	34.19629	-86.68747
0109	020	Cullman	BW01U1	Duck R	Duck R. approx. 15.2 miles us of confluence with Black Warrior R. (Mulberry Fork).	ALAMAP Monitoring Program	1997	68d	34.22790	-86.65410
0109	020	Cullman	BW05U3-5	Duck R.	Duck R. approx. 3/4 mile ds of AL Hwy 69.	ALAMAP Monitoring Program	1999	68d	34.23139	-86.65464
0109	020	Cullman	BW1U4-5	Duck R.	Duck R. approx. 3/4 mile ds of AL Hwy 69.	ALAMAP Monitoring Program	2000	68d	34.23139	-86.65464
0109	020	Cullman	BW1U5-5	Duck R.	Duck R. approx. 3/4 mile ds of AL Hwy 69.	ALAMAP Monitoring Program	2001	68d	34.23139	-86.65464
0109	020	Cullman	BW1U6-5	Duck R.	Duck R. approx. 3/4 mile ds of AL Hwy 69.	ALAMAP Monitoring Program	2002	68d	34.23139	-86.65464
0109	020	Cullman	BW05U2-5	Smith Br	Smith Branch approx. 0.1 mile us of confluence with Duck R..	ALAMAP Monitoring Program	1998	68d	34.23400	-86.65520
0109	020	Cullman	DCK-1	Duck Cr.	Duck Cr. at Cullman CR 1518, North of Fairview	1997 Intensive Water Quality Surveys	1997	68d	34.26873	-86.69313
0109	020	Cullman	DCK-2	Duck Cr.	Duck Cr. at Cullman CR 1569, East of Fairview	1997 Intensive Water Quality Surveys	1997	68d	34.25999	-86.66362
0109	020	Cullman	DCK-3	Duck R.	Duck R. at Alabama Hwy. 69 East of Fairview	1997 Intensive Water Quality Surveys	1997	68d	34.24416	-86.65225
0109	020	Cullman	DCK-4	Duck R.	Duck R. at Cullman CR, Southeast of Fairview	1997 Intensive Water Quality Surveys	1997	68d	34.21812	-86.66083
0109	020	Cullman	DCK-5	Long Branch	Long Branch at Cullman CR on Section Line	1997 Intensive Water Quality Surveys	1997	68d	34.26214	-86.64156
0109	020	Cullman	DCK-6	Wolf Cr.	Wolf Cr. at Cullman CR 1579 North of Birdsong	1997 Intensive Water Quality Surveys	1997	68d	34.25192	-86.64515
0109	020	Cullman	GSAMF-43	Duck R	Duck R. at CR 38	GSA Mulberry Fork Assessment, 1999-2001	2001	68d	34.13358	-86.70244
0109	020	Cullman	GSAMF-60	Duck R	Duck R. at CR 38	GSA Mulberry Fork Assessment, 1999-2002	2002	68d	34.13358	-86.70244
0109	030	Cullman	BINC-190	Brindley Cr	Brindley Cr. at CR prior to confluence with Eightmile Cr.	303(d) Monitoring Program	2001	68d	34.14623	-86.77397
0109	030	Cullman	BINC-190	Brindley Cr	Brindley Cr. at CR prior to confluence with Eightmile Cr.	303(d) Monitoring Program	2002	68d	34.14623	-86.77397
0109	030	Cullman	BINC-190	Brindley Cr	Brindley Cr. at CR prior to confluence with Eightmile Cr.	303(d) Monitoring Program	2003	68d	34.14623	-86.77397
0109	030	Cullman	BINC-190	Brindley Cr	Brindley Cr. at CR prior to confluence with Eightmile Cr.	Periphyton Bioassessment Pilot Project	2002	68d	34.14623	-86.77397
0109	030	Cullman	BINC-191	Brindley Cr	Brindley Cr. at the reservoir dam, forebay	303(d) Monitoring Program	2002	68d	34.15121	-86.76345
0109	030	Cullman	BINC-191	Brindley Cr	Brindley Cr. at the reservoir dam, forebay	303(d) Monitoring Program	2003	68d	34.15121	-86.76345
0109	030	Cullman	BINC-191	Brindley Cr	Brindley Cr. at the reservoir dam, forebay	303(d) Monitoring Program	2001	68d	34.15121	-86.76345
0109	030	Cullman	BINC-192	Brindley Cr	Brindley Cr. at State Hwy 69	303(d) Monitoring Program	2002	68d	34.20947	-86.76654

Appendix E. Stations assessed in the Black Warrior and Cahaba River Basins since 1992.

CU	Sub	County	Station	Stream	Station Description	Program	Most recent data	Eco-region	Lat Dec	Lon Dec
0109	030	Cullman	BINC-192	Brindley Cr	Brindley Cr. at State Hwy 69	303(d) Monitoring Program	2003	68d	34.20947	-86.76654
0109	030	Cullman	BINC-193	Brindley Cr	Brindley Cr. at CR in the SE 1/4 of Sect 15, R2S, T9S	303(d) Monitoring Program	2002	68d	34.24920	-86.72394
0109	030	Cullman	BINC-193	Brindley Cr	Brindley Cr. at CR in the SE 1/4 of Sect 15, R2S, T9S	303(d) Monitoring Program	2003	68d	34.24920	-86.72394
0109	030	Cullman	BINC-193	Brindley Cr	Brindley Cr. at CR in the SE 1/4 of Sect 15, R2S, T9S	303(d) Monitoring Program	2001	68d	34.24920	-86.72394
0109	030	Cullman	GSAMF-40	Brindley Cr	at Cullman Co. Rd 1476	GSA Mulberry Fork Assessment, 1999-2001	2001	68d	34.23028	-86.75734
0109	030	Cullman	GSAMF-57	Brindley Cr	at Cullman Co. Rd 1476	GSA Mulberry Fork Assessment, 1999-2002	2002	68d	34.23028	-86.75734
0109	030	Cullman	BRIC-72a	Brindley Cr	at Cullman Co. Rd 1476	NPS Screening Program	1997	68d	34.23028	-86.75734
0109	040	Cullman	EMIC-73a	Eightmile Cr	Eightmile Cr. at Mount View, Cullman Co.	NPS Screening Program	2002	68d	34.25086	-86.78933
0109	040	Cullman	EMIC-73a	Eightmile Cr	Eightmile Cr. at Mount View, Cullman Co.	NPS Screening Program	1997	68d	34.25086	-86.78933
0109	040	Cullman	EMIC-73a	Eightmile Cr	Eightmile Cr. at Mount View, Cullman Co.	Periphyton Bioassessment Pilot Project	2002	68d	34.25086	-86.78933
0109	040	Cullman	GSAMF-39	Eightmile Cr	Eightmile Cr. at confluence with Brindley Cr. (Buchman Bridge)	GSA Mulberry Fork Assessment, 1999-2001	2001	68d	34.14861	-86.76481
0109	040	Cullman	GSAMF-56	Eightmile Cr	Eightmile Cr. at confluence with Brindley Cr. (Buchman Bridge)	GSA Mulberry Fork Assessment, 1999-2002	2002	68d	34.14861	-86.76481
0109	050	Cullman	BR1	Broglen R	Broglen R. at AL Hwy 91 crossing (RM 4.6)	Ambient Monitoring Program	1974	68d	34.08278	-86.73750
0109	050	Cullman	BW05	Broglen R	Broglen R. at AL Hwy 91 crossing (RM 4.6)	Clean Water Strategy	1996	68d	34.07558	-86.74467
0109	050	Cullman	GSAMF-38	Broglen R	Broglen R. at AL Hwy 91 crossing (RM 4.6)	GSA Mulberry Fork Assessment, 1999-2001	2001	68d	34.08278	-86.73750
0109	050	Cullman	GSAMF-55	Broglen R	Broglen R. at AL Hwy 91 crossing (RM 4.6)	GSA Mulberry Fork Assessment, 1999-2002	2002	68d	34.07558	-86.74467
0109	050	Blount	GSAMF-37	Mulberry Fork	Mulberry Fork at CR 10	GSA Mulberry Fork Assessment, 1999-2001	2001	68d	34.05430	-86.70646
0109	050	Blount	GSAMF-54	Mulberry Fork	Mulberry Fork at CR 10	GSA Mulberry Fork Assessment, 1999-2002	2002	68d	34.05430	-86.70646
0109	060	Blount	GSAMF-41	Blue Spring Cr.	Blue Spring Cr. nr. Chamblees Mill	GSA Mulberry Fork Assessment, 1999-2001	2001	68d	34.05981	-86.66650
0109	060	Blount	GSAMF-58	Blue Spring Cr.	Blue Spring Cr. nr. Chamblees Mill	GSA Mulberry Fork Assessment, 1999-2002	2002	68d	34.05981	-86.66650
0109	070	Cullman	MUDC-1	Mud Cr.	Mud Cr. at CR 518	303(d) Monitoring Program	2002	68d	34.04883	-86.79584
0109	070	Cullman	MCH-4	Mud Cr.	Mud Cr. at CR 518	WQDS-1989 Mud Cr.	1989	68d	34.04883	-86.79584
0109	070	Cullman	MUDC-2	Mud Cr.	Mud Cr. at AL Hwy 31	303(d) Monitoring Program	2002	68d	34.05504	-86.76423
0109	070	Cullman	BW06	Mud Cr.	Mud Cr. at AL Hwy 31	Clean Water Strategy	1996	68d	34.05504	-86.76423

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CU	Sub	County	Station	Stream	Station Description	Program	Most recent data	Eco-region	Lat Dec	Lon Dec
0109	070	Cullman	MUDC-2	Mud Cr.	Mud Cr. at AL Hwy 31	NPS Screening Program	2002	68d	34.05504	-86.76423
0109	070	Cullman	MUDC-2	Mud Cr.	Mud Cr. at AL Hwy 31	Periphyton Bioassessment Pilot Project	2002	68d	34.05504	-86.76423
0109	070	Cullman	MCH-1	Mud Cr.	Mud Cr. at AL Hwy 31	WQDS-1989 Mud Cr.	1989	68d	34.05504	-86.76423
0109	070	Cullman	MCH-2	Mud Cr	Mud Cr. at CR 532 crossing	WQDS-1989 Mud Cr.	1989	68d	34.05517	-86.73967
0109	070	Cullman	MCH-3	Mud Cr	Mud Cr. off of CR 532 where it runs very close to the road	WQDS-1989 Mud Cr.	1989	68d	34.04747	-86.73689
0109	080	Cullman	MARC-2a	Marriott Cr	Marriott Cr. at AL Hwy 91	Mulberry Fork Intensive Survey	1996	68e	33.94831	-86.86022
0109	080	Cullman	MRTC-1	Marriott Cr	Marriott Cr. at unnamed rd south of Cullman CR 18	Periphyton Bioassessment Pilot Project	2002	68e	34.04211	-86.86283
0109	080	Cullman	MRTC-1	Marriott Cr	Marriott Cr. at unnamed rd south of Cullman CR 18	Reference Reach Program	2002	68e	34.04211	-86.86283
0109	080	Cullman	THK-1	Thacker Cr	Thacker Cr. at AL Hwy 91	1997 Intensive Water Quality Surveys	1997	68e	33.97584	-86.81866
0109	080	Cullman	THAC-68	Thacker Cr	Thacker Cr. at AL Hwy 91	NPS Screening Program	1997	68e	33.97584	-86.81866
0109	080	Cullman	GSAMF-33	Marriott Cr.	Marriott Cr. nr. US Hwy 65	GSA Mulberry Fork Assessment, 1999-2001	2001	68e	33.98328	-86.85881
0109	080	Cullman	GSAMF-50	Marriott Cr.	Marriott Cr. nr. US Hwy 65	GSA Mulberry Fork Assessment, 1999-2002	2002	68e	33.98328	-86.85881
0109	080	Cullman	GSAMF-33	Marriott Cr.	Marriott Cr. nr. US Hwy 65	NPS Screening Program	2002	68e	33.98328	-86.85881
0109	080	Cullman	BW04U2-37	Mulberry Fork Black Warrior R	Mulberry Fork of Black Warrior R. approx. 3.8 miles us of confluence with Marriott Cr..	ALAMAP Monitoring Program	1998	68e	33.95240	-86.82370
0109	080	Cullman	THK-2	Thacker Cr.	Thacker Cr. at Cullman CR just us of AL Hwy 91	1997 Intensive Water Quality Surveys	1997	68e	33.97688	-86.81663
0109	080	Cullman	THK-3	Thacker Cr.	Thacker Cr. approximately 50 yards us of mouth at Mulberry Fork	1997 Intensive Water Quality Surveys	1997	68e	33.95745	-86.81897
0109	090	Blount	GSAMF-34	Mill Cr.	Mill Cr. at Blount CR 5	GSA Mulberry Fork Assessment, 1999-2001	2001	68b	33.92486	-86.80628
0109	090	Blount	GSAMF-51	Mill Cr.	Mill Cr. at Blount CR 5	GSA Mulberry Fork Assessment, 1999-2002	2002	68b	33.92486	-86.80628
0109	090	Blount	GSAMF-35	Mulberry Fork	Mulberry Fork at US Hwy 31	GSA Mulberry Fork Assessment, 1999-2001	2001	68e	33.99667	-86.74964
0109	090	Blount	GSAMF-52	Mulberry Fork	Mulberry Fork at US Hwy 31	GSA Mulberry Fork Assessment, 1999-2002	2002	68e	33.99667	-86.74964
0109	090	Blount	GSAMF-35	Mulberry Fork	Mulberry Fork at US Hwy 31	NPS Screening Program	2002	68e	33.99667	-86.74964
0109	090	Blount	GSAMF-35	Mulberry Fork	Mulberry Fork at US Hwy 31	Periphyton Bioassessment Pilot Project	2002	68e	33.99667	-86.74964
0109	090	Blount	GSAMF-36	Mulberry Fork	Mulberry Fork at CR 26	GSA Mulberry Fork Assessment, 1999-2001	2001	68d	34.01142	-86.73558
0109	090	Blount	GSAMF-53	Mulberry Fork	Mulberry Fork at CR 26	GSA Mulberry Fork Assessment, 1999-2002	2002	68d	34.01142	-86.73558

Appendix E. Stations assessed in the Black Warrior and Cahaba River Basins since 1992.

CU	Sub	County	Station	Stream	Station Description	Program	Most recent data	Eco-region	Lat Dec	Lon Dec
0109	090	Blount	GSAMF-59	Mulberry Fork	Mulberry Fork at CR 47	GSA Mulberry Fork Assessment, 1999-2002	2002	68d	34.08669	-86.69739
0109	090	Blount	GSAMF-42	Mulberry Fork	Mulberry Fork at CR 47	GSA Mulberry Fork Assessment, 1999-2001	2001	68d	34.08669	-86.69739
0109	090	Blount	GSAMF-44	Mulberry Fork	Mulberry Fork at CR 783	GSA Mulberry Fork Assessment, 1999-2001	2001	68d	34.11697	-86.63442
0109	090	Blount	GSAMF-61	Mulberry Fork	Mulberry Fork at CR 783	GSA Mulberry Fork Assessment, 1999-2002	2002	68d	34.11697	-86.63442
0109	090	Blount	GSAMF-45	Mulberry Fork	Mulberry Fork at CR 55	GSA Mulberry Fork Assessment, 1999-2001	2001	68d	34.13608	-86.59497
0109	090	Blount	GSAMF-62	Mulberry Fork	Mulberry Fork at CR 55	GSA Mulberry Fork Assessment, 1999-2002	2002	68d	34.13608	-86.59497
0109	090	Blount	BW04U3-58	Williams Cr	Williams Cr. approx. 1.5 miles us of Blount CR 26 near Mt. Tabor Cemetary.	ALAMAP Monitoring Program	1999	68b	34.03650	-86.65830
0109	100	Walker	OTC-1	Old Town Cr	Old Town Cr. at Walker CR 81.; Approx. 0.1 mile us of confluence with Black Warrior R.	303(d) Monitoring Program	1999	68f	33.81640	-87.05490
0109	100	Walker	OTC-1	Old Town Cr	Old Town Cr. at Walker CR 81.; Approx. 0.1 mile us of confluence with Black Warrior R.	NPS Screening Program	2002	68f	33.81640	-87.05490
0109	100	Walker	OTC-2	Old Town Cr	Old Town Cr. at Walker CR 22.; Approx. 5.2 miles us of confluence with Black Warrior R.	303(d) Monitoring Program	1999	68f	33.78740	-87.00940
0109	100	Walker	MFC-4	Mulberry Fork	Mulberry Fork approx. 4 mi N of Empire	1996-Mulberry Fork Intensive Survey	1996	68f	33.85761	-87.02325
0109	100	Walker	GSAMF-27	Mulberry Fork	Mulberry Fork approx. 4 mi N of Empire	GSA Mulberry Fork Assessment, 1999-2001	2001	68f	33.85761	-87.02325
0109	100	Walker	GSAMF-44	Mulberry Fork	Mulberry Fork approx. 4 mi N of Empire	GSA Mulberry Fork Assessment, 1999-2002	2002	68f	33.85761	-87.02325
0109	100	Blount	MFC-3	Mulberry Fork	Mulberry Fork at CR 17	1997 Intensive Water Quality Surveys	1997	68e	33.86667	-86.92222
0109	100	Blount	MUFUA-1	Mulberry Fork	Mulberry Fork at CR 17	99-00 University Tributary Nutrient Loading Study	1999	68e	33.86667	-86.92222
0109	100	Blount	GSAMF-30	Mulberry Fork	Mulberry Fork at CR 17	GSA Mulberry Fork Assessment, 1999-2001	2001	68e	33.86667	-86.92222
0109	100	Blount	GSAMF-47	Mulberry Fork	Mulberry Fork at CR 17	GSA Mulberry Fork Assessment, 1999-2002	2002	68e	33.86667	-86.92222
0109	100	Blount	GSAMF-31	Mulberry Fork	Mulberry Fork approx. 0.25 mi ds of Rice Cr.	GSA Mulberry Fork Assessment, 1999-2001	2001	68e	33.90853	-86.92428
0109	100	Blount	GSAMF-48	Mulberry Fork	Mulberry Fork approx. 0.25 mi ds of Rice Cr.	GSA Mulberry Fork Assessment, 1999-2002	2002	68e	33.90853	-86.92428
0109	100	Blount	GSAMF-32	Mulberry Fork	Mulberry Fork at US Hwy 65	GSA Mulberry Fork Assessment, 1999-2001	2001	68e	33.93461	-86.86867
0109	100	Blount	GSAMF-49	Mulberry Fork	Mulberry Fork at US Hwy 65	GSA Mulberry Fork Assessment, 1999-2002	2002	68e	33.93461	-86.86867
0109	100	Walker	SLOW-11	Sloan Cr.	Sloan Cr. at unnamed CR	NPS Screening Program	2002	68e?	33.84451	-86.95998
0109	100	Blount	BW2U6-36	UT Mulberry Fork, Warrior R.	N 33.87090 W 86.92001	ALAMAP Monitoring Program	2002	68e	33.87090	-86.92001
0109	110	Cullman	DORC-1	Dorsey Cr	Dorsey Cr. at AL Hwy 91	1996-Mulberry Fork Intensive Survey	1996	68d	33.89463	-86.97768

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CU	Sub	County	Station	Stream	Station Description	Program	Most recent data	Eco-region	Lat Dec	Lon Dec
0109	110	Cullman	GSAMF-28	Dorsey Cr	Dorsey Cr. at AL Hwy 91	GSA Mulberry Fork Assessment, 1999-2001	2001	68d	33.89463	-86.97768
0109	110	Cullman	GSAMF-45	Dorsey Cr	Dorsey Cr. at AL Hwy 91	GSA Mulberry Fork Assessment, 1999-2002	2002	68d	33.89463	-86.97768
0109	110	Cullman	DORC-9a	Dorsey Cr	Dorsey Cr. at AL Hwy 91	NPS Screening Program	1997	68d	33.89463	-86.97768
0109	110	Cullman	RICC-1	Rice Cr	at Alabama 91, Cullman Co. Approx 0.9 mi us of confluence with Mulberry Fork	Mulberry Fork Intensive Survey	1996	68e	33.92472	-86.92195
0109	110	Cullman	RICC-11a	Rice Cr	at Alabama 91, Cullman Co. Approx 0.9 mi us of confluence with Mulberry Fork	NPS Screening Program	1997	68e	33.92472	-86.92195
0109	110	Cullman	SULC-1	Sullivan Cr	Sullivan Cr. at unnamed Cullman Co. Rd us of confluence with Mulberry Fork. nr. Arkadelphia	1996-Mulberry Fork Intensive Survey	1996	68e	33.87269	-86.96095
0109	110	Cullman	SULC-10a	Sullivan Cr	Sullivan Cr. at unnamed Cullman Co. Rd us of confluence with Mulberry Fork. nr. Arkadelphia	NPS Screening Program	2002	68e	33.87269	-86.96095
0109	110	Cullman	GSAMF-26	Ryan Cr.	Ryan Cr. at CR 436	GSA Mulberry Fork Assessment, 1999-2001	2001	68d	34.14522	-86.89486
0109	110	Cullman	GSAMF-43	Ryan Cr.	Ryan Cr. at CR 436	GSA Mulberry Fork Assessment, 1999-2002	2002	68d	34.14522	-86.89486
0109	110	Cullman	GSAMF-29	Dorsey Cr.	Dorsey Cr. approximately 3 mi. E of Wilburn	GSA Mulberry Fork Assessment, 1999-2001	2001	68e	33.95214	-87.00422
0109	110	Cullman	GSAMF-46	Dorsey Cr.	Dorsey Cr. approximately 3 mi. E of Wilburn	GSA Mulberry Fork Assessment, 1999-2002	2002	68e	33.95214	-87.00422
0109	110	Cullman	GSAMF-29	Dorsey Cr.	Dorsey Cr. approximately 3 mi. E of Wilburn	NPS Screening Program	2002	68e	33.95214	-87.00422
0109	110	Cullman	MFC-1	Mullberry Fork	Mulberry Fork at unnamed Cullman CR 508	1997 Intensive Water Quality Surveys	1997	68e	33.95374	-86.80946
0109	110	Blount	MFC-2	Mullberry Fork	Mulberry Fork at unnamed Blount CR	1997 Intensive Water Quality Surveys	1997	68e	33.95045	-86.83842
0109	120	Winston	BLAW-70a	Blackwater Cr	Blackwater Cr. at unnumbered Winston CR nr Ashbank	NPS Screening Program	1997	68f	34.01201	-87.50409
0109	120	Winston	GSAMF-10	Splunge Cr	Splunge Cr. at Winston CR 37	GSA Mulberry Fork Assessment, 1999-2001	2001	68e	34.02439	-87.49042
0109	120	Winston	GSAMF-12	Splunge Cr	Splunge Cr. at Winston CR 37	GSA Mulberry Fork Assessment, 1999-2002	2002	68e	34.02439	-87.49042
0109	120	Winston	SPLW-71a	Splunge Cr	Splunge Cr. at Winston CR 37	NPS Screening Program	1997	68e	34.02439	-87.49042
0109	120	Winston	BROW-17	Brown Cr	Brown Cr. off of CR 37	NPS Screening Program	2002	68e	34.01085	-87.46057
0109	120	Winston	BW02A2-41	Splunge Cr	Splunge Cr. approx. 48.1 miles us of confluence with Poley Cr.	ALAMAP Monitoring Program	1998	68e	34.01040	-87.46180
0109	130	Walker	BCK-1	Buck Cr.	Buck Cr. at AL Hwy 5.; approx. 1.1 miles us of confluence with Blackwater Cr.	303(d) Monitoring Program	1999	68f	33.93370	-87.40090
0109	130	Walker	BCK-2	Buck Cr.	Buck Cr. at Slicklizzard Road.; approx. 6.5 miles us of confluence with Blackwater Cr.	303(d) Monitoring Program	1999	68f	33.94420	-87.45830
0109	130	Walker	SPRW-4a	Spring Cr	Spring Cr. at unnumbered Walker CR nr Jasper	NPS Screening Program	1997	68f	33.92361	-87.27500
0109	130	Walker	GSAMF-10	Blackwater Cr.	Blackwater Cr. approximately 1.25 mi. N of Lupton	GSA Mulberry Fork Assessment, 1999-2002	2002	68f	33.95619	-87.39081

Appendix E. Stations assessed in the Black Warrior and Cahaba River Basins since 1992.

CU	Sub	County	Station	Stream	Station Description	Program	Most recent data	Eco-region	Lat Dec	Lon Dec
0109	130	Walker	GSAMF-11	Blackwater Cr.	Blackwater Cr. approximately 3 mi E of Nauvoo	GSA Mulberry Fork Assessment, 1999-2002	2002	68e	33.98639	-87.43431
0109	130	Walker	GSAMF-6	Blackwater Cr	Blackwater Cr. approx. 2 mi SE of Boldo	GSA Mulberry Fork Assessment, 1999-2001	2001	68f	33.84126	-87.15693
0109	130	Walker	GSAMF-6	Blackwater Cr	Blackwater Cr. approx. 2 mi SE of Boldo	GSA Mulberry Fork Assessment, 1999-2002	2002	68f	33.84126	-87.15693
0109	130	Walker	GSAMF-7	Blackwater Cr	Blackwater Cr. at AL Hwy 69	GSA Mulberry Fork Assessment, 1999-2001	2001	68f	33.88519	-87.16151
0109	130	Walker	GSAMF-7	Blackwater Cr	Blackwater Cr. at AL Hwy 69	GSA Mulberry Fork Assessment, 1999-2002	2002	68f	33.88519	-87.16151
0109	130	Walker	GSAMF-8	Blackwater Cr	Blackwater Cr. at Walston Bridge	GSA Mulberry Fork Assessment, 1999-2001	2001	68f	33.90464	-87.22877
0109	130	Walker	GSAMF-8	Blackwater Cr	Blackwater Cr. at Walston Bridge	GSA Mulberry Fork Assessment, 1999-2002	2002	68f	33.90464	-87.22877
0109	130	Walker	GSAMF-9	Blackwater Cr.	Blackwater Cr. at CR 25	GSA Mulberry Fork Assessment, 1999-2001	2001	68f	33.95821	-87.40406
0109	130	Walker	GSAMF-9	Blackwater Cr.	Blackwater Cr. at CR 25	GSA Mulberry Fork Assessment, 1999-2002	2002	68f	33.95821	-87.40406
0109	130	Walker	BW10U4-55	Bunkum Cr	Bunkum Cr.	ALAMAP Monitoring Program	2000	68e	33.99520	-87.38250
0109	130	Walker	BWCUA-1	Blackwater Cr	Blackwater Cr. at AL Hwy 257	NPS Screening Program	2002	68f	33.90833	-87.25694
0109	130	Walker	BWCUA-1	Blackwater Cr	Blackwater Cr. at AL Hwy 257	Periphyton Bioassessment Pilot Project	2002	68f	33.90833	-87.25694
0109	130	Walker	BWCUA-1	Blackwater Cr	Blackwater Cr. at AL Hwy 257	99-00 University Tributary Nutrient Loading Study	1999	68f	33.90833	-87.25694
0109	130	Walker	BW36	Mill Cr.	Mill Cr. at CR 51 north of Burrows Crossing	Clean Water Strategy	1996	68f	33.92333	-87.16000
0109	130	Walker	BW37	Mill Cr.	Near Curry School	Clean Water Strategy	1996	68f	33.95250	-87.19611
0109	130	Walker	BW38	Little Mill Cr.	Little Mill Cr. near Valley Hill Church	Clean Water Strategy	1996	68e	33.94213	-87.16028
0109	140	Walker	BW33	Little Blackwater Cr	Little Blackwater Cr. at unnamed CR (Old Piney Rd.) approx. 0.3 mi us of AL Hwy 5	Clean Water Strategy	1996	68f?	33.81469	-87.13754
0109	140	Walker	LBWW-9	Little Blackwater Cr	L. Blackwater Cr. at unnamed CR (Old Piney Rd.) approx. 0.3 mi us of AL Hwy 5	NPS Screening Program	2002	68f?	33.81469	-87.13754
0109	140	Walker	BW34	Cow Branch of Little Blackwater	Cow Br. nr Pleasant Hill Church	Clean Water Strategy	1996	68f	33.86753	-87.11278
0109	140	Walker	CA1	Cane Cr	Cane Cr. near Cordova	Ambient Monitoring Program		68f	33.79528	-87.14689
0109	150	Walker	TCJ-1	Town Cr	Town Cr. approximately 1 mi. us of WWTP discharge at 26th St. East bridge	WQDS-1987 Town Cr.	1987	68f	33.82488	-87.27584
0109	150	Walker	TCJ-3	Town Cr.	Town Cr. aproximately 1/8 mi. ds of WWTP discharge located on end of dirt rd. directly behind plant	WQDS-1987 Town Cr.	1987	68f	33.81063	-87.27199
0109	150	Walker	TCJ-4	Town Cr	Town Cr. approximately 0.5 mi ds of WWTP located behind mobile home park in pasture	WQDS-1987 Town Cr.	1987	68f	33.80599	-87.27001
0109	150	Walker	WALCO	Walker County Public Lake	Walker County Public Fishing Lake	Fish Tissue Monitoring		68f	33.79536	-87.22956

Appendix E. Stations assessed in the Black Warrior and Cahaba River Basins since 1992.

CU	Sub	County	Station	Stream	Station Description	Program	Most recent data	Eco-region	Lat Dec	Lon Dec
0109	170	Walker	CANW-1	Cane Cr	Cane Cr close to mouth	303(d) Monitoring Program	2002	68f	33.68705	-87.30247
0109	170	Walker	CANW-2	Cane Cr	Cane Cr at Dixie Springs Road	303(d) Monitoring Program	2002	68f	33.70583	-87.38750
0109	170	Walker	CANW-2	Cane Cr	Cane Cr at Dixie Springs Road	Periphyton Bioassessment Pilot Project	2002	68f	33.70583	-87.38750
0109	170	Walker	CANW-3	Cane Cr	Cane Cr at Ala Hwy 69&18	303(d) Monitoring Program	2002	68f	33.78917	-87.38750
0109	170	Walker	LOSW-1	Lost Cr	Lost Cr at Ala Hwy 69	303(d) Monitoring Program	2002	68f	33.76422	-87.35835
0109	170	Walker	LOSW-2	Lost Cr	Lost Cr at Ala Hwy 124 near Kings Chapel	303(d) Monitoring Program	2002	68f	33.81562	-87.38378
0109	170	Walker	LOSW-2	Lost Cr	Lost Cr at Ala Hwy 124 near Kings Chapel	NPS Screening Program	2002	68f	33.81562	-87.38378
0109	170	Walker	LOSW-3	Lost Cr	Lost Cr at Wire Road Below Dam	303(d) Monitoring Program	2002	68f	33.85279	-87.44661
0109	170	Walker	GSAMF-5	Lost Cr	Lost Cr at Wire Road Below Dam	GSA Mulberry Fork Assessment, 1999-2001	2001	68f	33.85279	-87.44661
0109	170	Walker	GSAMF-5	Lost Cr	Lost Cr at Wire Road Below Dam	GSA Mulberry Fork Assessment, 1999-2002	2002	68f	33.85279	-87.44661
0109	170	Walker	LOSW-4	Lost Cr.	Lost Cr. at Ripley Cutoff road	303(d) Monitoring Program	2002	68f	33.88121	-87.46363
0109	170	Walker	LOSW-5	Lost Cr	Lost Cr at US Hwy 78	303(d) Monitoring Program	2002	68f	33.88197	-87.51040
0109	170	Walker	LOSW-5	Lost Cr	Lost Cr at US Hwy 78	NPS Screening Program	2002	68f	33.88197	-87.51040
0109	170	Walker	MILW-6a	Mill Cr	Mill Cr. at Walker CR 11 nr Carbon Hill	NPS Screening Program	1997	68f	33.90833	-87.50639
0109	170	Walker	GSAMF-2	Lost Cr.	Lost Cr. at mouth of Indian Cr. nr Odom Memorial Church	GSA Mulberry Fork Assessment, 1999-2001	2001	68f	33.71197	-87.29869
0109	170	Walker	GSAMF-2	Lost Cr.	Lost Cr. at mouth of Indian Cr. nr Odom Memorial Church	GSA Mulberry Fork Assessment, 1999-2002	2002	68f	33.71197	-87.29869
0109	170	Walker	GSAMF-4	Lost Cr.	Lost Cr. at McClain Bridge	GSA Mulberry Fork Assessment, 1999-2001	2001	68f	33.80258	-87.36742
0109	170	Walker	GSAMF-4	Lost Cr.	Lost Cr. at McClain Bridge	GSA Mulberry Fork Assessment, 1999-2002	2002	68f	33.80258	-87.36742
0109	170	Walker	LBW11U4-59	Jess Cr	Jess Cr.	ALAMAP Monitoring Program	2000	68f	33.82420	-87.50300
0109	170	Walker	LOCUA01	Lost Cr.	Lost. Cr. at Browns Bridge Rd.	99-00 University Tributary Nutrient Loading Study	1999	68f	33.74247	-87.32672
0109	170	Walker	GSAMF-3	Lost Cr.	Lost Cr. at Browns Bridge Road	GSA Mulberry Fork Assessment, 1999-2001	2001	68f	33.74247	-87.32672
0109	170	Walker	GSAMF-3	Lost Cr.	Lost Cr. at Browns Bridge Road	GSA Mulberry Fork Assessment, 1999-2002	2002	68f	33.74247	-87.32672
0109	170	WALKER	LOS1	Lost Cr	Deepest point, main Cr. channel, Lost Cr. embayment. Approx. 0.5 mi. ds of Walker CR 53 bridge.	Fish Tissue Monitoring	1998	68f	33.63799	-87.24702
0109	170	Walker	Bankhead5	Lost Cr	Deepest point, main Cr. channel, Lost Cr. embayment. Approx. 0.5 mi. ds of Walker CR 53 bridge.	Reservoir Tributary Embayment Monitoring Program	2002	68f	33.62831	-87.24111

Appendix E. Stations assessed in the Black Warrior and Cahaba River Basins since 1992.

CU	Sub	County	Station	Stream	Station Description	Program	Most recent data	Eco-region	Lat Dec	Lon Dec
0109	180	Walker	WOLW-51c	Wolf Cr	at Walker CR 83 nr West Corona	NPS Screening Program	1997	68f	33.70942	-87.47747
0109	180	Walker	WOFW-1	Wolf Cr	Wolf Cr at CR 35 in	303(d) Monitoring Program	2002	68f	33.63139	-87.31694
0109	180	Walker	WOFW-1	Wolf Cr	Wolf Cr at CR 35 in	NPS Screening Program	2002	68f	33.63139	-87.31694
0109	180	Walker	BW28	Wolf Cr	Wolf Cr at CR 35 in	Clean Water Strategy	1996	68f	33.63164	-87.31638
0109	180	Walker	WOFW-2	Wolf Cr	Wolf Cr at AL Hwy 18	303(d) Monitoring Program	2002	68f	33.71025	-87.47772
0109	180	Walker	BW30	Wolf Cr	Wolf Cr at AL Hwy 18	Clean Water Strategy	1996	68f	33.71025	-87.47772
0109	180	Walker	GSAMF-1	Wolf Cr	Wolf Cr at AL Hwy 18	GSA Mulberry Fork Assessment, 1999-2001	2001	68f	33.71025	-87.47772
0109	180	Walker	GSAMF-1	Wolf Cr	Wolf Cr at AL Hwy 18	GSA Mulberry Fork Assessment, 1999-2002	2002	68f	33.71025	-87.47772
0109	180	Walker	WOFW-3	Wolf Cr	Wolf Cr at Ala Hwy 102 in	303(d) Monitoring Program	2002	68f	33.78929	-87.52267
0109	180	Walker	BW31	Wolf Cr	Wolf Cr at Ala Hwy 102 in	Clean Water Strategy	1996	68f	33.78929	-87.52267
0109	180	Walker	BW29	Wolf Cr.	Wolf Cr. at AL Hwy 69 at Enon.	Clean Water Strategy	1996	68f	33.67239	-87.38782
0109	180	Fayette	BW32	Wolf Cr.	Wolf Cr. at Fayette CR 63 near Howard.	Clean Water Strategy	1996	68f	33.82475	-87.54126
0109	190	Walker	BAKW-10	Baker Cr	Baker Cr. at AL Hwy 269	NPS Screening Program	2002	68f?	33.66197	-87.21074
0109	190	Walker	Bankhead4	Mulberry Fork	Deepest point, main R. channel, Mulberry Fork. Approx. 1.5 mi. us of Mulberry, Locust confluence.	Reservoir Intensive Monitoring Program		68f	33.57322	-87.20552
0109	200	Walker	BWR-2	Mulberry Fk	Mulberry Fork at RM 391.8 ds of Lost Cr.	Black Warrior Intensive Survey	1990	68f	33.61506	-87.23714
0109	200	Walker	BWR-2	Mulberry Fk	Mulberry Fork at RM 391.8 ds of Lost Cr.	Fish Tissue Monitoring	1994	68f	33.61506	-87.23714
0110	010	Lawrence	GSAMF-22	Thompson Cr	Thompson Cr. at US Forest Service Rd. 208. in the Bankhead National Forest	GSA Mulberry Fork Assessment, 1999-2002	2002	68e	34.34092	-87.47108
0110	010	Lawrence	TPSL-1	Thompson Cr	Thompson Cr. at US Forest Service Rd. 208. in the Bankhead National Forest	Periphyton Bioassessment Pilot Project	2002	68e	34.34092	-87.47108
0110	010	Lawrence	TPSL-1	Thompson Cr	Thompson Cr. at US Forest Service Rd. 208. in the Bankhead National Forest	Reference Reach Program	2002	68e	34.34092	-87.47108
0110	010	Winston	GSAMF-14	Sipsey Fork	Sipsey Fork at Winston CR 60 (Cranal Road)	GSA Mulberry Fork Assessment, 1999-2001	2001	68e	34.28558	-87.39906
0110	010	Winston	GSAMF-20	Sipsey Fork	Sipsey Fork at Winston CR 60 (Cranal Road)	GSA Mulberry Fork Assessment, 1999-2002	2002	68e	34.28558	-87.39906
0110	010	Winston	SF-1	Sipsey Fork	Sipsey Fork at Winston CR 60 (Cranal Road)	Sipsey Fork Special Study 1992	1992	68e	34.28558	-87.39906
0110	010	Winston	GSAMF-13	Sipsey Fork	Sipsey Fork at AL Hwy 33 north of Double Springs	GSA Mulberry Fork Assessment, 1999-2001	2001	68e	34.21811	-87.39606
0110	010	Winston	GSAMF-18	Sipsey Fork	Sipsey Fork at AL Hwy 33 north of Double Springs	GSA Mulberry Fork Assessment, 1999-2002	2002	68e	34.21811	-87.39606

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CU	Sub	County	Station	Stream	Station Description	Program	Most recent data	Eco-region	Lat Dec	Lon Dec
0110	010	Winston	SF-2	Sipsey Fork	Sipsey Fork at AL Hwy 33 north of Double Springs	NPS Screening Program	2002	68e	34.21811	-87.39606
0110	010	Winston	SF-2	Sipsey Fork	Sipsey Fork at AL Hwy 33 north of Double Springs	Periphyton Bioassessment Pilot Project	2002	68e	34.21811	-87.39606
0110	010	Winston	SF-2	Sipsey Fork	Sipsey Fork at AL Hwy 33 north of Double Springs	Reference Reach Program	2002	68e	34.21811	-87.39606
0110	010	Winston	SF-2	Sipsey Fork	Sipsey Fork at AL Hwy 33 north of Double Springs	Sipsey Fork Special Study 1992	1992	68e	34.21811	-87.39606
0110	010	Winston	GSAMF-17	Sandy Cr.	Sandy Cr. at Winston CR 18	GSA Mulberry Fork Assessment, 1999-2002	2002	68e	34.18853	-87.36122
0110	080	Winston	SANW-12a	Sandy Cr	Sandy Cr. at Winston CR 12 near Rock Cr.	NPS Screening Program	1997	68e	34.18889	-87.35250
0110	010	Winston	GSAMF-15	Borden Cr	Borden Cr. at FSR 229	GSA Mulberry Fork Assessment, 1999-2001	2001	68e	34.31008	-87.39492
0110	010	Winston	GSAMF-23	Borden Cr	Borden Cr. at FSR 229	GSA Mulberry Fork Assessment, 1999-2002	2002	68e	34.31008	-87.39492
0110	010	Lawrence	BW01A2-59	Hagood Cr	Hagood Cr. approx. 3.3 miles us of confluence of Braziel and Borden Cr.	ALAMAP Monitoring Program	1998	68e	34.34440	-87.40220
0110	010	Winston	GSAMF-19	Caney Cr.	Caney Cr. approximately 2 mi NE of Pleasant Hill (boat access)	GSA Mulberry Fork Assessment, 1999-2002	2002	68e	34.24728	-87.40650
0110	010	Lawrence	GSAMF-21	Hubbard Cr.	Hubbard Cr. at Forest Service Rd. 210	GSA Mulberry Fork Assessment, 1999-2002	2002	68e	34.30833	-87.50300
0110	010	Lawrence	GSAMF-24	Braziel Cr.	Braziel Cr. just us of confluence with Borden Cr.	GSA Mulberry Fork Assessment, 1999-2002	2002	68e	34.31219	-87.39458
0110	010	Lawrence	GSAMF-25	Flannagin Cr.	Flannagin Cr. at Forest Service Rd. 208	GSA Mulberry Fork Assessment, 1999-2002	2002	68e	34.33806	-87.38528
0110	010	Lawrence	GSAMF-26	Borden Cr.	Borden Cr. at Forest Service Rd. 208	GSA Mulberry Fork Assessment, 1999-2002	2002	68e	34.32944	-87.37750
0110	010	Winston	CANW-13a	Cane Cr	Cane Cr. at Winston CR 2 nr Double Springs	NPS Screening Program	1997	68e	34.16292	-87.32925
0110	020	Winston	Smith3	Sipsey Fk	Sipsey Fork at deepest point, main R. channel, immed. ds of Brushy Cr. confluence.	Reservoir Intensive Monitoring Program	2002	68e	34.06350	-87.25840
0110	020	Winston	Smith5	Sipsey Fk	Sipsey Fork at deepest point, main R. channel, approx. 0.5 miles ds of the confluence with Yellow Cr.	Reservoir Intensive Monitoring Program	2002	68e	34.08218	-87.25805
0110	030	Winston	BEEW-1	Beech Cr	Beech Cr. at Winston CR 70 nr Grayson	Brushy Cr. Intensive Survey	1997	68e	34.29723	-87.30594
0110	030	Winston	GSAMF-33	Beech Cr	Beech Cr. at Winston CR 70 nr Grayson	GSA Mulberry Fork Assessment, 1999-2002	2002	68e	34.29723	-87.30594
0110	030	Winston	BRSH-1	Brushy Cr	Brushy Cr. at unnamed Winston CR nr mouth of Capsey Cr.	Brushy Cr. Intensive Survey	1997	68e	34.19986	-87.25444
0110	030	Winston	GSAMF-17	Brushy Cr	Brushy Cr. at unnamed Winston CR nr mouth of Capsey Cr.	GSA Mulberry Fork Assessment, 1999-2001	2001	68e	34.19986	-87.25444
0110	030	Winston	GSAMF-29	Brushy Cr	Brushy Cr. at unnamed Winston CR nr mouth of Capsey Cr.	GSA Mulberry Fork Assessment, 1999-2002	2002	68e	34.19986	-87.25444
0110	030	Lawrence	BRUW-14f	Brushy Cr	Brushy Cr. us of North Loop of Lawrence CR 73 (east of CR 70) in Bankhead National Forest	Brushy Cr. Intensive Survey	1997	68e	34.33068	-87.28578
0110	030	Lawrence	GSAMF-34	Brushy Cr	Brushy Cr. us of North Loop of Lawrence CR 73 (east of CR 70) in Bankhead National Forest	GSA Mulberry Fork Assessment, 1999-2002	2002	68e	34.33068	-87.28578

Appendix E. Stations assessed in the Black Warrior and Cahaba River Basins since 1992.

CU	Sub	County	Station	Stream	Station Description	Program	Most recent data	Eco-region	Lat Dec	Lon Dec
0110	030	Lawrence	BRSL-3	Brushy Cr	Brushy Cr. us of North Loop of Lawrence CR 73 (east of CR 70) in Bankhead National Forest	Periphyton Bioassessment Pilot Project	2002	68e	34.33068	-87.28578
0110	030	Lawrence	BRSL-3	Brushy Cr	Brushy Cr. us of North Loop of Lawrence CR 73 (east of CR 70) in Bankhead National Forest	Reference Reach Program	2002	68e	34.33068	-87.28578
0110	030	Winston	CPSY-1	Capsey Cr	Capsey Cr. at unnamed Winston CR (FS 266) nr Inmanfield	Brushy Cr. Intensive Survey	1997	68e	34.26957	-87.21056
0110	030	Winston	GSAMF-30	Capsey Cr	Capsey Cr. at unnamed Winston CR (FS 266) nr Inmanfield	GSA Mulberry Fork Assessment, 1999-2002	2002	68e	34.26957	-87.21056
0110	030	Winston	RUSW-1	Rush Cr	Rush Cr. at Forest Service Rd. 245	Brushy Cr. Intensive Survey	1997	68e	34.27356	-87.25157
0110	030	Winston	GSAMF-31	Rush Cr	Rush Cr. at Forest Service Rd. 245	GSA Mulberry Fork Assessment, 1999-2002	2002	68e	34.27356	-87.25157
0110	030	Winston	GSAMF-32	Collier Cr.	Collier Cr. at end of Forest Service Rd. 253	GSA Mulberry Fork Assessment, 1999-2002	2002	68e	34.26036	-87.28261
0110	040	Winston	GSAMF-28	Inman Cr	Inman Cr. at unnamed Forest Service Rd in the Bankhead National Forest	GSA Mulberry Fork Assessment, 1999-2002	2002	68e	34.21525	-87.22447
0110	040	Winston	INMW-1	Inman Cr	Inman Cr. at unnamed Forest Service Rd in the Bankhead National Forest	Periphyton Bioassessment Pilot Project	2002	68e	34.21525	-87.22447
0110	040	Winston	INMW-1	Inman Cr	Inman Cr. at unnamed Forest Service Rd in the Bankhead National Forest	Reference Reach Program	2002	68e	34.21525	-87.22447
0110	040	Winston	BRSH-2	Brushy Cr.	Brushy Cr. approximately 1.5 mi. us of US Hwy 278 bridge	Brushy Cr. Intensive Survey	1997	68e	34.31168	-87.41996
0110	040	Winston	BRSH-3	Brushy Cr.	Brushy Cr. approximately 2.5 mi. us of US Hwy 278	Brushy Cr. Intensive Survey	1997	68e	34.27248	-87.38606
0110	040	Winston	BRSH-4	Brushy Cr.	Brushy Cr. approximately 1.5 mi. us of Winston CR 63	Brushy Cr. Intensive Survey	1997	68e	34.21892	-87.37729
0110	040	Winston	GSAMF-16	Brushy Cr	Brushy Cr. at mouth of Inman Cr. (boat access)	GSA Mulberry Fork Assessment, 1999-2001	2001	68e	34.19986	-87.25444
0110	040	Winston	GSAMF-27	Brushy Cr	Brushy Cr. at mouth of Inman Cr. (boat access)	GSA Mulberry Fork Assessment, 1999-2002	2002	68e	34.19986	-87.25444
0110	050	Winston	GSAMF-16	Clear Cr	Clear Cr. at unnamed rd nr Winston CR 28	GSA Mulberry Fork Assessment, 1999-2002	2002	68e	34.16667	-87.54167
0110	050	Winston	CLCW-53b	Clear Cr	Clear Cr. at unnamed rd nr Winston CR 28	NPS Screening Program	2002	68e	34.16667	-87.54167
0110	050	Winston	CLCW-53b	Clear Cr	Clear Cr. at unnamed rd nr Winston CR 28	NPS Screening Program	1997	68e	34.16667	-87.54167
0110	050	Winston	GSAMF-15	Right Fk Clear Cr	Rt. Fork Clear Cr. at Winston CR 32 nr Sutton Cemetery	GSA Mulberry Fork Assessment, 1999-2002	2002	68e	34.18803	-87.49792
0110	050	Winston	CLCW-53c	Right Fk Clear Cr	Rt. Fork Clear Cr. at Winston CR 32 nr Sutton Cemetery	NPS Screening Program	2002	68e	34.18803	-87.49792
0110	050	Winston	CLCW-53c	Right Fk Clear Cr	Rt. Fork Clear Cr. at Winston CR 32 nr Sutton Cemetery	NPS Screening Program	1997	68e	34.18803	-87.49792
0110	050	Winston	WIDW-18	Widow Cr.	Widow Cr. at AL Hwy 278	NPS Screening Program	2002	68e	34.16467	-87.44898
0110	050	Winston	LCLW-19	Little Clear Cr.	L. Clear Cr. at unnamed dirt road(CR 369) s of AL Hwy 278	NPS Screening Program	2002	68e	34.12919	-87.50901
0110	060	Winston	GSAMF-11	Clear Cr	Clear Cr. at Winston CR 4 (Otter Cr. Road)	GSA Mulberry Fork Assessment, 1999-2001	2001	68e	34.08139	-87.42239

Appendix E. Stations assessed in the Black Warrior and Cahaba River Basins since 1992.

CU	Sub	County	Station	Stream	Station Description	Program	Most recent data	Eco-region	Lat Dec	Lon Dec
0110	060	Winston	GSAMF-13	Clear Cr	Clear Cr. at Winston CR 4 (Otter Cr. Road)	GSA Mulberry Fork Assessment, 1999-2002	2002	68e	34.08139	-87.42239
0110	060	Winston	GSAMF-12	Clear Cr	Clear Cr. at CR 25	GSA Mulberry Fork Assessment, 1999-2001	2001	68e	34.12333	-87.43272
0110	060	Winston	GSAMF-14	Clear Cr	Clear Cr. at CR 25	GSA Mulberry Fork Assessment, 1999-2002	2002	68e	34.12333	-87.43272
0110	060	Winston	BRSH-5	Brushy Cr	Deepest point, main Cr. channel, Brushy Cr. embayment.	Brushy Cr. Intensive Survey	1997	68e	34.13657	-87.42720
0110	060	Winston	Smith4	Brushy Cr	Deepest point, main Cr. channel, Brushy Cr. embayment.	Reservoir Tributary Embayment Monitoring Program	2002	68e	34.13657	-87.42720
0110	070	Winston	Smith2	Sipsey Fk	Deepest point, main R. channel, at Duncan Cr./Sipsey R. confluence. ds of Alabama Hwy 257 bridge.	Reservoir Intensive Monitoring Program	2002	68e	33.98607	-87.20529
0110	070	Winston	Smith6	Clear Cr	Deepest point, main Cr. channel, Clear Cr. embayment.	Reservoir Tributary Embayment Monitoring Program	2002	68e	34.02100	-87.26300
0110	070	Winston	Smith7	Dismal Cr	Deepest point, main Cr. channel, Dismal Cr. embayment.	Reservoir Tributary Embayment Monitoring Program	2002	68e	34.01350	-87.19120
0110	070	Winston	SMI3	Lewis Smith Reservoir	Lewis Smith Reservoir- Mouth Of Clear Cr., Mouth Of Butler Cr.	Fish Tissue Monitoring	2002	68e	34.02756	-87.24664
0110	070	Cullman	BW07	Mud Cr.	Mud Cr. us of AL Hwy 31 and ds of confluence with unnamed trib from the south	Clean Water Strategy	1996	68d	34.05333	-86.76833
0110	080	Winston	RCK-1	Rock Cr	Rock Cr. at unnamed Winston CR nr Addison	1997 Intensive Water Quality Surveys	1997	68d	34.22613	-87.14102
0110	080	Winston	ROCW-52a	Rock Cr	Rock Cr. at unnamed Winston CR nr Addison	NPS Screening Program	1997	68d	34.22613	-87.14102
0110	080	Cullman	BLVC-1	Blevens Cr	Blevens Cr. at unnamed Cullman Co. Rd west of CR. 31	Periphyton Bioassessment Pilot Project	2002	68d	34.26736	-87.07761
0110	080	Cullman	BLVC-1	Blevens Cr	Blevens Cr. at unnamed Cullman Co. Rd west of CR. 31	Reference Reach Program	2003	68d	34.26736	-87.07761
0110	080	Winston	GSAMF-19	Rock Cr	Rock Cr. at Winston CR 80	GSA Mulberry Fork Assessment, 1999-2001	2001	68d	34.24094	-87.13542
0110	080	Winston	GSAMF-36	Rock Cr	Rock Cr. at Winston CR 80	GSA Mulberry Fork Assessment, 1999-2002	2002	68d	34.24094	-87.13542
0110	080	Winston	ROCW-52b	Rock Cr	Rock Cr. at Winston CR 80	NPS Screening Program	1997	68d	34.24094	-87.13542
0110	080	Winston	ROCW-52b	Rock Cr	Rock Cr. at Winston CR 80	NPS Screening Program	2002	68d	34.24094	-87.13542
0110	080	Winston	RCK-4	Rock Cr.	Rock Cr. at Winston CR 66	1997 Intensive Water Quality Surveys	1997	68e	34.15789	-87.16439
0110	080	Winston	GSAMF-18	Rock Cr.	Rock Cr. at Winston CR 66	GSA Mulberry Fork Assessment, 1999-2001	2001	68e	34.15789	-87.16439
0110	080	Winston	GSAMF-35	Rock Cr.	Rock Cr. at Winston CR 66	GSA Mulberry Fork Assessment, 1999-2002	2002	68e	34.15789	-87.16439
0110	080	Winston	RCK-6	Blevens Cr	Blevens Cr. at Winston CR 39	1997 Intensive Water Quality Surveys	1997	68e	34.18679	-87.13960
0110	080	Winston	GSAMF-20	Blevens Cr	Blevens Cr. at Winston CR 39	GSA Mulberry Fork Assessment, 1999-2001	2001	68e	34.18679	-87.13960
0110	080	Winston	GSAMF-37	Blevens Cr	Blevens Cr. at Winston CR 39	GSA Mulberry Fork Assessment, 1999-2002	2002	68e	34.18679	-87.13960

Appendix E. Stations assessed in the Black Warrior and Cahaba River Basins since 1992.

CU	Sub	County	Station	Stream	Station Description	Program	Most recent data	Eco-region	Lat Dec	Lon Dec
0110	080	Cullman	GSAMF-21	Blevens Cr.	Blevens Cr. at CR 1043	GSA Mulberry Fork Assessment, 1999-2001	2001	68d	34.23144	-87.08732
0110	080	Cullman	GSAMF-38	Blevens Cr.	Blevens Cr. at CR 1043	GSA Mulberry Fork Assessment, 1999-2002	2002	68d	34.23144	-87.08732
0110	080	Winston	RCK-2	Rock Cr.	Rock Cr. at Winston CR East of the Addison Municipal Airport	1997 Intensive Water Quality Surveys	1997	68d	34.21730	-87.15332
0110	080	Winston	RCK-3	Rock Cr.	Rock Cr. at Old U.S. Hwy. 278 ds of Blevens Cr.	1997 Intensive Water Quality Surveys	1997	68e	34.18412	-87.14651
0110	080	Winston	RCK-5	Boone Cr.	Boone Cr. at Winston CR North of Addison	1997 Intensive Water Quality Surveys	1997	68d	34.23011	-87.17257
0110	090	Cullman	CROC-54b	Crooked Cr	at US Hwy 278	NPS Screening Program	1997	68d?		
0110	090	Cullman	CRK-3	Crooked Cr	Crooked Cr. at Cullman CR 1043	1997 Intensive Water Quality Surveys	1997	68d	34.20444	-87.02317
0110	090	Cullman	GSAMF-23	Crooked Cr	Crooked Cr. at Cullman CR 1043	GSA Mulberry Fork Assessment, 1999-2001	2001	68d	34.20444	-87.02317
0110	090	Cullman	GSAMF-40	Crooked Cr	Crooked Cr. at Cullman CR 1043	GSA Mulberry Fork Assessment, 1999-2002	2002	68d	34.20444	-87.02317
0110	090	Cullman	CROC-54a	Crooked Cr	Crooked Cr. at Cullman CR 1043	NPS Screening Program	2002	68d	34.20444	-87.02317
0110	090	Cullman	CROC-54a	Crooked Cr	Crooked Cr. at Cullman CR 1043	NPS Screening Program	1997	68d	34.20444	-87.02317
0110	090	Cullman	CRK-5	Crooked Cr.	Crooked Cr. at Cullman CR 940	1997 Intensive Water Quality Surveys	1997	68e	34.11528	-87.05953
0110	090	Cullman	GSAMF-22	Crooked Cr.	Crooked Cr. at Cullman CR 940	GSA Mulberry Fork Assessment, 1999-2001	2001	68e	34.11528	-87.05953
0110	090	Cullman	GSAMF-39	Crooked Cr.	Crooked Cr. at Cullman CR 940	GSA Mulberry Fork Assessment, 1999-2002	2002	68e	34.11528	-87.05953
0110	090	Cullman	GSAMF-22	Crooked Cr.	Crooked Cr. at Cullman CR 940	NPS Screening Program	2002	68e	34.11528	-87.05953
0110	090	Cullman	CRK-1	Crooked Cr.	Crooked Cr. at Cullman CR us of Al. Hwy. 157	1997 Intensive Water Quality Surveys	1997	68d	34.26382	-86.98049
0110	090	Cullman	CRK-2	Crooked Cr.	Crooked Cr. at Cullman CR us of Jaybird Cr. in	1997 Intensive Water Quality Surveys	1997	68d	34.22108	-86.97744
0110	090	Cullman	CRK-4	Crooked Cr.	Crooked Cr. near unpaved Cullman CR us of Unnamed Tributary	1997 Intensive Water Quality Surveys	1997	68e	34.14766	-87.04578
0110	100	Walker	WHEC-17a	Whetstone Cr	Whetstone Cr. at unnamed Cullman CR nr Crane Hill	NPS Screening Program	1997	68e	34.10722	-87.08528
0110	100	Winston	WHOC-16a	White Oak Cr	White Oak Cr. at unnamed Cullman CR nr Mt. Zion	NPS Screening Program	1997	68e	34.11400	-87.12656
0110	100	Winston	Smith8	Rock Cr	Deepest point, main Cr. channel, Rock Cr. embayment.	Reservoir Tributary Embayment Monitoring Program	2002	68e	33.99874	-87.11970
0110	100	Winston	Smith9	Crooked Cr	Deepest point, main Cr. channel, Crooked Cr. embayment. approx. 1.5 miles us of Winston CR 22 bridge.	Reservoir Tributary Embayment Monitoring Program	2002	68e	34.06271	-87.12304
0110	100	Winston	SMI2	Lewis Smith Reservoir	Rock Cr., Lewis Smith Reservoir In Vicinity Of Little Crooked Cr.	Fish Tissue Monitoring	2002	68e	34.02169	-87.12319
0110	110	Cullman	RYNC-1	Ryan Cr	Ryan Cr ~1/4 mile South of CR 438/18, below mouth of Bavar Cr,	303(d) Monitoring Program	2002	68e	34.08764	-86.92287

Appendix E. Stations assessed in the Black Warrior and Cahaba River Basins since 1992.

CU	Sub	County	Station	Stream	Station Description	Program	Most recent data	Eco-region	Lat Dec	Lon Dec
0110	110	Cullman	RYNC-1	Ryan Cr	Ryan Cr ~1/4 mile South of CR 438/18, below mouth of Bavar Cr,	NPS Screening Program	2002	68e	34.08764	-86.92287
0110	110	Cullman	GSAMF-24	Ryan Cr	Ryan Cr ~1/4 mile South of CR 438/18, below mouth of Bavar Cr,	GSA Mulberry Fork Assessment, 1999-2001	2001	68e	34.08764	-86.92287
0110	110	Cullman	GSAMF-41	Ryan Cr	Ryan Cr ~1/4 mile South of CR 438/18, below mouth of Bavar Cr,	GSA Mulberry Fork Assessment, 1999-2002	2002	68e	34.08764	-86.92287
0110	110	Cullman	RYNC-1	Ryan Cr	Ryan Cr ~1/4 mile South of CR 438/18, below mouth of Bavar Cr,	Periphyton Bioassessment Pilot Project	2002	68e	34.08764	-86.92287
0110	110	Cullman	RYNC-2	Ryan Cr	Ryan Cr at CR 36,	303(d) Monitoring Program	2002	68d	34.12175	-86.90082
0110	110	Cullman	RYNC-3	Ryan Cr	Ryan Cr at US Hwy 278,	303(d) Monitoring Program	2002	68d	34.17271	-86.89104
0110	110	Cullman	GSAMF-25	Ryan Cr.	Ryan Cr. at Cullman CR 438	GSA Mulberry Fork Assessment, 1999-2001	2001	68e	34.09125	-86.92236
0110	110	Cullman	GSAMF-42	Ryan Cr.	Ryan Cr. at Cullman CR 438	GSA Mulberry Fork Assessment, 1999-2002	2002	68e	34.09125	-86.92236
0110	110	Cullman	ROCC-15	Rock Cr.	Rock Cr. at CR 436	303(d) Monitoring Program	2002	68e?	34.10817	-86.96898
0110	110	Cullman	ROCC-15	Rock Cr.	Rock Cr. at CR 436	NPS Screening Program	2002	68e?	34.10817	-86.96898
0110	110	Cullman	BW10	Bavar Cr.	CR 37 at Good Hope.	Clean Water Strategy	1996	68d	34.09306	-86.88244
0110	110	Cullman	BW11	Bavar Cr.	1/4 mile from bridge on Ryan Cr (at mouth of Bavar Cr).	Clean Water Strategy	1996	68e	34.08778	-86.92306
0110	120	Cullman	BW9U4-53	Little Crooked Cr, UT to	Tributary to Little Crooked Cr. immediately us of back water from Lewis Smith Lake.	ALAMAP Monitoring Program	2000	68e	34.02830	-87.09140
0110	120	Cullman	Smith1	Sipsey Fk	Deepest point, main R. channel, dam forebay.	Reservoir Intensive Monitoring Program	2002	68e	33.94954	-87.11081
0110	120	Cullman	Smith10	Ryan Cr	Deepest point, main Cr. channel, Ryan Cr. embayment.	Reservoir Tributary Embayment Monitoring Program	2002	68e	33.96190	-87.10080
0110	120	Cullman	SMI1	Lewis Smith Reservoir	Ryan Cr., Lewis Smith Reservoir Approx. 2.2 Miles us Of Big Bridge And Approx. 12 Miles us Of Sipsey Fork	Fish Tissue Monitoring	2002	68e	34.03603	-87.03286
0110	130	Walker	BW35	Mill Cr	at unnamed Winston Co. Rd nr Parker Bridge	Clean Water Strategy	1996	68e	33.91639	-87.09028
0110	130	Walker	MILW-18a	Mill Cr	at unnamed Winston Co. Rd nr Parker Bridge	NPS Screening Program	2002	68e	33.91639	-87.09028
0110	130	Walker	MILW-18a	Mill Cr	at unnamed Winston Co. Rd nr Parker Bridge	NPS Screening Program	1997	68e	33.91639	-87.09028
0110	130	Walker	SIFUA01	Sipsey Fork	Sipsey Fork at Lewis Smith Dam Tailrace	99-00 University Tributary Nutrient Loading Study	1999	68e	33.94056	-87.10778
0111	010	Etowah	GSA-25	Locust Fork	Locust Fork at unnamed CR approx. 1 mi NNE of Walnut Grove	GSA Water Quality Assessment of Locust Fork	2001	67f	34.08444	-86.28917
0111	010	Etowah	GSA-27	Locust Fork	Locust Fork at Dee Nix Road	GSA Water Quality Assessment of Locust Fork	2001	68d	33.99556	-86.31028
0111	010	Etowah	GSA-27	Locust Fork	Locust Fork at Dee Nix Road	GSA Water Quality Assessment of Locust Fork	2001	68d	33.99556	-86.31028
0111	010	Etowah	GSA-27	Locust Fork	Locust Fork at Dee Nix Road	NPS Screening Program	2002	68d	33.99556	-86.31028

Appendix E. Stations assessed in the Black Warrior and Cahaba River Basins since 1992.

CU	Sub	County	Station	Stream	Station Description	Program	Most recent data	Eco-region	Lat Dec	Lon Dec
0111	020	Etowah	GSA-26	Bristow Cr	Bristow Cr. at Pine Grove	GSA Locust Fork Fish Assessment	1997	67f	34.08722	-86.25731
0111	020	Etowah	GSA-26	Bristow Cr	Bristow Cr. at Pine Grove	GSA Water Quality Assessment of Locust Fork	2001	67f	34.08722	-86.25731
0111	020	Etowah	GSA-26	Bristow Cr	Bristow Cr. at Pine Grove	NPS Screening Program	2002	67f	34.08722	-86.25731
0111	020	Etowah	BW02U1	Wade Cr	Wade Cr. approx. 0.8 miles us of confluence with Bristow Cr..	ALAMAP Monitoring Program	1997	67f	34.11300	-86.18540
0111	030	Marshall	CLEM-76a	Clear Cr	Clear Cr. at Marshall CR 96	NPS Screening Program	2002	68d	34.14290	-86.28380
0111	030	Marshall	CLEM-76a	Clear Cr	Clear Cr. at Marshall CR 96	NPS Screening Program	1997	68d	34.14290	-86.28380
0111	030	Marshall	BW06U2-38	Big Mud Cr	Big Mud Cr. approx. 6.1 miles us of confluence with Locust Fork of Black Warrior R..	ALAMAP Monitoring Program	1998	68d	34.14330	-86.30750
0111	030	Blount	GSA-24	Locust Fork	Locust Fork at CR 36	GSA Water Quality Assessment of Locust Fork	2001	68d	34.11111	-86.36222
0111	030	Blount	BW08	Locust Fork	Locust Fork at AL Hwy 75	Clean Water Strategy	1996	68d	34.13411	-86.38428
0111	030	Blount	GSA-22	Locust Fork	Locust Fork at AL Hwy 75	GSA Locust Fork Fish Assessment	1997	68d	34.13411	-86.38428
0111	030	Blount	2454500	Locust Fork	Locust Fork at AL Hwy 75	USGS Sampling Station		68d	34.13411	-86.38428
0111	040	Marshall	SLAM-22c	Slab Cr	at unnamed Marshall CR nr Douglas	NPS Screening Program	2002	68d	34.21226	-86.27232
0111	040	Marshall	SLAM-22c	Slab Cr	at unnamed Marshall CR nr Douglas	NPS Screening Program	1997	68d	34.21226	-86.27232
0111	040	Marshall	GSA-21	Slab Cr.	Slab Cr. at CR 39	GSA Locust Fork Fish Assessment	1997	68d	34.19500	-86.38778
0111	040	Marshall	GSA-22	Slab Cr.	Slab Cr. at CR 39	GSA Water Quality Assessment of Locust Fork	2001	68d	34.19500	-86.38778
0111	050	Blount	GRVB-1	Graves Cr	Graves Cr. at Blount CR 31.	303(d) Monitoring Program	2000	68b	34.09990	-86.51110
0111	050	Blount	GRVB-2	Graves Cr	Graves Cr. at Blount CR 26.	303(d) Monitoring Program	2000	68b	34.08480	-86.52770
0111	050	Blount	GRVB-3	Graves Cr	Graves Cr. at unnamed Blount CR (Hamilton Mountain Rd.)	303(d) Monitoring Program	2000	68b	34.05740	-86.56540
0111	050	Blount	GRVB-4	Graves Cr	Graves Cr. at Blount CR (Martis Mill Rd.)	303(d) Monitoring Program	2000	68d	34.04500	-86.57200
0111	050	Blount	GSA-19	Graves Cr	Graves Cr. at Blount CR	GSA Locust Fork Fish Assessment	1997	68d	34.04500	-86.57200
0111	050	Blount	GRVB-4	Graves Cr	Graves Cr. at Blount CR (Martis Mill Rd.)	Periphyton Bioassessment Pilot Project	2002	68d	34.04500	-86.57200
0111	050	Blount	TYWW1	Graves Cr, UT to	Tyson-Blountsville Processing Facility; outfall to Graves Cr. us of confluence with Graves Cr.		2000	68b	34.04690	-86.57400
0111	050	Blount	DRYB-10	Dry Cr.	Dry Cr. at US Hwy 231	303(d) Monitoring Program	2002	68d	33.99046	-86.56606
0111	050	Blount	DRYB-11	Dry Cr	Dry Cr at Phillips Rd	303(d) Monitoring Program	2002	68d	33.97256	-86.60826

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CU	Sub	County	Station	Stream	Station Description	Program	Most recent data	Eco-region	Lat Dec	Lon Dec
0111	050	Blount	DRYB-11	Dry Cr	Dry Cr at Phillips Rd	Periphyton Bioassessment Pilot Project	2002	68d	33.97256	-86.60826
0111	050	Blount	DRYB-75a	Dry Cr.	Dry Cr. at unnamed Blount Co. Rd nr Nectar	NPS Screening Program	1997	68d	33.97158	-86.58878
0111	050	Blount	GRAB-77a	Graves Cr	at unnamed Blount CR nr Blountsville	NPS Screening Program	1997	68f	33.70942	-87.47747
0111	050	Blount	WHIB-74a	Wynnville Cr	at Blount Co. Rd 36	NPS Screening Program	1997	68d	34.09506	-86.38320
0111	050	Blount	GSA-16	Locust Fork	Locust Fork at Swann Bridge	GSA Water Quality Assessment of Locust Fork	2001	68d	33.99783	-86.60153
0111	050	Blount	BW09	Locust Fork	Locust Fork at CR 26	Clean Water Strategy	1996	68d	34.06772	-86.49400
0111	050	Blount	GSA-18	Locust Fork	Locust Fork at CR 26	GSA Water Quality Assessment of Locust Fork	2001	68d	34.06772	-86.49400
0111	050	Blount	GSA-19	Locust Fork	Locust Fork at CR 30	GSA Water Quality Assessment of Locust Fork	2001	68b	34.09961	-86.43531
0111	030	Blount	GSA-23	Big Mud Cr	Big Mud Cr. at CR 21	GSA Locust Fork Fish Assessment	1997	68d	34.13611	-86.37197
0111	030	Blount	GSA-23	Big Mud Cr	Big Mud Cr. at CR 21	GSA Water Quality Assessment of Locust Fork	2001	68d	34.13611	-86.37197
0111	050	Blount	GSA-20	Wynnville Cr	Wynnville Cr. at unnamed CR 0.5 mi south of CR 14	GSA Locust Fork Fish Assessment	1997	68d	34.10528	-86.41194
0111	050	Blount	GSA-20	Wynnville Cr	Wynnville Cr. at unnamed CR 0.5 mi south of CR 14	GSA Water Quality Assessment of Locust Fork	2001	68d	34.10528	-86.41194
0111	050	Blount	GSA-21	Locust Fork	Locust Fork at US Hwy 278	GSA Water Quality Assessment of Locust Fork	2001	68d	34.13125	-86.41403
0111	050	Blount	BW06U3-38	Dry Cr	Dry Cr. approx. 1/2 mile us of confluence with Locust Fork of Black Warrior R..	ALAMAP Monitoring Program	1999	68d	33.97210	-86.60860
0111	050	Blount	BW3U5-44	Dry Cr	Dry Cr. approx. 1/8 mile us of AL. Hwy 75 crossing.	ALAMAP Monitoring Program	2001	68d	34.06732	-86.43026
0111	050	Blount	GSA-19	Graves Cr.	Graves Cr. at unnumbered road off of Ala. Hwy. 79	GSA Locust Fork Fish Assessment	1997	68b	34.05737	-86.56555
0111	060	Blount	LCPB-23a	Little Warrior R.	L. Warrior R. at unnamed Blount CR nr Hortons Mill	NPS Screening Program	1997	68d	34.00556	-86.45917
0111	060	Blount	LCPB-23a	Little Warrior R.	L. Warrior R. at unnamed Blount CR nr Hortons Mill	NPS Screening Program	2002	68d	34.00556	-86.45917
0111	060	Blount	CCB-4	Chitwood Cr	Chitwood Cr. at unimproved road crossing, approximately 1.8 mi. ds of the WWTP discharge.	WQDS-Chitwood Cr.	1994	68d	33.94119	-86.54269
0111	060	Blount	CCB-5	Chitwood Cr	Chitwood Cr. at CR 33, approximately 2.8 mi. ds of the WWTP discharge	WQDS-Chitwood Cr.	1994	68d	33.95269	-86.54606
0111	060	Blount	GSA-12	Calvert Prong	Calvert Prong at Moss Bridge	GSA Locust Fork Fish Assessment	1997	67f	33.93725	-86.58025
0111	060	Blount	GSA-14	Calvert Prong	Calvert Prong at Moss Bridge	GSA Water Quality Assessment of Locust Fork	2001	67f	33.93725	-86.58025
0111	060	Blount	CCB-6	Calvert Prong	Calvert Prong just us of Gordon's Dam, approximately 2.4 miles ds of the confluence of Chitwood Cr. with Calvert Prong.	WQDS-Chitwood Cr.	1994	68d	33.94323	-86.55896
0111	060	Blount	GSA-13	Little Calvert Prong	Little Calvert Prong at CR 33	GSA Locust Fork Fish Assessment	1997	68d	33.97710	-86.52751

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CU	Sub	County	Station	Stream	Station Description	Program	Most recent data	Eco-region	Lat Dec	Lon Dec
0111	060	Blount	CCB-2a	Chitwood Cr.	Chitwood Cr. directly ds of discharge	WQDS-Chitwood Cr.	2001	68e	33.92919	-86.82852
0111	060	Blount	CCB-1	Mill Cr.	Mill Cr. just us of confluence with unnamed tributary that receives WWTP discharge	WQDS-Chitwood Cr.	2001	67f	33.92556	-86.52925
0111	060	Blount	CCB-1	Mill Cr.	Mill Cr. just us of confluence with unnamed tributary that receives WWTP discharge	WQDS-Chitwood Cr.	1994	67f	33.92556	-86.52925
0111	060	Blount	CCB-3	Chitwood Cr	Chitwood Cr. below the confluence of Cheney Branch and Mill Cr., approximately 0.8 mi. ds of the current WWTP	WQDS-Chitwood Cr.	2001	68d	33.93403	-86.52950
0111	060	Blount	CCB-3	Chitwood Cr	Chitwood Cr. below the confluence of Cheney Branch and Mill Cr., approximately 0.8 mi. ds of the current WWTP	WQDS-Chitwood Cr.	1994	68d	33.93403	-86.52950
0111	070	Blount	BLFB-78a	Blackburn Fk	at Blount Co. Hwy 20	NPS Screening Program	1997	68d	33.90589	-86.39414
0111	070	Blount	GSA-15	Hendrick Mill Br	Hendric Mill Br. at Blount CR 15	GSA Locust Fork Fish Assessment	1997	67f	33.87612	-86.56885
0111	070	Blount	HNMB-4	Hendrick Mill Br	Hendric Mill Br. at Blount CR 15	Periphyton Bioassessment Pilot Project	2002	67f	33.87612	-86.56885
0111	070	Blount	HNMB-4	Hendrick Mill Br	Hendric Mill Br. at Blount CR 15	Reference Reach Program	2002	67f	33.87612	-86.56885
0111	070	Blount	CCB-2	Cheney Branch	Cheney Branch us of confluence with Mill Cr.	WQDS-Chitwood Cr.	1994	68d	33.92969	-86.32614
0111	070	Blount	GSA-14	Blackburn Fk	Blackburn Fork at Hendrick Mill on unnamed CR off CR 15	GSA Locust Fork Fish Assessment	1997	67f	33.88269	-86.57731
0111	070	Blount	GSA-15	Blackburn Fk	Blackburn Fork at Hendrick Mill on unnamed CR off CR 15	GSA Water Quality Assessment of Locust Fork	2001	67f	33.88269	-86.57731
0111	070	Blount	02455220	Blackburn Fk	Blackburn Fork at Hendrick Mill on unnamed CR off CR 15	USGS Sampling Station	1997	67f	33.88269	-86.57731
0111	070	Blount	Inland1	Black Warrior R	Deepest point, main R. channel, dam forebay.	ADEM Reservoir Monitoring Program	2002	68d	33.83469	-86.55094
0111	070	Blount	INL1	Inland Reservoir	Inland Reservoir/Black Warrior R. at Remlap	Fish Tissue Monitoring	1995	68d	33.83472	-86.54917
0111	070	Blount	GSA-11	Blackburn Fork	Blackburn Fork at slab on unnumbered CR	GSA Locust Fork Fish Assessment	1997	68d	33.93591	-86.61598
0111	070	Blount	GSA-16	Blackburn Fork	Blackburn Fork approximately 0.5 mi. ds of Inland Lake Dam	GSA Locust Fork Fish Assessment	1997	68d	33.84119	-86.54835
0111	070	Blount	GSA-17	Blackburn Fork	Blackburn Fork at Co.Hwy. 27	GSA Locust Fork Fish Assessment	1997	68d	33.86537	-86.44345
0111	070	Blount	GSA-18	Little Warrior R.	Little Warrior R. at Co. Hwy. 20	GSA Locust Fork Fish Assessment	1997	68d	33.90558	-86.39400
0111	080	Blount	LONB-24a	Longs Cr	Longs Cr. at unnamed Blount CR	NPS Screening Program	2002	68f	33.84301	-86.72717
0111	080	Blount	LONB-24a	Longs Cr	Longs Cr. at unnamed Blount CR	NPS Screening Program	1997	68f	33.84301	-86.72717
0111	080	Blount	GSA-10	Longs Branch	Longs Branch at CR 22	GSA Locust Fork Fish Assessment	1997	68d	33.84589	-86.72444
0111	080	Blount	GSA-11	Longs Branch	Longs Branch at CR 22	GSA Water Quality Assessment of Locust Fork	2001	68d	33.84589	-86.72444
0111	080	Blount	GSA-13	Locust Fork	Locust Fork at CR 13	GSA Water Quality Assessment of Locust Fork	2001	68d	33.94594	-86.66914

Appendix E. Stations assessed in the Black Warrior and Cahaba River Basins since 1992.

CU	Sub	County	Station	Stream	Station Description	Program	Most recent data	Eco-region	Lat Dec	Lon Dec
0111	080	Blount	WHTB-12	Whites Cr.	Whites Cr. at unnamed CR	NPS Screening Program	2002	68e	33.87168	-86.67572
0111	080	Blount	SUGB-13	Sugar Cr.	Sugar Cr. at CR 45	NPS Screening Program	2002	68d	33.93660	-86.67781
0111	080	Blount	LFKB-2	Locust Fork	Locust Fork at CR 43 (Vaughns Bridge)	303(d) Monitoring Program	2002	68e	33.88570	-86.69927
0111	080	Blount	GSA-12	Locust Fork	Locust Fork at CR 43 (Vaughns Bridge)	GSA Water Quality Assessment of Locust Fork	2001	68e	33.88570	-86.69927
0111	080	Blount	LFKB-2	Locust Fork	Locust Fork at CR 43 (Vaughns Bridge)	NPS Screening Program	2002	68e	33.88570	-86.69927
0111	080	Blount	LFKB-2	Locust Fork	Locust Fork at CR 43 (Vaughns Bridge)	Periphyton Bioassessment Pilot Project	2002	68e	33.88570	-86.69927
0111	090	Jefferson	SFC-1	Self Cr.	Self Cr. at Self Cr. Road.	303(d) Monitoring Program	1999	68f	33.78400	-86.75120
0111	090	Jefferson	SFC-2	Self Cr.	Self Cr. at Old Dixiana Road	303(d) Monitoring Program	1999	68f	33.75230	-86.71070
0111	090	Blount	SVC-1	Sand Valley Cr	Sand Valley Cr. at Narrows Rd.; approx. 0.3 miles us of confluence with Gurley Cr.	303(d) Monitoring Program	1999	67f	33.78580	-86.64850
0111	090	Blount	GSA-9	Sand Valley Cr	Sand Valley Cr. at Narrows Rd.; approx. 0.3 miles us of confluence with Gurley Cr.	GSA Locust Fork Fish Assessment	1997	67f	33.78580	-86.64850
0111	090	Jefferson	GYC-1	Gurley Cr	Gurley Cr. at Bone Dry Rd.	303(d) Monitoring Program	1999	68f	33.80270	-86.75300
0111	090	Jefferson	GYC-2	Gurley Cr	Gurley Cr. us of AL Hwy 79.	303(d) Monitoring Program	1999	68f	33.79330	-86.68660
0111	090	Blount	GYC-3	Gurley Cr	Gurley Cr. at unnamed road ds of AL Hwy 75.	303(d) Monitoring Program	1999	67f	33.76990	-86.63300
0111	090	Jefferson	GSA-8	Gurley Cr	Gurley Cr. at Smith Mill Rd. nr Trafford	GSA Locust Fork Fish Assessment	1997	68f	33.80656	-86.71083
0111	090	Jefferson	GSA-10	Gurley Cr	Gurley Cr. at Smith Mill Rd. nr Trafford	GSA Water Quality Assessment of Locust Fork	2001	68f	33.80656	-86.71083
0111	100	Jefferson	GSA-9	Locust Fork	Locust Fork at Warrior-Kimberly Road	GSA Water Quality Assessment of Locust Fork	2001	67f	33.80931	-86.80075
0111	110	Jefferson	GSA-7	Turkey Cr.	Turkey Cr. at CR 129	GSA Water Quality Assessment of Locust Fork	2001	68f	33.73450	-86.79872
0111	110	Jefferson	GSA-7	Turkey Cr.	Turkey Cr. at Pinson on Turkey Cr. Road	GSA Locust Fork Fish Assessment	1997	68f	33.73136	-86.72883
0111	110	Jefferson	GSA-8	Turkey Cr.	Turkey Cr. at Pinson on Turkey Cr. Road	GSA Water Quality Assessment of Locust Fork	2001	68f	33.73136	-86.72883
0111	120	Jefferson	GSA-6	Crooked Cr	Crooked Cr. at CR 144	GSA Locust Fork Fish Assessment	1997	68f	33.73600	-86.86594
0111	120	Jefferson	GSA-6	Crooked Cr	Crooked Cr. at CR 144	GSA Water Quality Assessment of Locust Fork	2001	68f	33.73600	-86.86594
0111	120	Jefferson	02456305	Crooked Cr	Crooked Cr. at CR 144	USGS Sampling Station	2001	68f	33.73600	-86.86594
0111	120	Jefferson	LOFUA01	Locust Fork	Jefferson at unnamed CR. in Sayre, approximately 0.5 mi us of LFKJ-18	99-00 University Tributary Nutrient Loading Study	1999	68f	33.70972	-86.98333
0111	120	Jefferson	GSA-5	Ward Cr.	Ward Cr. at CR 140	GSA Locust Fork Fish Assessment	1997	68f	33.76453	-86.92498

Appendix E. Stations assessed in the Black Warrior and Cahaba River Basins since 1992.

CU	Sub	County	Station	Stream	Station Description	Program	Most recent data	Eco-region	Lat Dec	Lon Dec
0111	120	Jefferson	LFK-1	Locust Fork	Locust Fork at U.S. Hwy. 78	1997 Intensive Water Quality Surveys	1997	68f	33.70469	-86.99163
0111	130	Jefferson	TSB-1	Tarrant Spring Branch	Tarrant Spring Branch at unnamed drive approx. 0.1 mile us of confluence with Fivemile Cr. and 0.5 mi east of Robinwood.	303(d) Monitoring Program	1999	65i	33.61044	-86.73368
0111	130	Jefferson	FMCJ-1	Fivemile Cr.	Fivemile Cr at Lawson Rd U/S of Tributary	303(d) Monitoring Program	2002	67f	33.60756	-86.74306
0111	130	Jefferson	USGSFMJ-1	Fivemile Cr.	Fivemile Cr at Lawson Rd U/S of Tributary	USGS Landuse Gradient Study	2003	67f	33.60321	-86.73655
0111	130	Jefferson	02456980	Fivemile Cr.	Fivemile Cr at Lawson Rd U/S of Tributary	USGS Sampling Station	1996	67f	33.60321	-86.73655
0111	130	Jefferson	EPAFMC-1	Fivemile Cr.	Fivemile Cr. at Lawson Road	EPA Cahaba R. Study	2002	67f	33.60758	-86.74261
0111	130	Jefferson	FM-1A	Fivemile Cr.	Fivemile Cr. at CR 77 near Upper Coalburg	Ambient Montoring Program		68f	33.60695	-86.85972
0111	130	Jefferson	GSA-4	Fivemile Cr.	Fivemile Cr. at CR 77 near Upper Coalburg	GSA Locust Fork Fish Assessment	1997	68f	33.60695	-86.85972
0111	130	Jefferson	FMCJ-2	Fivemile Cr.	Fivemile Cr U/S of Sloss Discharge	303(d) Monitoring Program	2002	68f	33.58208	-86.79466
0111	130	Jefferson	FMCJ-3	Fivemile Cr.	Fivemile Cr ~1/2 mile D/S of Sloss discharge	303(d) Monitoring Program	2002	68f	33.58329	-86.79739
0111	130	Jefferson	FMCJ-4	Fivemile Cr.	Fivemile Cr at CR 67 "Republic Rd"	303(d) Monitoring Program	2002	68f	33.61111	-86.88556
0111	130	Jefferson	FM2	Fivemile Cr.	Fivemile Cr at CR 67 "Republic Rd"	Ambient Monitoring Program	1976	68f	33.61111	-86.88556
0111	130	Jefferson	FMCJ-4	Fivemile Cr.	Fivemile Cr at CR 67 "Republic Rd"	Periphyton Bioassessment Pilot Project	2002	68f	33.61111	-86.88556
0111	130	Jefferson	NFDJ-1	Newfound Cr	Newfound Cr at CR 67 "D/S of Impoundment" in	303(d) Monitoring Program	2002	68f	33.67162	-86.88639
0111	130	Jefferson	NFDJ-2	Newfound Cr	Newfound Cr at CR 112 "Brookside Road"	303(d) Monitoring Program	2002	68f	33.64345	-86.91195
0111	130	Jefferson	GSA-4	Fivemile Cr.	Fivemile Cr. at US Hwy 78	GSA Water Quality Assessment of Locust Fork	2001	68f	33.66361	-86.97094
0111	130	Jefferson	USGSFMJ-3	Fivemile Cr.	Fivemile Cr. at Fivemile Cr. Road near Huffman, AL	USGS Landuse Gradient Study	1999	67f	33.60806	-86.70000
0111	130	Jefferson	02456900	Fivemile Cr.	Fivemile Cr. at Fivemile Cr. Road near Huffman, AL	USGS Sampling Station	2000	67f	33.60806	-86.70000
0111	130	Jefferson	BW7A4-42	Five Mile Cr, UT to	Tributary to Fivemile Cr.	ALAMAP Monitoring Program	2000	68f	33.64280	-86.97230
0111	130	Jefferson	LFK-7	Fivemile Cr	Abandoned Bridge ds of U.S. Highway 78	1997 Intensive Water Quality Surveys	1997	68f	33.66222	-86.97361
0111	130	Jefferson	FICUA01	Fivemile Cr	Abandoned Bridge ds of U.S. Highway 78	99-00 University Tributary Nutrient Loading Study	1999	68f	33.66222	-86.97361
0111	130	Jefferson	BW4U6-43	UT Five-Mile Cr.	N 33.64180 W 86.97292	ALAMAP Monitoring Program	2002	68f	33.64180	-86.97292
0111	130	Jefferson	FMCJ-14	Fivemile Cr.	Fivemile Cr. at US Hwy 31	303(d) Monitoring Program	2002	68f	33.59111	-86.80361
0111	130	Jefferson	FM1	Fivemile Cr.	Fivemile Cr. at US Hwy 31	Ambient Monitoring Program	1974	68f	33.59111	-86.80361

Appendix E. Stations assessed in the Black Warrior and Cahaba River Basins since 1992.

CU	Sub	County	Station	Stream	Station Description	Program	Most recent data	Eco-region	Lat Dec	Lon Dec
0111	130	Jefferson	GSA-3	Fivemile Cr.	Fivemile Cr. at Cardiff Street? in Brookside	GSA Locust Fork Fish Assessment	1997	68f	33.64130	-86.92771
0111	140	Jefferson	BVLJ-2	Bayview Lake	Bayview lake Near the Bayview Lake Community	303(d) Monitoring Program	2002	68f	33.57235	-86.99203
0111	140	Jefferson	BVLJ-3	Bayview Lake	Bayview lake-Corbet Branch near Power line crossing	303(d) Monitoring Program	2002	68f	33.57044	-86.96238
0111	140	Jefferson	BVLJ-4	Bayview Lake	Bayview lake-Village Cr ~ 200yds U/S of mouth	303(d) Monitoring Program	2002	68f	33.56285	-86.86694
0111	140	Jefferson	BVLJ-5	Bayview Lake	Bayview lake-Camp Branch "behinds the Knowles Island Area"	303(d) Monitoring Program	2002	68f	33.54954	-86.97151
0111	140	Jefferson	VLG-1	Village Cr.	Village Cr at 75th Street North in	1997 Intensive Water Quality Surveys	1997	67f	33.58316	-86.72870
0111	140	Jefferson	VLGJ-1	Village Cr.	Village Cr at 75th Street North in	303(d) Monitoring Program	2002	67f	33.58316	-86.72870
0111	140	Jefferson	VLG-3	Village Cr.	Village Cr at Vanderbilt Rd	1997 Intensive Water Quality Surveys	1997	67f	33.56035	-86.78799
0111	140	Jefferson	VLGJ-2	Village Cr.	Village Cr at Vanderbilt Rd	303(d) Monitoring Program	2002	67f	33.56035	-86.78799
0111	140	Jefferson	VLG-5	Village Cr.	Village Cr at RR Bridge U/S of Arkedelphia Rd "US Hwy 78"	1997 Intensive Water Quality Surveys	1997	67f	33.55081	-86.84271
0111	140	Jefferson	VLGJ-3	Village Cr.	Village Cr at RR Bridge U/S of Arkedelphia Rd "US Hwy 78"	303(d) Monitoring Program	2002	67f	33.55081	-86.84271
0111	140	Jefferson	VLG-6	Village Cr.	Village Cr at Avenue F in Ensley	1997 Intensive Water Quality Surveys	1997	68f	33.56592	-86.92028
0111	140	Jefferson	VLGJ-4	Village Cr.	Village Cr at Avenue F in Ensley	303(d) Monitoring Program	2002	68f	33.56592	-86.92028
0111	140	Jefferson	VLGJ-4	Village Cr.	Village Cr at Avenue F in Ensley	Periphyton Bioassessment Pilot Project	2002	68f	33.56592	-86.92028
0111	140	Jefferson	BVLJ-1	Bayview Lake	Bayview lake above dam in	303(d) Monitoring Program	2002	68f	33.57805	-86.99203
0111	140	Jefferson	VLG-2	Village Cr.	Village Cr. at Tallapoosa Street (CR 79) near Birmingham Airport	1997 Intensive Water Quality Surveys	1997	67f	33.54855	-86.78063
0111	140	Jefferson	VI2	Village Cr.	Village Cr. at Tallapoosa Street (CR 79) near Birmingham Airport	Ambient Montoring Program		67f	33.54855	-86.78063
0111	140	Jefferson	VLG-7	Village Cr.	Village Cr at Jefferson CR 65	1997 Intensive Water Quality Surveys	1997	68f	33.54797	-86.92567
0111	140	Jefferson	VI3	Village Cr.	Village Cr at Jefferson CR 65	303(d) Monitoring Program	2002	68f	33.54797	-86.92567
0111	140	Jefferson	CMBJ-1	Camp Br	Camp Branch at Birmingport Road	303(d) Monitoring Program	2001	68f?	33.53591	-86.96264
0111	140	Jefferson	CMBJ-1	Camp Br	Camp Branch at Birmingport Road	303(d) Monitoring Program	2002	68f?	33.53591	-86.96264
0111	140	Jefferson	CMBJ-2	Camp Br	Camp Branch at Wooden Bridge	303(d) Monitoring Program	2002	68f?	33.52452	-86.95741
0111	140	Jefferson	CMBJ-2	Camp Br	Camp Branch at Wooden Bridge	303(d) Monitoring Program	2001	68f?	33.52452	-86.95741
0111	140	Jefferson	CMBJ-3	Camp Br	Camp Branch at Mulga Loop Road	303(d) Monitoring Program	2002	68f?	33.51668	-86.95289

Appendix E. Stations assessed in the Black Warrior and Cahaba River Basins since 1992.

CU	Sub	County	Station	Stream	Station Description	Program	Most recent data	Eco-region	Lat Dec	Lon Dec
0111	140	Jefferson	CMBJ-3	Camp Br	Camp Branch at Mulga Loop Road	303(d) Monitoring Program	2001	68f?	33.51668	-86.95289
0111	140	Jefferson	CMBJ-4	Camp Branch	U/T to Camp Branch	303(d) Monitoring Program	2001	68f?	33.52051	-86.95407
0111	140	Jefferson	CMBJ-4	Camp Branch	U/T to Camp Branch	303(d) Monitoring Program	2002	68f?	33.52051	-86.95407
0111	140	Jefferson	AVNJ-1	Avondale Cr	Avondale Cr. approximately 20' us of rr track bridge 1 block us of 10 St to approx. 320' us of rr bridge	Avondale Cr. Special Study	2002	67f	33.53362	-86.78812
0111	140	Jefferson	AVNJ-2	Avondale Cr	Avondale Cr. at end of 37th Ave., approx. 300m down railroad tracks; REACH: from approx. 100' us of I 20 bridge to approx. 400' us of I 20	Avondale Cr. Special Study	2002	67f	33.54095	-86.78837
0111	140	Jefferson	LFK-8	Village Cr.	Village Cr. on CR 45 at Power Plant nr West Jefferson	1997 Intensive Water Quality Surveys	1997	68f	33.54316	-86.88603
0111	140	Jefferson	VICUA-1	Village Cr.	Village Cr. on CR 45 at Power Plant nr West Jefferson	99-00 University Tributary Nutrient Loading Study	1999	68f	33.54316	-86.88603
0111	140	Jefferson	GSA-1	Village Cr.	Village Cr. on CR 45 at Power Plant nr West Jefferson	GSA Locust Fork Fish Assessment	1997	68f	33.54316	-86.88603
0111	140	Jefferson	GSA-2	Village Cr.	Village Cr. on CR 45 at Power Plant nr West Jefferson	GSA Water Quality Assessment of Locust Fork	2001	68f	33.54316	-86.88603
0111	140	Jefferson	USGSVIL-1	Village Cr.	Village Cr. at East Lake in Birmingham, AL	USGS Assessment of Village and Valley Cr.s	2002	67f	33.56833	-86.72528
0111	140	Jefferson	02458150	Village Cr.	Village Cr. at East Lake in Birmingham, AL	USGS Sampling Station	1998	67f	33.56833	-86.72528
0111	140	Jefferson	Bayview1	Bayview Lake	Deepest point, main Cr. channel, dam forebay .	Reservoir Intensive Monitoring Program	2002	68f	33.57340	-86.98810
0111	140	Jefferson	Bayview2	Bayview Lake	Deepest point, main Cr. channel, immed. ds of Village Cr. and Camp Cr. confluence.	Reservoir Intensive Monitoring Program	2002	68f	33.55500	-86.96850
0111	140	Jefferson	ABRJ-1	Avondale Br	Avondale Branch ~100 yds U/S in NW1/4-Sect 19-T17S-R2W	303(d) Monitoring Program	2003	67f	33.54220	-86.78970
0111	140	Jefferson	USGSVIL-2	Village Cr.	Village Cr. at 24th Street	USGS Assessment of Village and Valley Cr.s	2000	67f	33.54250	-86.81750
0111	140	Jefferson	02458300	Village Cr.	Village Cr. at 24th Street	USGS Sampling Station	1988	67f	33.54250	-86.81750
0111	140	Jefferson	USGSVIL-3	Village Cr.	Village Cr. at Avenue W at Ensley	USGS Assessment of Village and Valley Cr.s	2000	67f	33.51750	-86.87917
0111	140	Jefferson	02458450	Village Cr.	Village Cr. at Avenue W at Ensley	USGS Sampling Station	1975	67f	33.51750	-86.87917
0111	140	Jefferson	USGSVIL-4	Village Cr.	Village Cr. near Docena	USGS Assessment of Village and Valley Cr.s	2000	68f	33.54806	-86.93139
0111	140	Jefferson	02458600	Village Cr.	Village Cr. near Docena	USGS Sampling Station	1996	68f	33.54806	-86.93139
0111	140	Jefferson	BAY1	Bayview Lake	Bayview Lake/Village Cr. at midchannel of forebay area	Fish Tissue Monitoring	1994	68f	33.57361	-86.98750
0111	140	Jefferson	BAY5	Bayview Lake	Bayview Lake, approximately 1/4 mi. us of Bayview	Fish Tissue Monitoring	1998	68f	33.54861	-86.96583
0111	140	Jefferson	VLG-3A	Village Cr. Unnamed Trib to	Tributary to Village Cr. 100 feet us of Vanderbilt Road	1997 Intensive Water Quality Surveys	1997	67f	33.56035	-86.78799
0111	140	Jefferson	VLG-4	Village Cr.	Village Cr. at Street 400 yards us of I-65 near Quarry	1997 Intensive Water Quality Surveys	1997	67f	33.53643	-86.82397

Appendix E. Stations assessed in the Black Warrior and Cahaba River Basins since 1992.

CU	Sub	County	Station	Stream	Station Description	Program	Most recent data	Eco-region	Lat Dec	Lon Dec
0111	140	Jefferson	VIL1	Village Cr.	Village Cr. embayment approximately 0.5 mi us of confluence with Warrior R.	Fish Tissue Monitoring	1998	68f	33.62314	-87.07236
0111	140	Jefferson	Bankhead8	Village Cr.	Village Cr. embayment approximately 0.5 mi us of confluence with Warrior R.	Reservoir Tributary Embayment Monitoring Program	2002	68f	33.62314	-87.07236
0111	140	Jefferson	VI1	Village Cr.	Village Cr. at on FAS-12 Rd. west of Mulga (CM 19.2)	Ambient Montoring Program	1999	68f	33.57417	-86.98667
0111	150	Blount	LFKB-1	Locust Fork	Locust Fork at ALA HWY 231	303(d) Monitoring Program	2002	68d	34.01962	-86.57375
0111	150	Blount	GSA-17	Locust Fork	Locust Fork at ALA HWY 231	GSA Water Quality Assessment of Locust Fork	2001	68d	34.01962	-86.57375
0111	150	Jefferson	LFKJ-3	Locust Fork	Locust Fork at CR 77 "Hewitt Bridge"	303(d) Monitoring Program	2002	68f	33.74402	-86.91853
0111	150	Jefferson	GSA-5	Locust Fork	Locust Fork at CR 77 "Hewitt Bridge"	GSA Water Quality Assessment of Locust Fork	2001	68f	33.74402	-86.91853
0111	150	Jefferson	LFK-2	Locust Fork	Locust Fork at CR 12 "Flat Top Road"	1997 Intensive Water Quality Surveys	1997	68f	33.65705	-87.02729
0111	150	Jefferson	LFKJ-4	Locust Fork	Locust Fork at CR 12 "Flat Top Road"	303(d) Monitoring Program	2003	68f	33.64130	-86.92771
0111	150	Jefferson	LFKJ-4	Locust Fork	Locust Fork at CR 12 "Flat Top Road"	303(d) Monitoring Program	2002	68f	33.65705	-87.02729
0111	150	Jefferson	GSA-3	Locust Fork	Locust Fork at CR 12 "Flat Top Road"	GSA Water Quality Assessment of Locust Fork	2001	68f	33.64130	-86.92771
0111	150	Jefferson	LFK-3	Locust Fork	Locust Fork at CR 45 "Porter Road"	1997 Intensive Water Quality Surveys	1997	68f	33.63653	-87.06124
0111	150	Jefferson	LFKJ-5	Locust Fork	Locust Fork at CR 45 "Porter Road"	303(d) Monitoring Program	2002	68f	33.63653	-87.06124
0111	150	Jefferson	LFK-4	Locust Fork	Locust Fork at CR 269 "Attwood Ferry Bridge"	1997 Intensive Water Quality Surveys	1997	68f	33.58333	-87.11006
0111	150	Jefferson	LFKJ-6	Locust Fork	Locust Fork at CR 269 "Attwood Ferry Bridge"	303(d) Monitoring Program	2002	68f	33.58333	-87.11006
0111	150	Jefferson	LF1	Locust Fork	Locust Fork at CR 269 "Attwood Ferry Bridge"	Ambient Monitoring Program		68f	33.38417	-87.11333
0111	150	Jefferson	LFK-4	Locust Fork	Locust Fork of Black Warrior R. near Powhatan (RM 13.4)	1997 Intensive Water Quality Surveys	1997	68f	33.58333	-87.11006
0111	150	Jefferson	LF1	Locust Fork	Locust Fork of Black Warrior R. near Powhatan (RM 13.4)	Ambient Montoring Program	1974	68f	33.58333	-87.11006
0111	150	Jefferson	LFK-5	Short Cr	Short Cr. at Old Strip Mine (SE 1/4, Sec 15 T17S R5W)	1997 Intensive Water Quality Surveys	1997	68f	33.55744	-87.03914
0111	150	Jefferson	SHTJ-1	Short Cr	Short Cr. at Old Strip Mine (SE 1/4, Sec 15 T17S R5W)	303(d) Monitoring Program	2002	68f	33.55744	-87.03914
0111	150	Jefferson	SHTJ-1	Short Cr	Short Cr. at Old Strip Mine (SE 1/4, Sec 15 T17S R5W)	303(d) Monitoring Program	2001	68f	33.55744	-87.03914
0111	150	Jefferson	SHTJ-2	Short Cr	Short Cr. at Jefferson CR 61 (SE 1/4, Sec 18 T17S R5W)	303(d) Monitoring Program	2001	68f	33.55570	-87.09180
0111	150	Jefferson	SHTJ-2	Short Cr	Short Cr. at Jefferson CR 61 (SE 1/4, Sec 18 T17S R5W)	303(d) Monitoring Program	2002	68f	33.55570	-87.09180
0111	150	Jefferson	BWR-1	Locust Fork	Locust Fork at RM 388.5 nr Vines Fish Camp	Black Warrior Intensive Survey	1990	68f	33.55053	-87.15586

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CU	Sub	County	Station	Stream	Station Description	Program	Most recent data	Eco-region	Lat Dec	Lon Dec
0111	150	Jefferson	BWR-1	Locust Fork	Locust Fork at RM 388.5 nr Vines Fish Camp	Fish Tissue Monitoring	1998	68f	33.55053	-87.15586
0111	150	Jefferson	GSA-1	Locust Fork	Locust Fork approx. 2 mi. us of US Hwy 269	GSA Water Quality Assessment of Locust Fork	2001	68f		
0111	150	Jefferson	Bankhead3	Locust Fork	Deepest point, main R. channel, Locust Fork. Approx. 1.5 mi. us of Mulberry, Locust confluence.	Reservoir Intensive Monitoring Program	2002	68f	33.54480	-87.17498
0111	150	Jefferson	LFKJ-5A	Locust Fork	Locust Fork at R. Mile 402	303(d) Monitoring Program	2003	68f	33.59088	-87.06816
0111	150	Jefferson	LFKJ-7	Locust Fork	Locust Fork at R. Mile 396	303(d) Monitoring Program	2002	68f	33.56011	-87.11597
0111	150	Jefferson	BW15	Coal Cr.	Coal Cr. AL Hwy 269 (dirt access road at bottom of hollow to Cr.).	Clean Water Strategy	1996	68f	33.61248	-87.13851
0111	150	Jefferson	BW16	Coal Cr.	Coal Cr. at small concrete bridge crossing Cr. on CR 81 under water transmission lines.	Clean Water Strategy	1996	68f	33.58633	-87.14780
0111	150	Jefferson	LF1A	Locust Fork	Locust Fork of Black Warrior R. us of confluence Short Cr.	Ambient Montoring Program		68f	33.56306	-87.11306
0111	150	Jefferson	LFK-6	Short Cr	Short Cr. at CR 67	1997 Intensive Water Quality Surveys	1997	68f	33.56917	-87.08697
0111	150	Jefferson	SHT-1	Short Cr	Short Cr. at CR 67	1997 Intensive Water Quality Surveys	1997	68f	33.56917	-87.08697
0111	150	Jefferson	SHT-1	Short Cr	Short Cr. at CR 67	Ambient Montoring Program		68f	33.56917	-87.08697
0111	150	Jefferson	SHTJ-3	Short Cr	Birmingham Rd 269	303(d) Monitoring Program	2001	68f	33.55720	-87.10560
0111	150	Jefferson	SHTJ-3	Short Cr	Birmingham Rd 269	303(d) Monitoring Program	2002	68f	33.55720	-87.10560
0112	010	Walker	BAN2	Black Warrior R	Bankhead Reservoir near Taylor's Ferry Fish Camp	Fish Tissue Monitoring		68f	33.54644	-87.20264
0112	010	Jefferson	BL1	Bankhead Lake	Bankhead Lake at bridge near Camp Oliver (RM 388.6)	Ambient Monitoring Program		68f	33.53722	-87.22650
0112	010	Jefferson	BWR-3	Bankhead Lake	Bankhead Lake at bridge near Camp Oliver (RM 388.6)	Black Warrior Intensive Survey	1990	68f	33.53722	-87.22650
0112	010	Jefferson	BW04	Bankhead Lake	Bankhead Lake at bridge near Camp Oliver (RM 388.6)	Clean Water Strategy	1996	68f	33.53722	-87.22650
0112	020	Jefferson	OPOJ-1	Opossum Cr	Opossum Cr at Rail Road Crossing just prior to confluence with Valley Cr	303(d) Monitoring Program	2002	67f	33.41945	-86.97224
0112	020	Jefferson	OPSM1	Opossum Cr	Opossum Cr nr pumping station and spillway ds of CSX Rail Road Crossing	Fish Tissue Monitoring	2002	67f	33.45400	-86.96219
0112	020	Jefferson	OPSM2	Opossum Cr	Opossum Cr us of Koppers bridge	Fish Tissue Monitoring	2002	67f	33.44411	-86.96219
0112	020	Jefferson	OPOJ-2	Opossum Cr	Opossum Cr at Woodward Road	303(d) Monitoring Program	2002	67f	33.44368	-86.96272
0112	020	Jefferson	BW01	Opossum Cr	Opossum Cr at Woodward Road	Clean Water Strategy	1996	67f	33.43333	-87.95000
0112	020	Jefferson	OPOJ-3	Opossum Cr	Opossum Cr just above USX weir at pumping station	303(d) Monitoring Program	2002	67f	33.44972	-86.95869
0112	020	Jefferson	OPOJ-4	Opossum Cr	Opossum Cr just us of USX discharge	303(d) Monitoring Program	2002	67f	33.45429	-86.95491

Appendix E. Stations assessed in the Black Warrior and Cahaba River Basins since 1992.

CU	Sub	County	Station	Stream	Station Description	Program	Most recent data	Eco-region	Lat Dec	Lon Dec
0112	020	Jefferson	OPOJ-5	Opossum Cr	Opossum Cr above old cooling ponds	303(d) Monitoring Program	2002	67f	33.47609	-86.93105
0112	020	Jefferson	VAL2	Valley Cr.	Valley Cr. ds of confluence with Opossum Cr.	Fish Tissue Monitoring	2002	67f	33.42200	-86.97011
0112	020	Jefferson	VAL3	Valley Cr.	Valley Cr. us of confluence with Opossum Cr.	Fish Tissue Monitoring	2002	67f	33.41889	-86.96400
0112	020	Jefferson	BW3U6-38	Valley Cr.	N 33.45161 W 86.92030	ALAMAP Monitoring Program	2002	67f	33.45161	-86.92030
0112	020	Jefferson	VC-5	Valley Cr.	Valley Cr. us of 18th Avenue Bridge	303(d) Monitoring Program	2002	67f	33.42003	-86.96483
0112	030	Jefferson	LCK-1	Lick Cr	Lick Cr. at 15th Street Rd.; approx. 3.5 miles us of confluence with Valley Cr.	303(d) Monitoring Program	1999	68f	33.43670	-87.05100
0112	030	Jefferson	UTML-1	Valley Cr, UT to	Unnamed tributary to Valley Cr. at Lakeview Estates Drive at NE end of Martin lake.; approx 1.3 miles us of confluence with Valley Cr.	303(d) Monitoring Program	1999	68f	33.40910	-87.02690
0112	030	Jefferson	GSA-1	Mud Cr	Mud Cr. at CR 54 (Lock 17 Rd)	GSA Locust Fork and Valley Cr. Fish Surveys	2001	68f	33.44251	-87.19544
0112	030	Jefferson	MUDJ-1	Mud Cr	Mud Cr. at CR 54 (Lock 17 Rd)	303(d) Monitoring Program	2002	68f	33.44251	-87.19544
0112	030	Jefferson	M1	Mud Cr	Mud Cr. at CR 54 (Lock 17 Rd)	Ambient Monitoring Program		68f	33.44251	-87.19544
0112	030	Jefferson	MUDJ-2	Mud Cr	Mud Cr. at Groundhog Road	303(d) Monitoring Program	2002	68f	33.40233	-87.16321
0112	030	Jefferson	MUDJ-2	Mud Cr	Mud Cr. at Groundhog Road	303(d) Monitoring Program	2003	68f	33.40233	-87.16321
0112	030	Jefferson	MUDJ-2	Mud Cr	Mud Cr. at Groundhog Road	Periphyton Bioassessment Pilot Project	2002	68f	33.40233	-87.16321
0112	030	Jefferson	VA1	Valley Cr.	Valley Cr. at Jefferson CR 36 (CM 32.3)	303(d) Monitoring Program	2002	68f	33.38694	-87.06783
0112	030	Jefferson	VA1	Valley Cr.	Valley Cr. at Jefferson CR 36 (CM 32.3)	Ambient Montoring Program	2002	68f	33.38694	-87.06783
0112	030	Jefferson	BW03	Valley Cr.	Valley Cr. at Jefferson CR 36 (CM 32.3)	Clean Water Strategy	1996	68f	33.38694	-87.06783
0112	030	Jefferson	BW14?	Valley Cr.	Valley Cr. at Jefferson CR 36 (CM 32.3)	Clean Water Strategy	1996	68f	33.38694	-87.06783
0112	030	Jefferson	VA1	Valley Cr.	Valley Cr. at Jefferson CR 36 (CM 32.3)	Periphyton Bioassessment Pilot Project	2002	68f	33.38694	-87.06783
0112	030	Jefferson	USGSVAL-2	Valley Cr.	Valley Cr. at Cleburn Ave at Powderly, AL	USGS Assessment of Village and Valley Cr.s	2002	67f	33.46889	-86.88833
0112	030	Jefferson	USGSVAL-2	Valley Cr.	Valley Cr. at Cleburn Ave at Powderly, AL	USGS Landuse Gradient Study	1999	67f	33.46889	-86.88833
0112	030	Jefferson	02461200	Valley Cr.	Valley Cr. at Cleburn Ave at Powderly, AL	USGS Sampling Station	2000	67f	33.46889	-86.88833
0112	030	Jefferson	BW8U4-50	Mud Cr	Mud Cr. approx. 1.0 mile us of confluence with Valley Cr.	ALAMAP Monitoring Program	2000	68f	33.48440	-87.18470
0112	030	Jefferson	VACUA01	Valley Cr.	Jefferson CR near Oak Grove	99-00 University Tributary Nutrient Loading Study	1999	68f	33.44722	-87.12222
0112	030	Jefferson	USGSVAL-1	Valley Cr.	Valley Cr. at 5th Avenue and 7th Street	USGS Assessment of Village and Valley Cr.s	2002	67f	33.43528	-86.93750

Appendix E. Stations assessed in the Black Warrior and Cahaba River Basins since 1992.

CU	Sub	County	Station	Stream	Station Description	Program	Most recent data	Eco-region	Lat Dec	Lon Dec
0112	030	Jefferson	02461120	Valley Cr.	Valley Cr. at 5th Avenue and 7th Street	USGS Sampling Station	2002	67f	33.43528	-86.93750
0112	030	Jefferson	USGSVAL-3	Valley Cr.	Valley Cr. at US Hwy 11	USGS Assessment of Village and Valley Cr.s	2002	67f	33.43528	-86.93750
0112	030	Jefferson	02461300	Valley Cr.	Valley Cr. at US Hwy 11	USGS Sampling Station	2000	67f	33.43528	-86.93750
0112	030	Jefferson	BW02	Valley Cr.	Center of bridge on 18th Ave just west of US Pipe.	Clean Water Strategy	1996	67f	33.42003	-86.96483
0112	030	Jefferson	GSA-2	Valley Cr.	Valley Cr. at CR 23	GSA Locust Fork and Valley Cr. Fish Surveys	2002	68f	33.49475	-87.15653
0112	030	Jefferson	GSA-3	Valley Cr.	Valley Cr. at CR 21	GSA Locust Fork and Valley Cr. Fish Surveys	2002	68f	33.64130	-86.92771
0112	030	Jefferson	BW12	Rock Lakes	Rock Lakes (trib to Blue Cr).	Clean Water Strategy	1996	68f	33.33361	-87.07080
0112	030	Jefferson	BW13	Blue Cr.	Blue Cr. at abandoned CR near Black Diamond.	Clean Water Strategy	1996	68f	33.34583	-87.09280
0112	040	Jefferson	Bankhead2	Black Warrior R	Deepest point, main R. channel, mid-reservoir. Approx. 0.5 mi. us of Little Shoal Cr. confluence.	Reservoir Intensive Monitoring Program	2002	68f	33.50949	-87.26372
0112	040	Jefferson	VAL1	Valley Cr.	Deepest point, main Cr. channel, Valley Cr. embayment. Approx. 1 mile us of confluence with Warrior R.	Fish Tissue Monitoring	2002	68f	33.53583	-87.22981
0112	040	Jefferson	Bankhead6	Valley Cr.	Deepest point, main Cr. channel, Valley Cr. embayment. Approx. 1 mile us of confluence with Warrior R.	Reservoir Tributary Embayment Monitoring Program	2002	68f	33.52312	-87.22987
0112	050	Tuscaloosa	LYCT-1	Little Yellow Cr	Little Yellow Cr at Ala. Hwy 70	303(d) Monitoring Program	2002	68f	33.56769	-87.40925
0112	050	Tuscaloosa	BYC-1	Big Yellow Cr	Big Yellow Cr at Ala. Hwy 69	303(d) Monitoring Program	1999	68f	33.57210	-87.40290
0112	050	Tuscaloosa	BYET-65a	Big Yellow Cr	Big Yellow Cr at Ala. Hwy 69	303(d) Monitoring Program	2002	68f	33.57190	-87.40277
0112	050	Tuscaloosa	BYET-65a	Big Yellow Cr	Big Yellow Cr at Ala. Hwy 69	NPS Screening Program	1997	68f	33.57190	-87.40277
0112	050	Tuscaloosa	LYC-1	Little Yellow Cr.	Little Yellow Cr. at AL Hwy 69	303(d) Monitoring Program	1999	68f	33.56672	-87.41025
0112	050	Tuscaloosa	LYET-64a	Little Yellow Cr.	Little Yellow Cr. at AL Hwy 69	NPS Screening Program	1997	68f	33.56672	-87.41025
0112	060	Tuscaloosa	CFC-1	Clifty Cr	Clifty Cr. us of backwater from Bankhead Lake	303(d) Monitoring Program	1999	68f	33.52920	-87.35880
0112	060	Tuscaloosa	BAN1	Black Warrior R	Deepest point, main R. channel, dam forebay .	Fish Tissue Monitoring	2002	68f	33.46417	-87.35111
0112	060	Tuscaloosa	Bankhead1	Black Warrior R	Deepest point, main R. channel, dam forebay .	Reservoir Intensive Monitoring Program	2002	68f	33.46637	-87.34811
0112	060	Jefferson	BAN6	Black Warrior R	Black Warrior R./Bankhead Reservoir in vicinity of Valley Cr.	Fish Tissue Monitoring	1997	68f	33.54469	-87.23022
0112	060	Tuscaloosa	BYEL1	Big Yellow Cr.	Big Yellow Cr. embayment, approximately 1 mi us of confluence with Warrior R.	Fish Tissue Monitoring	1998	68f	33.48760	-87.34430
0112	060	Tuscaloosa	Bankhead7	Big Yellow Cr.	Big Yellow Cr. embayment, approximately 1 mi us of confluence with Warrior R.	Reservoir Tributary Embayment Monitoring Program	2002	68f	33.50000	-87.38056
0112		Tuscaloosa	HCRT-3t	Kepple Cr	Kepple Cr. at unnamed Tuscaloosa CR approximately 100 yds us of confluence with Hurricane Cr.	Hurricane Cr. Intensive Survey	1996			

Appendix E. Stations assessed in the Black Warrior and Cahaba River Basins since 1992.

CU	Sub	County	Station	Stream	Station Description	Program	Most recent data	Eco-region	Lat Dec	Lon Dec
0112	060	Jefferson	BWR-3a	Black Warrior R	Bankhead Lake approximately 7 mi ds of BWR-3 and approximately 1.8 mi S of Providence	Black Warrior Intensive Survey	1990	68f	33.47951	-87.28891
0112	070	Tuscaloosa	JKC-1	Jock Cr	Jock Cr. at mouth at unnamed road.	303(d) Monitoring Program	1999	68f	33.45310	-87.42820
0112	070	Tuscaloosa	LBC-1	Little Bear Cr	Little Bear Cr. at mouth 1/4 mile east of unnamed road.	303(d) Monitoring Program	1999	68f	33.45490	-87.42110
0112	070	Tuscaloosa	BW22	Blue Cr.	Blue Cr. at Tuscaloosa CR 38	Clean Water Strategy	1996	68f	33.48389	-87.47139
0112	070	Tuscaloosa	BLUT-49a	Blue Cr.	Blue Cr. at Tuscaloosa CR 38	NPS Screening Program	1997	68f	33.48389	-87.47139
0112	070	Tuscaloosa	BW02U3-43	McDuff Spring Br	McDuff Spring Branch ds of AL Hwy 69.	ALAMAP Monitoring Program	1999	68f	33.52770	-87.46240
0112	070	Tuscaloosa	BW25	McDuff Spring Br	McDuff Spring Branch ds of AL Hwy 69.	Clean Water Strategy	1996	68f	33.52770	-87.46240
0112	070	Tuscaloosa	BW4U5-50	Pewter Cr	Pewter Cr. approx. 2 miles us of confluence with Blue Cr..	ALAMAP Monitoring Program	2001	68f	33.51126	-87.43808
0112	070	Tuscaloosa	BLCUA01	Blue Cr.	Blue Cr. at unpaved Tuscaloosa CR (Old Watermelon Rd.)--only rd. to cross Blue Cr. between its headwaters and mouth	99-00 University Tributary Nutrient Loading Study	1999	68f	33.45000	-87.41250
0112	070	Tuscaloosa	BW21	Blue Cr.	Blue Cr. at unpaved Tuscaloosa CR (Old Watermelon Rd.)--only rd. to cross Blue Cr. between its headwaters and mouth	Clean Water Strategy	1996	68f	33.45000	-87.41250
0112	070	TUSCALOOSA	BLUT-49b	Blue Cr.	Blue Cr. at unpaved Tuscaloosa CR (Old Watermelon Rd.)--only rd. to cross Blue Cr. between its headwaters and mouth	NPS Screening Program	1997	68f	33.45083	-87.41222
0112	070	Tuscaloosa	BWR-4	Black Warrior R	Deepest point, main R. channel, mid-reservoir. Immed. us of Pegues Cr., Black Warrior confluence.	Black Warrior Intensive Survey	1990	68f	33.35749	-87.41455
0112	070	Tuscaloosa	Holt2	Black Warrior R	Deepest point, main R. channel, mid-reservoir. Immed. us of Pegues Cr., Black Warrior confluence.	Reservoir Intensive Monitoring Program	2002	68f	33.35749	-87.41455
0112	070	Tuscaloosa	BW23	Blue Cr.	Blue Cr. at AL Hwy 69.	Clean Water Strategy	1996	68f	33.52167	-87.48472
0112	070	Tuscaloosa	BW24	Blue Cr.	Blue Cr. at unnamed Tuscaloosa CR near Sandtown Cemetary.	Clean Water Strategy	1996	68f	33.56694	-87.48110
0112	070	Tuscaloosa	Holt3	Black Warrior R.	Black Warrior R./Holt Reservoir at deepest point, main R. channel, approximately 0.5 mi ds of confluence with Big Indian Cr.	Reservoir Intensive Monitoring Program	2002	68f	33.44900	-87.36570
0112	070	Tuscaloosa	BWR-9	Blue Cr.	Blue Cr. approximately 1 mi us of confluence with Black Warrior R.	Black Warrior Intensive Survey	1990	68f	33.44159	-87.38358
0112	070	Tuscaloosa	BWR-3b	Black Warrior R	Black Warrior R. just ds of Blue Cr., approximately 2.5 mi ds of Bankhead dam	Black Warrior Intensive Survey	1990	68f	33.42838	-87.38540
0112	080	Tuscaloosa	PDC-1	Prudes Cr	Prudes Cr. 1/4 mile us of mouth at unnamed road.	303(d) Monitoring Program	1999	68f	33.38950	-87.29420
0112	080	Tuscaloosa	PGC-1	Pegues Cr	Pegues Cr. off the end of unnamed road in T19S, R8W, S29, SW1/4.; approx. 2.1 miles us of confluence with Black Warrior R..	303(d) Monitoring Program	1999	68f	33.35900	-87.39320
0112	080	Tuscaloosa	DNC-1	Daniel Cr	Daniel Cr. adjacent to Camp Cherry Austin Rd.; T20S, R8W, S22, NW1/4.; approx. 3.0 miles us of confluence with Black Warrior R..	303(d) Monitoring Program	1999	68f	33.29500	-87.36440
0112	080	Tuscaloosa	HNC-1	Hanna Mill Cr	Hanna Mill Cr. at Hanna Cr. Road.; approx. 0.9 mile us of confluence with Davis Cr.	303(d) Monitoring Program	1999	68f	33.32444	-87.25556
0112	080	Tuscaloosa	BW26	Hanna Mill Cr	Hanna Mill Cr. at Hanna Cr. Road.; approx. 0.9 mile us of confluence with Davis Cr.	Clean Water Strategy	1996	68f	33.32460	-87.25590
0112	080	Tuscaloosa	BW27	Hanna Mill Cr	Hanna Mill Cr. at Hanna Cr. Road.; approx. 0.9 mile us of confluence with Davis Cr.	Clean Water Strategy	1996	68f	33.32460	-87.25590

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CU	Sub	County	Station	Stream	Station Description	Program	Most recent data	Eco-region	Lat Dec	Lon Dec
0112	080	Tuscaloosa	BW19	Davis Cr	nr Friendship Church, Tuscaloosa Co	Clean Water Strategy	1996	68f	33.33194	-87.23833
0112	080	Tuscaloosa	DAVT-27c	Davis Cr	nr Friendship Church, Tuscaloosa Co	NPS Screening Program	2002	68f	33.33194	-87.23833
0112	080	Tuscaloosa	DAVT-27b	Davis Cr	at Alabama Hwy 216 nr Abernant	NPS Screening Program	1997	68f	33.28718	-87.19810
0112	080	Tuscaloosa	DACUA-1	Davis Cr	Tuscaloosa CR 59	99-00 University Tributary Nutrient Loading Study	1999	68f	33.38833	-87.29722
0112	080	Tuscaloosa	BW20	Davis Cr	Tuscaloosa CR 59	Clean Water Strategy	1996	68f	33.38806	-87.29667
0112	080	Tuscaloosa	HOL2	Holt Reservoir	Holt Reservoir us of Old Lock 15 Public Access Area at COES RM 360	Fish Tissue Monitoring	1992	68f	33.39106	-87.40122
0112	080	Tuscaloosa	HOL3	Holt Reservoir	Holt Reservoir/ Black Warrior R. at RM 353	Fish Tissue Monitoring	1997	68f	33.30686	-87.39533
0112	080	Tuscaloosa	BW17	Davis Cr.	Davis Cr. headwaters at unnamed CR near Woodland Lake	Clean Water Strategy	1996	68f	33.25528	-87.16083
0112	080	Tuscaloosa	BW18	Davis Cr.	Davis Cr. us of CR 99 bridge, near Davis Cr Church	Clean Water Strategy	1996	68f	33.30889	-87.21861
0112	090	Tuscaloosa	BEAT-67b	Bear Cr	Bear Cr. at unnamed Tuscaloosa CR	NPS Screening Program	1997	68f	33.58333	-87.58333
0112	090	Fayette	CEDT-62a	Cedar Cr	Cedar Cr. at Tuscaloosa CR 63 nr Berry	NPS Screening Program	1997	68f	33.61247	-87.60519
0112	090	Fayette	CLEF-29a	Clear Cr	Clear Cr. at Alabama 13 nr Berry	NPS Screening Program	1997	65i	33.67806	-87.66000
0112	090	Tuscaloosa	TYRT-61a	Tyro Cr	Tyro Cr. at unnamed Tuscaloosa CR nr Sterling	NPS Screening Program	1997	68f	33.56606	-87.57614
0112	090	Tuscaloosa	LCDT-16	Little Cedar Cr.	Little Cedar Cr. at Dellert Farm Rd. of US Hwy 43	NPS Screening Program	2002	68f?	33.57829	-87.62284
0112	090	Tuscaloosa	BW01A3-27	North R	North R. at Wittson Bridge near Tuscaloosa CR 55.	ALAMAP Monitoring Program	1999	67h	33.54540	-86.60170
0112	090	Fayette	BW4U4-39	North R	North R. at Fayette and Tuscaloosa County Line.	ALAMAP Monitoring Program	2000	68f	33.60810	-87.63230
0112	090	Fayette	NRRT-2	North R	North R at CR 63 "Goorgas Rd"	303(d) Monitoring Program	2002	68f	33.56193	-87.63026
0112	090	Fayette	NORF-28c	North R	North R at CR 63 "Goorgas Rd"	NPS Screening Program	1997	68f	33.56193	-87.63026
0112	090	Fayette	NORF-28c	North R	North R at CR 63 "Goorgas Rd"	NPS Screening Program	2002	68f	33.56193	-87.63026
0112	090	Fayette	NORF-28c	North R	North R at CR 63 "Goorgas Rd"	Periphyton Bioassessment Pilot Project	2002	68f	33.56193	-87.63026
0112	100	Fayette	NRRF-3	North R	North R at State Hwy 18	303(d) Monitoring Program	2002	68f	33.63101	-87.65463
0112	100	Tuscaloosa	NRRT-1	North R	North R. at CR 38	303(d) Monitoring Program	2002	65i	33.47980	-87.59681
0112	100	Tuscaloosa	BINT-31f	Binion Cr	Binion Cr. at unnamed Tuscaloosa CR	NPS Screening Program	2002	65i	33.42492	-87.64236
0112	100	Tuscaloosa	BEAT-67a	Bear Cr	Bear Cr. at "Oregonia Rd" Crossing SE of Sterling, AL	NPS Screening Program	1997	68f	33.54245	-87.56167

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CU	Sub	County	Station	Stream	Station Description	Program	Most recent data	Eco-region	Lat Dec	Lon Dec
0112	100	Tuscaloosa	BERT-4	Bear Cr	Bear Cr. at "Oregonia Rd" Crossing SE of Sterling, AL	Periphyton Bioassessment Pilot Project	2002	68f	33.54245	-87.56167
0112	100	Tuscaloosa	BERT-4	Bear Cr	Bear Cr. at "Oregonia Rd" Crossing SE of Sterling, AL	Reference Reach Program	2003	68f	33.54245	-87.56167
0112	100	Tuscaloosa	BERT-4	Bear Cr	Bear Cr. at "Oregonia Rd" Crossing SE of Sterling, AL	Reference Reach Program	2002	68f	33.54245	-87.56167
0112	100	Tuscaloosa	BINT-31d	Barbee Cr	Barbee Cr. at unnamed Tuscaloosa CR	NPS Screening Program	1997	65i	33.44300	-87.66382
0112	100	Tuscaloosa	BINT-31e	Binion Cr	Binion Cr. at unnamed Tuscaloosa CR	NPS Screening Program	1997	65i	33.43697	-87.65639
0112	100	Tuscaloosa	CART-30a	Carroll Cr	Carroll Cr. at Alabama Hwy 13 nr Northport	NPS Screening Program	1997	65i	33.29374	-87.59854
0112	100	Tuscaloosa	CRIT-32a	Cripple Cr	Cripple Cr. at Tuscaloosa CR 38	NPS Screening Program	1997	65i	87.56229	33.49246
0112	100	Tuscaloosa	TUS1	Black Warrior R	Black Warrior R. at deepest point, main R. channel, dam forebay .	Fish Tissue Monitoring	2002	65i	33.37472	-87.13983
0112	100	Tuscaloosa	Tuscaloosa1	Black Warrior R	Black Warrior R. at deepest point, main R. channel, dam forebay .	Reservoir Intensive Monitoring Program	2002	65i	33.37472	-87.13983
0112	100	Tuscaloosa	TUS2	Black Warrior R	Black Warrior R. at deepest point, main R. channel, immed. ds of Binion Cr. confluence.	Fish Tissue Monitoring	1994	65i	33.37468	-87.59459
0112	100	Tuscaloosa	Tuscaloosa2	Black Warrior R	Black Warrior R. at deepest point, main R. channel, immed. ds of Binion Cr. confluence.	Reservoir Intensive Monitoring Program	2002	65i	33.37468	-87.59459
0112	100	Tuscaloosa	Tuscaloosa3	Black Warrior R	Black Warrior R. at deepest point, main R. channel, approx. one mile ds of AL Hwy 69 bridge.	Reservoir Intensive Monitoring Program	2002	65i	33.34054	-87.56042
0112	100	Tuscaloosa	BW5U6-45	Binion Cr	Binion Cr. at N 33.50003 W 87.70524	ALAMAP Monitoring Program	2002	65i	33.50003	-87.70524
0112	100	Tuscaloosa	BW6U6-54	Barbee Cr	Barbee Cr. at N 33.50040 W 87.64724	ALAMAP Monitoring Program	2002	65i	33.50040	-87.64724
0112	100	Marengo	Tuscaloosa4	North R.	North R. immediately us of Bull Slough crossing, deepest point, main channel	Reservoir Intensive Monitoring Program	2002	65i	33.39790	-87.57950
0112	060	Tuscaloosa	NOR1	North R.	North R. us Of Lake Tuscaloosa	Fish Tissue Monitoring	2002	65i	33.39780	-87.58220
0112	100	Tuscaloosa	Tuscaloosa5	Binion Cr.	Binion Cr., deepest point, main channel, immediately us of Hwy 43	Reservoir Tributary Embayment Monitoring Program	2002	65i	33.39720	-87.61010
0112	110	Tuscaloosa	YELH-33a	Yellow Cr	Yellow Cr. at unnamed Tuscaloosa CR nr CR 89	NPS Screening Program	1997	68f	33.33806	-87.45333
0112	110	Tuscaloosa	BW2U4-29	Yellow Cr	Yellow Cr. approx. 1/4 mile west of unnamed dirt road. T20S, R9W, S34.	ALAMAP Monitoring Program	2000	68f	33.26390	-87.46210
0112	110	Tuscaloosa	NIC1	Lake Nichol	Lake Nichol/Yellow Cr., lake wide sample	Fish Tissue Monitoring	1995	68f	33.29058	-87.48328
0112	110	Tuscaloosa	OLI2	Black Warrior R.	Black Warrior R. at COE RM 344.0-345.0; lat lon calculated at RM 345.0	Fish Tissue Monitoring	1992	65i	33.25131	-87.48328
0112	110	Tuscaloosa	Oliver3	Oliver Reservoir	Oliver Reservoir at deepest point, main channel, approximately 0.5 mi ds of confluence with Hurricane Cr.	Reservoir Intensive Monitoring Program	2002	68f	33.25320	-87.46100
0112	120	Tuscaloosa	BWRUA01	Black Warrior R	Black Warrior R. at US Hwy 82 at Oliver Lock & Dam (RM347.1)	99-00 University Tributary Nutrient Loading Study	1999	65i	33.21139	-87.57834
0112	120	Tuscaloosa	W-1	Black Warrior R	Black Warrior R. at US Hwy 82 at Oliver Lock & Dam (RM347.1)	Ambient Montoring Program	1996	65i	33.21139	-87.57834

Appendix E. Stations assessed in the Black Warrior and Cahaba River Basins since 1992.

CU	Sub	County	Station	Stream	Station Description	Program	Most recent data	Eco-region	Lat Dec	Lon Dec
0112	120	Tuscaloosa	NFHT-1	North Fk Hurricane Cr	North Fork Hurricane Cr. at at private bridge located at far side of Mobile Home Park nr Tuscaloosa CR 59	Hurricane Cr. Intensive Survey	1996	68f	33.22328	-87.30665
0112	120	Tuscaloosa	NFHT-1	North Fk Hurricane Cr	North Fork Hurricane Cr. at at private bridge located at far side of Mobile Home Park nr Tuscaloosa CR 59	NPS Screening Program	1997	68f	33.22328	-87.30665
0112	120	Tuscaloosa	LHCT-2a	Little Hurricane Cr.	Little Hurricane Cr. east of Tuscaloosa at unnamed ford on unimproved rd; access from US Hwy 11 near Cedar Cove, AL	Hurricane Cr. Intensive Survey	1996	68f	33.17839	-87.30900
0112	120	Tuscaloosa	LHCT-2b	Little Hurricane Cr	Little Hurricane Cr. east of Tuscaloosa at unimproved rd. off of Tuscaloosa CR 59	Hurricane Cr. Intensive Survey	1996	68f	33.18211	-87.31147
0112	120	Tuscaloosa	HCRT-4	Hurricane Cr	Hurricane Cr. east of Tuscaloosa at AL Hwy 216	Hurricane Cr. Intensive Survey	1996	68f	33.21085	-87.44780
0112	120	Tuscaloosa	HCRT-2a	Hurricane Cr	Hurricane Cr. at east of Tuscaloosa at unnamed CR off of Tuscaloosa CR 59	Hurricane Cr. Intensive Survey	1996	68f	33.21350	-87.32009
0112	120	Tuscaloosa	HCRT-1	Hurricane Cr	Hurricane Cr. east of Tuscaloosa at unnamed CR bridge	Hurricane Cr. Intensive Survey	1996	68f	33.21028	-87.29400
0112	120	Tuscaloosa	HCRT-2	Hurricane Cr	Hurricane Cr. east of Tuscaloosa at CR 59	Hurricane Cr. Intensive Survey	1996	68f	33.22107	-87.31514
0112	120	Tuscaloosa	HCRT-3	Hurricane Cr	Hurricane Cr. east of Tuscaloosa at the end of Chigger Ridge Rd. behind coalbed methane well pad	Hurricane Cr. Intensive Survey	1996	68f	33.20890	-87.35874
0112	120	Tuscaloosa	BW03U3-53	Kepple Cr, UT to	Tributary to Kepple Cr. near Lake Wildwood.	ALAMAP Monitoring Program	1999	68f	33.18800	-87.36610
0112	120	Tuscaloosa	BWRUA02	Black Warrior R	Holt Dam tailrace	99-00 University Tributary Nutrient Loading Study	1999	68f	33.25306	-87.44917
0112	120	Tuscaloosa	HUCUA01	Hurricane Cr	Tuscaloosa CR 88 approximately 2 mi. west of Peterson	99-00 University Tributary Nutrient Loading Study	1999	68f	33.22861	-87.43889
0112	120	Tuscaloosa	BWR-5	Black Warrior R	Forebay Area, ds Of Deerlick Cr. Public Access Area	Black Warrior Intensive Survey	1990	68f	33.25456	-87.44522
0112	120	Tuscaloosa	HOL1	Black Warrior R	Forebay Area, ds Of Deerlick Cr. Public Access Area	Fish Tissue Monitoring	2002	68f	33.25418	-87.44429
0112	120	Tuscaloosa	Holt1	Black Warrior R	Forebay Area, ds Of Deerlick Cr. Public Access Area	Reservoir Intensive Monitoring Program	2002	68f	33.25456	-87.44522
0112	120	Tuscaloosa	OLI1	Black Warrior R	Deepest point, main R. channel, dam forebay.	Fish Tissue Monitoring	2002	65i	33.21139	-87.58344
0112	120	Tuscaloosa	Oliver1	Black Warrior R	Deepest point, main R. channel, dam forebay.	Reservoir Intensive Monitoring Program	2002	65i	33.21458	-87.57175
0112	120	Tuscaloosa	Oliver2	Black Warrior R	Deepest point, main R. channel, mid-reservoir. Immed. ds of North R., Black Warrior confluence.	Reservoir Intensive Monitoring Program	2002	65i	33.24257	-87.50428
0112	120	Tuscaloosa	HUR1	Hurricane Cr.	Hurricane Cr. us of confluence with the Black Warrior R.	Fish Tissue Monitoring	1998	68f	33.25258	-87.46083
0112	120	Tuscaloosa	OLI3	Black Warrior R.	Oliver Reservoir (BWR) near Tuscaloosa	Fish Tissue Monitoring	1989	65i	33.22528	-87.52278
0112	120	Tuscaloosa	LHCT-2	Little Hurricane Cr.	Little Hurricane Cr. east of Tuscaloosa at US Hwy 11	Hurricane Cr. Intensive Survey	1996	68f	33.17712	-87.30867
0112	130	Jefferson	USGSFMJ-2	Fivemile Cr.	Fivemile Cr. at Freeman Ave. nr McCalla, Alabama	USGS Landuse Gradient Study	1999	67f	33.36361	-87.01917
0112	130	Jefferson	02461670	Fivemile Cr.	Fivemile Cr. at Freeman Ave. nr McCalla, Alabama	USGS Sampling Station	2000	67f	33.36361	-87.01917
0112	140	Jefferson	BW03U2-48	Opossum Cr	Opossum Cr. approx. 5.8 miles us of confluence with Valley Cr..	ALAMAP Monitoring Program	1998	67f	33.48160	-86.92420

Appendix E. Stations assessed in the Black Warrior and Cahaba River Basins since 1992.

CU	Sub	County	Station	Stream	Station Description	Program	Most recent data	Eco-region	Lat Dec	Lon Dec
0112	120	Tuscaloosa	H1	Hurricane Cr	Hurricane Cr. at CR 88 (old CR 116) near Peterson (CM 6.9)	Ambient Montoring Program	1974	68f	33.22983	-87.46181
0112	120	Tuscaloosa	H1	Hurricane Cr	Hurricane Cr. at CR 88 (old CR 116) near Peterson (CM 6.9)	Hurricane Cr. Intensive Survey	1996	68f	33.22983	-87.46181
0113	010	Tuscaloosa	BIGT-34a	Big Cr	Big Cr. at unnamed Tuscaloosa CR nr Coker	NPS Screening Program	1997	65p	33.20639	-87.66667
0113	010	Tuscaloosa	LUR1	Lake Lurleen	Lake Lurleen, Lake Lurleen State Park, lake wide sample	Fish Tissue Monitoring	1995	65i	33.28864	-87.68389
0113	020	Tuscaloosa	BW5U4-40	Cypress Cr	Cypress Cr. approx. 1/8 mile south of Skyland Blvd. T22S, R10W, S1.	ALAMAP Monitoring Program	2000	65i	33.16620	-87.52800
0113	020	Tuscaloosa	BW6A4-41	Grant Cr	Grant Cr. approx. 1/8 mile us of unnamed CR	ALAMAP Monitoring Program	2000	65i	33.09340	-87.70830
0113	020	Tuscaloosa	Warrior4	Warrior Reservoir	Warrior Reservoir approximately 3.5 mi us of I-59	Reservoir Intensive Monitoring Program	2002	65p	33.13380	-87.68260
0113	020	Tuscaloosa	BWR-6	Black Warrior R.	Black Warrior R. at approximately RM 311.5, ds of Little Sandy Cr.	Black Warrior Intensive Survey	1990	65p	33.07894	-87.58586
0113	020	Tuscaloosa	BWR1a	Black Warrior R.	Black Warrior R. ds of Tuscaloosa at RM 334.4	Fish Tissue Monitoring			33.20000	-87.64670
0113	030	Tuscaloosa	BSAT-59d	Big Sandy Cr	Big Sandy Cr. ds of the confluence with Bear Cr. at unnamed Tuscaloosa CR nr Duncan-ville	NPS Screening Program	1997	65i	33.05468	-87.44967
0113	030	Tuscaloosa	BSAT-59a	Bear Cr	Bear Cr. at unnamed Tuscaloosa Co. Rd nr AL Hwy 82	NPS Screening Program	1997	65i	33.04253	-87.40722
0113	030	Tuscaloosa	BSAT-59b	Big Sandy Cr	Big Sandy Cr. us of confluence with Lye Branch at unnamed Tuscaloosa CR	NPS Screening Program	1997	65i	33.08161	-87.35147
0113	030	Tuscaloosa	BSAT-59b	Big Sandy Cr	Big Sandy Cr. us of confluence with Lye Branch at unnamed Tuscaloosa CR	NPS Screening Program	2002	65i	33.08161	-87.35147
0113	030	Tuscaloosa	BSAT-59c	Lye Br	Lye Br. at unnamed Tuscaloosa Co. Rd	NPS Screening Program	1997	65i	33.08550	-87.39847
0113	030	Tuscaloosa	SSAT-58a	South Sandy Cr	South Sandy Cr. at unnamed Tuscaloosa CR	NPS Screening Program	1997	65i	33.04167	-87.50000
0113	030	Bibb	SSB-1	South Sandy Cr	South Sandy Cr. at Talladega National Forest Rd. 731.	Reference Reach Program	2002	65i	32.96994	-87.39775
0113	030	Tuscaloosa	BW03U1	Butler Br	Butler Branch approx. 0.5 mile us of confluence with Big Sandy Cr.	ALAMAP Monitoring Program	1997	65i	33.10730	-87.33400
0113	030	Tuscaloosa	BSCUA01	Big Sandy Cr	Big Sandy Cr. at AL Hwy 69	99-00 University Tributary Nutrient Loading Study	1999	65p	33.03500	-87.58750
0113	030	Tuscaloosa	Warrior5	Big Sandy Cr.	Big Sandy Cr., in main channel, approximately 0.5 mi us of confluence with Black Warrior R.	Reservoir Tributary Embayment Monitoring Program	2002	65p	33.04470	-87.62310
0113	030	Tuscaloosa	BWR-10	Big Sandy Cr.	Big Sandy Cr., in main channel, approximately 1.0 mi us of confluence with Black Warrior R.	Black Warrior Intensive Survey	1990	65p	33.04258	-87.62011
0113	040	Tuscaloosa	BW2U5-34	Black Warrior R, UT to	Tributary to Black Warrior R. approx. 1 mile us of confluence with Black Warrior R..	ALAMAP Monitoring Program	2001	65p	33.00868	-87.64974
0113	040	Hale	Warrior3	Black Warrior R	Black Warrior R. at deepest point, main R. channel, at Lock 9 Public Use Area.	Reservoir Intensive Monitoring Program	2002	65p	32.99508	-87.70566
0113	050	Greene	BUCG-37a	Buck Cr.	Buck Cr. at Greene CR 86	NPS Screening Program	1997	65i	33.00303	-87.75361
0113	050	Tuscaloosa	GRAT-61a	Grant Cr.	Grant Cr. at Tuscaloosa CR 10, us of US Hwy 43	NPS Screening Program	1997	65i	33.09328	-87.70847

Appendix E. Stations assessed in the Black Warrior and Cahaba River Basins since 1992.

CU	Sub	County	Station	Stream	Station Description	Program	Most recent data	Eco-region	Lat Dec	Lon Dec
0113	050	Greene	LBUG-36a	Little Buck Cr	L. Buck Cr. at Greene CR 220	NPS Screening Program	1997	65p	32.99289	-87.76303
0113	050	Tuscaloosa	BWR-7	Black Warrior R	Black Warrior R. at approximately RM 307.3, ds of Big Sandy Cr.	Black Warrior Intensive Survey	1990	65p	33.04439	-87.62708
0113	050	Tuscaloosa	BWR-8	Black Warrior R	Black Warrior R. at Moundville, approximately RM 302.7	Black Warrior Intensive Survey	1990	65p	33.01057	-87.63768
0113	050	Tuscaloosa	BW3U4-37	Grant Cr	Grant Cr. approx. 1/8 mile north of unnamed dirt road.	ALAMAP Monitoring Program	2000	65p	33.02360	-87.69290
0113	050	Tuscaloosa	WAR3	Warrior Lake	Black Warrior R./Warrior Lake in vicinity of Moundville	Fish Tissue Monitoring	1997	65p	33.01106	-87.63803
0113	060	Hale	ELLH-47a	Elliotts Cr	Elliotts Cr. at Hale CR 50	NPS Screening Program	1997	65i	32.98369	-87.60440
0113	060	Hale	ELLUA01	Elliotts Cr	Elliotts Cr. at AL Hwy 69	99-00 University Tributary Nutrient Loading Study	1999	65p	32.99722	-87.62222
0113	070	Hale	MILH-38a	Millians Cr	Millians Cr. at Hale CR 21	NPS Screening Program	1997	65p	32.95472	-87.67056
0113	070	Hale	GABH-39b	Gabriel Cr	Gabriel Cr. off unnamed Hale CR	NPS Screening Program	1997	65i	32.93600	-87.64542
0113	070	Hale	GABH-39a	Gabriel Cr	Gabriel Cr. at Hale CR 21	NPS Screening Program	1997	65i	32.94227	-87.65974
0113	090	Hale	FIMH-40c	Fivemile Cr.	Fivemile Cr. at Hale CR 42	NPS Screening Program	1997	65i	32.89065	-87.73073
0113	090	Jefferson	Warrior6	Fivemile Cr.	Fivemile Cr. approximately 0.5 mi us of confluence with Black Warrior R.	Reservoir Tributary Embayment Monitoring Program	2002	65p	32.89990	-87.75590
0113	100	Hale	WAR2	Black Warrior R	Deepest point, main R. channel, immed. ds of Lock 8 Public Use Area.	Fish Tissue Monitoring	1993	65p	32.89519	-87.78297
0113	100	Hale	Warrior2	Black Warrior R	Deepest point, main R. channel, immed. ds of Lock 8 Public Use Area.	Reservoir Intensive Monitoring Program	2002	65p	32.89492	-87.78727
0113	110	Greene	MING-41a	Minter Cr	Minter Cr. at Greene CR 231	NPS Screening Program	2002	65i	32.96331	-87.85072
0113	110	Greene	MING-41a	Minter Cr	Minter Cr. at Greene CR 231	NPS Screening Program	1997	65i	32.96331	-87.85072
0113	120	Hale	BBRH-42b	Big Brush Cr	Big Brush Cr. at Hale CR 51	NPS Screening Program	1997	65i	32.74757	-87.54117
0113	120	Hale	BBRH-42g	Big Brush Cr	Big Brush Cr. at AL Hwy 69	NPS Screening Program	1997	65i	32.76052	-87.58511
0113	120	Hale	BBRH-42g	Big Brush Cr	Big Brush Cr. at AL Hwy 69	NPS Screening Program	2002	65i	32.76052	-87.58511
0113	120	Hale	BBRH-42a	Polecat Cr	Polecat Cr. at Hale CR. 51	NPS Screening Program	2002	65i	32.74324	-87.55239
0113	120	Hale	BBRH-42a	Polecat Cr	Polecat Cr. at Hale CR. 51	NPS Screening Program	1997	65i	32.74324	-87.55239
0113	120	Hale	BBRH-42f	Sparks Cr	Sparks Cr. at AL Hwy 25 nr Greensboro	NPS Screening Program	1997	65i	32.79167	-87.62500
0113	120	Hale	BBRH-42f	Sparks Cr	Sparks Cr. at AL Hwy 25 nr Greensboro	NPS Screening Program	2002	65i	32.79167	-87.62500
0113	120	Hale	BBRH-42d	Big Brush Cr	Big Brush Cr. at CR 21	NPS Screening Program	2002	65i?	32.78504	-87.65406

Appendix E. Stations assessed in the Black Warrior and Cahaba River Basins since 1992.

CU	Sub	County	Station	Stream	Station Description	Program	Most recent data	Eco-region	Lat Dec	Lon Dec
0113	120	Hale	BBRH-42c	Big Brush Cr	Big Brush Cr. at unnamed CR/CR 19 junction	NPS Screening Program	2002	65i?	32.76955	-87.61589
0113	120	Hale	BBCUA01	Big Brush Cr	Big Brush Cr. at AL Hwy 60 north of Wedgeworth	99-00 University Tributary Nutrient Loading Study	1999	65p	32.82000	-87.75389
0113	120	Hale	Warrior7	Big Brush Cr.	Big Brush Cr. approximately 0.5 mi us of confluence with Black Warrior R.	Reservoir Tributary Embayment Monitoring Program	2002	65p	32.83340	-87.80380
0113	130	Hale	BWRUA03	Black Warrior R	Selden Dam Tailrace	99-00 University Tributary Nutrient Loading Study	1999	65p	32.77778	-87.84056
0113	130	Hale	WAR1	Black Warrior R	Black Warrior R. at deepest point, main R. channel, dam forebay.	Fish Tissue Monitoring	2002	65p	32.78131	-87.83589
0113	130	Hale	Warrior1	Black Warrior R	Black Warrior R. at deepest point, main R. channel, dam forebay.	Reservoir Intensive Monitoring Program	2002	65p	32.78131	-87.83589
0113	140	Greene	NHC-2	Needham Cr	Needham Cr. at US Hwy 43.	303(d) Monitoring Program	1999	65a	32.69870	-87.90320
0113	140	Greene	NHC-2	Needham Cr	Needham Cr. at US Hwy 43.	NPS Screening Program	2002	65a	32.69870	-87.90320
0113	150	Hale	HINH-43a	Hines Cr	Hines Cr. off unnumbered Hale CR	NPS Screening Program	1997	65p	32.69064	-87.76383
0113	150	Hale	HINH-43a	Hines Cr	Hines Cr. off unnumbered Hale CR	NPS Screening Program	2002	65p	32.69064	-87.76383
0113	160	Hale	BPRH-44d	Big Prairie Cr	Big Prairie Cr. at AL Hwy 25	NPS Screening Program	2002	65a	32.53562	-87.59940
0113	160	Hale	BPRH-44d	Big Prairie Cr	Big Prairie Cr. at AL Hwy 25	NPS Screening Program	1997	65a	32.53562	-87.59940
0113	160	Hale	COTH-57c	Cottonwood Cr	Cottonwood Cr. at Hale CR 12	NPS Screening Program	2002	65a?	32.50946	-87.64409
0113	160	Hale	BPRH-44a	Dry Cr	Dry Cr. at AL Hwy 61 nr Newbern	NPS Screening Program	1997	65a	32.53561	-87.53200
0113	160	Hale	BPRH-44a	Dry Cr	Dry Cr. at AL Hwy 61 nr Newbern	NPS Screening Program	2002	65a	32.53561	-87.53200
0113	160	Perry	BPRH-44b	Big Prairie Cr	Big Prairie Cr. at Perry CR 20	NPS Screening Program	2002	65a	32.58247	-87.52678
0113	160	Perry	BPRH-44b	Big Prairie Cr	Big Prairie Cr. at Perry CR 20	NPS Screening Program	1997	65a	32.58247	-87.52678
0113	160	Marengo	COTH-57a	Cottonwood Cr	Cottonwood Cr. at AL Hwy 25 Marengo co	NPS Screening Program	1997	65a	32.50833	-87.62500
0113	160	Hale	BPRH-44c	Big Prairie Cr	Big Prairie Cr. at CR 10	NPS Screening Program	1997	65a?	32.56380	-87.56066
0113	170	Hale	LPRH-45b	Little Prairie Cr	L. Prairie Cr. at Hale CR 9	NPS Screening Program	2002	65a	32.59289	-87.64610
0113	170	Hale	BGEH-46a	Big German Cr	Big German Cr. at Hale CR 16	NPS Screening Program	1997	65a	32.61250	-87.69389
0113	170	Hale	BGEH-46a	Big German Cr	Big German Cr. at Hale CR 16	NPS Screening Program	2002	65a	32.61250	-87.69389
0113	170	Hale	LPRH-45a	Little Prairie Cr	L. Prairie Cr. at AL Hwy 69	NPS Screening Program	1997	65a	32.59306	-87.64667
0113	180	Marengo	DEM2	Black Warrior R.	Black Warrior/Demopolis Reservoir in vicinity of US Hwy 43	Fish Tissue Monitoring	1997	65p	32.54469	-87.82347
0113	190	Hale	YELH-3c	Yellow Cr.	Yellow Cr. at CR 2	NPS Screening Program	2002	65a	32.52629	-87.76738

Appendix F. List of stations assessed or attempted as part of the 2002 surface water quality NPS screening assessment of the BWC Basin Group.

	Reason for sampling										
Sub-watershed	1996/97 NPS Priority Sub-watershed	M/H NPS Impairment Potential	Nutrient Enrichment	303(d) NPS Impaired Stream	Recent Data Unavailable	Stream	Station	Assessment Type[a]	Subregion[b]	County	T / R / S
0315-0202 Cahaba River Basin											
050		X			X	Piney Murry Cr.	PMUS-6	H, M, F, C	67h	Shelby	21S/4W/16
050		X			X	Savage Cr.	SAVS-7	H, M, F, C	67h	Shelby	21S/4W/31
120	X				X	Affonee Cr.	AFF-2	H, M, F, C	65i	Bibb	23N/8E/20
120	X				X	Blue Girth Cr.	BLU-1	H, M, C	65i	Bibb	22N/8E/17
130	X				X	Walton Cr.	WLT-1	H, M, F, C	65i	Bibb	22N/9E/33
140	X				X	Mill Cr.	MIL-1	H, M, F, C	65p	Perry	20N/9E/30
140	X				X	Old Town Cr.	OTWN-1	H, M, F, C	65i	Perry	20N/8E/16
150	X				X	Waters Cr.	WAT-1	H, M, F, C	65p	Perry	19N/9E/29
160					X	L. Oakmulgee Cr.	OAKG-3	H, M, C	65i	Dallas	19N/10E/26
160					X	Oakmulgee Cr.	OAKG-1	F, C	65i	Dallas	18N/10E/17
170	X			X	X	Childers Cr.	CHIL-2	H, M, C	65a	Dallas	17N/10E/21
170	X			X	X	Dry Cr.	DRY-1	H, M, C	65a	Dallas	17N/9E/6
0316-0109 Mulberry Fork											
010		H				Hurricane Cr.	GSAMF-48	H, M, C	68d	Cullman	9S/1E/21
010		H				Pan Cr.	GSAMF-46	H, M, C	68d	Cullman	10S/1E/6
010		H				Warrior Cr.	GSAMF-50	H, M, F, C	68d	Blount	9S/1E/14
010		H				Warrior Cr.	GSAMF-51	H, M, F, C	68d	Cullman	9S/2E/6
020	X	H		X		Duck Cr.	DUCC-69	H, M, F, C	68d	Cullman	10S/1W/6
030	X	H				Brindley Cr.	BINC-190	H, M, F	68d	Cullman	10S/2W/29
040	X	H		X		Eightmile Cr.	EMIC-73a	H, M, F, C	68d	Cullman	9S/2W/18
070		H				Mud. Cr.	MUDC-2	H, M	68d	Cullman	11S/2W/29
080	X	M		X		Marriott Cr.	GSAMF-33	H, M, C	68e	Cullman	12S/3W/21
090			X			Mulberry Fork	GSAMF-35	H, M, F, C	68e	Blount	12S/2W/16
100			X			Old Town Cr.	OTC-1	H, M, C	68f	Walker	14S/5W/22
100					X	Sloan Cr.	SLOW-11	H, M, C	68e	Walker	14S/4W/9
110		H				Dorsey Cr.	GSAMF-29	H, M, C	68e	Cullman	12S/4W/31
110	X	H				Sullivan Cr.	SULC-10a	H, M, C	68e	Cullman	13S/4W/33
120	X				X	Brown Cr.	BROW-17	H, M, C	68e	Winston	12S/9W/10
130		H				Blackwater Cr.	BWCUA-1	H, M, F, C	68f	Walker	13S/7W/15
170		M		X		Cane Cr.	CANW-2	H, M, F	68f	Walker	15S/8W/35
170		M		X		Lost Cr.	LOSW-2	H, M	68f	Walker	14S/8W/21
170		M		X		Lost Cr.	LOSW-5	H, M	68f	Walker	13S/9W/29
180	X			X		Wolf Cr.	WOFW-1	H, M	68f	Walker	16S/7W/19
180	X			X		Wolf Cr.	WOFW-3	H, M	68f	Walker	14S/9W/31
190		M			X	Baker Cr.	BAKW-10	H, M, C	68f	Walker	16S/6W/7

a. H=habitat; M=macroinvertebrate community; F=fish community; C=water chemistry

Appendix F, cont. List of stations assessed or attempted as part of the 2002 surface water quality NPS screening assessment of the BWC Basin Group.

	Reason for sampling										
Sub-watershed	1996/97 NPS Priority Sub-watershed	M/H NPS Impairment Potential	Nutrient Enrichment	303(d) NPS Impaired Stream	Recent Data Unavailable	Stream	Station	Assessment Type[a]	Subregion[b]	County	T / R / S
0316-0110 Sipsey Fork											
050	X				X	Clear Cr.	CLCW-53b	H, M, C	68e	Winston	10S/9W/20
050	X				X	Little Clear Cr.	LCLW-19	H, M, F, C	68e	Winston	11S/9W/5
050	X				X	Rt. Fork Clear Cr.	CLCW-53c	H, M, F, C	68e	Winston	10S/9W/8
050	X				X	Widow Cr.	WIDW-18	H, M, F, C	68e	Winston	10S/9W/23
080	X			X		Rock Cr.	ROCW-52b	H, M, C	68d	Winston	9S/6W/23
090		M		X		Crooked Cr.	CROC-54a	H, M, F, C	68d	Cullman	10S/4W/6
090			X			Crooked Cr.	GSAMF-22	H, M, C	68e	Cullman	11S/5W/3
110		H				Rock Cr.	ROCC-15	H, M, C	68e	Cullman	11S/4W/14
110		H				Ryan Cr.	RYNC-1	H, M, F, C	68e	Cullman	11S/4W/14
130	X	M				Mill Cr.	MILW-18a	H, M, C	68e	Walker	13S/5W/17
0316-0111 Locust Fork											
010	X		X			Locust Fork	GSA-27	H, M, C	68d	Etowah	12S/3E/15
020	X					Bristow Cr.	GSA-26	H, M, C	67f	Etowah	11S/4E/7
030	X	M			X	Clear Cr.	CLEM-76a	H, M, F, C	68d	Marshall	10S/3E/25
040	X	M			X	Slab Cr.	SLAM-22c	H, M, C	68d	Marshall	9S/3E/36
050	X	M		X		Dry Cr.	DRYB-11	H, M, F	68d	Blount	12S/1W/23
050	X	M		X		Graves Cr.	GRVB-4	H, M, F	68d	Blount	11S/1E/30
060	X				X	Little Calvert Prong	LCPB-23a	H, M, C	68d	Blount	12S/2E/8
080	X				X	Longs Cr.	LONB-24a	H, M, F, C	68f	Blount	14S/2S/3
080	X				X	Sugar Cr.	SUGB-13	H, M, F, C	68d	Blount	13S/1W/6
080	X				X	Whites Creek	WHTB-12	H, M, C	68e	Blount	13S/1W/30
0316-0112 Upper Black Warrior River											
080	X				X	Davis Cr.	DAVT-27c	H, M, C	68f	Tuscaloosa	20S/7W/2
090	X					North R.	NORF-28c	H, M, F, C	68f	Fayette	15S/10W/8
100	X			X	X	Binion Cr.	BINT-31f	H, M, C	65i	Tuscaloosa	19S/11W/1
0316-0113 Lower Black Warrior River											
030	X				X	Big Sandy Cr.	BSAT-59b	H, M, F, C	65i	Tuscaloosa	24N/7E/3
110					X	Minter Cr.	MING-41a	H, M, C	65i	Greene	22N/2E/14
120	X				X	Big Brush Cr.	BBRH-42g	F, C	65i	Hale	21N/5E/28
120	X				X	Polecat Cr.	BBRH-42a	H, M, C	65i	Hale	21N/5E/35
120	X				X	Sparks Cr.	BBRH-42f	H, M, C	65i	Hale	21N/5E/35
140		M				Needham Cr.	NHC-2	H, M, C	65a	Greene	20N/2E/20
150					X	Hines Cr.	HINH-43a	H, M, C	65p	Hale	20N/3E/22
160	X	M			X	Big. Prairie Cr.	BPRH-44b	H, F, C	65a	Hale	19N/6E/30-31
160	X	M			X	Big Prairie Cr.	BPRH-44d	H, M, C	65a	Hale	18N/5E/17
160	X	M			X	Cottonwood Cr.	COTH-57a	H, M, C	65a	Marengo	17N/5E/5
160	X	M			X	Dry Cr.	BPRH-44a	H, M, C	65a	Hale	18N/5E/13
170		M			X	Little Prairie Cr.	LPRH-45a	H, M, C	65a	Hale	18N/4E/3
170		M			X	Big German Cr.	BGEH-46a	H, M, C	65a	Hale	19N/4E/16
190		M			X	Yellow Cr.	YELH-3c	H, M, F, C	65a	Hale	18N/3E/15

a. H=habitat; M=macroinvertebrate community; F=fish community; C=water chemistry

Appendix G. Summary of assessments conducted within the Cahaba and Black Warrior River Basins as a part of the NPS assessment of the BWC Basin Group and other available biological and chemical data collected 1998-

Sub-watershed	Station	Date	Assessment Results: Habitat	Macroinvertebrate	Fish	Lowest Station Assessment
Cahaba River (0315-0202)						
010	[a] BBC-1	990706	Excellent	Good		Good
010	[a] BBC-2	990706	Excellent	Fair		Fair
010	[a] BBC-3	990706	Excellent	Fair		Fair
010	[a] BBC-4	990706	Excellent	Fair		Fair
010	[d] GSACR-10	020802			Poor	Poor
010	[d] GSACR-11	020802			Good	Good
020	[b] LC1	020521	Excellent	Poor		Poor
030	[b] CABJ-6	020521	Excellent	Good		Good
030	[h] CARJ-1	980629	Excellent	Good		Good
030	[h] CARJ-2	980629	Excellent	Fair		Fair
030	[b] CARS-5	980629	Excellent	Fair		Fair
030	[d] GSACR-8	020801			Good	Good
030	[d] GSACR-6	020627			Fair	Fair
030	[d] GSACR-7	020801			Poor	Poor
030	[d] GSACR-9	020802			Good	Good
030	[b] LCBJ-1	020521	Excellent	Good		Good
030	[b] PA1	020523	Excellent	Fair		Fair
30	[b] PA1	020729			Fair	Fair
040	[k] DRYS-1	980514	Excellent	Good		Good
040	[k] DRYS-1	980514			Poor	Poor
040	[k] PEAS-1	980514	Excellent	Excellent		Excellent
050	[b] C3	020523	Excellent	Fair		Fair
050	[d] GSACR-5	020627			Fair	Fair
050	[f] PMUS-6	020516	Excellent	Fair		Fair
050	[f] PMUS-6	020726			Poor	Poor
050	[f] SAVS-7	020516	Good	Good		Good
050	[f] SAVS-7	020726			Fair	Fair
050	[d] GSACR-4	020626			Fair	Fair
070	[b] CAFC-1	020515	Excellent	Good		Good
070	[b] CAFC-1	020611			Fair/ Poor	Fair/ Poor
080	[g] MAYB-1	990615	Good	Good		Good
080	[g] MAYB-1	020516	Excellent	Excellent		Excellent
080	[g] MAYB-1	020618			Good	Good
090	[g] FRMB-8	020516	Excellent	Excellent		Excellent
090	[g] FRMB-8	020611			Good	Good
090	[d] GSACR-12	020625			Good	Good
100	[d] GSACR-2	020624			Good	Good
100	[d] GSACR-3	020626			Fair	Fair
120	[f] AFF-2	020515	Good	Good		Good
120	[f] AFF-2	020716			Good/ Fair	Good/ Fair
120	[f] BLU-1	020515	Excellent	Good		Good
130	[f] WLT-1	020515	Good	Good		Good
130	[f] WLT-1	020716			Good/ Excellent	Good/ Excellent
130	[d] GSACR-1	020625			Good	Good

Appendix G, cont. Summary of assessments conducted within the Cahaba and Black Warrior River Basins as a part of the NPS assessment of the BWC Basin Group and other available biological and chemical data collected

Sub-watershed	Station	Date	Assessment Results: Habitat	Macroinvertebrate	Fish	Lowest Station Assessment
Cahaba River (0315-0202)						
140	[f] MIL-1	020514	Fair	Excellent		Excellent
140	[f] MIL-1	020711			Good	Good
140	[f] OTWN-1	020514	Good	Good		Good
140	[f] OTWN-1	020715			Good	Good
150	[f] WAT-1	020514	Good	Excellent		Excellent
150	[f] WAT-1	020711			Fair	Fair
160	[f] OAKG-1	020711			Good	Good
160	[f] OAKG-3	020514	Good	Fair		Fair
170	[f] CHIL-2	020509	Fair	Poor		Poor
170	[f] DRY-1	020509	Good	Good		Good
Mulberry Fork (0316-0109)						
010	[j] RMA-2	980603	Excellent	Poor		Poor
010	[j] RMA-3	980603	Good	Poor		Poor
010	[j] RMA-4	980603	Good	Fair		Fair
010	[f] GSAMF-46	020619	Excellent	Good		Good
010	[e] GSAMF-63	000601			Poor	Poor
010	[f] GSAMF-50	020621	Good	Good		Good
010	[f] GSAMF-50	020719			Poor	Poor
010	[e] GSAMF-67	000601			Poor	Poor
010	[f] GSAMF-51	020618	Good	Fair		Fair
010	[f] GSAMF-51	020719			Poor	Poor
010	[e] GSAMF-68	000601			Poor	Poor
010	[e] GSAMF-61	000524			Fair	Fair
010	[e] GSAMF-62	000531			Fair	Fair
010	[e] GSAMF-64	000531			Fair	Fair
010	[e] GSAMF-65	000601			Fair	Fair
010	[f] GSAMF-48	020618	Excellent	Good		Good
010	[e] GSAMF-66	000531			Fair	Fair
020	[f] DUCC-69	020619	Excellent	Fair		Fair
020	[f] DUCC-69	020620			Fair	Fair
020	[e] GSAMF-59	001019			Fair	Fair
020	[e] GSAMF-60	000824			Poor	Poor
030	[e] GSAMF-57	010517			Very poor	Very poor
030	[b] BINC-190	020612			Poor	Poor
030	[b] BINC-190	020620	Good	Good		Good
040	[f] EMIC-73a	020612			Poor/ Very poor	Poor/ Very poor
040	[f] EMIC-73a	020619	Excellent	Good		Good
040	[e] GSAMF-56	000824			Poor	Poor
050	[e] GSAMF-54	000524			Fair	Fair
050	[e] GSAMF-55	000714			Fair	Fair
060	[e] GSAMF-58	000719			Poor	Poor
070	[b] MUDC-2	020619	Fair	Good		Good
080	[g] MRTC-1	020612			Fair	Fair
080	[g] MRTC-1	020620	Good	Fair		Fair
080	[f] GSAMF-33	020619	Good	Fair		Fair
080	[e] GSAMF-50	010517			Poor	Poor

Appendix G, cont. Summary of assessments conducted within the Cahaba and Black Warrior River Basins as a part of the NPS assessment of the BWC Basin Group and other available biological and chemical data collected

Sub-watershed	Station	Date	Assessment Results: Habitat	Macroinvertebrate	Fish	Lowest Station Assessment
Mulberry Fork (0316-0109)						
090	[f] GSAMF-35	020709	Excellent	Fair		Fair
090	[f] GSAMF-35	020729			Fair	Fair
090	[e] GSAMF-52	991019			Good	Good
090	[e] GSAMF-52	020503			Fair	Fair
090	[e] GSAMF-51	000719			Poor	Poor
090	[e] GSAMF-53	991019			Fair	Fair
100	[f] OTC-1	020605	Good	Poor		Poor
100	[e] GSAMF-44	991203			Poor	Poor
100	[e] GSAMF-44	020911			Fair	Fair
100	[e] GSAMF-47	001019			Fair	Fair
100	[e] GSAMF-47	020823			Poor	Poor
100	[e] GSAMF-48	001011			Fair	Fair
100	[f] SLOW-11	020605	Excellent	Poor		Poor
110	[f] GSAMF-29	020619	Good	Fair		Fair
110	[e] GSAMF-46	010517			Poor	Poor
110	[e] GSAMF-45	000824			Fair	Fair
110	[e] GSAMF-49	001011			Fair	Fair
110	[f] SULC-10a	020619	Excellent	Fair		Fair
120	[f] BROW-17	020613	Excellent	Fair		Fair
120	[e] GSAMF-12	010515			Fair	Fair
130	[f] BWCUA-1	020605	Excellent	Good		Good
130	[f] BWCUA-1	020619			Poor	Poor
130	[e] GSAMF-6	010614			Poor	Poor
130	[e] GSAMF-6	020911			Good	Good
130	[e] GSAMF-7	000714			Fair	Fair
130	[e] GSAMF-7	020430			Fair	Fair
130	[e] GSAMF-8	010514			Fair	Fair
130	[e] GSAMF-9	020823			Poor	Poor
130	[e] GSAMF-10	010514			Poor	Poor
120	[e] GSAMF-11	020823			Poor	Poor
170	[b] CANW-2	020605	Excellent	Fair		Fair
170	[b] CANW-2	020619			Fair/ Poor	Fair/ Poor
170	[b] LOSW-2	020605	Excellent	Poor		Poor
170	[e] GSAMF-2	010614			Poor	Poor
170	[e] GSAMF-3	000614			Fair	Fair
170	[e] GSAMF-4	010514			Poor	Poor
170	[e] GSAMF-5	010514			Poor	Poor
180	[e] GSAMF-1	010514			Poor	Poor
180	[b] WOFW-3	020606	Good	Poor		Poor
190	[f] BAKW-10	020605	Good	Poor		Poor
Sipsey Fork (0316-0110)						
010	[e] GSAMF-19	020502			Good	Good
010	[e] GSAMF-20	010515			Fair	Fair
010	[e] GSAMF-21	020516			Fair	Fair

Appendix G, cont. Summary of assessments conducted within the Cahaba and Black Warrior River Basins as a part of the NPS assessment of the BWC Basin Group and other available biological and chemical data collected

Sub-watershed	Station	Date	Assessment Results: Habitat	Macroinvertebrate	Fish	Lowest Station Assessment
Sipsey Fork (0316-0110)						
010	[e] GSAMF-22	020430			Fair	Fair
010	[g] TPSL-1	020612	Good	Fair		Fair
010	[g] TPSL-1	020716			Fair	Fair
010	[e] GSAMF-23	010515			Fair	Fair
010	[e] GSAMF-24	020516			Fair	Fair
010	[e] GSAMF-25	020501			Good	Good
010	[e] GSAMF-26	020501			Fair	Fair
010	[e] GSAMF-17	020502			Fair	Fair
010	[e] GSAMF-18	010515			Good	Good
010	[g] SF-2	020612	Excellent	Good		Good
010	[g] SF-2	020724			Fair	Fair
030	[g] BRSL-3	020612	Good	Good		Good
030	[g] BRSL-3	020716			Fair/ Poor	Fair/ Poor
030	[e] GSAMF-34	020501			Poor	Poor
030	[e] GSAMF-30	020502			Good	Good
030	[e] GSAMF-31	020502			Good	Good
030	[e] GSAMF-32	020501			Fair	Fair
030	[e] GSAMF-33	020501			Fair	Fair
040	[e] GSAMF-27	010509			Poor	Poor
040	[e] GSAMF-28	020502			Good	Good
040	[g] INMW-1	010711	Excellent	Good		Good
040	[g] INMW-1	020613	Excellent	Good		Good
040	[g] INMW-1	020724			Fair/ Poor	Fair/ Poor
040	[e] GSAMF-29	010511			Fair	Fair
050	[f] CLCW-53b	020612	Good	Fair		Fair
050	[e] GSAMF-16	020516			Fair	Fair
050	[f] CLCW-53c	020612	Excellent	Fair		Fair
050	[f] CLCW-53c	020725			Fair/ Poor	Fair/ Poor
050	[e] GSAMF-15	020516			Poor	Poor
050	[f] LCLW-19	020612	Good	Good		Good
050	[f] LCLW-19	020725			Poor	Poor
050	[f] WIDW-18	020612	Excellent	Good		Good
050	[f] WIDW-18	020725			Fair/ Poor	Fair/ Poor
060	[e] GSAMF-13	010515			Fair	Fair
060	[e] GSAMF-14	010515			Poor	Poor
080	[g] BLVC-1	020618	Excellent	Good		Good
080	[g] BLVC-1	020620			Fair/ Poor	Fair/ Poor
080	[g] BLVC-1	980603	Good	Excellent		Excellent
080	[e] GSAMF-36	010511			Poor	Poor
080	[f] ROCW-52b	020613	Good	Good		Good
080	[e] GSAMF-35	010511			Poor	Poor
080	[e] GSAMF-37	010511			Poor	Poor
080	[e] GSAMF-38	010516			Fair	Fair
090	[f] CROC-54a	020618	Good	Fair		Fair
090	[f] CROC-54a	020730			Fair/ Poor	Fair/ Poor
090	[e] GSAMF-40	010516			Poor	Poor

Appendix G, cont. Summary of assessments conducted within the Cahaba and Black Warrior River Basins as a part of the NPS assessment of the BWC Basin Group and other available biological and chemical data collected

Sub-watershed	Station	Date	Assessment Results: Habitat	Macroinvertebrate	Fish	Lowest Station Assessment
Sipsey Fork (0316-0110)						
090	[f] GSAMF-22	020618	Excellent	Fair		Fair
090	[e] GSAMF-39	010516			Poor	Poor
110	[e] GSAMF-41	010509			Poor	Poor
110	[f] RYNC-1	020612			Poor	Poor
110	[f] RYNC-1	020619	Excellent	Good		Good
110	[e] GSAMF-42	010516			Poor	Poor
110	[e] GSAMF-43	010516			Fair	Fair
110	[f] ROCC-15	020618	Excellent	Fair		Fair
Locust Fork (0316-0111)						
020	[f] GSA-26	020619	Good	Fair		Fair
030	[f] CLEM-76a	020530	Excellent	Good		Good
030	[f] CLEM-76a	020719			Fair/ Poor	Fair/ Poor
040	[f] SLAM-22c	020530	Fair	Fair		Fair
050	[b] DRYB-11	020529	Good	Fair		Fair
050	[b] DRYB-11	020613			Poor	Poor
050	[b] GRVB-4	020529	Excellent	Good		Good
050	[b] GRVB-4	020613			Poor/ Very poor	Poor/ Very poor
060	[i] CCB-1	010206	Good	Good		Good
060	[i] CCB-2a	010206	Good	Fair		Fair
060	[i] CCB-4	010206	Excellent	Fair		Fair
060	[i] CCB-5	010206	Excellent	Good		Good
060	[f] LCPB-23a	020529	Excellent	Excellent		Excellent
070	[g] HNMB-4	000613	Excellent	Excellent		Excellent
070	[g] HNMB-4	020529	Excellent	Excellent		Excellent
070	[g] HNMB-4	020613			Poor	Poor
080	[b] LFKB-2	020702	Excellent	Good		Good
080	[b] LFKB-2	020730			Good	Good
080	[f] LONB-24a	020528	Excellent	Good		Good
080	[f] LONB-24a	020718			Fair/ Poor	Fair/ Poor
080	[f] SUGB-13	020528	Good	Excellent		Excellent
080	[f] SUGB-13	020718			Fair	Fair
080	[f] WHTB-12	020528	Excellent	Fair		Fair
130	[b] FMCJ-2	020522	Excellent	Fair		Fair
130	[b] FMCJ-3	020522	Excellent	Poor		Poor
130	[b] FMCJ-4	020703			Poor	Poor
130	[b] FMCJ-4	020709	Excellent	Fair		Fair
130	[b] FMCJ-14	020522	Excellent	Poor		Poor
130	[b] NFDJ-1	020528	Excellent	Poor		Poor
130	[b] NFDJ-2	020528	Good	Fair		Fair
130	[b] TSB-1	990617	Excellent	Fair		Fair
130	[b] VLGJ-2	020522	Good	Poor		Poor
140	[c] AVNJ-1	020205	Good	Poor		Poor
140	[c] AVNJ-2	020205	Good	Poor		Poor
140	[b] CMBJ-3	020528	Good	Poor		Poor
140	[b] CMBJ-4	020528	Excellent	Poor		Poor

Appendix G, cont. Summary of assessments conducted within the Cahaba and Black Warrior River Basins as a part of the NPS assessment of the BWC Basin Group and other available biological and chemical data collected

Sub-watershed	Station	Date	Assessment Results: Habitat	Macroinvertebrate	Fish	Lowest Station Assessment
Locust Fork (0316-0111)						
140	[b] VLGJ-1	020522	Excellent	Poor		Poor
140	[b] VLGJ-4	020522	Good	Poor		Poor
140	[b] VLGJ-4	020729			Poor/ Very poor	Poor/ Very poor
140	[l] USGSVIL-1	000609	Impaired	Impaired	Impaired	Impaired
140	[l] USGSVIL-3	000615	Impaired	Impaired	Impaired	Impaired
Upper Black Warrior River (0316-0112)						
020	[b] VA1	020523	Excellent	Fair		Fair
020	[b] VA1	020618			Poor	Poor
030	[b] MUDJ-2	020523	Excellent	Fair		Fair
030	[b] MUDJ-2	020703			Poor	Poor
030	[l] USGSVAL-1	000614	Impaired	Impaired	Impaired	Impaired
030	[l] USGSVAL-2	000608	Impaired	Impaired	Impaired	Impaired
050	[b] LYC-1	990616	Poor	Poor		Poor
070	[b] JKC-1	990615	Excellent	Poor		Poor
080	[f] DAVT-27c	020604	Excellent	Fair		Fair
080	[b] DNC-1	990622	Good	Poor		Poor
080	[b] PGC-1	990622	Excellent	Poor		Poor
090	[f] NORF-28c	020528	Good	Fair		Fair
090	[f] NORF-28c	020619			Good	Good
100	[g] BERT-4	020604	Good	Fair		Fair
100	[f] BINT-31f	020604	Good	Fair		Fair
Lower Black Warrior River (0316-0113)						
030	[f] BSAT-59b	020515	Fair	Good		Good
030	[f] BSAT-59b	020715			Fair	Fair
030	[g] SSB-1	980506	Excellent	Good		Good
030	[g] SSB-1	990615	Excellent	Excellent		Excellent
030	[g] SSB-1	020515	Excellent	Excellent		Excellent
030	[g] SSB-1	020611			Good/ Fair	Good/ Fair
110	[f] MING-41a	020507	Good	Fair		Fair
120	[f] BBRH-42a	020507	Excellent	Poor		Poor
120	[f] BBRH-42f	020507	Good	Fair		Fair
120	[f] BBRH-42g	020715			Good	Good
140	[b] NHC-2	020507	Fair	Poor		Poor
150	[f] HINH-43a	020701	Fair	Good		Good
160	[f] BPRH-44b	020712			Poor	Poor
160	[f] BPRH-44d	020508	Good	Good		Good
160	[f] COTH-57c	020508	Good	Poor		Poor
170	[f] BGEH-46a	020508	Good	Good		Good
170	[f] BGEH-46a	020712			Fair	Fair
170	[f] LPRH-45b	020508	Fair	Fair		Fair
190	[f] YELH-3c	020508	Good	Good		Good

a 1999 Black Creek Study
b 303(d) Monitoring Program
c Avondale Creek Special Study
d GSA Cahaba River Bioassessment
e GSA Mulberry Fork Assessment 1999-2002
f NPS Screening Program
g Reference Reach Program
h WQDS-Cahaba River
I WQDS-Chitwood Creek
j WQDS-Riley Maze
k 1998 State Parks Project
l USGS Assessment of Village and Valley Creeks, 2000-2001
m Reference site used for comparison

Appendix H. Estimates of animal concentrations, animal units (A.U.), percent aquaculture land use, and percent pesticides/herbicide application in the Cahaba and Black Warrior River Basins. Numbers of animals, aquaculture acres, and pesticides/herbicides listed by acreage and sub-watershed were provided by the local SWCDs on Conservation Assessment Worksheets completed in 1998.

Cataloging Unit		Cahaba River (0315-0202)									
Sub-watershed		010	020	030	040	050	060	070	080	090	100
County (s)[a]		Jefferson* St. Clair	Jefferson St. Clair Shelby	Jefferson* St. Clair Shelby	Shelby	Bibb Jefferson Shelby	Bibb Jefferson* Shelby Tuscaloosa*	Bibb Shelby Tuscaloosa	Bibb Chilton* Perry Shelby	Bibb Chilton* Shelby	Bibb
Acres Reported (% of Total)		100	100	100	100	93	100	99	100	99	100
Pesticides Applied	Est. % Reported	5	ur	2	ur	ur	6	ur	1	<1	ur
Cattle	# / Acre	0.02	0.02	0.00	0.01	0.01	0.03	0.02	0.02	0.03	0.04
	A.U./Acre	**0.02**	**0.02**	**0.00**	**0.01**	**0.01**	**0.03**	**0.02**	**0.02**	**0.03**	**0.04**
Dairy	# / Acre	0.00	0.00	0.00	<0.01	0.00	0.00	0.00	0.00	0.00	0.00
	A.U./Acre	**0.00**	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Swine	# / Acre	0.00	0.00	0.00	0.00	0.00	<0.01	0.00	0.00	0.00	0.00
	A.U./Acre	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**<0.01**	**0.00**	**0.00**	**0.00**	**0.00**
Poultry - Broilers	# / Acre	1.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	A.U./Acre	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Poultry - Layers	# / Acre	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	A.U./Acre	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Total	A.U./Acre	**0.03**	**0.02**	**0.00**	**0.02**	**0.01**	**0.03**	**0.02**	**0.02**	**0.03**	**0.04**
	Potential NPS Impairment	L	L	L	L	L	L	L	L	L	L
Aquaculture	% Total Acres	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	<0.01	0.00
	Potential NPS Impairment	L	L	L	L	L	L	L	L	L	L

a % Pesticide acres based on data reported by counties shown with asterisk; ur=unreported

Appendix H, cont. Estimates of animal concentrations, animal units (A.U.), percent aquaculture land use, and percent pesticides/herbicide application in the Cahaba and Black Warrior River Basins. Numbers of animals, aquaculture acres, and pesticides/herbicides listed by acreage and sub-watershed were provided by the local SWCDs on Conservation Assessment Worksheets completed in 1998.

Cataloging Unit		Cahaba River (0315-0202)							Mulberry Fork (0316-0109)		
Sub-watershed		110	120	130	140	150	160	170	010	020	030
County (s)		Bibb Tuscaloosa	Bibb Perry Tuscaloosa	Bibb Perry*	Bibb Perry	Dallas Perry	Bibb Chilton Dallas Perry	Dallas Perry	Blount* Cullman* Marshall* Morgan	Cullman*	Cullman*
Acres Reported (% of Total)		100	96	100	96	99	73	100	100	100	100
Pesticides Applied	Est. % Total Reported Acres	ur	ur	1	ur	ur	ur	ur	13	4	6
Cattle	# / Acre	0.02	0.02	0.05	0.03	0.05	0.04	0.12	0.18	0.21	0.19
	A.U./Acre	**0.02**	**0.02**	**0.05**	**0.03**	**0.05**	**0.04**	**0.12**	**0.18**	**0.21**	**0.19**
Dairy	# / Acre	0.00	0.00	0.00	<0.01	0.00	0.00	0.00	0.01	0.02	0.02
	A.U./Acre	**0.00**	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.02**	**0.02**	**0.03**
Swine	# / Acre	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.01	0.00	0.00
	A.U./Acre	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**<0.01**	**0.00**	**0.00**
Poultry - Broilers	# / Acre	0.00	0.00	0.00	0.00	0.00	0.00	0.00	261.40	390.61	432.71
	A.U./Acre	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**2.09**	**3.12**	**3.46**
Poultry - Layers	# / Acre	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.93	4.35	4.14
	A.U./Acre	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.03**	**0.03**	**0.03**
Total	A.U./Acre	**0.02**	**0.02**	**0.05**	**0.03**	**0.05**	**0.04**	**0.12**	**2.32**	**3.39**	**3.71**
	Potential NPS Impairment	L	L	L	L	L	L	L	H	H	H
Aquaculture	% Total Acres	0.00	0.00	0.00	0.00	0.00	<0.01	0.60	0.00	0.00	0.00
	Potential NPS Impairment	L	L	L	L	L	L	M	L	L	L

a % Pesticide acres based on data reported by counties shown with asterisk; ur=unreported

Appendix H, cont. Estimates of animal concentrations, animal units (A.U.), percent aquaculture land use, and percent pesticides/herbicide application in the Cahaba and Black Warrior River Basins. Numbers of animals, aquaculture acres, and pesticides/herbicides listed by acreage and sub-watershed were provided by the local SWCDs on Conservation Assessment Worksheets completed in 1998.

Cataloging Unit		Mulberry Fork (0316-0109)									
Sub-watershed		040	050	060	070	080	090	100	110	120	130
County (s)		Cullman* Morgan	Cullman	Blount*	Cullman*	Cullman	Blount*	Blount* Jefferson Walker	Cullman	Walker	Walker Winston
Acres Reported (% of Total)		96	100	100	100	100	96	98	92	100	96
Pesticides Applied	Est. % Reported	3	ur	31	4	ur	11	9	ur	ur	ur
Cattle	# / Acre	0.16	0.15	0.14	0.13	0.20	0.04	0.05	0.10	0.06	0.06
	A.U./Acre	**0.16**	**0.15**	**0.14**	**0.13**	**0.20**	**0.04**	**0.05**	**0.10**	**0.06**	**0.06**
Dairy	# / Acre	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	A.U./Acre	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Swine	# / Acre	0.02	0.00	0.00	0.00	0.01	0.00	0.19	0.00	0.00	0.00
	A.U./Acre	**0.01**	**0.00**	**0.00**	**0.00**	**<0.01**	**0.00**	**0.07**	**0.00**	**0.00**	**0.00**
Poultry - Broilers	# / Acre	447.90	315.75	10.38	237.25	246.38	5.42	0.83	242.85	4.64	255.97
	A.U./Acre	**3.58**	**2.53**	**0.08**	**1.90**	**1.97**	**0.04**	**0.01**	**1.94**	**0.04**	**2.05**
Poultry - Layers	# / Acre	4.58	3.24	0.92	3.24	3.03	0.48	0.00	2.99	0.00	0.30
	A.U./Acre	**0.04**	**0.03**	**0.01**	**0.03**	**0.02**	**<0.01**	**0.00**	**0.02**	**0.00**	**0.00**
Total	A.U./Acre	**3.79**	**2.70**	**0.23**	**2.05**	**2.20**	**0.09**	**0.13**	**2.07**	**0.09**	**2.11**
Potential NPS Impairment		H	H	L	H	H	L	L	H	L	H
Aquaculture	% Total Acres	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potential NPS Impairment		L	L	L	L	L	L	L	L	L	L

a % Pesticide acres based on data reported by counties shown with asterisk; ur=unreported

Appendix H, cont. Estimates of animal concentrations, animal units (A.U.), percent aquaculture land use, and percent pesticides/herbicide application in the Cahaba and Black Warrior River Basins. Numbers of animals, aquaculture acres, and pesticides/herbicides listed by acreage and sub-watershed were provided by the local SWCDs on Conservation Assessment Worksheets completed in 1998.

Cataloging Unit		Mulberry Fork (0316-0109)							Sipsey Fork (0316-0110)					
Sub-watershed		140	150	160	170	180	190	200	010	020	030	040	050	060
County (s)		Walker	Walker	Jefferson Walker	Fayette Walker Winston	Fayette Tuscaloosa Walker	Walker	Jefferson Walker	Franklin Lawrence* Winston	Winston	Lawrence* Winston	Winston	Winston	Winston
Acres Reported (% of Total)		100	100	96	98	96	100	97	99	100	100	100	100	100
Pesticides Applied	Est. % Reported	ur	ur	ur	ur	ur	ur	ur	0	ur	0	ur	ur	ur
Cattle	# / Acre	0.05	<0.01	<0.01	0.03	<0.01	0.01	0.01	0.02	0.04	0.01	0.09	0.06	0.04
	A.U./Acre	**0.05**	**<0.01**	**<0.01**	**0.03**	**<0.01**	**0.01**	**0.01**	**0.02**	**0.04**	**0.01**	**0.09**	**0.06**	**0.04**
Dairy	# / Acre	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.01	0.00	0.01	0.00	0.00
	A.U./Acre	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**
Swine	# / Acre	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	A.U./Acre	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Poultry - Broilers	# / Acre	199.59	0.00	0.00	16.41	0.00	0.00	0.00	0.70	5.20	5.10	17.40	16.08	12.08
	A.U./Acre	**0.96**	**0.00**	**0.00**	**0.13**	**0.00**	**0.00**	**0.00**	**0.01**	**0.04**	**0.04**	**0.14**	**0.13**	**0.10**
Poultry - Layers	# / Acre	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.01	0.00	1.36	2.33	0.00	0.00
	A.U./Acre	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**<0.01**	**0.00**	**0.01**	**0.02**	**0.00**	**0.00**
Total	A.U./Acre	**1.01**	**0.00**	**0.00**	**0.16**	**0.00**	**0.01**	**0.01**	**0.03**	**0.08**	**0.06**	**0.26**	**0.19**	**0.14**
	Potential NPS Impairment	M	L	L	L	L	L	L	L	L	L	L	L	L
Aquaculture	% Total Acres	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Potential NPS Impairment	L	L	L	L	L	L	L	L	L	L	L	L	L

a % Pesticide acres based on data reported by counties shown with asterisk; ur=unreported

Appendix H, cont. Estimates of animal concentrations, animal units (A.U.), percent aquaculture land use, and percent pesticides/herbicide application in the Cahaba and Black Warrior River Basins. Numbers of animals, aquaculture acres, and pesticides/herbicides listed by acreage and sub-watershed were provided by the local SWCDs on Conservation Assessment Worksheets completed in 1998.

Cataloging Unit		Sipsey Fork (0316-0110)							Locust Fork (0316-0111)		
Sub-watershed		070	080	090	100	110	120	130	010	020	030
County (s)		Walker Winston	Cullman Lawrence* Winston	Cullman	Cullman Walker Winston	Cullman	Cullman Walker	Cullman Walker	Blount* Etowah	Etowah	Blount* Etowah Marshall*
Acres Reported (% of Total)		100	100	100	100	100	94	100	100	100	100
Pesticides Applied	Est. % Reported	ur	0	ur	ur	ur	ur	ur	7	ur	34
Cattle	# / Acre	0.03	0.14	0.20	0.11	0.18	0.14	0.12	0.14	0.16	0.14
	A.U./Acre	**0.03**	**0.14**	**0.20**	**0.11**	**0.18**	**0.14**	**0.12**	**0.14**	**0.16**	**0.14**
Dairy	# / Acre	<0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
	A.U./Acre	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**
Swine	# / Acre	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	<0.01
	A.U./Acre	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**<0.01**
Poultry - Broilers	# / Acre	11.41	160.69	312.69	166.82	278.75	314.64	98.19	46.54	0.18	156.61
	A.U./Acre	**0.09**	**1.29**	**2.50**	**1.33**	**2.23**	**2.52**	**0.79**	**0.37**	**<0.01**	**1.25**
Poultry - Layers	# / Acre	1.53	3.19	4.99	3.59	4.46	3.81	0.77	0.91	0.00	3.13
	A.U./Acre	**0.01**	**0.03**	**0.04**	**0.03**	**0.04**	**0.03**	**0.01**	**0.01**	**0.00**	**0.03**
Total	A.U./Acre	**0.14**	**1.45**	**2.74**	**1.47**	**2.45**	**2.68**	**0.92**	**0.52**	**0.16**	**1.43**
	Potential NPS Impairment	L	M	H	M	H	H	M	M	L	M
Aquaculture	% Total Acres	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Potential NPS Impairment	L	L	L	L	L	L	L	L	L	L

a % Pesticide acres based on data reported by counties shown with asterisk; ur=unreported

Appendix H, cont. Estimates of animal concentrations, animal units (A.U.), percent aquaculture land use, and percent pesticides/herbicide application in the Cahaba and Black Warrior River Basins. Numbers of animals, aquaculture acres, and pesticides/herbicides listed by acreage and sub-watershed were provided by the local SWCDs on Conservation Assessment Worksheets completed in 1998.

Cataloging Unit		Locust Fork (0316-0111)											
Sub-watershed		040	050	060	070	080	090	100	110	120	130	140	150
County (s)		Blount* Marshall*	Blount* Etowah	Blount*	Blount* Etowah St. Clair	Blount* Jefferson	Blount* Jefferson*	Blount* Jefferson	Jefferson*	Blount Jefferson* Walker	Jefferson*	Jefferson	Jefferson Walker
Acres Reported (% of Total)		100	98	100	100	97	100	100	100	93	100	100	93
Pesticides Applied	Est. % Total Reported Acres	47	14	19	17	18	10	6	5	6	2	ur	ur
Cattle	# / Acre	0.10	0.09	0.09	0.08	0.09	0.05	0.04	0.02	0.02	0.01	<0.01	<0.01
	A.U./Acre	**0.10**	**0.09**	**0.09**	**0.08**	**0.09**	**0.05**	**0.04**	**0.02**	**0.02**	**0.01**	**<0.01**	**<0.01**
Dairy	# / Acre	0.00	0.01	0.00	0.00	0.00	<0.01	0.00	0.00	0.00	0.00	0.00	0.00
	A.U./Acre	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Swine	# / Acre	<0.01	0.04	0.00	0.00	0.00	0.01	0.00	0.00	<0.01	<0.01	<0.01	0.00
	A.U./Acre	**<0.01**	**0.04**	**0.00**	**0.00**	**0.00**	**<0.01**	**0.00**	**0.00**	**<0.01**	**<0.01**	**<0.01**	**0.00**
Poultry - Broilers	# / Acre	120.71	48.52	14.08	21.83	5.16	0.65	4.48	0.00	0.00	0.00	0.00	0.00
	A.U./Acre	**0.97**	**0.39**	**0.11**	**0.17**	**0.04**	**0.01**	**0.04**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Poultry - Layers	# / Acre	3.03	5.43	0.64	0.84	0.37	0.00	0.20	0.00	0.00	0.00	0.00	0.00
	A.U./Acre	**0.02**	**0.04**	**0.01**	**0.01**	**<0.01**	**0.00**	**<0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Total	A.U./Acre	**1.09**	**0.55**	**0.21**	**0.26**	**0.13**	**0.06**	**0.07**	**0.02**	**0.02**	**0.01**	**0.00**	**0.00**
	Potential NPS Impairment	M	M	L	L	L	L	L	L	L	L	L	L
Aquaculture	% Total Acres	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Potential NPS Impairment	L	L	L	L	L	L	L	L	L	L	L	L

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Appendix H, cont. Estimates of animal concentrations, animal units (A.U.), percent aquaculture land use, and percent pesticides/herbicide application in the Cahaba and Black Warrior River Basins. Numbers of animals, aquaculture acres, and pesticides/herbicides listed by acreage and sub-watershed were provided by the local SWCDs on Conservation Assessment Worksheets completed in 1998.

Cataloging Unit		Upper Black Warrior River (0316-0112)											
Sub-watershed		010	020	030	040	050	060	070	080	090	100	110	120
County (s)		Jefferson	Jefferson*	Jefferson Tuscaloosa	Jefferson Tuscaloosa	Fayette Tuscaloosa* Walker	Tuscaloosa* Walker	Tuscaloosa*	Bibb Jefferson Tuscaloosa*	Fayette Tuscaloosa	Fayette Tuscaloosa	Tuscaloosa*	Tuscaloosa*
Acres Reported (%Total)		100	100	100	90	98	100	100	96	98	100	100	100
Pesticides Applied	Est. % Reported	ur	11	ur	ur	0	0	0	0	ur	ur	0	0
Cattle	# / Acre	0.00	0.04	0.01	<0.01	0.01	<0.01	0.00	0.01	0.03	0.02	<0.01	0.01
	A.U./Acre	**0.00**	**0.04**	**0.00**	**<0.01**	**0.01**	**<0.01**	**0.00**	**0.01**	**0.03**	**0.02**	**<0.01**	**0.01**
Dairy	# / Acre	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.01	0.00	0.00
	A.U./Acre	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**<0.01**	**0.00**	**0.00**
Swine	# / Acre	0.00	<0.01	<0.01	0.00	0.00	0.00	0.00	0.00	0.00	<0.01	0.00	<0.01
	A.U./Acre	**0.00**	**<0.01**	**<0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**<0.01**	**0.00**	**<0.01**
Poultry - Broilers	# / Acre	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.03	0.00	2.28
	A.U./Acre	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.04**	**0.00**	**0.02**
Poultry - Layers	# / Acre	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	A.U./Acre	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Total	A.U./Acre	**0.00**	**0.04**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.01**	**0.03**	**0.06**	**0.00**	**0.03**
Potential NPS Impairment		L	L	L	L	L	L	L	L	L	L	L	L
Aquaculture	% Total Acres	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potential NPS Impairment		L	L	L	L	L	L	L	L	L	L	L	L

a % Pesticide acres based on data reported by counties shown with asterisk; ur=unreported

Appendix H, cont. Estimates of animal concentrations, animal units (A.U.), percent aquaculture land use, and percent pesticides/herbicide application in the Cahaba and Black Warrior River Basins. Numbers of animals, aquaculture acres, and pesticides/herbicides listed by acreage and sub-watershed were provided by the local SWCDs on Conservation Assessment Worksheets completed in 1998.

Cataloging Unit		Lower Black Warrior River (0316-0113)										
Sub-watershed		010	020	030	040	050	060	070	080	090	100	110
County (s)		Tuscaloosa*	Tuscaloosa*	Bibb Hale Tuscaloosa*	Hale* Tuscaloosa*	Greene Tuscaloosa*	Hale Tuscaloosa	Hale*	Greene Tuscaloosa	Bibb Hale* Perry	Hale*	Greene
Acres Reported (% of Total)		100	100	100	100	99	99	100	98	97	100	100
Pesticides Applied	Est. % Total Reported Acres	11	0	0	2	6	ur	4	ur	1	0	ur
Cattle	# / Acre	0.02	0.01	0.02	0.01	0.03	0.00	0.01	0.02	<0.01	0.02	0.05
	A.U./Acre	**0.02**	**0.01**	**0.00**	**0.01**	**0.03**	**0.00**	**0.01**	**0.02**	**<0.01**	**0.02**	**0.05**
Dairy	# / Acre	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	A.U./Acre	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Swine	# / Acre	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
	A.U./Acre	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**
Poultry - Broilers	# / Acre	0.00	0.00	0.00	0.00	0.00	0.00	1.33	0.00	0.00	0.00	0.00
	A.U./Acre	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**
Poultry - Layers	# / Acre	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	A.U./Acre	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Total	A.U./Acre	**0.02**	**0.01**	**0.02**	**0.01**	**0.03**	**0.00**	**0.02**	**0.02**	**0.00**	**0.02**	**0.05**
Potential NPS Impairment		L	L	L	L	L	L	L	L	L	L	L
Aquaculture	% Total Acres	0.00	0.08	0.00	0.00	0.37	0.00	0.00	0.00	0.00	0.00	0.48
Potential NPS Impairment		L	L	L	L	M	L	L	L	L	L	M

a % Pesticide acres based on data reported by counties shown with asterisk; ur=unreported

Appendix H, cont. Estimates of animal concentrations, animal units (A.U.), percent aquaculture land use, and percent pesticides/herbicide application in the Cahaba and Black Warrior River Basins. Numbers of animals, aquaculture acres, and pesticides/herbicides listed by acreage and sub-watershed were provided by the local SWCDs on Conservation Assessment Worksheets completed in 1998.

Cataloging Unit		Lower Black Warrior River (0316-0113)							
Sub-watershed		120	130	140	150	160	170	180	190
County (s)		Hale* Perry*	Hale*	Greene Perry	Hale*	Hale* Marengo Perry	Hale*	Greene	Hale* Marengo
Acres Reported (% of Total)		100	100	100	100	139	100	100	100
Pesticides Applied	Est. % Reported	<1	3	ur	5	5	11	ur	7
Cattle	# / Acre	0.01	0.00	0.04	0.05	0.11	0.02	0.06	0.34
	A.U./Acre	**0.01**	**0.00**	**0.04**	**0.05**	**0.11**	**0.02**	**0.06**	**0.34**
Dairy	# / Acre	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
	A.U./Acre	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**	**0.02**	**0.00**	**0.00**
Swine	# / Acre	0.00	0.00	<0.01	0.00	<0.01	0.01	0.00	0.00
	A.U./Acre	**0.00**	**0.00**	**<0.01**	**0.00**	**<0.01**	**<0.01**	**0.00**	**0.00**
Poultry - Broilers	# / Acre	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	A.U./Acre	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Poultry - Layers	# / Acre	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	A.U./Acre	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Total	A.U./Acre	**0.01**	**0.00**	**0.04**	**0.05**	**0.11**	**0.04**	**0.06**	**0.34**
Potential NPS Impairment		L	L	L	L	L	L	L	L
Aquaculture	% Total Acres	0.00	0.00	0.59	0.22	4.80	9.78	0.00	1.18
Potential NPS Impairment		L	L	M	L	H	H	L	H

a % Pesticide acres based on data reported by counties shown with asterisk; ur=unreported

Appendix I. Sedimentation estimates by source, forest condition, septic tank information and resource concerns by sub-watershed in the Cahaba and Black Warrior River Basins as provided by the local Soil and Water Conservation Districts (SWCD) on Conservation Assessment Worksheets (ASWCC 1998).

Basin Code- Cataloging Unit	Cahaba River (0315-0202)										
Sub-watershed	010	020	030	040	050	060	070	080	090	100	110
County/SWCD District	Jefferson, St. Clair	Jefferson, Shelby, St. Clair	Jefferson, Shelby	Shelby	Shelby	Bibb, Jefferson, Shelby, Tuscaloosa	Bibb	Bibb, Chilton, Shelby	Bibb, Chilton	Bibb	Bibb, Tusculoosa
Forest condition											
% Needing forest improvement[a]	23	14	10	ur	ur	18	ur	6	7	ur	ur
Potential for forestry NPS	L	L	L			L		L	L		
Sedimentation rates (tons/acre/year)											
Cropland	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	0.0	<0.1	0.1	0.0	<0.1
Sand & gravel pits	0.6	0.0	0.0	0.4	2.7	0.3	0.0	0.6	0.1	0.0	0.1
Mined land	0.0	0.6	0.4	0.3	<0.1	0.3	27.0	4.1	0.3	0.0	1.5
Developing urban land	3.2	40.8	38.5	128.7	38.2	12.1	3.0	43.2	<0.1	0.0	2.5
Critical areas	0.8	1.1	1.5	2.1	0.4	1.3	0.4	0.5	0.4	0.7	0.5
Gullies	2.5	2.9	5.1	0.9	1.6	4.1	<0.1	1.5	0.1	0.3	0.2
Stream banks	0.3	0.2	0.2	<0.1	<0.1	0.2	0.1	0.1	0.1	0.3	0.1
Dirt roads and roadbanks	0.1	0.6	0.4	0.6	0.3	0.2	0.3	0.5	0.2	0.2	0.6
Woodlands	0.1	0.1	<0.1	<0.1	0.2	0.1	0.2	0.1	0.3	0.3	0.3
Total sediment	7.5	46.2	46.1	133.2	43.4	18.6	31.0	50.5	1.5	1.7	5.8
Sediment NPS Impairment Potential	M	H	H	H	H	M	H	H	L	L	L
Septic Tanks											
# Septic tanks per acre	0.03	0.11	0.06	0.19	0.04	0.01	0.01	0.04	0.01	0.05	0.01
# Septic tanks failing per acre (Estimated)	0.004	0.015	0.002	0.006	0.002	0.001	0.004	0.003	0.002	0.014	0.004
# of alternative septic systems per acre	0.0013	0.0082	0.0064	0.0032	0.0008	0.0000	0.0000	0.0008	0.0000	0.0000	0.0001
Resource Concerns in the sub-watershed											
Excessive erosion on cropland						X	X	X	X	X	X
Gully erosion on agricultural land								X	X		
Road and roadbank erosion		X	X	X	X	X	X	X	X	X	X
Poor soil condition (cropland)								X	X		
Excessive animal waste applied to land											
Excessive pesticides applied to land				X	X	X					
Excessive sediment from cropland								X			
Excessive sediment from roads/road banks		X	X	X	X	X	X	X			X
Excessive sediment from urban development	X	X	X	X	X	X		X			X
Inadequate management of animal wastes											
Nutrients in surface waters			X		X	X			X		
Pesticides in surface waters			X			X			X		
Bacteria and other organisms in surface waters	X	X		X	X	X	X	X	X	X	X
Low dissolved oxygen in surface waters	X	X	X	X		X					
Livestock are overgrazing pastures	X	X					X	X	X	X	X
Livestock Commonly have access to streams	X	X			X	X	X	X	X	X	X

a. ur=unreported

Appendix I, cont. Sedimentation estimates by source, forest condition, septic tank information and resource concerns by sub-watershed in the Cahaba and Black Warrior River Basins as provided by the local Soil and Water Conservation Districts (SWCD) on Conservation Assessment Worksheets (ASWCC 1998).

Basin Code- Cataloging Unit	Cahaba River (0315-0202)						Mulberry Fork (0316-0109)				
Sub-watershed	120	130	140	150	160	170	010	020	030	040	050
County/SWCD District	Bibb	Bibb, Perry	Perry	Perry	Bibb, Chilton, Dallas, Perry	Dallas, Perry	Blount, Cullman, Marshall	Cullman	Cullman	Cullman	Cullman
Forest condition											
% Needing forest improvement[a]	ur	4	31	28	27	19	28	34	37	38	37
Potential for forestry NPS		L	M	M	M	L	M	M	M	M	M
Sedimentation rates (tons/acre/year)											
Cropland	0.1	<0.1	0.1	0.3	0.1	0.1	0.3	0.3	0.3	0.2	0.3
Sand & gravel pits	0.0	0.0	0.0	0.0	<0.1	1.4	0.0	0.0	0.0	0.0	0.0
Mined land	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Developing urban land	3.0	2.7	0.0	<0.1	0.1	0.0	0.1	0.1	0.2	0.5	0.2
Critical areas	0.3	0.4	<0.1	0.3	0.2	0.4	0.1	<0.1	0.5	0.1	0.1
Gullies	<0.1	0.1	<0.1	0.1	0.4	1.3	0.1	<0.1	0.0	0.0	<0.1
Stream banks	0.1	0.1	0.1	0.1	0.1	0.1	0.5	<0.1	0.1	<0.1	<0.1
Dirt roads and roadbanks	0.2	0.3	0.1	0.1	0.4	0.3	0.5	0.6	0.6	0.6	0.6
Woodlands	0.2	0.2	0.3	0.2	0.4	0.2	0.1	0.1	0.1	1.2	0.1
Total sediment	3.9	3.8	0.6	1.0	1.6	3.6	1.7	1.1	1.8	2.6	1.4
Sediment NPS Impairment Potential	L	L	L	L	L	L	L	L	L	L	L
Septic tanks											
# Septic tanks per acre	0.01	0.01	<0.01	<0.01	0.01	0.02	0.04	0.06	0.05	0.11	0.08
# Septic tanks failing per acre (Estimated)	0.005	0.004	0.008	0.002	0.001	0.007	0.005	0.003	0.003	0.006	0.004
# of alternative septic systems per acre	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Resource concerns in the sub-watershed											
Excessive erosion on cropland	X	X	X	X	X	X	X	X	X	X	X
Gully erosion on agricultural land											
Road and roadbank erosion	X	X	X	X	X	X					
Poor soil condition (cropland)											
Excessive animal waste applied to land							X	X	X	X	X
Excessive pesticides applied to land								X			
Excessive sediment from cropland							X	X	X		
Excessive sediment from roads/roadbanks	X	X	X	X	X	X				X	
Excessive sediment from urban development							X			X	
Inadequate management of animal wastes							X	X	X	X	X
Nutrients in surface waters							X	X	X	X	X
Pesticides in surface waters								X		X	
Bacteria and other organisms in surface waters	X	X	X	X	X	X	X	X	X	X	X
Low dissolved oxygen in surface waters							X	X	X	X	X
Livestock are overgrazing pastures	X	X	X	X	X	X	X		X	X	X
Livestock commonly have access to streams	X	X	X	X	X	X	X	X	X	X	

a. ur=unreported

Appendix I, cont. Sedimentation estimates by source, forest condition, septic tank information and resource concerns by sub-watershed in the Cahaba and Black Warrior River Basins as provided by the local Soil and Water Conservation Districts (SWCD) on Conservation Assessment Worksheets (ASWCC 1998).

Basin Code- Cataloging Unit	Mulberry Fork (0316-0109)										
Sub-watershed	060	070	080	090	100	110	120	130	140	150	160
County/SWCD District	Blount	Cullman	Cullman	Blount	Blount, Walker	Cullman	Walker, Wintson	Walker	Walker	Walker	Walker
Forest condition											
% Needing forest improvement[a]	14	40	78	27	33	51	4	42	36	28	46
Potential for forestry NPS	L	M	H	M	M	M	L	M	M	M	M
Sedimentation rates (tons/acre/year)											
Cropland	0.2	0.2	<0.1	0.1	0.1	0.1	<0.1	0.1	0.0	0.0	0.0
Sand & gravel pits	0.0	0.0	0.0	1.9	1.2	0.0	0.1	0.0	1.7	0.0	1.4
Mined land	0.0	0.0	0.5	0.0	1.0	0.3	0.3	2.6	2.4	1.6	1.7
Developing urban land	0.2	0.3	0.0	0.2	0.1	0.0	<0.1	0.2	0.2	2.9	0.3
Critical areas	0.6	<0.1	0.1	0.2	0.7	0.3	0.3	1.5	1.5	1.5	1.5
Gullies	0.1	0.0	0.1	0.3	1.9	0.1	0.6	4.9	4.9	4.9	4.9
Stream banks	1.4	0.1	<0.1	1.4	1.0	0.1	0.1	<0.1	0.1	<0.1	<0.1
Dirt roads and roadbanks	0.4	0.6	0.6	0.4	0.4	0.6	0.2	0.2	0.2	0.2	0.2
Woodlands	0.1	0.1	0.2	0.1	0.5	0.2	0.8	1.0	1.0	0.7	1.1
Total sediment	3.1	1.3	1.5	4.5	6.8	1.7	2.2	10.6	11.9	11.9	11.2
Sediment NPS Impairment Potential	L	L	L	L	M	L	L	M	M	M	M
Septic tanks											
# Septic tanks per acre	0.01	0.07	0.02	0.01	0.04	0.01	0.03	0.07	0.14	0.06	0.02
# Septic tanks failing per acre (Estimated)	0.020	0.004	0.001	0.004	0.012	0.001	0.008	0.021	0.043	0.018	0.045
# of alternative septic systems per acre	ur	0.0000	0.0000	ur	ur	0.0000	ur	ur	ur	ur	ur
Resource concerns in the sub-watershed											
Excessive erosion on cropland											
Gully erosion on agricultural land											
Road and roadbank erosion					X		X	X	X	X	X
Poor soil condition (cropland)											
Excessive animal waste applied to land		X	X			X		X			
Excessive pesticides applied to land											
Excessive sediment from cropland											
Excessive sediment from roads/roadbanks											
Excessive sediment from urban development											
Inadequate management of animal wastes		X	X			X	X				
Nutrients in surface waters		X	X		X	X	X	X	X	X	X
Pesticides in surface waters											
Bacteria and other organisms in surface waters		X	X		X	X	X	X	X	X	X
Low dissolved oxygen in surface waters		X	X			X					
Livestock are overgrazing pastures	X	X	X	X	X	X	X	X	X	X	X
Livestock commonly have access to streams	X		X	X	X	X	X	X	X	X	X

a. ur=unreported

Appendix I, cont. Sedimentation estimates by source, forest condition, septic tank information and resource concerns by sub-watershed in the Cahaba and Black Warrior River Basins as provided by the local Soil and Water Conservation Districts (SWCD) on Conservation Assessment Worksheets (ASWCC 1998).

Basin Code- Cataloging Unit	Mulberry Fork (0316-0109)				Sipsey Fork (0316-0110)					
Sub-watershed	170	180	190	200	010	020	030	040	050	060
County/SWCD District	Walker	Fayette, Walker	Walker	Walker	Lawrence, Winston	Winston	Lawrence, Winston	Winston	Winston	Winston
Forest condition										
% Needing forest improvement[a]	52	59	49	60	16	ur	15	ur	ur	ur
Potential for forestry NPS	M	H	M	H	L		L			
Sedimentation rates (tons/acre/year)										
Cropland	0.0	0.0	0.0	0.0	<0.1	<0.1	<0.1	<0.1	<0.1	0.1
Sand & gravel pits	0.3	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mined land	4.5	1.2	5.6	1.7	0.1	0.1	0.0	0.0	0.8	0.2
Developing urban land	0.1	0.0	0.3	0.3	0.0	<0.1	0.0	0.0	<0.1	<0.1
Critical areas	1.5	1.2	1.5	1.5	0.1	0.2	0.1	0.2	0.1	0.2
Gullies	4.6	5.0	4.9	4.9	<0.1	0.1	<0.1	0.2	0.1	0.2
Stream banks	<0.1	0.3	<0.1	<0.1	0.1	<0.1	<0.1	0.1	0.1	0.1
Dirt roads and roadbanks	0.5	0.4	0.6	0.1	0.1	0.2	0.1	0.2	0.1	0.2
Woodlands	1.2	1.5	1.3	1.5	0.3	1.0	0.3	0.9	0.5	1.1
Total sediment	12.6	10.0	14.6	10.0	0.6	1.5	0.5	1.5	1.7	2.1
Sediment NPS Impairment Potential	M	M	M	M	L	L	L	L	L	L
Septic tanks										
# Septic tanks per acre	0.04	0.02	0.03	0.06	<0.01	0.03	<0.01	0.03	0.03	0.05
# Septic tanks failing per acre (Estimated)	0.012	0.005	0.010	0.010	0.001	0.005	<0.001	0.006	0.000	0.010
# of alternative septic systems per acre	ur	0.0000	ur	ur	0.0003	ur	0.0000	ur	ur	ur
Resource concerns in the sub-watershed										
Excessive erosion on cropland										
Gully erosion on agricultural land										
Road and roadbank erosion	X	X	X	X	X		X			
Poor soil condition (cropland)										
Excessive animal waste applied to land										
Excessive pesticides applied to land										
Excessive sediment from cropland										
Excessive sediment from roads/roadbanks		X								
Excessive sediment from urban development										
Inadequate management of animal wastes						X	X	X	X	
Nutrients in surface waters	X	X	X	X			X			
Pesticides in surface waters										
Bacteria and other organisms in surface waters	X	X	X	X			X			
Low dissolved oxygen in surface waters										
Livestock are overgrazing pastures	X	X	X	X	X	X	X	X	X	
Livestock commonly have access to streams	X	X	X	X	X	X		X	X	

a. ur=unreported

Appendix I, cont. Sedimentation estimates by source, forest condition, septic tank information and resource concerns by sub-watershed in the Cahaba and Black Warrior River Basins as provided by the local Soil and Water Conservation Districts (SWCD) on Conservation Assessment Worksheets (ASWCC 1998).

Basin Code- Cataloging Unit	Sipsey Fork (0316-0110)							Locust Fork (0316-0111)				
Sub-watershed	070	080	090	100	110	120	130	010	020	030	040	050
County/SWCD District	Walker, Winston	Cullman, Lawrence, Winston	Cullman	Cullman, Winston	Cullman	Cullman	Cullman, Walker	Blount, Etowah	Etowah	Blount, Etowah, Marshall	Blount, Marshall	Blount
Forest condition												
% Needing forest improvement[a]	3	23	49	20	40	41	46	6	4	9	16	18
Potential for forestry NPS	L	L	M	L	M	M	M	L	L	L	L	L
Sedimentation rates (tons/acre/year)												
Cropland	<0.1	0.1	0.1	0.1	0.2	<0.1	0.2	0.1	0.3	1.1	0.7	0.3
Sand & gravel pits	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	2.2	0.2	0.0	0.0
Mined land	0.5	0.0	0.0	1.2	0.0	0.4	1.1	0.0	0.0	0.0	0.0	0.7
Developing urban land	<0.1	<0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.0	0.3	0.1	0.1
Critical areas	1.6	0.1	0.1	0.4	<0.1	0.1	1.1	1.0	1.2	0.8	0.4	0.2
Gullies	5.0	0.1	0.0	0.2	0.0	<0.1	3.4	0.2	0.0	0.2	0.2	0.4
Stream banks	0.1	0.1	<0.1	0.1	<0.1	0.2	0.1	0.9	0.7	0.7	0.6	1.4
Dirt roads and roadbanks	0.2	0.3	0.6	0.4	0.6	0.6	0.3	0.1	<0.1	0.1	0.2	0.4
Woodlands	0.9	0.5	0.2	0.4	0.1	0.2	0.8	0.1	0.1	0.1	0.1	0.1
Total sediment	8.2	1.1	0.9	2.8	1.0	1.5	7.1	3.6	4.4	3.5	2.3	3.6
Sediment NPS Impairment Potential	M	L	L	L	L	L	L	L	L	L	L	L
Septic tanks												
# Septic tanks per acre	0.05	0.02	0.05	0.03	0.05	0.05	0.17	0.03	0.04	0.08	0.06	0.02
# Septic tanks failing per acre (Estimated)	0.013	0.002	0.002	0.004	0.003	0.005	0.049	0.006	0.007	0.048	0.047	0.006
# of alternative septic systems per acre	ur	0.0000	0.0000	0.0000	0.0000	0.0002	0.0000	0.0015	0.0021	0.0010	0.0000	ur
Resource concerns in the sub-watershed												
Excessive erosion on cropland			X		X	X		X	X	X	X	
Gully erosion on agricultural land												
Road and roadbank erosion	X	X					X					
Poor soil condition (cropland)			X					X	X	X		
Excessive animal waste applied to land		X	X	X	X	X	X	X	X	X	X	
Excessive pesticides applied to land			X									
Excessive sediment from cropland			X					X	X	X	X	
Excessive sediment from roads/roadbanks												
Excessive sediment from urban development						X						
Inadequate management of animal wastes	X	X	X	X	X	X		X	X	X	X	
Nutrients in surface waters	X	X	X	X	X	X	X	X	X	X	X	
Pesticides in surface waters			X							X	X	
Bacteria and other organisms in surface waters	X	X	X	X	X	X	X	X	X	X	X	
Low dissolved oxygen in surface waters		X	X	X	X	X				X	X	
Livestock are overgrazing pastures	X	X	X	X			X	X				
Livestock commonly have access to streams	X	X	X	X	X	X	X	X	X	X	X	

a. ur=unreported

Appendix I, cont. Sedimentation estimates by source, forest condition, septic tank information and resource concerns by sub-watershed in the Cahaba and Black Warrior River Basins as provided by the local Soil and Water Conservation Districts (SWCD) on Conservation Assessment Worksheets (ASWCC 1998).

Basin Code- Cataloging Unit	Locust Fork (0316-0111)										Upper Black Warrior (0316-0112)		
Sub-watershed	060	070	080	090	100	110	120	130	140	150	010	020	030
County/SWCD District	Blount	Blount	Blount	Blount, Jefferson	Blount, Jefferson	Jefferson	Jefferson	Jefferson	Jefferson	Jefferson	Jefferson	Jefferson	Jefferson
Forest condition													
% Needing forest improvement[a]	17	20	20	28	28	34	28	22	4	87	86	5	51
Potential for forestry NPS	L	L	L	M	M	M	M	L	L	H	H	L	M
Sedimentation rates (tons/acre/year)													
Cropland	0.3	0.2	0.2	0.1	0.3	<0.1	0.5	0.0	0.0	0.1	0.0	0.0	0.1
Sand & gravel pits	0.3	0.1	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mined land	0.2	0.2	1.9	8.6	0.9	1.8	4.5	2.7	2.3	6.3	13.5	0.9	18.0
Developing urban land	0.4	0.1	0.1	1.1	1.7	1.3	0.8	6.0	20.4	0.2	0.6	24.0	0.8
Critical areas	0.4	0.2	0.2	1.1	0.8	1.5	1.5	1.5	2.0	1.5	0.8	1.5	1.5
Gullies	0.3	0.2	0.4	3.4	2.4	4.9	4.9	4.9	4.9	4.9	9.8	4.9	4.9
Stream banks	1.4	1.4	1.4	0.6	0.8	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Dirt roads and roadbanks	0.4	0.4	0.4	0.2	0.3	0.1	0.1	0.1	0.1	0.1	<0.1	0.1	<0.1
Woodlands	0.1	0.1	0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.1	<0.1	0.1
Total sediment	3.7	2.9	4.9	15.4	7.3	9.8	12.4	15.4	29.8	13.3	24.9	31.6	25.4
Sediment NPS Impairment Potential	L	L	L	M	L	M	M	M	H	M	H	H	H
Septic tanks													
# Septic tanks per acre	0.04	0.01	0.02	0.01	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
# Septic tanks failing per acre (Estimated)	0.013	0.004	0.005	0.004	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
# of alternative septic systems per acre	ur	ur	ur	ur	ur	ur	ur	ur	ur	ur	ur	ur	ur
Resource concerns in the sub-watershed													
Excessive erosion on cropland							X						
Gully erosion on agricultural land													
Road and roadbank erosion													
Poor soil condition (cropland)													
Excessive animal waste applied to land													
Excessive pesticides applied to land													
Excessive sediment from cropland							X						
Excessive sediment from roads/roadbanks													
Excessive sediment from urban development				X		X		X	X			X	X
Inadequate management of animal wastes													
Nutrients in surface waters									X				
Pesticides in surface waters								X	X			X	
Bacteria and other organisms in surface waters				X	X		X	X				X	X
Low dissolved oxygen in surface waters													
Livestock are overgrazing pastures													
Livestock commonly have access to streams													

a. ur=unreported

Appendix I, cont. Sedimentation estimates by source, forest condition, septic tank information and resource concerns by sub-watershed in the Cahaba and Black Warrior River Basins as provided by the local Soil and Water Conservation Districts (SWCD) on Conservation Assessment Worksheets (ASWCC 1998).

Basin Code- Cataloging Unit	Upper Black Warrior (0316-0112)								
Sub-watershed	040	050	060	070	080	090	100	110	120
County/SWCD District	Jefferson	Fayette, Tuscaloosa	Tuscaloosa, Walker	Tuscaloosa	Tuscaloosa	Fayette	Fayette, Tuscaloosa	Tuscaloosa	Tuscaloosa
Forest condition									
% Needing forest improvement[a]	88	ur	30	ur	ur	ur	ur	ur	ur
Potential for forestry NPS	H		M						
Sedimentation rates (tons/acre/year)									
Cropland	0.0	<0.1	0.0	0.0	<0.1	0.1	0.2	<0.1	<0.1
Sand & gravel pits	0.0	0.2	<0.1	0.2	0.1	0.1	0.8	0.2	0.1
Mined land	1.8	2.0	25.3	23.2	12.0	0.1	0.5	2.1	9.8
Developing urban land	0.0	<0.1	0.0	0.1	0.2	5.3	0.1	1.2	0.9
Critical areas	1.5	0.1	0.7	0.1	0.3	<0.1	0.3	0.1	<0.1
Gullies	4.9	0.4	2.5	0.2	0.1	0.1	0.2	0.3	0.1
Stream banks	0.2	0.5	<0.1	<0.1	<0.1	1.2	0.2	<0.1	<0.1
Dirt roads and roadbanks	0.1	1.6	0.6	1.4	0.2	1.2	0.5	1.5	1.4
Woodlands	0.1	1.1	1.5	1.5	1.5	0.2	1.3	0.5	1.0
Total sediment	8.5	5.9	30.6	26.7	14.5	8.3	4.0	5.7	13.5
Sediment NPS Impairment Potential	M	L	H	H	M	M	L	L	M
Septic tanks									
# Septic tanks per acre	0.00	0.01	0.01	<0.01	0.01	0.01	0.04	0.01	0.06
# Septic tanks failing per acre (Estimated)	0.000	0.001	0.003	<0.001	<0.001	0.001	0.004	<0.001	0.006
# of alternative septic systems per acre	ur	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002	0.0001	0.0011
Resource concerns in the sub-watershed									
Excessive erosion on cropland							X		
Gully erosion on agricultural land									
Road and roadbank erosion		X	X	X	X		X	X	
Poor soil condition (cropland)									
Excessive animal waste applied to land									
Excessive pesticides applied to land									
Excessive sediment from cropland									
Excessive sediment from roads/roadbanks		X		X			X	X	X
Excessive sediment from urban development					X		X	X	X
Inadequate management of animal wastes							X		X
Nutrients in surface waters			X	X				X	
Pesticides in surface waters									
Bacteria and other organisms in surface waters		X	X	X				X	
Low dissolved oxygen in surface waters			X						
Livestock are overgrazing pastures		X	X		X		X		
Livestock commonly have access to streams		X	X		X		X		X

a. ur=unreported

Appendix I, cont. Sedimentation estimates by source, forest condition, septic tank information and resource concerns by sub-watershed in the Cahaba and Black Warrior River Basins as provided by the local Soil and Water Conservation Districts (SWCD) on Conservation Assessment Worksheets (ASWCC 1998).

Basin Code- Cataloging Unit	Lower Black Warrior (0316-0113)											
Sub-watershed	010	020	030	040	050	060	070	080	090	100	110	120
County/SWCD District	Tuscaloosa	Tuscaloosa	Bibb, Hale, Tuscaloosa	Hale, Tuscaloosa	Greene, Tuscaloosa	Hale	Hale	Greene	Bibb, Hale	Hale	Greene	Hale, Perry
Forest condition												
% Needing forest improvement[a]	ur	ur	1	11	7	13	12	45	12	9	35	15
Potential for forestry NPS			L	L	L	L	L	M	L	L	M	L
Sedimentation rates (tons/acre/year)												
Cropland	0.6	0.2	0.1	0.6	0.3	1.8	<0.1	<0.1	0.4	0.8	0.1	0.4
Sand & gravel pits	0.4	0.2	0.1	0.3	0.7	0.0	0.4	3.5	0.0	0.0	3.5	0.1
Mined land	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Developing urban land	0.5	2.2	0.1	0.7	0.1	0.0	0.0	0.0	0.0	0.0	0.6	0.2
Critical areas	0.1	0.1	0.3	4.8	0.3	<0.1	0.1	0.2	<0.1	<0.1	0.1	0.1
Gullies	0.3	0.1	0.2	0.5	0.3	0.0	1.4	0.4	2.5	0.0	0.2	0.3
Stream banks	<0.1	<0.1	0.1	0.9	0.1	0.9	0.1	0.1	0.3	0.3	0.1	0.6
Dirt roads and roadbanks	1.5	0.6	1.1	0.6	0.5	0.1	0.3	0.1	0.3	0.5	0.1	0.3
Woodlands	0.8	0.8	1.2	0.5	1.2	0.0	0.0	0.2	<0.1	0.0	0.2	0.1
Total sediment	4.2	4.2	3.1	8.9	3.5	2.8	2.3	4.6	3.6	1.7	4.8	2.0
Sediment NPS Impairment Potential	L	L	L	M	L	L	L	L	L	L	L	L
Septic tanks												
# Septic tanks per acre	0.07	0.09	0.04	0.01	0.03	0.00	0.00	<0.01	<0.01	0.00	<0.01	<0.01
# Septic tanks failing per acre (Estimated)	0.004	0.005	0.003	0.001	0.001	0.000	0.000	0.002	0.001	0.000	0.002	0.001
# of alternative septic systems per acre	0.0008	0.0010	0.0003	0.0000	0.0005	ur	ur	0.0001	0.0000	ur	0.0006	0.0000
Resource concerns in the sub-watershed												
Excessive erosion on cropland			X	X		X			X	X		X
Gully erosion on agricultural land								X			X	
Road and roadbank erosion			X	X	X	X	X	X	X	X	X	X
Poor soil condition (cropland)				X		X	X					
Excessive animal waste applied to land												
Excessive pesticides applied to land												
Excessive sediment from cropland												
Excessive sediment from roads/roadbanks			X	X	X	X	X	X	X	X	X	X
Excessive sediment from urban development	X	X	X	X								
Inadequate management of animal wastes					X			X				
Nutrients in surface waters												
Pesticides in surface waters												
Bacteria and other organisms in surface waters			X	X	X	X	X	X	X	X		X
Low dissolved oxygen in surface waters												
Livestock are overgrazing pastures			X		X		X	X			X	X
Livestock commonly have access to streams	X	X	X	X	X		X	X			X	X

a. ur=unreported

Appendix I, cont. Sedimentation estimates by source, forest condition, septic tank information and resource concerns by sub-watershed in the BWC Basin Group as provided by the local SWCD on Conservation Assessment Worksheets (ASWCC 1998).

Basin Code- Cataloging Unit	Lower Black Warrior (0316-0113)						
Sub-watershed	130	140	150	160	170	180	190
County/SWCD District	Hale	Greene	Hale	Hale, Marengo, Perry	Hale	Greene	Hale, Marengo
Forest condition							
% Needing forest improvement[a]	35	19	11	8	2	36	5
Potential for forestry NPS	Hale	L	L	L	L	M	L
Sedimentation rates (tons/acre/year)							
Cropland	0.0	0.2	1.0	0.5	1.5	0.1	0.2
Sand & gravel pits	0.0	0.4	0.0	0.0	0.0	0.6	0.0
Mined land	0.0	0.0	0.0	0.0	0.0	0.0	1.3
Developing urban land	0.0	6.3	0.0	0.2	0.1	0.0	0.1
Critical areas	0.1	<0.1	0.2	0.1	0.1	0.1	0.8
Gullies	0.0	0.2	1.9	0.8	0.6	1.0	2.8
Stream banks	3.3	0.9	1.7	0.6	1.6	1.2	3.7
Dirt roads and roadbanks	0.9	0.3	0.2	0.1	0.1	0.3	0.2
Woodlands	0.0	0.1	0.0	0.1	0.0	0.2	<0.1
Total sediment	4.3	8.4	5.0	2.4	3.8	3.4	9.0
Potential for sediment NPS	L	M	L	L	L	L	M
Septic tanks							
# Septic tanks per acre	0.00	0.01	0.00	<0.01	0.00	0.01	0.01
# Septic tanks failing per acre (Estimated)	0.000	0.007	0.000	0.001	0.000	0.006	0.011
# of alternative septic systems per acre	0.0000	0.0002	0.0000	0.0000	ur	0.0000	0.0001
Resource concerns in the sub-watershed							
Excessive erosion on cropland		X	X	X	X		X
Gully erosion on agricultural land		X	X	X	X		X
Road and roadbank erosion	X	X	X	X	X	X	X
Poor soil condition (cropland)			X	X	X		X
Excessive animal waste applied to land							
Excessive pesticides applied to land							
Excessive sediment from cropland				X			
Excessive sediment from roads/roadbanks	X	X	X	X	X	X	X
Excessive sediment from urban development							
Inadequate management of animal wastes							
Nutrients in surface waters		X					
Pesticides in surface waters							
Bacteria and other organisms in surface waters	X		X	X	X		X
Low dissolved oxygen in surface waters							
Livestock are overgrazing pastures		X	X	X	X	X	X
Livestock commonly have access to streams		X	X	X	X	X	X

a. ur=unreported

Appendix J. Physical characteristics and habitat quality of sites assessed in the Black Warrior and Cahaba River basins during ADEM's 2002 NPS Basinwide Screening Assessment.

CU		Cahaba River										
Sub-watershed		050	050	120	120	130	140	140	150	160	170	170
Station		PMUS-6	SAVS-7	AFF-2	BLU-1	WLT-1	MIL-1	OTWN-1	WAT-1	OAKG-3	CHIL-2	DRY-1
Date (YYMMDD)		020516	020516	020515	020515	20515	020514	020514	020514	020514	020509	020509
Subecoregion		67h	67h	65i	65i	65i	65i	65p	65i	65i	65a	65a
Drainage area (mi^2)												
Width (ft)		20	20	15	30	20	25	15	15	25	5	25
Canopy cover[b]		O	S	MS	S	50/50	S	S	MO	S	MS	MO
Depth (ft)	Riffle	0.4	0.3							1.0		0.1
	Run	1.0	1.0	0.5	1.0	0.3	1.0	0.5		2.0		0.2
	Pool	2.0	2.0	1.5	3.0	0.5	1.5			2.8		1.0
Substrate (%)	Bedrock	0	0	0	0	0	0	0	0	65 (Clay)	0	70 (Clay)
	Boulder	3	0	0	0	0	0	0	0	0	0	5 (Clay)
	Cobble	10	5	0	0	1	0	0	1	0	0	10 (Clay)
	Gravel	46	20	0	0	5	2	1	20	0	0	5 (Clay)
	Sand	30	45	87	60	79	65	92	70	19	90	2
	Silt	5	15	6	10	5	15	5	4	5	6	5 (Clay)
	Detritus	4	7	7	27	8	17	2	5	6	2	3
	Clay	2	2	0	0	1	0	0	0	5	2	0
	Organic silt	0	1	0	3	1	1	0	0	0	0	0
Habitat assessment form[c]		RR	RR	GP	GP	GP	GP	GP	RR	GP	GP	GP
Habitat survey (% maximum)												
	Instream habitat quality	73	56	48	67	36	43	28	58	58	32	33
	Sediment deposition	56	48	74	75	68	53	60	55	81	58	71
	Sinuosity	72	20	45	40	43	40	38	68	38	43	45
	Bank and vegetative stability	66	59	45	30	40	20	38	56	16	25	31
	Riparian measurements	95	98	66	90	90	60	93	74	90	45	88
Habitat assessment score		174	149	129	138	115	94	114	152	126	93	110
% Maximum		72	62	58	63	52	43	52	63	57	42	50
Assessment[d]		Excellent	Good	Good	Excellent	Good	Fair	Good	Good	Good	Fair	Good

a. No flow; Assessment not conducted

b. Canopy cover: S=shaded; MS=mostly shaded; 50/50=50% shaded; MO=mostly open; O=open

c. Habitat assessment form: RR=riffle/run (Barbour et al. 1999); GP=glide/pool (Barbour et al. 1999)

d. Assessment guidelines based on data collected at reference sites, 1991-2003; NG=no assessment guidelines

e. Bridge construction; No assessment conducted

f. Algal mats/Decaying algae

g. Beaverdam; Not flowing; Assessment not conducted

h. chemical/physical data collected during ADEM's §303(d) Monitoring Program

Appendix J, cont. Physical characteristics and habitat quality of sites assessed in the Black Warrior and Cahaba River basins during ADEM's 2002 NPS Basinwide Screening Assessment.

CU		Mulberry Fork											
Sub-watershed		010	010	010	010	020	030	040	070	080	090	100	100
Station		GSAMF-46	GSAMF-50	GSAMF-51	GSAMF-48	DUCC-69	BINC-190[h]	EMIC-73a	MUDC-2[h]	GSAMF-33	GSAMF-35	OTC-1	SLOW-11
Date (YYMMDD)		020619	020621	020618	020618	020619	020620	020619	020619	020619	020709	020605	020605
Subecoregion		68d	68d	68d	68d	68d	68d	68d	68d	68e	68e	68f	68e
Drainage area (mi^2)													
Width (ft)		25	20	15	35	55	30	25	15	30	80	45	17
Canopy cover[b]		MS	MS	MS	50/50	MO	MO	50/50	O	50/50	O	MO	S
Depth (ft)	Riffle	0.6	0.5	0.3	1.0		0.3	0.5	0.3	0.6			0.3
	Run	1.3	1.0	1.0	1.8		1.0	1.0	1.3	1.0	1.5	2.3	1.0
	Pool	2.5	1.5	2.5	3.5		2.5	1.5	3.0	1.2	2.0	3.5+	2.0
Substrate (%)	Bedrock	0	21	1	5	10	0	20	45	0	20	0	5
	Boulder	50	31	5	15	50	5	5	12	7	30	5	2
	Cobble	5	16	35	25	0	25	10	5	35	11	5	20
	Gravel	10	11	35	35	0	30	15	7	30	15	15	20
	Sand	20	16	15	10	25	25	35	18	15	5	35	45
	Silt	10	2	4	4	10	10	10	5	10	2	10	0
	Detritus	5	3	5	5	5	3	5	1	3	2	6	7
	Clay	0	0	0	1	0	2	0	7	0	0	14	0
	Organic silt	0	0	0	0	0	0	0	0	0	10[f]	10	0
Habitat assessment form[c]		RR	RR	RR	RR	GP	RR	RR	RR	RR	GP	GP	RR
Habitat survey (% maximum)													
	Instream habitat quality	81	72	76	78	65	77	72	58	61	83	56	66
	Sediment deposition	73	56	65	74	70	49	49	45	54	81	63	60
	Sinuosity	93	92	78	55	30	72	38	80	68	68	35	80
	Bank and vegetative stability	89	84	65	86	64	53	73	40	73	61	39	58
	Riparian measurements	90	35	73	90	84	85	91	25	78	78	80	93
Habitat assessment score		203	156	169	191	148	167	162	109	156	170	125	173
% Maximum		85	65	70	80	67	70	67	45	65	77	57	72
Assessment[d]		Excellent	Good	Good	Excellent	Excellent	Good	Excellent	Fair	Good	Excellent	Good	Excellent

a. No flow; Assessment not conducted

b. Canopy cover: S=shaded; MS=mostly shaded; 50/50=50% shaded; MO=mostly open; O=open

c. Habitat assessment form: RR=riffle/run (Barbour et al. 1999); GP=glide/pool (Barbour et al. 1999)

d. Assessment guidelines based on data collected at reference sites, 1991-2003; NG=no assessment guidelines

e. Bridge construction; No assessment conducted

f. Algal mats/Decaying algae

g. Beaverdam; Not flowing; Assessment not conducted

h. chemical/physical data collected during ADEM's §303(d) Monitoring Program

Appendix J, cont. Physical characteristics and habitat quality of sites assessed in the Black Warrior and Cahaba River basins during ADEM's 2002 NPS Basinwide Screening Assessment.

CU		Mulberry Fork										
Sub-watershed		110	110	120	130	130	170	170	170	180	180	190
Station		GSAMF-29	SULC-10a	BROW-17	BWCUA-1	BWCUA-1	CANW-2[h]	LOSW-2[h]	LOSW-5[g, h]	WOFW-1[a, h]	WOFW-3[h]	BAKW-10
Date (YYMMDD)		020619	020619	020613	020605	020612	020605	020605	020605	020605	020606	020605
Subecoregion		68e	68e	68e	68f	68f	68f	68f	68f	68f	68f	68f
Drainage area (mi^2)												
Width (ft)		15	12	15	60	60	25	40			30	7
Canopy cover[b]		50/50	MO	S	O	O	50/50	MS			S	MO
Depth (ft)	Riffle	0.8	0.3	0.5	0.8	1.0	NP	1.0			0.3	0.5
	Run	1.2	0.6	1.5	1.5	2.0	1.3	2.0			1.5	1.0
	Pool	1.5	2.0	3.5	3.5+	1.5	3.5	3.5			3.5+	4.0+
Substrate (%)	Bedrock	35	75	0	35	5	0	0			0	0
	Boulder	22	8	10	35	50	3	10			5	0
	Cobble	15	5	15	5	33	35	10			5	5
	Gravel	5	2	10	5	3	35	20			5	10
	Sand	15	7	45	5	5	5	47			75	50
	Silt	5	1	15	12	1	10	0			5	6
	Detritus	3	2	5	3	3	12	12			5	4
	Clay	0	0	0	0	0	0	1			5	10
	Organic silt	0	0	0	0	0	0	0			0	15
Habitat assessment form[c]		RR	RR	RR	RR	RR	GP	RR			RR	RR
Habitat survey (% maximum)												
	Instream habitat quality	78	65	68	90	89	82	71			46	48
	Sediment deposition	61	86	60	85	86	81	59			45	34
	Sinuosity	85	58	85	53	85	38	80			78	40
	Bank and vegetative stability	48	65	61	85	90	38	49			46	81
	Riparian measurements	58	74	88	90	91	88	83			90	90
Habitat assessment score		163	168	173	201	213	151	166			146	144
% Maximum		68	71	72	84	89	68	69			61	60
Assessment[d]		Good	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent			Good	Good

a. No flow; Assessment not conducted

b. Canopy cover: S=shaded; MS=mostly shaded; 50/50=50% shaded; MO=mostly open; O=open

c. Habitat assessment form: RR=riffle/run (Barbour et al. 1999); GP=glide/pool (Barbour et al. 1999)

d. Assessment guidelines based on data collected at reference sites, 1991-2003; NG=no assessment guidelines

e. Bridge construction; No assessment conducted

f. Algal mats/Decaying algae

g. Beaverdam; Not flowing; Assessment not conducted

h. chemical/physical data collected during ADEM's §303(d) Monitoring Program

Appendix J, cont. Physical characteristics and habitat quality of sites assessed in the Black Warrior and Cahaba River basins during ADEM's 2002 NPS Basinwide Screening Assessment.

CU		Sipsey Fork											Locust Fork	
Sub-watershed		050	050	050	050	080	090	090	110	110	110	130	010	020
Station		CLCW-53b	CLCW-53c	LCLW-19	WIDW-18	ROCW-52b	CROC-54a	GSAMF-22	ROCC-15	RYNC-1[h]	RYNC-1[h]	MILW-18a[e]	GSA-27[a]	GSA-26
Date (YYMMDD)		020612	020612	020612	020612	020613	020618	020618	020618	020619	020521	020618	020619	020619
Subecoregion		68e	68e	68e	68e	68d	68d	68e	68e	68e	68e	68e	68d	67f
Drainage area (mi^2)														
Width (ft)		25	35	15	25	30	40	60	30	35	40			40
Canopy cover[b]		S	MS	MS	50/50	50/50	50/50	O	MS	50/50	50/50			MO
Depth (ft)	Riffle				0.3	0.3	0.5	1.0	0.3	0.7	0.5			0.7
	Run	1.0	1.5	1.3	1.3	1.0	1.0	1.5	1.5	1.0	2.0			1.5
	Pool	3.0	3.0	3.2	3.5	2.5	2.0	2.5	2.0	2.0	3.5			2.5
Substrate (%)	Bedrock	0	0	5	5	5	2	20	5	15	85			0
	Boulder	3	2	5	10	24	6	25	37	30	0			5
	Cobble	2	2	10	10	24	7	20	25	25	0			30
	Gravel	5	5	5	5	24	14	10	5	5	0			30
	Sand	55	60	55	48	14	49	20	20	15	0			25
	Silt	10	6	15	15	4	9	0	3	5	0			5
	Detritus	19	20	5	5	5	10	2	3	3	0			5
	Clay	5	5	0	2	0	3	3	2	2	0			0
	Organic silt	0	0	0	0	0	0	0	0	0	0			0
Habitat assessment form[c]		GP	GP	GP	RR	RR	RR	RR	RR	RR	RR			RR
Habitat survey (% maximum)														
	Instream habitat quality	57	53	50	63	67	63	80	75	67	39			71
	Sediment deposition	73	75	79	58	71	44	73	73	73	95			68
	Sinuosity	48	38	55	60	90	45	65	85	55	100			60
	Bank and vegetative stability	28	40	50	86	63	75	58	65	58	84			68
	Riparian measurements	70	64	86	90	75	86	75	90	89	60			64
Habitat assessment score		121	127	142	179	169	161	173	188	172	173			158
% Maximum		55	58	65	75	70	67	72	78	72	72			66
Assessment[d]		Good	Excellent	Good	Excellent	Good	Excellent	Excellent	Excellent	Excellent	Excellent			Good

a. No flow; Assessment not conducted

b. Canopy cover: S=shaded; MS=mostly shaded; 50/50=50% shaded; MO=mostly open; O=open

c. Habitat assessment form: RR=riffle/run (Barbour et al. 1999); GP=glide/pool (Barbour et al. 1999)

d. Assessment guidelines based on data collected at reference sites, 1991-2003; NG=no assessment guidelines

e. Bridge construction; No assessment conducted

f. Algal mats/Decaying algae

g. Beaverdam; Not flowing; Assessment not conducted

h. chemical/physical data collected during ADEM's §303(d) Monitoring Program

Appendix J, cont. Physical characteristics and habitat quality of sites assessed in the Black Warrior and Cahaba River basins during ADEM's 2002 NPS Basinwide Screening Assessment.

CU		Locust Fork								U. Black Warrior R.		
Sub-watershed		030	040	050	050	060	080	080	080	080	090	100
Station		CLEM-76a	SLAM-22c	DRYB-11[h]	GRVB-4	LCPB-23a	LONB-24a	SUGB-13	WHTB-12	DAVT-27c	NORF-28c	BINT-31f
Date (YYMMDD)		020530	020530	020529	020529	020529	020528	020528	020528	020604	020528	020604
Subecoregion		68d	68d	68d	68d	68d	68f	68d	68e	68f	65i	68f
Drainage area (mi^2)												
Width (ft)		35	25	25	50	45	25	20	20	45	30	30
Canopy cover[b]		MS	MO	O	MS	MS	50/50	MS	50/50	MS	MO	50/50
Depth (ft)	Riffle	1.0		0.5	0.3	1.5	0.4	0.5	0.3	0.5	0.3	
	Run	1.5	2.0	1.0	1.0	2.0	0.8	1.0	0.8	1.5	2.0	2.0
	Pool	3.5	3.0+	1.5	2.0	3.0+	2.0	2.5	1.0	2.5	3.5	4.0
Substrate (%)	Bedrock	0	1	57	60	25	2	50	48	75	60	0
	Boulder	50	0	5	13	35	4	10	30	5	5	0
	Cobble	10	0	15	5	25	35	15	10	5	5	0
	Gravel	10	0	5	2	5	40	5	2	5	10	0
	Sand	20	75	5	15	4	10	9	2	5	15	90
	Silt	4	5	10	3	3	3	5	5	2	2	5
	Detritus	6	15	3	3	3	5	4	3	3	3	5
	Clay	0	2	0	0	0	1	2	0	0	0	0
	Organic silt	0	2	0	0	0	0	0	0	0	0	0
Habitat assessment form[c]		RR	GP	RR	RR	RR	RR	RR	RR	RR	RR	GP
Habitat survey (% maximum)												
	Instream habitat quality	80	45	58	70	93	77	67	72	76	63	45
	Sediment deposition	51	66	70	85	85	68	68	93	81	64	70
	Sinuosity	90	63	65	82	75	95	78	70	85	62	58
	Bank and vegetative stability	76	26	81	88	91	65	59	88	89	33	28
	Riparian measurements	84	51	58	94	95	56	53	76	93	90	90
Habitat assessment score		185	112	162	199	214	168	160	190	205	156	123
% Maximum		77	51	68	83	89	70	66	79	85	65	56
Assessment[d]		Excellent	Fair	Good	Excellent	Excellent	Excellent	Good	Excellent	Excellent	Good	Good

a. No flow; Assessment not conducted

b. Canopy cover: S=shaded; MS=mostly shaded; 50/50=50% shaded; MO=mostly open; O=open

c. Habitat assessment form: RR=riffle/run (Barbour et al. 1999); GP=glide/pool (Barbour et al. 1999)

d. Assessment guidelines based on data collected at reference sites, 1991-2003; NG=no assessment guidelines

e. Bridge construction; No assessment conducted

f. Algal mats/Decaying algae

g. Beaverdam; Not flowing; Assessment not conducted

h. chemical/physical data collected during ADEM's §303(d) Monitoring Program

Appendix J, cont. Physical characteristics and habitat quality of sites assessed in the Black Warrior and Cahaba River basins during ADEM's 2002 NPS Basinwide Screening Assessment.

CU		L. Black Warrior River												
Sub-watershed		030	110	120	120	140	150	150	160	160	160	170	170	190
Station		BSAT-59b	MING-41a	BBRH-42a	BBRH-42f	NHC-2	HINH-43a[a]	HINH-43a	BPRH-44a[e]	BPRH-44d	COTH-57c	BGEH-46a	LPRH-45b	YELH-3c
Date (YYMMDD)		020515	020507	020507	020507	020507	020508	020701	020508	020508	020508	020508	020508	020508
Subecoregion		65i	65i	65i	65i	65a	65p	65p	65a	65a	65a	65a	65a	65a
Drainage area (mi^2)														
Width (ft)		25	25	20		6		4		30	20	20	25	7
Canopy cover[b]		MO	MS	50/50	S	MS		S		50/50	50/50	S	O	MS
Depth (ft)	Riffle					0.1					0.2	0.4	0.5	0.1
	Run	1.0	1.0	1.0	2.0	0.6		0.5		1.0		0.6	1.0	0.4
	Pool	2.5	1.5	3.0+	3.0	1.0		2.0		3.0	2.5	0.8	1.5	0.8
Substrate (%)	Bedrock	0	1 (Clay)	0	0	60 (Clay)		0		0	30 (Clay)	25	0	34 (Clay)
	Boulder	0	0	0	0	1 (Clay)		0		0	0	0	10 (Clay)	2 (Clay)
	Cobble	0	0	0	0	1 (Clay)		0		0	0	0	20 (Clay)	9 (Clay)
	Gravel	2	5	1	0	2		0		0	20	5	1	23
	Sand	80	80	81	83	2		80		90	25	57	5	21
	Silt	10	5	1	0	32 (Clay)		5		2	10	10	25 (Clay)	9 (Clay)
	Detritus	8	9	17	17	2		11		6	4	3	35	2
	Clay	0	0	0	0	0		3		2	0	0	4	0
	Organic silt	0	0	0	0	0		1		0	12[f]	0	0	0
Habitat assessment form[c]		GP	GP	GP	GP	RR		GP		GP	GP	GP	GP	RR
Habitat survey (% maximum)														
	Instream habitat quality	43	53	57	50	27		36		36	49	43	57	43
	Sediment deposition	63	64	74	70	83		60		56	64	68	56	64
	Sinuosity	45	55	65	45	48		55		50	48	38	33	68
	Bank and vegetative stability	9	25	31	25	38		26		33	46	45	14	55
	Riparian measurements	15	88	90	80	81		81		80	69	68	0	63
Habitat assessment score		86	121	135	122	124		103		112	132	121	88	135
% Maximum		39	55	61	55	52		47		51	60	55	40	56
Assessment[d]		Fair	Good	Excellent	Good	Fair		Fair		Good	Good	Good	Fair	Good

a. No flow; Assessment not conducted

b. Canopy cover: S=shaded; MS=mostly shaded; 50/50=50% shaded; MO=mostly open; O=open

c. Habitat assessment form: RR=riffle/run (Barbour et al. 1999); GP=glide/pool (Barbour et al. 1999)

d. Assessment guidelines based on data collected at reference sites, 1991-2003; NG=no assessment guidelines

e. Bridge construction; No assessment conducted

f. Algal mats/Decaying algae

g. Beaverdam; Not flowing; Assessment not conducted

h. chemical/physical data collected during ADEM's §303(d) Monitoring Program

Appendix K. Bioassessment results from sites assessed in the Black Warrior and Cahaba River basins during ADEM's 2002 NPS Basinwide Screening Assessment.

CU	Cahaba River											
Sub-watershed	050	050	120	120	130	140	140	150	160	160	170	170
Station	PMUS-6	SAVS-7	AFF-2	BLU-1	WLT-1	MIL-1	OTWN-1	WAT-1	OAKG-1	OAKG-3	CHIL-2	DRY-1
Subecoregion	67h	67h	65i	65i	65p	65p	65i	65i	65i	65i	65a	65a
Macroinvertebrate community												
Date (yymmdd)	020516	020516	020515	020515	020515	020514	020514	020514		020514	020509	20509
# EPT families	8	9	12	12	11	10	9	10		5	2	7
Assessment	Fair	Good	Good	Good	Good	Excellent	Good	Excellent		Fair	Poor	Good
Fish community												
Date (yymmdd)	020726	020726	020716		020716	020711	020715	020711	020711			
Richness measures												
# species	12	19	18		21	20	18	16	21			
# darter species	2	3	3		2	2	1	1	4			
# minnow species	5	7	5		8	8	10	8	8			
# sunfish species	3	4	4		4	3	2	3	3			
# sucker species	1	2	1		3	2	1	1	2			
# intolerant species	2	1	3		4	3	3	2	3			
Composition measures												
% sunfish	30	37	25		8	15	3	3	3			
% omnivores and herbivores	8	19	3		10	11	6	17	10			
% insectivorous cyprinids	29	27	19		62	63	74	68	60			
% top carnivores	1	1	11		1	2	1	0	4			
Population measures												
# collected per hour	238	208	94		393	390	608	217	314			
% disease and anomalies	9	0	0		<1	0	0	0	0			
IBI score	34	44	46		56	48	48	44	50			
Assessment	Poor	Fair	Good/ Fair		Good/ Excellent	Good	Good	Fair	Good			

a. No flow; Assessment not conducted

b. Canopy cover: S=shaded; MS=mostly shaded; 50/50=50% shaded; MO=mostly open; O=open

c. Habitat assessment form: RR=riffle/run (Barbour et al. 1999); GP=glide/pool (Barbour et al. 1999)

d. Assessment guidelines based on data collected at reference sites, 1991-2003; NG=no assessment guidelines

e. Bridge construction; No assessment conducted

f. Algal mats/Decaying algae

g. Beaverdam; No flow; Assessment not conducted

h. physical/chemical data collected in conjunction with ADEM's §303(d) Monitoring Program

Appendix K. Bioassessment results from sites assessed in the Black Warrior and Cahaba River basins during ADEM's 2002 NPS Basinwide Screening Assessment.

CU	Mulberry Fork													
Sub-watershed	010	010	010	010	020	030	040	070	080	090	100	100	110	110
Station	GSAMF-46	GSAMF-50	GSAMF-51	GSAMF-48	DUCC-69	BINC-190[h]	EMIC-73a	MUDC-2[h]	GSAMF-33	GSAMF-35	OTC-1	SLOW-11	GSAMF-29	SULC-10a
Subecoregion	68d	68d	68d	68d	68d	68d	68d	68d	68e	68e	68f	68e	68e	68e
Macroinvertebrate community														
Date (yymmdd)	020619	020621	020618	020618	020619	020620	020619	020619	020619	020709	020605	020605	020619	020619
# EPT families	9	9	7	12	5	8	10	8	6	10	4	5	9	9
Assessment	Good	Good	Fair	Good	Fair	Good	Good	Good	Fair	Fair	Poor	Poor	Fair	Fair
Fish community														
Date (yymmdd)		020719	020719		020620	020612	020612			020729				
Richness measures														
# species		11	9		16	9	8			12				
# darter species		2	1		2	1	1			1				
# minnow species		2	2		6	3	2			4				
# sunfish species		4	2		4	3	2			3				
# sucker species		1	2		2	0	0			1				
# intolerant species		1	1		2	1	0			1				
Composition measures														
% sunfish		38	60		15	24	23			8				
% omnivores and herbivores		51	26		17	45	75			24				
% insectivorous cyprinids		0	0		42	30	0			49				
% top carnivores		2	<1		<1	<1	2			3				
Population measures														
# collected per hour		164	437		640	502	471			266				
% disease and anomalies		0	0		0	0	2			0				
IBI score		32	34		40	30	26			42				
Assessment		Poor	Poor		Fair	Poor	Poor/ Very poor			Fair				

a. No flow; Assessment not conducted

b. Canopy cover: S=shaded; MS=mostly shaded; 50/50=50% shaded; MO=mostly open; O=open

c. Habitat assessment form: RR=riffle/run (Barbour et al. 1999); GP=glide/pool (Barbour et al. 1999)

d. Assessment guidelines based on data collected at reference sites, 1991-2003; NG=no assessment guidelines

e. Bridge construction; No assessment conducted

f. Algal mats/Decaying algae

g. Beaverdam; No flow; Assessment not conducted

h. physical/chemical data collected in conjunction with ADEM's §303(d) Monitoring Program

Appendix K. Bioassessment results from sites assessed in the Black Warrior and Cahaba River basins during ADEM's 2002 NPS Basinwide Screening Assessment.

CU	Mulberry Fork								Sipsey Fork			
Sub-watershed	120	130	170	170	170	180	180	190	050	050	050	050
Station	BROW-17	BWCUA-1	CANW-2[h]	LOSW-2[h]	LOSW-5[g, h]	WOFW-1[a, h]	WOFW-3[h]	BAKW-10	CLCW-53b	CLCW-53c	LCLW-19	WIDW-18
Subecoregion	68e	68f	68f	68f	68f	68f	68f	68f	68e	68e	68e	68e
Macroinvertebrate community												
Date (yymmdd)	020613	020605	020605	020605	020605	020605	020606	020605	020612	020612	020612	020612
# EPT families	7	12	6	5			5	2	6	10	11	14
Assessment	Fair	Good	Fair	Poor			Poor	Poor	Fair	Fair	Good	Good
Fish community												
Date (yymmdd)		020619	020619							020725	020725	020725
Richness measures												
# species		9	10							12	10	10
# darter species		1	2							1	1	1
# minnow species		1	3							5	3	4
# sunfish species		4	3							2	1	2
# sucker species		0	0							0	0	0
# intolerant species		2	1							0	1	0
Composition measures												
% sunfish		62	17							14	7	7
% omnivores and herbivores		10	48							5	24	7
% insectivorous cyprinids		0	24							28	17	52
% top carnivores		7	1							6	5	11
Population measures												
# collected per hour		84	227							159	72	145
% disease and anomalies		0	0							0	0	0
IBI score		30	36							36	32	38
Assessment		Poor	Fair/ Poor							Fair/ Poor	Poor	Fair/ Poor

a. No flow; Assessment not conducted
b. Canopy cover: S=shaded; MS=mostly shaded; 50/50=50% shaded; MO=mostly open; O=open
c. Habitat assessment form: RR=riffle/run (Barbour et al. 1999); GP=glide/pool (Barbour et al. 1999)
d. Assessment guidelines based on data collected at reference sites, 1991-2003; NG=no assessment guidelines
e. Bridge construction; No assessment conducted
f. Algal mats/Decaying algae
g. Beaverdam; No flow; Assessment not conducted
h. physical/chemical data collected in conjunction with ADEM's §303(d) Monitoring Program

Appendix K. Bioassessment results from sites assessed in the Black Warrior and Cahaba River basins during ADEM's 2002 NPS Basinwide Screening Assessment.

CU	Sipsey Fork						Locust Fork							
Sub-watershed	080	090	090	110	110	130	010	020	030	040	050	050	060	080
Station	ROCW-52b	CROC-54a	GSAMF-22	ROCC-15	RYNC-1	MILW-18a[e]	GSA-27[a]	GSA-26	CLEM-76a	SLAM-22c	DRYB-11[h]	GRVB-4[h]	LCPB-23a	LONB-24a
Subecoregion	68d	68d	68e	68e	68e	68e	68d	67f	68d	68d	68d	68d	68d	68f
Macroinvertebrate community														
Date (yymmdd)	020613	020618	020618	020618	020619	020618	020619	020619	020530	020530	020529	020529	020529	020528
# EPT families	11	7	6	10	11			9	10	5	5	10	13	12
Assessment	Good	Fair	Fair	Fair	Good			Fair	Good	Fair	Fair	Good	Excellent	Good
Fish community														
Date (yymmdd)		020730			020612				020719					020718
Richness measures														
# species		15			10				15					14
# darter species		2			2				3					3
# minnow species		4			2				4					4
# sunfish species		4			3				4					4
# sucker species		2			0				1					2
# intolerant species		1			1				1					2
Composition measures														
% sunfish		30			8				52					12
% omnivores and herbivores		33			57				20					56
% insectivorous cyprinids		20			11				7					18
% top carnivores		1			12				2					1
Population measures														
# collected per hour		210			459				153					162
% disease and anomalies		0			0				0					0
IBI score		36			34				36					36
Assessment		Fair/ Poor			Poor				Fair/ Poor					Fair/ Poor

a. No flow; Assessment not conducted
b. Canopy cover: S=shaded; MS=mostly shaded; 50/50=50% shaded; MO=mostly open; O=open
c. Habitat assessment form: RR=riffle/run (Barbour et al. 1999); GP=glide/pool (Barbour et al. 1999)
d. Assessment guidelines based on data collected at reference sites, 1991-2003; NG=no assessment guidelines
e. Bridge construction; No assessment conducted
f. Algal mats/Decaying algae
g. Beaverdam; No flow; Assessment not conducted
h. physical/chemical data collected in conjunction with ADEM's §303(d) Monitoring Program

Appendix K. Bioassessment results from sites assessed in the Black Warrior and Cahaba River basins during ADEM's 2002 NPS Basinwide Screening Assessment.

CU	Locust Fork		U. Black Warrior R.			L. Black Warrior River							
Sub-watershed	080	080	080	090	100	030	110	120	120	120	140	150	150
Station	SUGB-13	WHTB-12	DAVT-27c	NORF-28c	BINT-31f	BSAT-59b	MING-41a	BBRH-42a	BBRH-42f	BBRH-42g	NHC-2	HINH-43a[a]	HINH-43a
Subecoregion	68d	68e	68f	65i	68f	65i	65i	65i	65i	65i	65a	65p	65p
Macroinvertebrate community													
Date (yymmdd)	020528	020528	020604	020528	020604	020515	020507	020507	020507		020507	020508	020701
# EPT families	14	8	5	10	6	10	7	4	7		2		5
Assessment	Excellent	Fair	Fair	Fair	Fair	Good	Fair	Poor	Fair		Poor		Good
Fish community													
Date (yymmdd)	020718			020619		020715				020715			
Richness measures													
# species	17			21		15				22			
# darter species	3			3		3				3			
# minnow species	5			8		5				8			
# sunfish species	4			4		3				4			
# sucker species	3			2		1				2			
# intolerant species	1			3		3				4			
Composition measures													
% sunfish	31			10		5				11			
% omnivores and herbivores	42			34		37				6			
% insectivorous cyprinids	15			39		11				52			
% top carnivores	1			0		2				5			
Population measures													
# collected per hour	286			504		184				194			
% disease and anomalies	0			0		0				0			
IBI score	42			48		40				48			
Assessment	Fair			Good		Fair				Good			

a. No flow; Assessment not conducted

b. Canopy cover: S=shaded; MS=mostly shaded; 50/50=50% shaded; MO=mostly open; O=open

c. Habitat assessment form: RR=riffle/run (Barbour et al. 1999); GP=glide/pool (Barbour et al. 1999)

d. Assessment guidelines based on data collected at reference sites, 1991-2003; NG=no assessment guidelines

e. Bridge construction; No assessment conducted

f. Algal mats/Decaying algae

g. Beaverdam; No flow; Assessment not conducted

h. physical/chemical data collected in conjunction with ADEM's §303(d) Monitoring Program

Appendix K. Bioassessment results from sites assessed during ADEM's 2002 NPS Basinwide Screening Assessment.

	L. Black Warrior R.						
Sub-watershed	160	160	160	160	170	170	190
Station	BPRH-44a[e]	BPRH-44b	BPRH-44d	COTH-57c	BGEH-46a	LPRH-45b	YELH-3c
Subecoregion	65a	65a	65a	65a	65a	65a	65a
Macroinvertebrate community							
Date (yymmdd)	020508		020508	020508	020508	020508	020508
# EPT families			7	0	6	5	6
Assessment			Good	Poor	Good	Fair	Good
Fish community							
Date (yymmdd)		020712			020712		
Richness measures							
# species		15			19		
# darter species		2			2		
# minnow species		3			8		
# sunfish species		3			4		
# sucker species		1			0		
# intolerant species		1			1		
Composition measures							
% sunfish		26			44		
% omnivores and herbivores		30			9		
% insectivorous cyprinids		16			37		
% top carnivores		3			2		
Population measures							
# collected per hour		78			279		
% disease and anomalies		0			0		
IBI score		32			40		
Assessment		Poor			Fair		

a. No flow; Assessment not conducted

b. Canopy cover: S=shaded; MS=mostly shaded; 50/50=50% shaded; MO=mostly open; O=open

c. Habitat assessment form: RR=riffle/run (Barbour et al. 1999); GP=glide/pool (Barbour et al. 1999)

d. Assessment guidelines based on data collected at reference sites, 1991-2003; NG=no assessment guidelines

e. Bridge construction; No assessment conducted

f. Algal mats/Decaying algae

g. Beaverdam; No flow; Assessment not conducted

h. physical/chemical data collected in conjunction with ADEM's §303(d) Monitoring Program

Appendix L-1. ADEM Riffle/Run habitat assessement field data sheet

Habitat Parameter	Category: Optimal	Suboptimal	Marginal	Poor
1 **Instream Cover**	>50% mix of boulder, cobble, submerged logs, undercut banks, or other stable habitat.	50-30% mix of boulder, cobble, or other stable habitat; adequate habitat.	30-10% mix of boulder, cobble, or other stable habitat; habitat availability less than desirable.	<10% mix of boulder, cobble, or other stable habitat; lack of habitat is obvious.
Score ______	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2 **Epifaunal surface**	Well developed riffle and run; riffles as wide as stream and length is 2x the width of stream; abundance of cobble.	Riffle is as wide as stream, but length is <2 times width; abundance of cobble; boulders and gravel common.	Run area may be lacking; riffle not as wide as stream and its length is <2 times the stream width; gravel or large boulders and bedrock prevalent; some cobble present.	Riffles or run virtually non existent; large boulders and bedrock prevalent; cobble lacking.
Score ______	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3 **Embeddedness**	Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment	Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment	Gravel, cobble and boulder particles are 50-75% surrounded by fine sediment.	Gravel, cobble and boulder particles are >75% surrounded by fine sediment.
Score ______	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4 **Velocity/Depth Regimes**	All 4 velocity/depth regimes present (slow-deep, slow-shallow, fast-shallow, fast-deep).	Only 3 of 4 regimes present. (if fast-shallow is missing, score lower.)	Only 2 of 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).	Dominated by 1 velocity/depth regime (usually slow-deep).
Score ______	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
5 **Man-made Channel Alteration**	No Channelization or dredging present.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization (>20 years) may be present, but not recent	New embankments present on both banks; and 40 - 80% of stream reach is channelized and disrupted.	Banks shored with gabion or cement; >80% of the stream reach channelized and disrupted.
Score ______	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
6 **Sediment Deposition**	Little or no enlargement of islands or point bars and less than 5 % of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from coarse gravel; 5-30% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel coarse sand on old and new bars; 30-50% of the bottom affected; sediment deposits at obstruction, constriction, and bends; moderate deposition of pools	Heavy deposits of fine material, increased bar development; > 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
Score ______	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7 **Frequency of Riffles** (Distance between riffles/ stream width)	<5 5 6 7	8 9 11 13 15	16 18 21 23 25	26 28 30 32 34 ≥ 35
Score ______	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
8 **Channel flow Status**	Water reaches base of both lower banks.	Water fills >75% of the available channel.	Water fills 75 - 25% of the available channel and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
Score ______	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
9 **Condition of Banks**	Banks stable; no evidence (<5%) of erosion or bank failure.	Moderately stable; infrequent, small areas (5-30%) of erosion mostly healed over.	Moderately unstable; 30-60% of banks in reach have areas of erosion.	Unstable; many eroded areas; "raw" areas frequent Along straight section and bends; on side slopes, 60-100% of bank has erosional scars.
Score ______	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
10 **Bank Vegetative Protection**	>90% of the stream bank surfaces covered by vegetation.	90-70% of the streambank surfaces covered by vegetation.	70-50% of the stream bank surfaces covered by vegetation.	<50% of the streambank surfaces covered by vegetation.
Score (LB) ______	10 9 8	7 6	5 4 3	2 1 0
Score (RB) ______	10 9 8	7 6	5 4 3	2 1 0
11 **Grazing or other disruptive pressure**	Vegetative disruption, through grazing or mowing, minimal or not evident; almost all plants allowed to grow naturally.	Disruption evident but not affecting full plant growth potential to any great extent; >1/2 of the potential plant stubble height remaining.	Disruption obvious; patches of bare soil or closely cropped vegetation common; < 1/2 of the potential plant stubble height remaining.	Disruption of stream bank vegetation is very high; vegetation has been removed to ≤ 2 inches average stubble height.
Score (LB) ______	10 9 8	7 6	5 4 3	2 1 0
Score (RB) ______	10 9 8	7 6	5 4 3	2 1 0
12 **Riparian vegetative zone (each bank)**	Width of riparian zone >60 feet; human activities (i.e., parking lots, roadbeds, clearcuts, lawns, or crops) have not impacted zone.	Width of riparian zone 60 - 40 feet; human activities have impacted zone only minimally.	Width of riparian zone 40 - 20 feet; human activities have impacted zone a great deal.	Width of riparian zone <20 feet; little or no riparian vegetation due to human activities.
Score (LB) ______	10 9 8	7 6	5 4 3	2 1 0
Score (RB) ______	10 9 8	7 6	5 4 3	2 1 0

Appendix L-2. ADEM Glide/Pool habitat assessment field data sheet

Habitat Parameter	Category: Optimal	Suboptimal	Marginal	Poor
1 **Instream Cover**	> 50% mix of snags, submerged logs, undercut banks, or other stable habitat; rubble, gravel may be present.	50-30% mix of stable habitat; adequate habitat for maintenance of populations.	30-10% mix of stable habitat; habitat availability less than desirable.	<10% stable habitat; lack of habitat is obvious.
Score ______	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2 **Pool Substrate Characterization**	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present.	All mud or clay or sand bottom; little or no root mat; no submerged vegetation.	Hard-pan clay or bedrock; no root mat or vegetation.
Score ______	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3 **Pool Variability**	Even mix of large-shallow, large-deep, small-shallow, small-deep pools present.	Majority of pools large-deep; very few shallow.	Shallow pools much more prevalent than deep pools.	Majority of pools small-shallow or pools absent.
Score ______	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4 **Man-made Channel Alteration**	No Channelization or dredging present.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization (>20 years) may be present, but not recent.	New embankments present on both banks; channelization may be extensive, usually in urban or agriculture lands; and > 80% of stream reach is channelized and disrupted.	Extensive channelization; banks shored with gabion or cement; heavily urbanized areas; instream habitat greatly altered or removed entirely.
Score ______	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
5 **Sediment Deposition**	<20% of bottom affected; minor accumulation of fine and coarse material at snags and submerged vegetation; little or no enlargement of islands or point bars.	20-50% affected; moderate accumulation; substantial sediment movement only during major storm event; some new increase in bar formation.	50-80% affected; major deposition; pools shallow, heavily silted; embankments may be present on both banks; frequent and substantial sediment movement during storm events.	Channelized; mud, silt, and/or sand in braided or non-braided channels; pools almost absent due to deposition.
Score ______	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
6 **Channel Sinuosity**	Bends in stream increase stream length 3 to 4 times longer than if it was in a straight line.	Bends in stream increase stream length 2 to 3 times longer than if it was in a straight line.	Bends in stream increase the stream length 2 to 1 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
Score ______	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7 **Channel flow Status**	Water reaches base of both lower banks and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel.	Water fills 25-75% of the available channel and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
Score ______	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
8 **Condition of Banks**	Banks stable; no evidence of erosion or bank failure; <5% affected.	Moderately stable; infrequent, small areas of erosion mostly healed over; 5-30% affected.	Moderately unstable; 30-60% of banks in reach have areas of erosion.	Unstable; many eroded areas; "raw" areas frequent along straight section and bends; on side slopes, 60-100% of bank has erosional scars.
Score ______	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
9 **Bank Vegetative Protection (each bank)**	> 90% of the stream bank surfaces covered by vegetation.	90-70% of the streambank surfaces covered by vegetation.	70-50% of the stream bank surfaces covered by vegetation.	<50% of the streambank surfaces covered by vegetation.
Score (LB) ______	10 9 8	7 6	5 4 3	2 1 0
Score (RB) ______	10 9 8	7 6	5 4 3	2 1 0
10 **Grazing or other disruptive pressure (each bank)**	Vegetative disruption, through grazing or mowing, minimal or not evident; almost all plants allowed to grow naturally.	Disruption evident but not affecting full plant growth potential to any great extent; >1/2 of the potential plant stubble height remaining.	Disruption obvious; patches of bare soil or closely cropped vegetation common; <1/2 of the potential plant stubble height remaining.	Disruption of stream bank vegetation is very high; vegetation has been removed to $\leq$ 2 inches average stubble height.
Score (LB) ______	10 9 8	7 6	5 4 3	2 1 0
Score (RB) ______	10 9 8	7 6	5 4 3	2 1 0
11 **Riparian vegetative zone Width (each bank)**	Width of riparian zone >60 feet; human activities (i.e., parking lots, roadbeds, clearcuts, lawns, or crops) have not impacted zone.	Width of riparian zone 60 - 40 feet; human activities have impacted zone only minimally.	Width of riparian zone 40 - 20 feet; human activities have impacted zone a great deal.	Width of riparian zone <20 feet; little or no riparian vegetation due to human activities.
Score (LB) ______	10 9 8	7 6	5 4 3	2 1 0
Score (RB) ______	10 9 8	7 6	5 4 3	2 1 0

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Appendix L-3. ADEM - Field Operations Division Physical Characterization Field Data Sheet

Station #______________________ ***Date***____________________ ***Collector Names***______________________________

Reason for Survey ☐Use Support / 303(d) ☐Reconnaissance ☐ Pollution Event ☐ Storm Event ☐ Permit Compliance

Reach Description____

WATERSHED FEATURES

Predominant Watershed Land use		***Local Watershed NPS Pollution***	***Local Watershed Erosion***
☐ Forest	☐ Commercial	☐ No Evidence	☐ None
☐ Field/Pasture	☐ Industrial	☐ Obvious Sources	☐ Slight
☐ Agriculture	☐ Mixed Urban	☐ Potential Sources	☐ Moderate
☐ Residential	☐ ____________		☐ Heavy

RIPARIAN LANDUSE & VEGETATION

Land use at Reach			***Dominant Riparian Vegetation Present*** *(60 ft Buffer) (If known)*		
☐ Pasture	☐ Field/Pasture	☐ Industrial	☐ Trees	☐ Herbaceous	Dominant Species Present:______________
☐ Crops	☐ Residential	☐ Mixed Urban	☐ Shrubs		______________________________
☐ Forest	☐ Commercial	☐ ____________	☐ Grasses		______________________________

INSTREAM FEATURES

Stream Morphology Est.	***Canopy Cover***	***Stream Depth***	***Est. Gradient***	***Dam Present***
Reach Length _________ft	☐ Open 0-20%	Riffle _______ft	(over 300 ft reach)	☐ No
Stream Width _________ft	☐ Mostly Open 20-40%	Run ________ft	☐ Low <1ft	*If Yes, Kind?*
Bank Height __________ft	☐ Est 50/50 40-60%	Pool ________ft	☐ Medium 1-3 ft	☐ low-head
High Water Mark ______ft	☐ Mostly Shaded 60-80%	***Proportion of Reach***	☐ High >3ft	☐ Beaver
Rosgen Stream Type______	☐ Shaded 80-100%	Riffle_______%		☐ __________
Channelized ☐ Yes ☐ No		Run _______%		*Relation to Reach*
	Type: _______________	Pool _______%		☐Above☐below

AQUATIC VEGETATION

Check types present. Estimate the % of wetted substrate in the reach with each type, indicate species, if known

Total % of wetted reach with aquatic vegetation present_____% *Dominant Vegetation Type:____________________________*

Type	***% of Wetted Reach***	***Species***	***Type***	***% of Wetted Reach***	***Species***
☐ Rooted Emergent	____%	_________________________	☐ Attached Algae	____%	________________________
☐ Rooted Floating	____%	_________________________	☐ Floating Algae	____%	________________________
☐ Rooted Submergent	____%	_________________________	☐ Free Floating	____%	________________________

WATER QUALITY INDICATORS

Water Odors	***Surface Oils***	***Turbidity***	***Water Color***		***Biological Indicators***
☐Normal/None	☐ None	☐ None	☐ None	☐ Green	☐ Fish
☐ Sewage	☐ Flecks	☐ Slightly Turbid	☐ Dk. Tannic	☐ Muddy	☐ Fresh Beaver Sticks
☐ Petroleum	☐ Sheen	☐ Moderately Turbid	☐ Lt .Tannic	☐ Red (Dye)	☐ Macroinvertebrates
☐ Chemical	☐ Slick	☐ Severely Turbid	☐ Chalky	☐ Grey	☐ Mussels
☐ Fishy	☐ Globs		☐ __________		☐ Snails
☐ ____________	☐ _______________		☐ __________		☐ _________________

SEDIMENT / SUBSTRATE

Sediment Odors		***Oils***		***Deposits***		***Looking at stones that are not deeply embedded, are the undersides black in color?***
☐ Normal	☐ Chemical	☐ Absent	☐ Profuse	☐ None	☐ Paper	
☐ Sewage	☐ Anaerobic	☐ Slight		☐ Sludge	☐ Sand	
☐ Petroleum	☐ ________	☐ Moderate		☐ Sawdust		☐ Yes ☐ No ☐ N/A

WEATHER & FLOW CONDITIONS

Now	***Weather***	*Past 24 hrs*	***Flow Stage***	***Velocity***	***Was Stream Flow Measured?***
					☐ Yes
					☐ No If no ✓ reason below
☐	Clear / Cloudless	☐	☐ Flood (out of banks)	☐ Fast >3 ft / Sec	☐ not required in Study Plan
☐	Partly Cloudy	☐	☐ Above Normal		☐ not wadeable (too deep)
☐	Mostly Cloudy/Overcast	☐	☐ Normal	☐ Moderate 1.5 – 3 ft / Sec	☐ meter malfunction
☐	Cloudy	☐	☐ Low		☐ visible but not detectable
☐	Light Rain / Drizzle	☐	☐ Dry	☐ Slow <1.5 ft / Sec	☐ flow conditions dangerous
☐	Rain	☐	☐ Unknown		☐ no visible flow
☐	Thunderstorms	☐		☐ No Flow	☐ pools/dry streambed
☐	Freezing Precipitation	☐			☐ visible/too shallow for pygmy
Heavy Rain in last 7 Days?	☐ Yes	☐ No			

ADEM — FIELD OPERATIONS DIVISION

PAGE 2----SUBSTRATE CHARACTERIZATION, HABITAT & WATER QUALITY FIELD DATA SHEET

Est. % Composition In Sampling Area

Type	Diameter	Percent	Stable
Bedrock			1/2
Boulder	>10 in.		Yes
Cobble	2.5 — 10 in.		Yes
Gravel	0.1 — 2.5 in.		Yes
Sand	Gritty		
Silt			
Clay	Slick		
Detritus	Stick/Wood		Yes
	CPOM		
Muck	Fine Organic		
	Total	100%	

Water Quality Field Measures (Duplicate at 10% of Stations)

Parameter	Value	Duplicate	Unit	Instrument
Time			*hrs (24hrs)*	□*Clock* □*Sonde*
Total Depth			*ft.*	□*Estimate* □*Measure*
Sampling Depth			*ft.*	□*Estimate* □*Measure*
Air Temp.			*°C*	□*Thermometer*
Water Temp.			*°C*	□*Thermometer* □ *Sonde*
pH			*su*	□*pH Meter* □*Sonde*
Conductivity			*µmhos@25°C*	□*Meter* □*Sonde*
D.O.			*mg/L*	□*Winkler* □*Meter* □*Sonde*
Turbidity			*NTU*	□*Meter* □*Sonde*
Stream Flow		N/A	*cfs*	□*AA* □*Pygmy* □*Acoustic*

WATER SAMPLES COLLECTED					
Relative Sampling Depth	□Surface	□ 5 ft	□ Mid-Depth	□Bottom	
Methods	□Grab-Jug/Jar	□Bucket	□ Sampler	□ Field Filtered (FF)	□ **Duplicate Samples (5% of Stations)**
Preservatives # of Bottles ***FF=Field Filtered*** ***IA—Immunoassay***	□ Iced ½ gal________# □ Iced ¼ gal________# □ Iced *125mL* FF_____#	□ H2SO4 ½ gal____# □ H2SO4 ¼ gal____#	□ HNO3 ½ gal _______# □ HNO3 ¼ gal _______# □ HNO3 *125mL* FF___#	□ Iced 1L Agl _________# □ Iced 60mL_____# (IA) □ HCL 2x40mL Agl ___#	

BIO SAMPLES COLLECTED				
□ MB-I Inverts	□ MB-EPT Inverts	□ Fish IBI	□Chlorophyll *a* *(Collected at 5ft or mid-depth whichever is less)*	□ Fecal Coliform *(Collected 6-12 inches below surface)*

HABITAT ASSESSMENT TALLY FORMS

	Riffle / Run HA	*Collector 1* Score (LB/RB)	*Collector 2* Score (LB/RB)
	Name of Collector		
1	Instream Cover		
2	Epifaunal surface		
3	Embeddedness		
4	Velocity/Depth		
5	Channel Alteration		
6	Sediment Deposition		
7	Frequency of Riffles		
8	Channel Flow Status		
9	Condition of Banks		
10	Bank Veg. Protection	/	/
11	Disruptive Pressure	/	/
12	Riparian Veg. zone	/	/

	Glide / Pool HA	*Collector 1* Score (LB/RB)	*Collector 2* Score (LB/RB)
	Name of Collector		
1	Instream Cover		
2	Pool Substrate Char.		
3	Pool Variability		
4	Channel Alteration		
5	Sediment Deposition		
6	Channel Sinuosity		
7	Channel Flow Status		
8	Condition of Banks		
9	Bank Veg. Protection	/	/
10	Disruptive Pressure	/	/
11	Riparian Veg. Zone	/	/

COMMENTS	

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Appendix M. Water quality data collected from stations in conjunction with the 2002 NPS Screening Assessment of the Black Warrior and Cahaba River Basins.

Sub-watershed	Station	Date (yymmdd)	Time (24hr)	Water Temp (°C)	D. O. (mg/L)	pH (su)	Cond. (µmhos at 25°C)	Turb. (ntu)	Flow (cfs)	Fecal Coliform (col/ 100 mL)	Alkalinity Total (mg/L)	Hardness (mg/L)	CBOD-5 (mg/L)	TDS (mg/L)	TSS (mg/L)	NH_3-N (mg/L)	TKN (mg/L)	NO_2+ NO_3-N (mg/L)	T-P (mg/L)	DRP (mg/L)	Chl *a* (mg/m^3)	TOC (mg/L)	Cl^- (mg/L)
Cahaba River (0315-0202)																							
050	PMUS-6	020516	1050	19.0	8.6	7.5	244.0	4.95	6	12 est.	64	76.6	0.5	64	7	<0.015	0.264	0.189	0.031	0.006	0.53	1.571	29.3
050	PMUS-6	020726	0910	24.0	7.7	7.5	208.0	3.2															
050	SAVS-7	020516	0930	17.0	7.5	7.1	158.2	4.45	2.6	34	31	51	0.8	71	17	<0.015	<0.15	0.042	0.031	0.007	0.27	1.525	29.3
050	SAVS-7	020726	1110	26.3	7.1	7.3	225.0	2.5															
120	AFF-2	020515	1040	17.0	7.6	6.3	21.4	17.7	4.2	54	20	4.52	1.6	21	18	<0.015	0.165	<0.003	0.04	0.022	5.34	7.481	29.2
120	AFF-2	020716	0835	25.0	6.4	6.4	26.0	15.3															
120	BLU-1	020515	1300	18.0	7.8	6.4	19.3	15.7	12.7	140	5	4.02	1.8	33	16	<0.015	0.27	0.025	0.041	0.008	6.41	4.165	29.3
130	WLT-1	020515	1445	18.0	8.5	6.4	21.5	11.7	2.3	250	3	4.08	1.8	2	15	<0.015	<0.15	0.025	0.033	0.009	2.14	2.433	29.3
130	WLT-1	020716	1050	24.0	8.1	6.1	23.0	14.6															
140	MIL-1	020514	1420	19.0	7.8	6.8	37.0	13.6	2.4	280	23	7.8	1.6	21	13	<0.015	0.488	0.053	0.036	0.008	2.85	2.679	29.3
140	MIL-1	020711	1450	25.0	7.0	6.7	30.0	46.9															
140	OTWN-1	020514	1545	20.0	8.1	6.9	64.0	8.3	6	58	20	13.7	1.1	24	15	<0.015	0.432	0.085	0.034	0.014	0.27	1.368	29.3
140	OTWN-1	020715	0955	24.0	8.4	6.9	46.0	26.9															
150	WAT-1	020514	1240	20.0	8.6	6.6	66.0	2.27	3.2	55	3	17.6	1.4	31	6	<0.015	<0.15	0.174	0.029	0.009	1.34	0.564	29.3
150	WAT-1	020711	1305	28.0	8.8	7.3	59.0	1.26															
160	OAKG-1	020711	0940	27.0	7.3	6.6	37.0	14.1															
160	OAKG-3	020514	1050	18.0	6.5	6.5	43.1	27.6	6.5	100	11	8.97	1.7	34	18	0.07	0.918	0.039	0.049	<0.004	<0.1	4.721	29.3
170	CHIL-2	020509	1300	27.0	6.7	7.0	137.6	25.4	0.3	197	70	40.7	0.7	102	27	0.146	0.881	0.01	0.169	0.044	11.21	8.611	29.3
170	DRY-1	020509	1045	24.0	6.0	7.7	392.8	6.74	nm	210	86	145	1.8	265	11	0.098	0.486	<0.003	0.053	0.009	4.63	5.535	29.5
Mulberry Fork (0316-0109)																							
010	GSAMF-46	020619	0800	20.0	8.5	7.2	103.8	4.54	1.7	190	32	32.3	0.7	83	8	<0.015	<0.15	0.246	0.042	0.013	2.67	2.638	7.53
010	GSAMF-48	020618	1615	23.0	8.5	7.2	75.7	3.46	2.8	100	17	21.6	1.2	74	8	<0.015	0.691	0.806	0.066	0.009	0.53	3.881	5.81
010	GSAMF-50	020621	1015	22.0	7.0	7.3	90.7	3.91	0.5	>660	17	28.8	0.7	42	5	<0.015	0.936	1.24	0.027	0.018		2.776	6.24
010	GSAMF-50	020719		23.0	6.9	7.1	76.0	18.3															
010	GSAMF-51	020618	1430	22.0	8.3	7.2	83.8	6.16	0.3	>600	22	27	2	88	18	0.054	1.44	1.14	0.104	0.076	0.8	2.986	5.79
010	GSAMF-51	020719	0830	21.0	7.7	7.9	78.0	12.6															
020	DUCC-69	020619	0645	21.0	7.3	7.3	92.4	5.96	2.9	73	24	28.6	0.7	88	9	<0.015	0.208	0.948	0.082	0.02	<0.1	4.346	6.49
020	DUCC-69	020620	0800	25.0	6.9	7.2	101.0	7.6															
040	EMIC-73a	020620		20.5	6.3	7.6	102.3	3.78	0.6	470	26	35.8	0.7	53	7	<0.015	0.959	0.781	0.059	0.019	0.8	3.598	7.08
040	EMIC-73a	020612	1400	25.0	7.7	7.5	106.0	2.33															
080	GSAMF-33	020619	1500	25.0	8.3	7.1	191.0	6.1	2.5	97	12	7307	0.8	167	4	<0.015	<0.15	0.023	0.011	0.007	0.27	1.296	4.77
090	GSAMF-35	020709	0955	27.0	7.7	8.1	157.7	3.51	31.1	10 est.	47	56.7	1.6	121	3	<0.015	<0.15	2.33	0.176	0.166	3.74	4.28	8.75
090	GSAMF-35	020729	1630	32.0	8.2	8.3	151.0	5.64															
100	SLOW-11	020605	1015	22.0	8.6	7.1	45.0	3.67	1.3	160	3	11.4	0.4	83	6	<0.015	0.471	0.209	0.038	0.009	<0.1	1.541	4.61
100	OTC-1	020605	0840	25.0	6.9	7.6	1019.0	6.41	8	110	169	484	0.4	835	12	<0.015	0.678	0.147	0.032	<0.004	0.53	2.134	4.69
110	GSAMF-29	020619	0915	22.0	8.0	8.2	703.0	2.7	4.1	120	210	354	0.8	609	3	<0.015	0.565	1.77	0.027	0.011	1.07	2.294	4.7
110	SULC-10a	020619	1245	25.0	8.4	7.8	137.0	6.3	0.5	530	40	54.5	1.5	81	6	<0.015	0.167	0.297	0.058	0.023	1.34	3.163	4.86
120	BROW-17	020613	0710	21.0	8.1	6.9	67.1	9.55	9	83	20	20.8	0.8	58	4	<0.015	0.298	0.057	0.045	0.006		2.368	3.55
130	BWCUA-1	020605	0650	24.0	7.2	7.3	165.4	6.12	gs														
130	BWCUA-1	020612	1020	24.0	7.4	7.7	171.4	4.9	gs														
130	BWCUA-1	020619	1410	28.0	8.3	7.7	169.0	16.9	gs														
190	BAKW-10	020605	1300	28.0	7.7	7.9	1774.0	3.63	9	9 est.	170	848	0.9	1732	13	0.062	<0.15	0.619	0.026	0.005	0.27	2.593	5.03

Appendix M. Water quality data collected from stations in conjunction with the 2002 NPS Screening Assessment of the Black Warrior and Cahaba River Basins.

Sub-watershed	Station	Date (yymmdd)	Time (24hr)	Water Temp (^oC)	D. O. (mg/L)	pH (su)	Cond. (µmhos at 25^{o}C)	Turb. (ntu)	Flow (cfs)	Fecal Coliform (col/ 100 mL)	Alkalinity Total (mg/L)	Hardness (mg/L)	CBOD-5 (mg/L)	TDS (mg/L)	TSS (mg/L)	NH_3-N (mg/L)	TKN (mg/L)	NO_2+ NO_3-N (mg/L)	T-P (mg/L)	DRP (mg/L)	Chl *a* (mg/m^3)	TOC (mg/L)	Cl^- (mg/L)
Sipsey Fork (0316-0110)																							
050	CLCW-53b	020612	1555	26.0	8.1	7.0	55.8	3.81	11.7	97													
050	CLCW-53c	020612	1720	24.0	7.6	6.8	38.9	5.3	5.6	65	15	10.6	0.5	37	4	<0.015	<0.15	0.252	0.05	0.009	1.87	1.944	4.01
050	CLCW-53c	020725	1100	24.0	7.0	6.9	42.0	6.8															
050	CLCW-53d	020612	1555								18	17	0.6	45	2	<0.015	<0.15	0.35	0.032	0.007	0.8	1.929	4.22
050	LCLW-19	020612	1410	24.0	8.0	6.7	27.0	10.7	2.8														
050	LCLW-19	020725	1010	24.0	7.0	6.7	32.0	8.6															
050	WIDW-18	020612	1150	22.0	8.4	6.8	27.6	8.01	7.6	107	24	5.36	0.8	73	9	0.157	<0.15	0.465	<0.004	<0.004	0.71	1.859	3.86
050	WIDW-18	020725	1435	23.0	7.9	6.7	30.0	6.55															
080	ROCW-52b	020613	0925	21.0	6.8	6.2	53.0	4.5	0.4	170	21	14.4	1	42	3	<0.015	0.334	0.283	0.044	0.007		2.507	4.82
090	CROC-54a	020618	1150	20.5	7.2	7.1	99.4	24.1	2.8	600	22	31.7	1.7	59	12	<0.015	0.671	1.1	0.064	0.016	1.87	3.526	5.85
090	CROC-54a	020730	1345	26.0	8.4	7.9	95.0	18															
090	GSAMF-22	020618	1450	25.0	8.2	7.2	84.4	32.1	9.8		21	26	1.4	79	8	<0.015	0.781	0.953	0.073	0.031	1.34	4.992	5.16
110	ROCC-15	020618	1620	23.1	7.9	7.1	68.6	12.9	2.9	130	20	21.6	1.4	70	6	0.125	0.708	0.757	0.069	0.016	0.27	4.174	4.93
130	MILW-18a	020605[a]	0800																				
Locust Fork (0316-0111)																							
010	GSA-27	020619[b]	1200																				
020	GSA-26	020619	1005	22.0	7.9	7.9	178.4	6.62	1.2	150	78	80.5	1.4	90	9	<0.015	<0.15	1.46	0.06	<0.004	<0.1	3.238	4.26
030	CLEM-76a	020530	1000	19.0	6.8	7.0	116.0	7.06	10.1	220	26	30.1	0.4	92	7	0.946	1.11	1.75	0.046	0.035	1.34	4.104	7.05
030	CLEM-76a	020719	0900	23.0	5.5	7.1	92.0	4.2															
040	SLAM-22c	020530	0740	19.0	6.7	7.0	242.0	10	12.7	360	33	62.2	0.4	204	16	0.088	0.685	4.11	0.491	0.469	2.4	4.208	17.97
060	LCPB-23a	020529	0945	21.0	7.7	7.9	278.0	7.1	18	130													
080	LONB-24a	020528	1000	18.0	8.6	7.9	5.0	3.78	11.4	42	70	229	0.2	357	8	0.091	<0.15	0.17	0.024	<0.004	8.8	1.438	29.3
080	LONB-24a	020718	1005	20.0	8.5	8.4	660.0	3.26															
080	SUGB-13	020528	1520	22.0	9.1	8.0	176.0	1.92	2.5	150	78	78.4	0.3	34	6	<0.015	0.417	0.24	0.028	0.007	2.67	1.53	29.3
080	SUGB-13	020718	1430	27.0	8.3	8.1	248.0	3.93															
080	WHTB-12	020528	1245	21.0	7.0	7.0	81.3	13.6	---	600	18	23.3	0.3	56	11	0.017	0.467	0.355	0.038	0.005	<0.1	1.916	29.3
Upper Black Warrior R. (0316-0112)																							
080	DAVT-27c	020604	1030	24.0	8.2	8.0	1165.0	1.86	17.2	28	136	360	1.1	1004	6	0.017	1.92	0.006	<0.004	<0.004	0.27	2.123	29.96
090	NORF-28c	020619	0800	20.0	6.7	6.5	60.0	4.29															
100	BINT-31f	020604	1240	25.0	7.4	6.8	49.0	15.5	gs	130	5	14.6	0.6	90	14	<0.015		0.131	0.052	0.008	0.71	3.097	4.31
Lower Black Warrior R. (0316-0113)																							
030	BSAT-59b	020515	0800	14.0	9.1	8.0	216.0	5.35	21	390	113	105	1.6	90	12	0.016	0.118	0.239	0.025	0.007	0.53	0.496	29.3
030	BSAT-59b	020715	1530	21.0	8.3	6.9	243.0	4.07															
110	MING-41a	020507	1140	22.0	7.3	6.7	83.8	15.1	5.5	250	24	19.2	0.8	164	14	0.354	0.795	0.565	0.297	0.175	4.63	2.964	29.3
120	BBRH-42a	020507	1525	---	6.3	6.7	55.6	35.3	4.8	195	13	14.3	0.3	90	20	0.106	0.439	0.096	0.075	0.017	1.07	7.164	29.3
120	BBRH-42f	020507	1420	25.0	6.8	6.8	52.8	26.5	14.2	280	15	13.7	0.8	98	16	0.05	0.432	0.081	0.057	0.02	1.07	5.723	29.3
120	BBRH-42g	020507	1715	---	6.5	6.6	51.6	25.4	22.7	1190	14	12.9	12	68	17	0.134	0.246	0.09	0.065	0.006	0.53	5.52	29.3
120	BBRH-42g	020715	1300	26.0	5.7	6.7	68.0	18.3															

Appendix M. Water quality data collected from stations in conjunction with the 2002 NPS Screening Assessment of the Black Warrior and Cahaba River Basins.

Sub-watershed	Station	Date (yymmdd)	Time (24hr)	Water Temp (°C)	D. O. (mg/L)	pH (su)	Cond. (μmhos at 25°C)	Turb. (ntu)	Flow (cfs)	Fecal Coliform (col/ 100 mL)	Alkalinity Total (mg/L)	Hardness (mg/L)	CBOD-5 (mg/L)	TDS (mg/L)	TSS (mg/L)	NH_3-N (mg/L)	TKN (mg/L)	NO_2+ NO_3-N (mg/L)	T-P (mg/L)	DRP (mg/L)	Chl *a* (mg/m^3)	TOC (mg/L)	Cl^- (mg/L)
Lower Black Warrior R. (0316-0113)																							
140	NHC-2	020507	1030	25.0	7.4	7.7	977.0	2.49	5.5	37	217	278	1.6	994	11	<0.015	0.379	0.008	0.071	0.02	6.68	6.046	32.1
150	HINH-43a	020507[c]	1315																				
150	HINH-43a	020701	1010	18.0	4.6	7.2	168.0	12.3	0.5	195	86	58.9	1.6	113	17	<0.015	0.701	<0.003	0.1	0.03	12.3	4.456	5.89
160	BPRH-44a	020508[a]																					
160	BPRH-44b	020712	0820	25.0	6.5	7.7	83.0	9.11															
160	BPRH-44d	020508	1420	25.0	6.5	7.6	183.2	36	19.1	>780	69	49.6	1.3	110	35	0.045	0.909	0.328	0.113	0.027	4.27	6.775	29.4
160	COTH-57c	020508	1035	25.0	2.2	7.9	806.0	5.34	0.5	16 est.	345	232	5.2	483	11	6.99	7.42	0.01	2.11	0.507	15.49	11.922	30.2
170	BGEH-46a	020508	0855	23.0	5.7	7.5	214.6	16.8	4.3	160	85	75.6	1.2	161	20	0.099	0.522	0.465	0.142	0.051	1.07	4.514	29.4
170	BGEH-46a	020712	0945	25.0	4.9	7.3	156.0	39.2															
170	LPRH-45b	020508	1310	25.0	6.2	7.7	220.0	14.4	2.4	63 est.	115	104	0.7	178	16	0.094	0.776	0.479	0.114	0.059	0.53	6.744	29.4
190	YELH-3c	020508	0725	---	3.7	7.8	448.5	17.6	---	170	178	193	1.6	319	18	0.063	<0.15	0.078	0.037	0.017	3.56	3.342	29.3

a. bridge construction
b. no flow
c. high flow

Appendix N. Concentration of metals at stations sampled during the 2002 NPS Basinwide Screening Assessment of the BW/C Basin Group.

Sub-watershed	Station	Date (yymmdd)	Time (24hr)	SO_4 (mg/L)	AL, Total (mg/L)	Fe, Total (mg/L)	K, Total (mg/L)	Mn, Total (mg/L)
Cahaba River (0315-0202)								
050	SAVS-7	020516	0930	26.0	<0.2	0.981	<1	0.193
050	PMUS-6	020516	1050	41.8	<0.2	0.344	<1	0.044
120	AFF-2	020515	1040	1.8	<0.2	7.94	<1	0.684
120	BLU-1	020515	1300	1.8	<0.2	3.72	<1	0.299
130	WLT-1	020515	1445	2.1	<0.2	1.91	<1	0.095
140	MIL-1	020514	1420	1.9	<0.2	2.88	<1	0.723
140	OTWN-1	020514	1545	4.8	<0.2	1.2	<1	0.279
150	WAT-1	020514	1240	10.2	<0.2	0.572	<1	0.639
160	OAKG-3	020514	1050	2.3	<0.2	4.01	<1	2.13
170	CHIL-2	020509	1300	2.5	<0.2	3.19	<1	7.28
170	DRY-1	020509	1045	64.5	<0.2	0.042	<1	0.028
Mulberry Fork (0316-0109)								
010	GSAMF-46	020619	0800	4.5	<0.2	0.211	1.15	0.033
010	GSAMF-48	020618	1615	4.5	<0.2	0.308	3.32	0.034
010	GSAMF-50	560615	1015	4.8				
010	GSAMF-51	020618	1430	4.8	<0.2	0.228	2.62	0.038
020	EMIC-73a	020619	0645	4.9				
020	DUCC-69	560614	0800	4.7	<0.2	0.26	4.72	0.043
080	GSAMF-33	020619	1500	63.7	<0.2	0.086	1.97	0.029
090	GSAMF-35	020709	0955	7.8	<0.2	0.105	4.3	0.036
100	SLOW-11	020605	1015	4.4	<0.2	0.163	<1	0.022
110	SULC-10a	020619	1245	17.2	<0.2	0.23	3.2	0.048
110	GSAMF-29	020619	0915	214.0	<0.2	0.105	3.01	0.02
120	BROW-17	020613	0710	14.6	<0.2	0.32	2.1	0.037
130	OTC-1	020605	0840		<0.2	0.403	<1	0.29
190	BAKW-10	020605	1300	940.0	<0.2	0.175	<1	0.144
Sipsey Fork (0316-0110)								
050	WIDW-18	020612	1150	1.2	<0.2	1.26	<1	0.084
050	CLCW-53c	020612	1720	2.3	<0.2	1.13	1.24	0.089
050	CLCW-53D	020612	1555	3.0	<0.2	0.676	1.17	0.057
080	ROCW-52b	020613	0925	3.6	<0.2	1.36	1.01	0.142
090	GSAMF-22	020618	1450	4.9	<0.2	0.247	4.03	0.03
090	CROC-54a	020618	1150	5.4	<0.2	0.337	3.55	0.053
110	ROCC-15	020618	1620	3.9	<0.2	0.232	3.3	<0.02
Locust Fork (0316-0111)								
020	GSA-26	020619	1005	3.6	<0.2	0.222	4.72	0.036
030	CLEM-76a	020530	1000	8.9	<0.2	0.183	<1	0.029
040	SLAM-22c	020530	0740	30.3	<0.2	0.357	<1	0.072
080	WHTB-12	020528	1245	8.2	<0.2	0.823	<1	0.203
080	SUGB-13	020528	1520	8.5	<0.2	0.075	<1	0.023
080	LONB-24a	020528	1000	160.0	<0.2	0.201	<1	0.134
Upper Black Warrior River (0316-0112)								
080	DAVT-27c	020604	1030	479.6	<0.2	0.142	<1	0.065
100	BINT-31f	020604	1240	5.9	<0.2	1.75	<1	0.235
Lower Black Warrior River (0316-0113)								
030	BSAT-59b	020515	0800	3.5	<0.2	0.301	<1	0.052
110	MING-41a	020507	1140	5.2	<0.2	1.73	<1	0.15
120	BBRH-42g	020507	1715	2.8		3.2	<1	0.466
120	BBRH-42f	020507	1420	2.8	<0.2	3.39	<1	0.579
120	BBRH-42a	020507	1525	2.9	<0.2	4.21	<1	1.02
140	NHC-2	020507	1030	67.4	<0.2	0.043	<1	0.028
150	HINH-43a	020701	1010	1.7	<0.2	1.26	1.82	0.24
160	BPRH-44d	020508	1420	5.6	<0.2	1.23	<1	0.135
160	COTH-57c	020508	1035	11.7	<0.2	0.517	1.65	0.629
170	BGEH-46a	020508	0855	6.4	<0.2	1.42	<1	0.153
170	LPRH-45b	020508	1310	6.8	<0.2	0.644	<1	0.102
190	YELH-3c	020508	0725	55.2	<0.2	0.102	<1	0.056

Appendix O. Ecoregional Reference Reach Program

Lead agency: ADEM

Purpose: Ecoregions are relatively homogeneous ecological areas defined by similarity of climate, landform, soil, potential natural vegetation, hydrology, or other ecologically relevant variables. Since 1991, ADEM has maintained a network of least-impaired ecoregional reference reaches. Intensive monitoring assessments, including chemical, physical, habitat, and biological data, are collected to develop baseline reference conditions for each of Alabama's 29 Level IV subecoregions (Griffith et al. 2001). The reference condition establishes the basis for making comparisons and detecting use impairment.

Appendix O-1. Habitat assessment data

Appendix O-2. Biological assessment data

Appendix O-3. Physical/ chemical data

References:

ADEM. 2002k. Ecoregional reference reach data collected by ADEM 1992 to 2002 (unpublished). Field Operations Division, Alabama Department of Environmental Management. Montgomery, AL.

Appendix O-1. Physical characteristics and habitat quality of sites assessed in the Black Warrior and Cahaba River basins during ADEM's Ecoregional Reference Reach Program, 1998-2002.

CU		0202	0202	0202	0202	0202	0202	0202	0202	0202	0202	0109	0109
Sub-watershed		090	090	090	090	080	080	080	080	080	080	080	080
Station		FRMB-8	FRMB-8	FRMB-8	FRMB-8	MAYB-1	MAYB-1	MAYB-1	MAYB-1	MAYB-1	MAYB-1	MRTC-1	MRTC-1
Date (YYMMDD)		020328	020430	020516	020718	990615	000525	020328	020430	020516	020627	020314	020522
Subecoregion		67f	67f	67f	67f	67h	67h	67h	67h	67h	67h	68e	68e
Drainage area (mi^2)		8	8	8	8	12	12	12	12	12	12	9	9
Width (ft)		20	20	15	20	30	30	40	25	15	30		20
Canopy cover[b]		50/50		MS	50/50	O	50/50	MO		MS	MO		MS
Depth (ft)	Riffle			0.4	0.1	0.8	0.4			0.8	0.3		0.3
	Run			1.0	0.5		1.0			1.3	1.0		1.0
	Pool			2.0	1.0	2.0	3.0			2.0	2.0		1.5
Substrate (%)	Bedrock	10	15	5	0	8	10		10	10	30	90	78
	Boulder	10	20	15	40	2	17		23	15	10	0	2
	Cobble	25	30	30	20	1	5		20	10	10	0	2
	Gravel	25	20	30	30	30	30		5	10	20	5	3
	Sand	25	15	15	10	50	25		35	45	15	5	9
	Silt	1	0	2	0	5	5		5	5	0	0	3
	Detritus	4	2	3	0	4	7		2	5	15	0	3
	Clay	0	0	0	0	0	1		0	0	0	0	0
	Organic silt	0	0	0	0	0	0		0	0	0	0	0
Habitat assessment form[c]		RR	RR	RR	RR	RR	RR	RR	RR	RR	RR	RR	RR
	Instream habitat quality	87	88	80	53	62	78	70	90	78	93	75	55
	Sediment deposition	76	84	84	85	51	55	29	56	50	91	95	88
	Sinuosity	75	88	90	100	0	53	65	80	73	100	100	85
	Bank and vegetative stability	73	96	90	86	48	63	46	64	73	65	88	40
	Riparian measurements	93	100	100	100	85	95	45	69	83	75	94	83
Habitat assessment score		200	221	208	196	147	167	138	182	176	203	214	165
% Maximum		83	92	87	81	61	69	58	76	73	84	89	69
Assessment[d]		Excellent	Excellent	Excellent	Excellent	Good	Excellent	Good	Excellent	Excellent	Excellent	Excellent	Good

a. No flow; Assessment not conducted

b. Canopy cover: S=shaded; MS=mostly shaded; 50/50=50% shaded; MO=mostly open; O=open

c. Habitat assessment form: RR=riffle/run (Barbour et al. 1999); GP=glide/pool (Barbour et al. 1999)

d. Assessment guidelines based on data collected at reference sites, 1991-2003; NG=no assessment guidelines

Appendix O-1. Physical characteristics and habitat quality of sites assessed in the Black Warrior and Cahaba River basins during ADEM's Ecoregional Reference Reach Program, 1998-2002.

CU		0109	0109	0109	0109	0110	0110	0110	0110	0110	0110	0110	0110
Sub-watershed		080	080	080	080	010	010	010	010	010	010	010	010
Station		MRTC-1	MRTC-1	MRTC-1	MRTC-1	SF-2	SF-2	TPSL-1	TPSL-1	TPSL-1	TPSL-1	TPSL-1	TPSL-1
Date (YYMMDD)		020620	020701	020716	021114	020606	020612	020320	020605	020612	020806	021106	021218
Subecoregion		68e	68e	68e	68e	68e	68e	68e	68e	68e	68e	68e	68e
Drainage area (mi^2)		9	9	9	9			15	15	15	15	15	15
Width (ft)		7	12	40	20	70	80	30	25	25	30	36	25
Canopy cover[b]		S	50/50	50/50	50/50	O	50/50	50/50	50/50		50/50	MO	50/50
Depth (ft)	Riffle	0.3	0.2	0.5	0.5			0.5	0.3	0.3	0.5	0.7	0.4
	Run	0.5	0.5	1.0	0.8	2.5	2.0	2.5	1.0	1.3	0.1	1.4	0.7
	Pool	0.8	1.5	2.0		3.5	4.0	3.0	2.0	4.0	0.0	0.0	1.5
Substrate (%)	Bedrock	82	80	75	83	54	36	0	0	0	0	0	2
	Boulder	1	5	2.5	5	10	23	0	5	3	5	2	2
	Cobble	2	5	2.5	2	1	5	2	42	35	5	2	10
	Gravel	3	5	5	5	0	1	50	43	42	50	47	46
	Sand	5	5	5	2	30	25	45	5	15	30	46	35
	Silt	4	0	5	0	3	6	0	1	2	0	0	1
	Detritus	3	0	6	3	2	4	3	4	3	10	3	4
	Clay	0	0	0	0	0	0	0	0	0	0	0	0
	Organic silt	0	0	0	0	0	0	0	0	0	0	0	0
Habitat assessment form[c]		RR	RR	RR	RR	GP	GP	RR	RR	RR	RR	RR	RR
	Instream habitat quality	58	36	51	61	44	53	71	83	72	55	68	88
	Sediment deposition	86	90	58	98	80	83	74	81	75	78	80	78
	Sinuosity	50	90	98	100	58	48	85	88	68	100	100	88
	Bank and vegetative stability	54	38	59	78	90	79	66	50	49	33	34	88
	Riparian measurements	85	100	91	80	95	96	100	90	88	100	98	99
Habitat assessment score		160	160	166	195	159	161	194	185	168	167	175	214
% Maximum		66	66	69	81	72	73	81	77	70	70	73	89
Assessment[d]		Good	Good	Good	Excellent	Excellent	Excellent	Excellent	Excellent	Good	Good	Excellent	Excellent

a. No flow; Assessment not conducted

b. Canopy cover: S=shaded; MS=mostly shaded; 50/50=50% shaded; MO=mostly open; O=open

c. Habitat assessment form: RR=riffle/run (Barbour et al. 1999); GP=glide/pool (Barbour et al. 1999)

d. Assessment guidelines based on data collected at reference sites, 1991-2003; NG=no assessment guidelines

Appendix O-1. Physical characteristics and habitat quality of sites assessed in the Black Warrior and Cahaba River basins during ADEM's Ecoregional Reference Reach Program, 1998-2002.

CU		0110	0110	0110	0110	0110	0110	0110	0110	0110	0110	0110	0110
Sub-watershed		030	030	030	030	040	040	040	040	040	040	080	080
Station		BRSL-3	BRSL-3	BRSL-3	BRSL-3	INMW-1	INMW-1	INMW-1	INMW-1	INMW-1	INMW-1	BLVC-1	BLVC-1
Date (YYMMDD)		020320	020606	020806	021218	020320	020610	020613	020806	021106	021218	020313	020610
Subecoregion		68e	68e	68e	68e	68e	68e	68e	68e	68e	68e	68d	68d
Drainage area (mi^2)						4	4	4	4	4	4	9	9
Width (ft)		32	15	15	36	35	20	30	20	21.4	20		20
Canopy cover[b]		MS	MS	50/50	MS	S	MS	MS	MS	50/50	50/50	50/50	MS
Depth (ft)	Riffle	0.6	0.3	0.5	0.5	0.4	0.3	0.3	0.3		0.5		0.2
	Run	1.5	0.5	1.0	1.5	1.5	0.5	1.5	1.2		1.0		0.5
	Pool	1.5	1.5	1.5	1.3	2.0	0.3	0.0	0.0	0.0	1.5		0.8
Substrate (%)	Bedrock	0	0	2	0	5	0	40	0	0	0	0	15
	Boulder	10	2	15	5	25	30	10	10	8	5	5	10
	Cobble	45	40	50	20	45	50	15	50	40	20	20	20
	Gravel	10	20	5	20	5	12	10	10	20	25	20	25
	Sand	26	33	20	50	15	2	15	20	27	40	40	15
	Silt	5	2	0	2	1	3	7	0	0	5	0	5
	Detritus	4	3	8	3	4	3	3	8	5	5	5	5
	Clay	0	0	0	0	0	0	0	2	0	0	5	0
	Organic silt	0	0	0	0	0	0	0	0	0	0	5	0
Habitat assessment form[c]		RR	RR	RR	RR	RR	RR	RR	RR	RR	RR	RR	RR
	Instream habitat quality	86	83	58	78	90	78	73	84	81	83	75	66
	Sediment deposition	88	63	85	64	78	85	76	75	91	73	71	69
	Sinuosity	93	85	75	88	85	80	88	83	80	95	100	90
	Bank and vegetative stability	93	73	88	78	73	85	81	94	85	80	75	50
	Riparian measurements	95	96	100	99	100	96	90	149	149	100	98	90
Habitat assessment score		220	192	199	198	210	204	189	234	235	209	201	174
% Maximum		92	80	83	82	88	85	79	98	98	87	84	73
Assessment[d]		Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

a. No flow; Assessment not conducted

b. Canopy cover: S=shaded; MS=mostly shaded; 50/50=50% shaded; MO=mostly open; O=open

c. Habitat assessment form: RR=riffle/run (Barbour et al. 1999); GP=glide/pool (Barbour et al. 1999)

d. Assessment guidelines based on data collected at reference sites, 1991-2003; NG=no assessment guidelines

Appendix O-1. Physical characteristics and habitat quality of sites assessed in the Black Warrior and Cahaba River basins during ADEM's Ecoregional Reference Reach Program, 1998-2002.

CU		0110	0110	0110	0110	0111	0111	0111	0111	0111	0111	0112	0112
Sub-watershed		080	080	080	080	070	070	070	070	070	070	100	100
Station		BLVC-1	BLVC-1	BLVC-1	BLVC-1	HNMB-4	HNMB-4	HNMB-4	HNMB-4	HNMB-4	HNMB-4	BERT-4	BERT-4
Date (YYMMDD)		020618	020626	020715	021209	000613	020321	020524	020529	020626	021209	020418	020604
Subecoregion		68d	68d	68d	68d	67f	67f	67f	67f	67f	67f	68f	68f
Drainage area (mi^2)		9	9	9	9							12	12
Width (ft)		10	10	30	23	10	20	8	15	15	15	20	25
Canopy cover[b]		MS	MS	MS	MO	S	50/50	MS	MO	MS	50/50	50/50	S
Depth (ft)	Riffle	0.3	0.2	0.5	0.5	0.5		0.5	0.5	0.2	0.3	0.3	
	Run	0.8	0.5	1.0	1.0	1.0		1.0	1.3	0.5	0.5	1.5	1.5
	Pool	1.0		2.0		3.0		1.5	1.8	1.5	1.0	2.0	3.0
Substrate (%)	Bedrock	12	20	0	10	20	5	0	25	20	0	0	0
	Boulder	10	25	10	5	14	5	8	10	30	30	5	0
	Cobble	25	25	10	10	40	40	50	35	30	20	40	1
	Gravel	30	20	10	37	20	40	40	17	10	35	40	2
	Sand	15	7	60	36	1	3	10	5	10	3	5	85
	Silt	2	3	2	0	1	0	0	2	0	1	5	5
	Detritus	6	0	6	2	4	2	2	6	0	11	4	4
	Clay	0	0	2	0	0	0	0	0	0	0	0	3
	Organic silt	0	0	0	0	0	0	0	0	0	0	1	0
Habitat assessment form[c]		RR	RR	RR	RR	RR	RR	RR	RR	RR	RR	RR	GP
	Instream habitat quality	67	46	72	76	87	81	95	93	87	88	88	42
	Sediment deposition	69	84	55	60	94	83	91	90	89	93	90	68
	Sinuosity	85	70	60	100	93	100	95	93	95	100	100	38
	Bank and vegetative stability	60	60	65	74	81	90	88	93	78	76	68	48
	Riparian measurements	93	100	95	100	100	100	94	100	100	100	98	76
Habitat assessment score		177	166	177	196	215	211	218	223	212	217	204	125
% Maximum		74	69	74	81	90	88	91	93	88	90	85	57
Assessment[d]		Excellent	Good	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Good

a. No flow; Assessment not conducted

b. Canopy cover: S=shaded; MS=mostly shaded; 50/50=50% shaded; MO=mostly open; O=open

c. Habitat assessment form: RR=riffle/run (Barbour et al. 1999); GP=glide/pool (Barbour et al. 1999)

d. Assessment guidelines based on data collected at reference sites, 1991-2003; NG=no assessment guidelines

Appendix O-1. Physical characteristics and habitat quality of sites assessed in the Black Warrior and Cahaba River basins during ADEM's Ecoregional Reference Reach Program, 1998-2002.

CU		0112	0112	0113	0113	0113	0113
Sub-watershed		100	100	030	030	030	030
Station		BERT-4	BERT-4	SSB-1	SSB-1	SSB-1	SSB-1
Date (YYMMDD)		020808	021119	020402	020515	020718	030108
Subecoregion		68f	68f	65i	65i	65i	65i
Drainage area (mi^2)		12	12	21	21	21	21
Width (ft)		12	25		15	15	16
Canopy cover[b]		S	MS	MS	S	MS	50/50
Depth (ft)	Riffle	0.2	0.5		0.0		
	Run	0.5	1.0		1.0	1.0	1.5
	Pool	1.0			3.0	2.0	2.5
Substrate (%)	Bedrock	0	0	0	0	0	0
	Boulder	20	2	0	0	0	0
	Cobble	30	20	0	0	0	0
	Gravel	30	35	0	0	0	0
	Sand	1	35	80	70	80	89
	Silt	15	3	5	10	10	2
	Detritus	3	5	15	16	10	8
	Clay	0	0	0	2	0	1
	Organic silt	1	0	0	2	0	0
Habitat assessment form[c]		RR	RR	GP	GP	GP	GP
	Instream habitat quality	76	78	60	56	53	69
	Sediment deposition	46	61	83	83	66	84
	Sinuosity	73	98	80	53	80	88
	Bank and vegetative stability	65	59	58	58	45	88
	Riparian measurements	100	93	100	95	100	100
Habitat assessment score		171	190	162	151	147	186
% Maximum		71	79	74	69	67	84
Assessment[d]		Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

a. No flow; Assessment not conducted

b. Canopy cover: S=shaded; MS=mostly shaded; 50/50=50% shaded; MO=mostly open; O=open

c. Habitat assessment form: RR=riffle/run (Barbour et al. 1999); GP=glide/pool (Barbour et al. 1999)

d. Assessment guidelines based on data collected at reference sites, 1991-2003; NG=no assessment guidelines

Appendix O-2. Bioassessment results from sites assessed in the Black Warrior and Cahaba River basins as part of ADEM's Ecoregional Reference Reach Program, 1998-2002.

CU	0202	0202	0202	0109	0110	0110	0110	0110	0110	0110	0110	0111	0111	0112	0113	0113	0113
Sub-watershed	080	080	090	080	010	010	030	040	040	080	080	070	070	100	030	030	030
Station	MAYB-1	MAYB-1	FRMB-8	MRTC-1	TPSL-1	SF-2	BRSL-3	INMW-1	INMW-1	BLVC-1	BLVC-1	HNMB-4	HNMB-4	BERT-4	SSB-1	SSB-1	SSB-1
Subecoregion	67h	67h	67f	68e	68e	68e	68e	68e	68e	68d	68d	67f	67f	68f	65i	65i	65i
Drainage area (mi^2)	12	12	8	9	15	125	9	5	5	9	9	7	7	12	21	21	21
Macroinvertebrate community																	
Date (yymmdd)	990615	020515	020516	020620	020612	020612	020612	010711	020613	980603	020618	000613	020529	020604	980506	990615	020515
# EPT families	11	14	16	8	8	12	14	12	13	13	9	19	18	7	13	14	14
Assessment	Good	Excellent	Excellent	Fair	Fair	Good	Good	Good	Good	Excellent	Good	Excellent	Excellent	Fair	Good	Excellent	Excellent
Fish community																	
Date (yymmdd)		020618	020611	020612	020716	020724	020716		020724		020620		020613				020611
Richness measures																	
# species		22	18	14	11	19	13		12		12		3				16
# darter species		3	3	2	2	7	3		3		1		0				3
# minnow species		7	7	5	3	3	3		3		5		2				6
# sunfish species		4	2	3	2	4	3		5		3		0				2
# sucker species		2	2	2	1	1	0		0		1		0				2
# intolerant species		3	2	3	2	5	0		1		2		0				3
Composition measures																	
% sunfish		11	9	6	10	31	17		23		5		0				3
% omnivores and herbivores		26	8	65	29	11	23		27		24		8				6
% insectivorous cyprinids		44	75	18	31	10	0		2		36		0				64
% top carnivores		6	3	0	4	5	4		1		0		51				0
Population measures																	
# collected per hour		358	274	576	186	239	70		138		184		284				214
% disease and anomalies		0	1	0	0	0	0		0		3		0				0
IBI score		50	52	40	42	42	36		36		38		32				46
Assessment		Good	Good	Fair	Fair	Fair	Fair/ Poor		Fair/ Poor		Fair/ Poor		Poor				Good/ Fair

a. No flow; Assessment not conducted

b. Canopy cover: S=shaded; MS=mostly shaded; 50/50=50% shaded; MO=mostly open; O=open

c. Habitat assessment form: RR=riffle/run (Barbour et al. 1999); GP=glide/pool (Barbour et al. 1999)

d. Assessment guidelines based on data collected at reference sites, 1991-2003; NG=no assessment guidelines

e. Bridge construction; No assessment conducted

f. Algal mats/Decaying algae

g. Beaverdam; No flow; Assessment not conducted

Appendix O-3. Physical/chemical data collected during ADEM's Ecoregional Reference Reach Program, 1998-2002.

Sub	Station	Date yymmdd	Time 24hr	T-H2O C	pH su	Cond µmhos @ 25C	DO mg/L	Turb NTU	Flow cfs	Fecal Coliform col/100mL	Alk mg/L	Hard mg/L	CBOD5[c] mg/L	COD mg/L	TSS mg/L	TDS mg/L	CL mg/L	Chl *a* mg/m^3	Peri-Chl *a* mg/m^2	TOC mg/L	TP mg/L	DRP mg/L	NO_2+ NO_3-N mg/L	NH_3-N mg/L	TKN mg/L	TON mg/L
Cahaba R.																										
080	MAYB-1	990507	1505	19.2	6.8	24.0	8.1	11.6	8.5			12	1[c]		1						0.004		0.072	<0.015	0.211	
080	MAYB-1	990511	0800	14.7	6.3					118										1.62						
080	MAYB-1	990615	1517	25.5	6.1	52.6	7.7	99.5	14.3																	
080	MAYB-1	990623	1235	23.4	6.8	43.5	8.0	4.1	1.8	112		42	0.2[c]		3					1.91	0.01		0.031	<0.015	0.445	
080	MAYB-1	990720	1410	25.8	8.2	35.8	7.3		4.4	228		42	0.8[c]		4					1.61	0.004		0.008	<0.015	0.168	
080	MAYB-1	990812	1230	28.2	6.7	38.8	7.5	5.3	0.8	20					3					2.49	0.006		0.036		0.298	
080	MAYB-1	990922	1100	17.0	7.3	48.8	4.0	5.0		100					10						0.021		0.003	0.058	0.327	
080	MAYB-1	000525	0725	23.0	6.8	39.0	6.8	4.0	1.6																	
080	MAYB-1	020328	1245	18.2	5.8	15.0	9.3	4.5	20.6	13[b]	5	7.81	0.6	<2	1	34		0.27		1.279	0.04	0.01	0.031	<0.015	0.39	
080	MAYB-1	020430	0900	19.0	7.3	38.4	8.5	4.2										<0.1	0.97							
080	MAYB-1	020516	0700	16.5	7.1	41.7	7.9	3.9	2.4																	
080	MAYB-1	020521	1235	19.0	7.1	25.0	8.9	3.5	3.9	24	3	8.87			6	26		<0.1		1.709	0.025	0.009	0.003	<0.015	0.167	0.167
080	MAYB-1	020627	1345	29.0	7.6	35.0	7.8	12.0	7.3	167	7	9.87	0.3	<2	5	185		1.07		4.116	0.042	<0.004	0.108	<0.015	0.649	0.649
080	MAYB-1	020711	1450	25.6	6.9	40.0	7.2	3.5		>102	10	13.5	0.8	<2	9	73		1.07		2.412	0.062	0.009	0.018	<0.015	<0.15	<0.001
080	MAYB-1	020718	1535	28.5	7.1	30.0	8.0	4.3		64	6	11.2			13	86		0.53		2.316	0.038	0.012	0.104	<0.015	0.72	0.72
080	MAYB-1	020815	1135	26.4	7.6	45.0	7.0	4.0		52	20	6.58			10	75		0.8		2.862	0.077	0.007	0.003	<0.015	0.319	
080	MAYB-1	021210	1200	9.4	5.8	20.0	11.2	28.7		>1300	8	12.8	2.1	<2	29	49				6.05	0.057	0.007	0.095	0.031	0.26	
090	FRMB-8	020328	1140	22.0	6.2	5.0	8.9	0.9	10.2	6[b]	20	24.6	0.3	<2	3	45		1.07		1.289	0.045	<0.004	0.03	<0.015	<0.15	
090	FRMB-8	020430	1030	18.7	7.5	95.0	8.9	2.9	2.5	25[a]	420	44.8			6	55		1.07		1.841	0.027	0.009	0.045	<0.015	0.272	
090	FRMB-8	020516	0805	16.0	7.6	128.4	8.0	4.1	1.6																	
090	FRMB-8	020521	1200	17.0	6.9	130.0	8.9	5.2		31	90	61.7			5	77		1.34		1.563	0.026	0.012	0.054	<0.015	0.381	0.381
090	FRMB-8	020627	1415	26.5	7.6	150.0	8.3	19.9		53[b]	70	69.3	0.6	<2	8	105		0.8		2.832	0.048	<0.004	0.073	<0.015	1.09	1.09
090	FRMB-8	020711	1422	24.0	7.0	220.0	7.0	6.0		64	14	125	1.3	<2	28	152		1.07		2.189	0.031	0.006	0.105	<0.015	<0.15	<0.001
090	FRMB-8	020718	1500	29.3	7.2	190.0	9.0	3.5	0.1	31	82	88			9	141		0.27		2.031	0.056	0.009	0.094	<0.015	0.647	0.647
090	FRMB-8	020815	1100	26.0	7.5	305.0	6.6	6.6		60[b]	163	45.9			11	205		0.53		1.717	0.036	0.005	0.057	0.021	0.28	
090	FRMB-8	021210	1130	10.5	6.0	30.0	10.9	33.7		350	13	20.1	1.9	<2	32	46		<0.1		4.588	0.051	0.007	0.134	0.03	0.273	
Mulberry Fork																										
080	MRTC-1	020314	1235	17.0	7.1	35.0	10.1	7.8	14.6	3[b]	22	11.9	1.1	<2	2	48		0.34		0.894	0.05	0.01	0.202	0.08	1.26	
080	MRTC-1	020509	0905	19.0	7.4	50.0	8.5	7.3	8.0	60[a]	20	14.8			2	39		1.6		0.757	0.032	<0.004	0.239	<0.015	<0.15	
080	MRTC-1	020522	1409	17.0	7.4	48.8	10.1	5.8	4.2									0.53	0.95							
080	MRTC-1	020620	1145	23.0	7.2	55.9	8.2	6.6	0.5																	
080	MRTC-1	020701	1345	24.0	7.1	35.0	8.3	22.9	1.7	>840	31	19.6	0.9	<2	18	55		1.6		3.696	0.041	<0.004	0.624	<0.015	<0.15	
080	MRTC-1	020716	0930	23.0	6.8	55.0	8.5	14.7	13.0	340[a]	20	19.7	1.6	<2	17	62		0.53		1.444	0.031	0.008	0.653	<0.015	0.726	0.726
080	MRTC-1	021114	1010	11.7	7.1	35.0	10.9	6.1	17.8	80[a]	10	16.6			5	26		0.3		1.221	0.024	0.014	0.409	<0.015	0.345	
080	MRTC-1	021209	1115	9.0	7.3	35.0	12.6	5.6	11.5	19[a, b]	15	16	0.9	<2	3	46		0.27		1.06	0.036	0.011	0.341	<0.015	0.179	
Sipsey Fork																										
010	SF-2	020606	1015	25.0	7.4	75.0	7.2	2.0	40.8									<0.1	2.45							
010	SF-2	020612	1020	24.0	7.5	70.7	8.1	1.6	22.3																	
010	TPSL-1	990527	1200	19.1	6.4	93.4	8.5	1.3	5.2	11		54	0.6[c]		<1					0.98	0.004		0.11	<0.015	<0.15	
010	TPSL-1	990609	1300	23.0	7.4	90.4	11.7	<1	5.2	20		60	0.6[c]		<1					1.01	0.004		0.024	<0.015	<0.15	

Appendix O-3. Physical/chemical data collected during ADEM's Ecoregional Reference Reach Program, 1998-2002.

Sub	Station	Date yymmdd	Time 24hr	T-H2O C	pH su	Cond µmhos @ 25C	DO mg/L	Turb NTU	Flow cfs	Fecal Coliform col/100mL	Alk mg/L	Hard mg/L	CBOD5[c] mg/L	COD mg/L	TSS mg/L	TDS mg/L	CL mg/L	Chl *a* mg/m^3	Peri-Chl *a* mg/m^2	TOC mg/L	TP mg/L	DRP mg/L	NO_2+ NO_3-N mg/L	NH_3-N mg/L	TKN mg/L	TON mg/L
Sipsey Fork																										
010	TPSL-1	990713	1545	21.4	7.5	78.7	8.9	2.2	23.5	30		42	0.5[c]		2					1.3	0.004		0.039	<0.015	<0.15	
010	TPSL-1	020320	1600	15.0	7.3	44.0	9.8	8.7		240[a]		18.5	1.9	<2	13	37		2.67		1.216	0.04	0.01	0.003	0.03	<0.15	
010	TPSL-1	020415	1615	21.9	7.9	72.0	9.4	2.6	15.2	10[a, b]	15	22.8	0.7	<2	1	42		0.27		0.971	0.024	0.009	0.003	<0.015	<0.15	<0.001
010	TPSL-1	020508	1335	20.0	7.7	60.0	9.1	4.0	28.6	70[a]		18			3	32		0.53		0.826	0.026	0.004	0.004	<0.015	0.498	0.498
010	TPSL-1	020605	1505	25.4	7.8	88.0	8.1	1.8										2.67	5.04							
010	TPSL-1	020612	0715	20.0	7.4	104.6	7.6	1.1	0.6																	
010	TPSL-1	020806	1350	25.0	6.8	75.0	7.2	4.2	1.1	13[a, b]		38	0.6	<2	4	80		1.07		1.077	0.07	0.001	0.04	<0.015	<0.15	<0.001
010	TPSL-1	021009	1510	19.0	8.0	80.0	8.6	1.9		66[a]		47.6			7	69		2.14		1.525	0.028	0.018	0.009	0.171	0.203	
010	TPSL-1	021106	1525	16.0	7.4	31.0	9.9	7.2	109.6	65[a]		17.9	1.9	<2	7	41		0.3		1.527	0.077	0.01	0.003	0.104	0.98	
010	TPSL-1	021218	1410	12.2	7.2	50.0	10.0	3.2	30.7	27[a]		23.3		<2		40		0.56		0.705	0.031	0.024	0.003	0.048	0.205	
030	BRSL-3	020320	1330	15.0	7.8	39.2	9.7	16.3	11.0	52[a]		4.87	0.6	<2	10	27		1.6		1.416	0.04	0.004	0.003	0.04	<0.15	
030	BRSL-3	020415	1415	22.0	7.0	22.0	8.7	4.6	11.0	20[a]	5	7.39	0.5	<2	4	33		0.53		1.526	0.026	0.008	0.035	<0.015	<0.15	<0.001
030	BRSL-3	020508	1210	20.7	7.6	40.0	8.9	4.1	21.7	12[a, b]		3.9			2	20		0.8		0.897	0.025	0.004	0.003	<0.015	0.333	0.333
030	BRSL-3	020606	0800	21.0	6.9	29.5	8.1	3.0	2.2									1.6	2.2							
030	BRSL-3	020612	0905	20.0	6.9	31.3	8.5	1.9	0.9																	
030	BRSL-3	020806	1210	23.9	5.5	32.0	7.3	4.2	1.2	>63[a]		6.11	1.8	<2	11	43		0.53		2.314	0.062	0.007	0.036	<0.015	0.258	0.258
030	BRSL-3	020910	1150	20.0	7.2	40.0	8.4	2.0		24[a]		14.1			5	62		0.27		2.781	0.041	0.004	0.043	0.011	<0.15	
030	BRSL-3	021009	1320	19.0	7.4	70.0	8.4	2.8		93[a]		8.33			7	34		1.07		3.922	0.04	0.038	0.003	0.168	0.44	
030	BRSL-3	021106	1310	16.0	6.7	10.0	10.0	8.6		90[a]		6.34	2.6	<2	8	132		0.8		1.839	0.108	0.01	0.01	0.275	0.466	
030	BRSL-3	021218	1215	13.0	5.7	25.0	10.2	2.7	21.1	37[a]		7.06		9.04		29		0.59		1.083	0.038	0.026	0.004	0.127	<0.15	
040	INMW-1	990525	1500	19.3	7.7	24.4	8.1	3.8	2.9	42		16	0.5[c]		2					1.17	0.004		0.422	<0.015	0.186	
040	INMW-1	990609	1500	23.3	6.8	26.6	11.4	3.1	3.5	42		14	0.3[c]		2					1.47	0.026		0.471	<0.015	<0.15	
040	INMW-1	990713	1330	21.0	6.8	26.4	8.9	8.3	36.5	1340		22	0.3[c]		5					1.36	0.014		0.407	<0.015	<0.15	
040	INMW-1	990817	1215	23.9	7.0	29.5	6.8	2.5		7		10	0.8[c]		3					2.21	0.022		0.326	<0.015	0.733	
040	INMW-1	990914	1330	21.4	6.8	34.1	6.6	2.5		8		10			3					3.93	0.004		0.143	<0.015	0.21	
040	INMW-1	010711	1035	24.0	7.1	53.6	7.7	5.0	18.6	113	22	9.54	1.4		11	70	4.16			1.95	0.085	0.02	0.45	<0.015	0.15	
040	INMW-1	010828	1130	21.1	7.4	27.8	8.1	53.1	1.2	540	1	10.3	0.8		9	51	4.02				0.01		3.02	0.04	<0.15	
040	INMW-1	020320	1030	15.0	7.8	39.2	9.7	16.3		320[a]		8.15	2.3	<2	29	33		2.14		1.802	0.004	<0.004	0.265	<0.15	<0.15	
040	INMW-1	020415	1024	19.0	7.4	25.0	9.6	3.6		43[a]	2	6.45	1.1	<2	3	30		0.8		1.23	0.031	0.007	0.342	<0.015	<0.15	<0.001
040	INMW-1	020508	1010	18.0	7.9	20.0	9.0	5.3	11.1	35[a]		5.19			4	29		0.53		1.074	0.021	0.002	0.309	<0.015	0.539	0.539
040	INMW-1	020610	1030	20.5	7.4	34.7	8.1	4.3	5.0									0.53	1.81							
040	INMW-1	020613	1120	21.0	6.6	32.0	9.0	3.0	1.4																	
040	INMW-1	020806	1030	23.2	7.2	32.0	6.9	4.0		41[a]		4.99	1.2	<2	14	42		0.38		1.922	0.029	0.008	0.363	0.054	<0.15	<0.001
040	INMW-1	020910	1012	20.0	6.7	30.0	7.7	5.5		12[a, b]		11.6			30	55		<0.1		1.843	0.049	0.022	0.05	<0.015	<0.15	
040	INMW-1	021009	1100	19.0	8.4	55.0	85.0	5.9	2.8	120[a]		7.55			6	54		0.28		2.206	0.042	<0.004	0.523	0.167	0.288	
040	INMW-1	021106	1030	16.0	7.2		9.7	12.0		270[a, b]		9.17	2	<2	3	40		1.4		2.198	0.074	0.017	0.572	0.084	0.525	
040	INMW-1	021218	1015	14.0	6.2	40.0	10.5	4.4	10.1	39[a]		9.6		<2		39		0.27		0.979	0.03	0.028	0.579	0.146	<0.15	

Appendix O-3. Physical/chemical data collected during ADEM's Ecoregional Reference Reach Program, 1998-2002.

Sub	Station	Date yymmdd	Time 24hr	T-H2O C	pH su	Cond µmhos @ 25C	DO mg/L	Turb NTU	Flow cfs	Fecal Coliform col/100mL	Alk mg/L	Hard mg/L	CBOD5[c] mg/L	COD mg/L	TSS mg/L	TDS mg/L	CL mg/L	Chl *a* mg/m^3	Peri-Chl *a* mg/m^2	TOC mg/L	TP mg/L	DRP mg/L	NO$_2$+NO$_3$-N mg/L	NH$_3$-N mg/L	TKN mg/L	TON mg/L
Sipsey Fork																										
080	BLVC-1	980603	1535	24.0	7.6	44.0	7.3	11.9		>1290	15	14.1	2.6[c]		26	70	4.12				0.01		0.306	<0.015	0.18	0.18
080	BLVC-1	990527	1015	17.3	7.3	39.6	8.4	4.2	3.5			18	0.7[c]		<1					1.95	0.004		0.273	<0.015	0.266	
080	BLVC-1	990610	1130	21.1	6.9		6.7	4.7	0.8	600		16	0.1[c]		5					2.07	0.029		0.323	<0.015	0.184	
080	BLVC-1	990713	1220	24.4	6.4	33.7	8.0	10.1	18.4	500		24	0.8[c]		7					2.62	0.021		0.52	<0.015	0.301	
080	BLVC-1	990817	1115	22.9	7.3	166.7	5.5	4.8		23		76	0.9[c]		36					3.14	0.042		0.133	<0.015	0.601	
080	BLVC-1	020313	1735	12.0	7.0	30.0	10.0	4.3	31.5	36	19	8.33	1.5	<2	3	52		1.6			0.05	<0.004	0.809	0.02	1.46	
080	BLVC-1	020411	1320	18.1	7.1	25.0	12.5	3.1	13.4	37	41	8.33			3	38		0.53		0.125	0.031	<0.004	0.61	<0.015	0.405	
080	BLVC-1	020516	0845	15.0	7.1	30.0	9.5	3.6	5.4	22[a]	2	9.1			8	13		0.8		1.093	0.006	<0.004	0.623	8.27	30.7	
080	BLVC-1	020610	1220	22.5	7.1	57.8	7.7	3.6	0.5																	
080	BLVC-1	020618	1015	19.0	7.2	46.0	8.2	5.8	1.0																	
080	BLVC-1	020626	1450	26.3	7.6	50.0	7.8	3.7		850	6	14.5	1.5	<2	7	118		1.07		2.408	0.051	0.191	0.258	<0.015	2.16	2.16
080	BLVC-1	020701	1150	24.0	6.8	60.0		15.3		930[a]	10	14.2	1.5	<2	36	48		0.53		2.936	0.049	<0.004	0.221	<0.015	<0.15	
080	BLVC-1	020715	1945	23.0	6.9	25.0	8.1	12.9	32.8	157[a]	2	9.96	2.1	<2	23	67		1.07		2.149	0.033	0.013	0.995	<0.015	0.698	0.698
080	BLVC-1	021113	1600	25.0	6.9	40.0	9.9	4.0	30.5	N/A	21	11.2			13	134		0.5		1.784	0.048	0.004	1.27	0.233	0.319	
080	BLVC-1	021209	1325	9.0	7.1	60.0	12.1	2.5	10.9	3[a, b]	7	12	0.9	<2	3	41		<0.1		1.326	0.034	<0.004	1.202	<0.015	0.29	
Locust Fork																										
070	HNMB-4	000613	0945	19.0	7.9	208.1	9.0	1.2	0.6																	
070	HNMB-4	000919	1010	15.5	8.3	209.0	9.6	0.8	0.3		84	104	0.5[c]		1	135				0.409	0.03	0.01	0.292	<0.015	0.19	
070	HNMB-4	020321	1125	17.0	7.1	200.0	10.0	13.4	8.3	55	115	136	1	<2	8	165		2.94		1.999	0.04	0.006	0.038	0.15	0.23	
070	HNMB-4	020509	1315	19.0	8.1	190.0	9.1	3.1	4.7	>62	101.1	99.2			5	107		0.8		0.711	0.036	0.012	0.09	<0.015	<0.15	
070	HNMB-4	020524	0745	14.0	7.9	215.3	10.7	1.9	2.1									2.67	0.49							
070	HNMB-4	020529	1255	20.0	8.1	207.0	9.4	2.7	3.0																	
070	HNMB-4	020626	1105	22.0	7.0	200.0		12.4	2.6	53	104	103	1.8	<2	12	139		2.4		0.478	0.031	<0.004	0.211	<0.015	0.219	0.219
070	HNMB-4	020710	1410	21.0	8.1	196.0	9.3	3.3	1.6	16[b]	96	115			4	117		0.53		0.62	0.021	0.017	0.265	<0.015	<0.15	
070	HNMB-4	020716	1240	21.4	8.0	185.0	9.4	6.6	1.6	56	80	112	1.6	<2	12	181		2.67		0.742	0.027	0.015	0.241	<0.015	0.417	0.417
070	HNMB-4	021113	1305	17.0	8.0	250.0	10.2	2.9	3.0	62[a]	147	148			5	163		0.8		1.495	0.038	0.013	0.118	<0.015	0.232	
070	HNMB-4	021209	1600	12.0	8.3	220.0	10.9	1.4	2.0	20[a]	104	140	1.7	<2	6	134		0.53		0.836	0.032	0.01	0.159	<0.015	0.26	
Upper Black Warrior R.																										
100	BERT-4	020320	0950	18.0	7.1	31.0	9.2		36.2		33	9.14	1.1	<2	12	32		4.01		1.272	0.04	0.01	0.033	0.1	<0.15	
100	BERT-4	020418	0935	18.0	6.9	36.0	8.0		11.1																	
100	BERT-4	020507	0950	19.0	7.5	35.0	9.5		15.0																	
100	BERT-4	020604	1600	26.0	6.6	43.8	7.6	10.8	0.1																	
100	BERT-4	020606	0900	23.0	8.1	60.0	7.9		3.2	22	7	12.2	0.7	<2	5	123		4.27		1.813	0.041	<0.004	0.037	<0.015	<0.15	
100	BERT-4	020702	0920	23.0	8.6	49.0	7.9		3.3	127	12	12.7	1.2	<2	12	69		0.33		2.586	0.043	0.001	0.277	<0.015	0.2	
100	BERT-4	021022	1100	17.0	6.6		8.8		6.1																	
100	BERT-4	021119	1100	12.0	7.4	100.0	9.6		21.0	41	10	13.3	0.3	<2	5	43		0.8		1.7	0.004		0.069	0.198	0.436	
100	BERT-4	020808	0930	26.0	8.7	66.0	5.6																			
Lower Black Warrior R.																										
030	SSB-1	980506	1315	21.0	5.4	16.0	8.6	13.9	12.5		2	3.3	4[c]		10	24	3.21				0.03		0.02	<0.015	<0.15	
030	SSB-1	980713	1315	23.5	5.5	11.0	7.1	42.7	33.3																	
030	SSB-1	980908	1158	23.0	5.9	8.0	7.7	12.5	3.8	110	11	3.38	0.2[c]		3	34	3.98				0.17		0.02	<0.015	<0.15	
030	SSB-1	990513	1300	19.8	6.0	14.3	8.6	15.9		236		24	0.3[c]		9					3.69	0.004		0.014	<0.015	0.514	
030	SSB-1	990615	1340	25.0	5.9	16.7	7.0	25.8	6.8																	

Appendix O-3. Physical/chemical data collected during ADEM's Ecoregional Reference Reach Program, 1998-2002.

Sub	Station	Date yymmdd	Time 24hr	T-H2O C	pH su	Cond µmhos @ 25C	DO mg/L	Turb NTU	Flow cfs	Fecal Coliform col/100mL	Alk mg/L	Hard mg/L	CBOD5[c] mg/L	COD mg/L	TSS mg/L	TDS mg/L	CL mg/L	Chl *a* mg/m^3	Peri-Chl *a* mg/m^2	TOC mg/L	TP mg/L	DRP mg/L	NO_2+ NO_3-N mg/L	NH_3-N mg/L	TKN mg/L	TON mg/L
Lower Black Warrior R.																										
030	SSB-1	990623	1035	21.9	6.2	15.0	7.7	13.4	3.9	560		8	0.4[c]		11					3.35	0.021		0.041	<0.015	<0.15	
030	SSB-1	990720	1130	23.4	6.6		7.3		7.9	216										3.63	0.004		0.019	<0.015	0.322	
030	SSB-1	990812	1025	25.2	6.6		7.7		4.8	260					5					3.28	0.015		0.009		0.432	
030	SSB-1	990916	1030	19.3	4.8	11.9	8.3	10.8		156			0.1[c]		8						0.004		0.003	<0.015	<0.15	
030	SSB-1	000513	1300	19.8	6.0	14.3	8.6	15.9	8.9																	
030	SSB-1	020402	1405	25.0	7.0	10.0	9.0	11.9	16.0	77[a]	2	3.43	1.7	<2	9	13		2.67		3.142	0.023	0.02	0.003	<0.015	<0.15	
030	SSB-1	020430	1320	22.0	6.5	15.0	8.2	18.8	6.9	123	10	3.46	0.4	<2	16	21		2.14		5.137	0.028	0.029	0.003	<0.015	0.331	
030	SSB-1	020515	0926	16.0	6.5	18.1	8.3	20.9	4.5																	
030	SSB-1	020711	1247	26.0	6.1	20.0	7.1	51.1	4.4	>1430	2	3.55	2.8	<2	95	56		2.14		5.24	0.07	0.029	0.027	<0.015	<0.15	<0.001
030	SSB-1	020718	1300	29.0	6.4		7.4	18.9	4.1	280	2	3.49			19	63		1.07		4.393	0.04	0.041	0.003	<0.015	0.613	0.613
030	SSB-1	020815	1300	26.0	7.5	10.0	7.4	14.1		227	4	1.22			15	48		0.53		3.344	0.078	<0.004	0.003	<0.015	0.379	
030	SSB-1	030108	1045	5.5	4.7	10.0	12.3	4.9	9.8	<1	3	4.4	0.7	<2	3	55		1.34		1.494	0.014	0.013	0.003	0.055	0.246	0.191

a. analyzed out of holding time
b. estimated
c. BOD5--analyzed in 1998 and 1999

Appendix P. §303(d) Waterbody Monitoring Project

Lead agency**:** ADEM

Purpose**:** In accordance with §303(d) of the Federal Clean Water Act, each state must identify its impaired waterbodies that do not meet surface water quality standards and submit this list to the EPA. In an effort to address water quality problems within Alabama, some waterbodies included on ADEM's §303(d) list are only suspected to have water quality problems based on evaluated assessment data. ADEM conducts monitored assessments of impaired waterbodies to support §303(d) listing and de-listing decisions. The program includes intensive chemical, habitat, and biological data collected using ADEM's SOPs and QA/QC manuals.

Appendix P-1. Habitat assessment data

Appendix P-2. Biological assessment data

Appendix P-3. Physical/chemical data

References:

ADEM. 2002l. Water quality monitoring data collected by ADEM in support of CWA §303(d) listing and de-listing decisions 1999-2002 (unpublished). Field Operations Division, Alabama Department of Environmental Management. Montgomery, AL.

Appendix P-1. Physical characteristics and habitat quality of sites assessed in the Black Warrior and Cahaba River basins as part of ADEM's §303(d) Monitoring Program, 1998-2003.

CU		0202	0202	0202	0202	0202	0202	0202	0202	0202	0202	0202	0202	0202	0202	0202
Sub-watershed		020	020	030	030	030	030	030	030	030	030	030	050	070	070	070
Station		LC1	LC1	C2	CABJ-6	CABJ-6	LCBJ-1	PA1	PATJ-3	PATJ-3	PATJ-4	PATJ-4	C3	CAFC-1	CAFC-1	CAFC-1
Date (YYMMDD)		020521	020619	020621	020521	020619	020521	020523	020306	020813	020306	020813	020523	020417	020430	020515
Subecoregion		67f	67f	67h	67h	67h	67h	67h	67h	67h	67h	67h	67h	67h	67h	67h
Width (ft)		25	30	35	70	50	55	20	10	8	18	20	100	18	40	
Canopy cover[b]		S	MO	MO	50/50	50/50	MO	50/50	50/50	MO	MO	50/50	O	S	50/50	
Depth (ft)	Riffle		0.5	0.4	0.5	0.8	0.5	0.2			0.4	0.2	0.7	0.5	0.5	
	Run	1.5	2.0	1.0	2.5	2.5	1.5	1.0			1.0	0.5	1.8	0.8	1.0	
	Pool	2.5	2.5	1.0	2.5	4.0	3.5	2.0	2.0	1.5	1.8	1.0	3.5	1.5	4.0	
Substrate (%)	Bedrock	5	0	25	20	10	30	0	0	0	60	65	15	0	2	3
	Boulder	35	5	12	12	20	10	15	0	0	5	5	3	5	0	1
	Cobble	20	20	27	20	23	35	20	0	0	5	5	15	5	10	5
	Gravel	16	34	23	20	20	17	25	0	0	5	5	42	0	5	7
	Sand	10	28	8	18	20	3	10	10	10	10	5	10	80	63	65
	Silt	5	8	1	3	1	1	20	15	0	5	0	5	0	2	8
	Detritus	4	5	5	7	6	4	8	0	0	5	10	7	10	8	8
	Clay	5	0	0	2	0	0	2	0	15	5	0	3	0	0	1
	Organic silt	0	0	0	0	0	0	0	75	75	0	5	0	0	0	2
Habitat assessment form[c, d]		GP[NGP]	RR	RR	RR	RR	RR	RR	GP[NGP]	GP[NGP]	GP[NGP]	GP[NGP]	RR	RR	RR	RR
	Instream habitat quality	78	53	74	78	85	88	74	44	45	65	64	87	16	53	61
	Sediment deposition	86	66	81	73	88	91	65	55	51	68	69	84	13	40	61
	Sinuosity	43	35	78	73	85	85	48	48	50	25	25	83	13	33	65
	Bank and vegetative stability	56	65	56	61	83	88	61	70	71	65	65	64	33	70	68
	Riparian measurements	76	86	90	95	100	90	88	86	86	35	35	85	48	93	95
Habitat assessment score		159	161	181	186	213	215	170	139	139	126	124	197	61	151	172
% Maximum		72	67	75	77	89	90	71	63	63	57	56	82	25	63	71
Assessment[e]		Excellent	Good	Excellent	Excellent	Excellent	Excellent	Excellent	Good	Good	Good	Good	Excellent	Good	Good	Excellent

a. No flow; Assessment not conducted

b. Canopy cover: S=shaded; MS=mostly shaded; 50/50=50% shaded; MO=mostly open; O=open

c. Habitat assessment form: RR=riffle/run (Barbour et al. 1999); GP=glide/pool (Barbour et al. 1999)

d. NGP=no glide/pool assessment guidelines; habitat assessment rating based on riffle/run scoring criteria

e. NG=assessment guidelines; for 68b, used guidelines from adjacent subecoregion 68d; limited reference data available for 68f; 68f guidelines calculated from combintion of reference data from 68f, and adjacent subecoregions 65i, 67f, and 68e.

f. nonwadeable; no habitat assessment conducted

Appendix P-1. Physical characteristics and habitat quality of sites assessed in the Black Warrior and Cahaba River basins as part of ADEM's §303(d) Monitoring Program, 1998-2003.

CU		0109	0109	0109	0109	0109	0109	0109	0109	0109	0109	0109	0109	0109
Sub-watershed		030	030	030	030	070	070	100	130	170	170	170	170	170
Station		BINC-190	BINC-192	BINC-192	BINC-193	MUDC-1	MUDC-2	OTC-2	BCK-2	CANW-2	CANW-2	CANW-3	CANW-3	LOSW-1
Date (YYMMDD)		030610	020411	030610	020411	020417	020417	000121	000121	020416	020813	020806	020416	020416
Subecoregion		68d	68d	68d	68d	68d	68d	68f[NG]	68f[NG]	68f[NG]	68f[NG]	68f[NG]	68f[NG]	68f[NG]
Width (ft)		30	30	30	15	4	16	11	15	12	40	12	15	50
Canopy cover[b]		50/50	50/50	MS	50/50	O	O	S	S		MS	MS		MS
Depth (ft)	Riffle	0.6	0.5	0.2				0.4	0.8	1.0	5.0	0.5	1.0	
	Run	1.5	1.5	0.7	1.0			1.3	1.0	2.0	2.0	1.0	1.5	
	Pool	2.5	2.5	2.0	4.0			2.0	3.0	4.0	3.0	2.0	3.0	
Substrate (%)	Bedrock	1	0	5	0	0	0	20	0		0	0	0	10
	Boulder	1	15	20	2	0	0	0	0		0	25	0	10
	Cobble	20	20	20	0	4	0	40	8		25	15	25	10
	Gravel	29	25	15	0	45	0	24	1		25	25	25	30
	Sand	35	35	35	50	35	70	4	35		25	25	25	15
	Silt	10	2	3	3	4	5	2	10		10	0	25	5
	Detritus	3	3	1	20	3	8	8	45		15	0	0	8
	Clay	1	0	1	0	7	15	0	0		0	5	0	7
	Organic silt	0	0	0	25	2	3	2	1		0	5	0	5
Habitat assessment form[c, d]		RR	RR	RR	GP[NGP]	RR	GP[NGP]	RR	RR	GP	GP	GP	GP	RR
	Instream habitat quality	83	78	81	48	69	46	68	37	78	93	78	79	90
	Sediment deposition	53	81	59	65	80	48	98	60	65	59	68	74	76
	Sinuosity	75	100	73	53	88	28	35	35	60	65	73	73	43
	Bank and vegetative stability	46	70	63	16	76	65	80	55	70	66	70	69	61
	Riparian measurements	76	71	89	100	55	46	85	100	86	88	70	91	73
Habitat assessment score		168	191	180	126	171	112	192	153	162	171	160	171	177
% Maximum		70	79	75	57	71	51	80	64	73	78	73	78	74
Assessment[e]		Good	Excellent	Excellent	Good	Good	Fair	Excellent	Good	Excellent	Excellent	Excellent	Excellent	Excellent

a. No flow; Assessment not conducted
b. Canopy cover: S=shaded; MS=mostly shaded; 50/50=50% shaded; MO=mostly open; O=open
c. Habitat assessment form: RR=riffle/run (Barbour et al. 1999); GP=glide/pool (Barbour et al. 1999)
d. NGP=no glide/pool assessment guidelines; habitat assessment rating based on riffle/run scoring criteria
and 68e.
f. nonwadeable; no habitat assessment conducted

Appendix P-1. Physical characteristics and habitat quality of sites assessed in the Black Warrior and Cahaba River basins as part of ADEM's §303(d) Monitoring Program, 1998-2003.

CU		0109	0109	0109	0109	0109	0110	0110	0111	0111	0111	0111
Sub-watershed		170	180	180	180	180	110	110	050	050	050	050
Station		LOSW-3	WOFW-2	WOFW-2	WOFW-3	WOFW-3	RYNC-2	RYNC-3	DRYB-10	DRYB-11	GRVB-1	GRVB-1
Date (YYMMDD)		020416	020416	020806	020416	020606	020521	020521	020716	020716	001213	000504
Subecoregion		68f[NG]	68f[NG]	68f[NG]	68f[NG]	68f[NG]	68d	68d	68d	68d	68b[NG]	68b[NG]
Width (ft)		85	20		12	30	44	44	30	15	15	6
Canopy cover[b]		O	M	MS	MS	S	O	50/50	MS	O	MO	MS
Depth (ft)	Riffle		1.0	0.5	0.5	0.3		0.5	0.5		0.3	0.3
	Run		2.5	1.0	1.0	1.5		2.0	1.0		0.5	0.8
	Pool		4.0	1.0	1.5	3.5		3.0	1.5		0.9	1.0
Substrate (%)	Bedrock	30	0		0	0	45	35	65	50	0	0
	Boulder	25	0		0	5	25	25	10	10	0	0
	Cobble	5	50		50	5	10	15	10	25	2	5
	Gravel	5	25		25	5	5	2	5	5	15	10
	Sand	15	15		25	75	10	15	5	3	20	15
	Silt	5	10		0	5	3	1	13	5	20	20
	Detritus	5	0		0	5	3	4	2	2	30	10
	Clay	5	0		0	50	0	1	0	0	5	10
	Organic silt	5	0		0	0	0	2	0	0	8	30
Habitat assessment form[c, d]		RR	GP	GP	GP	RR	RR	RR	RR	RR	RR	RR
	Instream habitat quality	60	75	78	83	46	63	58	53	49	48	54
	Sediment deposition	49	79	68	75	45	86	84	54	75	46	43
	Sinuosity	68	58	75	80	78	100	98	50	58	70	75
	Bank and vegetative stability	68	56	73	75	46	73	79	66	85	48	60
	Riparian measurements	69	78	84	84	90	79	100	69	75	23	83
Habitat assessment score		154	158	166	173	146	186	195	144	170	117	154
% Maximum		64	72	75	79	61	78	81	60	71	49	64
Assessment[e]		Good	Excellent	Excellent	Excellent	Good	Excellent	Excellent	Good	Good	Fair	Good

a. No flow; Assessment not conducted
b. Canopy cover: S=shaded; MS=mostly shaded; 50/50=50% shaded; MO=mostly open; O=open
c. Habitat assessment form: RR=riffle/run (Barbour et al. 1999); GP=glide/pool (Barbour et al. 1999)
d. NGP=no glide/pool assessment guidelines; habitat assessment rating based on riffle/run scoring criteria
adjacent subecoregions 65i, 67f, and 68e.
f. nonwadeable; no habitat assessment conducted

Appendix P-1. Physical characteristics and habitat quality of sites assessed in the Black Warrior and Cahaba River basins as part of ADEM's §303(d) Monitoring Program, 1998-2003.

CU		0111	0111	0111	0111	0111	0111	0111	0111	0111	0111	0111	0111	0111	0111	0111	0111
Sub-watershed		050	050	050	050	050	050	090	090	130	130	130	130	130	130	130	130
Station		GRVB-2	GRVB-2	GRVB-3	GRVB-3	GRVB-4	GRVB-4	GYC -3	SFC-2	FMCJ-2	FMCJ-3	FMCJ-4	NFDJ-1	NFDJ-1	NFDJ-2	NFDJ-2	TSB-1
Date (YYMMDD)		001213	000627	000627	001213	000627	001213	000119	000120	020522	020522	020709	020809	020528	020809	020528	990617
Subecoregion		68b[NG]	68b[NG]	68b[NG]	68b[NG]	68b[NG]	68b[NG]	67f	68f[NG]	68f[NG]	68f[NG]	68f[NG]	68f[NG]	68f[NG]	68f[NG]	68f[NG]	65i
Width (ft)		40	40	10	20	35	40	25	18	30	40	40	10	20	30	17	25
Canopy cover[b]		MO	MO	MO	O	S	50/50	O	50/50	MO	O		MO	50/50	MO	MS	S
Depth (ft)	Riffle			0.3	0.3	0.5	0.3		0.5	0.3	0.5	1.0	0.4		0.3	0.5	0.5
	Run			0.5	0.8	1.5	1.0		1.0	1.5	1.3	1.5	0.8	1.0	0.8	1.5	0.5
	Pool	6.0	5.0	3.5	3.0	2.0	1.5		5.0	5.0	3.0	2.5	4.0	3.0	2.5		2.0
Substrate (%)	Bedrock	0	0	0	0	50	20	50	25	10	0	40	0	0	0	0	15
	Boulder	0	0	0	0	15	40	5	15	10	30	20	2	5	0	1	7
	Cobble	0	0	15	5	15	12	5	30	25	25	15	35	15	2	30	10
	Gravel	0	0	70	33	10	3	0	19	20	30	10	25	17	68	30	63
	Sand	0	0	10	12	5	5	1	2	15	10	9	1	40	20	10	2
	Silt	0	0	1	3	4	3	25	1	5	3	3	3	20	2	10	1
	Detritus	0	0	2	12	1	15	11	7	5	2	3	4	3	5	4	2
	Clay	0	0	2	35	0	1	1	0	0	0	0	28	0	2	15	0
	Organic silt	0	0	0	0	0	1	2	1	0	0	0	2	0	1	0	0
Habitat assessment form[c, d]		GP[NGP]	GP	RR	RR	RR	RR	RR	RR	RR	RR	RR	GP	GP	RR	RR	RR
	Instream habitat quality	0	21	50	58	75	73	30	82	77	78	83	64	60	51	77	72
	Sediment deposition	49	50	26	56	78	91	55	93	70	78	70	74	70	50	56	70
	Sinuosity	10	45	55	78	93	68	60	90	63	75	85	65	43	65	88	95
	Bank and vegetative stability	91	96	43	44	73	74	85	73	71	81	85	59	70	54	33	33
	Riparian measurements	86	88	33	13	88	91	40	90	56	66	69	84	76	66	85	90
Habitat assessment score		113	134	108	122	198	199	131	204	169	183	189	147	150	140	161	174
% Maximum		51	61	45	51	82	83	55	85	70	76	79	67	68	58	67	73
Assessment[e]		Fair	Good	Fair	Fair	Excellent	Excellent	Good	Excellent	Excellent	Excellent	Excellent	Good	Excellent	Good	Good	Excellent

a. No flow; Assessment not conducted

b. Canopy cover: S=shaded; MS=mostly shaded; 50/50=50% shaded; MO=mostly open; O=open

c. Habitat assessment form: RR=riffle/run (Barbour et al. 1999); GP=glide/pool (Barbour et al. 1999)

d. NGP=no glide/pool assessment guidelines; habitat assessment rating based on riffle/run scoring criteria

e. NG=assessment guidelines; for 68b, used guidelines from adjacent subecoregion 68d; limited reference data available for 68f; 68f guidelines calculated from combintion of reference data from 68f, and adjacent subecoregions 65i, 67f, and 68e.

f. nonwadeable; no habitat assessment conducted

Appendix P-1. Physical characteristics and habitat quality of sites assessed in the Black Warrior and Cahaba River basins as part of ADEM's §303(d) Monitoring Program, 1998-2003.

CU		0111	0111	0111	0111	0111	0111	0111	0111	0111	0111	0111	0111	0111	0111	0111
Sub-watershed		140	140	140	140	140	140	140	140	140	140	140	140	140	150	150
Station		CMBJ-2	CMBJ-3	CMBJ-3	CMBJ-3	CMBJ-4	CMBJ-4	CMBJ-4	VLGJ-1	VLGJ-1	VLGJ-2	VLGJ-2	VLGJ-4	VLGJ-4	LFKB-2	SHTJ-1
Date (YYMMDD)		020528[a]	020612	020313	020528	020612	020313	020528	020522	020715	020522	020715[f]	020522	020715	020702	020515
Subecoregion		68f[NG]	68f[NG]	68f[NG]	68f[NG]	68f[NG]	68f[NG]	68f[NG]	67f	67f	67f	67f	67f	68f[NG]	68e	68f[NG]
Width (ft)			6	10	6	12	12	5	25	20	35	30	60	50	110	20
Canopy cover[b]		O	50/50	50/50	S	O	MO	O	O	MO	O	50/50	O	O	O	MS
Depth (ft)	Riffle				0.3			0.3	0.5	0.5	0.3	1.0	0.3	0.4	0.5	0.2
	Run		0.4		1.0	0.5		1.0	1.5	0.8	1.5	3.0	1.5	0.6	4.0	0.5
	Pool		0.7			1.5		2.0		1.5		6.0		2.0	5.0	1.5
Substrate (%)	Bedrock		0	0	0	0	0	0	0	0	5	50	5	0	0	0
	Boulder		0	0	0	0	0	0	15	25	5	20	0	0	5	40
	Cobble		0	0	5	0	0	35	20	30	45	20	10	5	30	30
	Gravel		2	0	5	45	45	25	35	30	35	5	68	50	30	15
	Sand		45	80	60	50	45	22	25	15	5	5	10	40	24	10
	Silt		45	0	20	5	0	5	4	0	3	0	5	5	5	3
	Detritus		8	20	5	0	10	3	1	0	2	0	2	0	3	0
	Clay		0	0	5	0	0	5	0	0	0	0	0	0	3	3
	Organic silt		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Habitat assessment form[c, d]			GP	GP	RR	GP	GP	RR	RR	RR	RR		RR	RR	RR	RR
	Instream habitat quality		34	71	38	61	72	73	71	77	73		71	25	81	67
	Sediment deposition		73	78	43	70	63	56	76	45	71		69	49	66	78
	Sinuosity		50	68	55	60	60	65	83	98	55		55	70	48	100
	Bank and vegetative stability		65	85	53	90	80	66	76	93	61		83	73	78	81
	Riparian measurements		100	90	88	63	61	69	51	53	25		56	89	93	100
Habitat assessment score			133	175	138	148	152	163	173	178	134		160	142	189	199
% Maximum			60	80	58	67	69	68	72	74	56		67	59	79	83
Assessment[e]			Good	Excellent	Good	Good	Excellent	Excellent	Excellent	Excellent	Good		Good	Good	Excellent	Excellent

a. No flow; Assessment not conducted

b. Canopy cover: S=shaded; MS=mostly shaded; 50/50=50% shaded; MO=mostly open; O=open

c. Habitat assessment form: RR=riffle/run (Barbour et al. 1999); GP=glide/pool (Barbour et al. 1999)

d. NGP=no glide/pool assessment guidelines; habitat assessment rating based on riffle/run scoring criteria

e. NG=assessment guidelines; for 68b, used guidelines from adjacent subecoregion 68d; limited reference data available for 68f; 68f guidelines calculated from combintion of reference data from 68f, and adjacent subecoregions 65i, 67f, and 68e.

f. nonwadeable; no habitat assessment conducted

Appendix P-1. Physical characteristics and habitat quality of sites assessed in the Black Warrior and Cahaba River basins as part of ADEM's §303(d) Monitoring Program, 1998-2003.

CU		0112	0112	0112	0112	0112	0112	0112	0112	0112	0113
Sub-watershed		030	030	050	050	050	070	080	080	100	140
Station		MUDJ-2	VA1	BYET-65a	LYC-1	LYCT-1	JKC-1	DNC-1	PGC-1	NORF-28c	NHC-2
Date (YYMMDD)		020523	020523	020417[f]	990616	020417	990616	990622	990622	020528	000210
Subecoregion		68f[NG]	68f[NG]	68f[NG]	68f[NG]	68f[NG]	68f[NG]	68f[NG]	68f[NG]	68f[NG]	65a
Width (ft)		30	96		30	30	15	25	15	30	12
Canopy cover[b]		S	?	MS	MO	MO	S	50/50	50/50	MO	50/50
Depth (ft)	Riffle	0.5	0.5	0.3		0.5	0.5	0.3	0.3	0.3	
	Run	1.5	1.0	4.0		1.3	0.8	0.5	0.5	2.0	1.0
	Pool	2.8	5.0		2.0		1.8	1.0		3.5	3.0
Substrate (%)	Bedrock	40	60		78	80	5	0	0	60	0
	Boulder	10	15		1	0	3	5	1	5	0
	Cobble	10	10		3	0	25	10	25	5	0
	Gravel	10	5		0	5	56	60	66	10	2
	Sand	18	5		5	10	5	3	1	15	29
	Silt	5	3		10	0	3	20	5	2	22
	Detritus	4	2		3	3	3	2	2	3	4
	Clay	3	0		0	0	0	0	0	0	40
	Organic silt	0	0		0	3	0	0	0	0	3
Habitat assessment form[c, d]		RR	RR		GP	RR	RR	RR	RR	RR	GP
	Instream habitat quality	65	76		10	15	78	57	65	63	15
	Sediment deposition	74	80		53	26	90	38	60	64	75
	Sinuosity	75	85		30	33	100	25	95	63	40
	Bank and vegetative stability	83	90		70	36	60	43	83	33	20
	Riparian measurements	95	91		23	48	73	85	88	90	30
Habitat assessment score		189	203		88	73	189	131	176	156	73
% Maximum		79	85		40	30	79	55	73	65	33
Assessment[e]		Excellent	Excellent		Fair	Poor	Excellent	Good	Excellent	Good	Poor

a. No flow; Assessment not conducted
b. Canopy cover: S=shaded; MS=mostly shaded; 50/50=50% shaded; MO=mostly open; O=open
c. Habitat assessment form: RR=riffle/run (Barbour et al. 1999); GP=glide/pool (Barbour et al. 1999)
d. NGP=no glide/pool assessment guidelines; habitat assessment rating based on riffle/run scoring criteria
68f, and adjacent subecoregions 65i, 67f, and 68e.
f. nonwadeable; no habitat assessment conducted

Appendix P-2. Bioassessment results from assessed in the Black Warrior and Cahaba River basins as part of ADEM's §303(d) Monitoring Program, 1998-2002.

CU	0202	0202	0202	0202	0202	0202	0202	0111	0111	0111
Sub-watershed	020	030	030	030	030	050	070	080	130	130
Station	LC-1	CABJ-6	CARS-5	LCBJ-1	PA-1	C-3	CAFC-1	LFKB-2	FMCJ-2	FMCJ-3
Subecoregion	67f	67h	67h	67h	67h	67h	67h	68e	68f	68f
Drainage area (mi^2)							0015			
Macroinvertebrate community										
Date (yymmdd)	020521	020521	980629	020521	020523	020523	020515	020702	020522	020522
# EPT families	5	9	8	7	5	6	12	12	6	3
Assessment	Poor	Good	Fair	Good	Fair	Fair	Good	Good	Fair	Poor
Fish community										
Date (yymmdd)					020729		020611	020730		
Richness measures										
# species					19		15	22		
# darter species					2		4	3		
# minnow species					4		4	6		
# sunfish species					5		3	3		
# sucker species					4		2	2		
# intolerant species					2		1	4		
Composition measures										
% sunfish					41		52	12		
% omnivores and herbivores					40		8	26		
% insectivorous cyprinids					14		16	54		
% top carnivores					4		3	4		
Population measures										
# collected per hour					612		144	546		
% disease and anomalies					0		1	0		
IBI score					44		38	48		
Assessment					Fair		Fair/ Poor	Good		

a. No flow; Assessment not conducted

b. Canopy cover: S=shaded; MS=mostly shaded; 50/50=50% shaded; MO=mostly open; O=open

c. Habitat assessment form: RR=riffle/run (Barbour et al. 1999); GP=glide/pool (Barbour et al. 1999)

d. Assessment guidelines based on data collected at reference sites, 1991-2003; NG=no assessment guidelines

e. Bridge construction; No assessment conducted

f. Algal mats/Decaying algae

g. Beaverdam; No flow; Assessment not conducted

Appendix P-2. Bioassessment results from assessed in the Black Warrior and Cahaba River basins as part of ADEM's §303(d) Monitoring Program, 1998-2002.

CU	0111	0111	0111	0111	0111	0111	0111	0111	0111	0111	0112	0112	0112	0112	0112
Sub-watershed	130	130	130	130	130	140	140	140	140	140	020	050	070	080	080
Station	FMCJ-4	FMCJ-14	NFDJ-1	NFDJ-2	TSB-1	CMBJ-3	CMBJ-4	VLGJ-1	VLGJ-2	VLGJ-4	VA-1	LYC-1	JKC-1	DNC-1	PGC-1
Subecoregion	68f	68f	68f	68f	65i	68f	68f	67f	67f	68f	68f	68f	68f	68f	68f
Drainage area (mi^2)															
Macroinvertebrate community															
Date (yymmdd)	020709	020522	020528	020528	990617	020528	020528	020522	020522	020522	020523	990616	990615	990622	990622
# EPT families	6	2	3	7	6	3	4	3	2	2	7	2	6	3	6
Assessment	Fair	Poor	Poor	Fair	Fair	Poor	Poor	Poor	Poor	Poor	Fair	Poor	Poor	Poor	Poor
Fish community															
Date (yymmdd)	020703									020729	020618				
Richness measures															
# species	11									5	10				
# darter species	2									0	2				
# minnow species	3									1	2				
# sunfish species	3									1	2				
# sucker species	0									0	1				
# intolerant species	1									0	0				
Composition measures															
% sunfish	19									39	10				
% omnivores and herbivores	52									57	84				
% insectivorous cyprinids	14									0	3				
% top carnivores	2									5	1				
Population measures															
# collected per hour	112									327	212				
% disease and anomalies	0									1	1				
IBI score	30									24	30				
Assessment	Poor									Poor/ Very poor	Poor				

a. No flow; Assessment not conducted

b. Canopy cover: S=shaded; MS=mostly shaded; 50/50=50% shaded; MO=mostly open; O=open

c. Habitat assessment form: RR=riffle/run (Barbour et al. 1999); GP=glide/pool (Barbour et al. 1999)

d. Assessment guidelines based on data collected at reference sites, 1991-2003; NG=no assessment guidelines

e. Bridge construction; No assessment conducted

f. Algal mats/Decaying algae

g. Beaverdam; No flow; Assessment not conducted

Appendix P-3. Physical/chemical data collected from stations located in the BWC Basin Group as part of the CWA §303(d) Monitoring Program, 1999-2002 (ADEM 2002l).

Sub-Watershed	Stream	Station	Date	Time	Water Temp.	DO	pH	Conductivity	Turbidity	Flow	Fecal Coliform	BOD_5/ $CBOD_5$[a]	TSS	TDS	TOC	Total-P	DRP	NO_3+ NO_2-N	NH_3-N	TKN	Chl *a*	Hardness	ALK
			yymmdd	*24hr*	*°C*	*mg/L*	*s.u.*	*µmhos @ 25°C*	*NTU*	*cfs*	*col/ 100mL*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/m³*	*mg/L*	*mg/L*
Cahaba River (0315-0202)																							
010	Cahaba R.	CABJ-8	020128	1030	10.9	11.2	7.6	96.0	8.1		58	1.0	2.0			0.004	0.008v	0.319	<0.015	<0.15		70	
010	Cahaba R.	CABJ-8	020219	1015	9.0	12.4	7.3	145.0	1.9		38	0.9	<1			0.035	<0.004	0.290	0.016	<0.15		76	
010	Cahaba R.	CABJ-8	020327	1010	12.1	11.1	8.0	131.0	10.8		52	0.4	3.0			<0.004	<0.004	0.230	<0.015	<0.15		62	
010	Cahaba R.	CABJ-8	020410	1000	16.1	11.3	7.8	157.0	5.3		76	0.1	4.0			<0.004	<0.004	0.269	<0.015	<0.15		86	
010	Cahaba R.	CABJ-8	020506	1300	17.9	10.0	7.7	125.0	10.2		160	0.5	6.0			0.014	<0.004	0.264	<0.015	<0.15		62	
010	Cahaba R.	CABJ-8	020523	1030	16.4	9.9	6.6	192.0	3.2		78	0.1	4.0			0.008	<0.004	0.121	<0.015	0.156		106	
010	Cahaba R.	CABJ-8	020617	1150	23.2	9.0	7.8	164.0	9.2		200	1.1	5.0			0.016	0.013	0.150	<0.015	<0.15		96	
010	Cahaba R.	CABJ-8	020718	0850	23.7	6.5	6.9	141.0	13.9		208	0.5	1.0			0.051	<0.004	0.309	<0.015	0.190		66	
010	Cahaba R.	CABJ-8	020812	1045	24.3	5.5	7.0	407.0	1.5		144	0.5	10.0			0.012	<0.004	<0.003	<0.015	1.130		200	
010	Cahaba R.	CABJ-9	020128	1100	11.1	11.3	7.7	111.0	20.1		63	1.0	6.0			0.042	0.025	0.508	<0.015	<0.15		70	
010	Cahaba R.	CABJ-9	020219	1040	8.7	14.5	8.4	180.0	3.0		27	1.1	2.0			0.055	0.024	1.376	<0.015	<0.15		82	
010	Cahaba R.	CABJ-9	020327	1040	13.4	13.3	8.5	177.0	7.6		128	0.5	5.0			0.062	0.040	0.918	<0.015	<0.15		78	
010	Cahaba R.	CABJ-9	020410	1045	17.3	11.3	8.0	190.0	6.9		57	0.3	5.0			0.067	0.030	1.278	<0.015	<0.15		86	
010	Cahaba R.	CABJ-9	020506	1325	19.4	9.7	7.8	152.0	26.7		168	0.7	17.0			0.062	<0.004	0.481	<0.015	<0.15		70	
010	Cahaba R.	CABJ-9	020523	1100	17.6	9.4	6.8	286.0	6.4		54	0.3	24.0			0.156	0.127	2.691	<0.015	0.240		116	
010	Cahaba R.	CABJ-9	020617	1230	23.7	9.2	8.1	229.0	11.2		76	1.2	6.0			0.195	0.097	1.237	<0.015	0.156		110	
010	Cahaba R.	CABJ-9	020718	0915	25.6	6.4	7.7	236.0	17.0		132	0.6	7.0			0.164	0.103	1.860	<0.015	0.266		90	
010	Cahaba R.	CABJ-9	020812	1105	24.5	8.8	7.8	401.0	7.3		92	0.9	7.0			0.331	0.305	5.350	<0.015	0.372		142	
020	L. Cahaba R.	LC-1	020122	1335	11.7	11.3	7.7	258.0	20.0		270	0.7	6.0			0.004	0.024v	0.726	<0.015	<0.15		150	
020	L. Cahaba R.	LC-1	020213	1140	12.6	10.7	7.8	335.0	8.0		36	0.6	5.0			0.037	0.017	1.140	0.048	<0.15		180	
020	L. Cahaba R.	LC-1	020326	1125	17.1	9.4	7.9	393.0	52.4		172	0.5	16.0			0.041	0.009	0.873	<0.015	<0.15		174	
020	L. Cahaba R.	LC-1	020409	1150	17.2	10.0	7.6	312.0	38.8		1200	1.6	15.0			0.067	0.015	1.081	<0.015	0.419		132	
020	L. Cahaba R.	LC-1	020507	1130	19.5	8.4	7.6	383.0	22.3		204	0.3	10.0			0.049	0.030	0.976	<0.015	<0.15		186	
020	L. Cahaba R.	LC-1	020521	1530	18.0	9.0	7.7	381.0	6.8														
020	L. Cahaba R.	LC-1	020522	1215	16.2	9.2	7.9	423.0			56	<0.1	6.0			0.071	0.067	1.703	<0.015	0.199		198	
020	L. Cahaba R.	LC-1	020613	1210	21.8	9.3	7.8	406.0	7.8		200	4.0	5.0			0.090	0.081	2.042	<0.015	<0.15		188	
020	L. Cahaba R.	LC-1	020717	1140	21.9	7.2	7.4	396.0	16.3		350	0.2	7.0			0.079	0.039	1.170	<0.015	<0.15		178	
020	L. Cahaba R.	LC-1	020808	1050	23.2	8.0	7.7	461.0	8.6		160	0.5	4.0			0.040	0.034	1.780	0.029	0.236		188	
020	L. Cahaba R.	LCBS-3	020122	1210	10.4	11.0	7.6	217.0	21.5	29.1	290	1.1	7.0			0.043	0.045	0.360	<0.015	0.177		142	
020	L. Cahaba R.	LCBS-3	020213	1000	11.3	11.4	7.8	283.0	3.6	11.2	60	0.6	4.0			0.062	0.028	0.079	0.073	<0.15		164	
020	L. Cahaba R.	LCBS-3	020326	0940	17.1	8.6	7.6	324.0	24.7	17.4	360	1.3	60.0			0.121	0.033	0.574	<0.015	<0.15		166	
020	L. Cahaba R.	LCBS-3	020409	1030	17.0	8.9	7.6	302.0	24.9	14.2	720	1.0	14.0			0.123	0.040	0.529	<0.015	0.160		148	
020	L. Cahaba R.	LCBS-3	020507	1030	20.0	7.6	7.5	337.0	23.7	12.9	480	0.6	16.0			0.108	0.087	0.600	<0.015	<0.15		174	
020	L. Cahaba R.	LCBS-3	020522	1050	16.0	8.0	7.6	372.0	5.9	12.2	48	0.1	6.0			0.325	0.302	1.314	<0.015	<0.15		180	
020	L. Cahaba R.	LCBS-3	020613	0920	21.6	6.6	7.7	351.0	8.2	2.5	64	3.6	32.0			0.538	0.549	1.830	<0.015	0.166		174	
020	L. Cahaba R.	LCBS-3	020717	1045	22.9	6.3	7.4	334.0	22.2	5.2	370	0.3	4.0			0.241	0.206	0.989	<0.015	0.261		156	
020	L. Cahaba R.	LCBS-3	020808	0945	22.7	7.3	7.2	354.0	2.8	3.5	22	0.4	22.0			0.613	0.596	1.620	<0.015	1.530		176	
030	Cahaba R.	C2	020129	1110	12.2	11.3	7.7	75.0	100.0		120	0.7	7.0			0.035	0.016	0.375	<0.015	<0.15		70	
030	Cahaba R.	C2	020220	1030	10.8	10.4	7.8	178.0	26.9		62	0.9	11.0			0.057	<0.004	0.417	<0.015	0.178		98	
030	Cahaba R.	C2	020328	1115	14.0	10.4	7.8	183.0	6.8		42	2.0	5.0			0.020	<0.004	0.150	<0.015	0.171		78	
030	Cahaba R.	C2	020411	1105	18.3	9.4	7.7	199.0	10.1		50	0.7	44.0			0.027	0.038	0.226	<0.015	<0.15		86	
030	Cahaba R.	C2	020502	1215	20.5	9.3	7.8	167.0	68.7		580	1.4	24.0			0.054	<0.004	0.128	<0.015	0.249		80	

Appendix P-3. Physical/chemical data collected from stations located in the BWC Basin Group as part of the CWA §303(d) Monitoring Program, 1999-2002 (ADEM 2002l).

Sub-Watershed	Stream	Station	Date	Time	Water Temp.	DO	pH	Conductivity	Turbidity	Flow	Fecal Coliform	BOD_{5*}/ $CBOD_5$[a]	TSS	TDS	TOC	Total-P	DRP	NO_3+ NO_2-N	NH_3-N	TKN	Chl *a*	Hardness	ALK
			yymmdd	*24hr*	*^oC*	*mg/L*	*s.u.*	*μmhos @ 25^oC*	*NTU*	*cfs*	*col/ 100mL*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/m^3*	*mg/L*	*mg/L*
Cahaba River (0315-0202)																							
030	Cahaba R.	C2	020523	1120	20.7	10.1	7.8	251.0			74	0.5	4.0			0.202	0.177	0.762	<0.015	0.676		102	
030	Cahaba R.	C2	020618	1030	25.1	8.1	7.7	277.0	10.2		15	0.7	8.0			0.439	0.110	0.938	<0.015	0.279		120	
030	Cahaba R.	C2	020716	1100	25.9	7.8	7.7	173.0	33.6		56	0.6	11.0			0.050	0.025	0.279	<0.015	0.410		78	
030	Cahaba R.	C2	020813	1030	27.6	8.3	7.3	365.0	8.0		12	0.9	10.0			0.890	0.849	3.830	<0.015	0.637		110	
030	Cahaba R.	CABJ-5	020128	1230	11.2	11.3	7.6	108.0	24.4		54	0.7	9.0			0.021	0.012	0.335	<0.015	<0.15		62	
030	Cahaba R.	CABJ-5	020219	1245	8.8	11.9	8.0	120.0	3.8		10	0.9	1.0			<0.004	<0.004	0.518	0.034	<0.15		64	
030	Cahaba R.	CABJ-5	020327	1230	14.5	10.1	8.1	157.0	5.5		15	0.6	2.0			<0.004	<0.004	0.294	<0.015	<0.15		62	
030	Cahaba R.	CABJ-5	020411	1140	17.9	9.5	7.7	173.0	9.8		124	0.7	3.0			0.023	0.011	0.415	<0.015	<0.15		70	
030	Cahaba R.	CABJ-5	020502	1300	20.4	9.1	7.7	128.0	49.1		720	0.9	23.0			0.050	<0.004	0.249	<0.015	<0.15		66	
030	Cahaba R.	CABJ-5	020523	1040	17.8	10.6	7.4	209.0			15	0.2	5.0			0.044	0.018	0.433	<0.015	0.454		80	
030	Cahaba R.	CABJ-5	020618	0945	23.0	7.6	7.7	262.0	26.5		84	0.5	16.0			0.062	0.015	0.946	<0.015	0.228		104	
030	Cahaba R.	CABJ-5	020718	1210	26.9	8.0	7.7	168.0	40.1		120	0.3	14.0			0.094	0.015	0.375	<0.015	0.359		68	
030	Cahaba R.	CABJ-5	020812	1355	27.0	8.8	8.0	274.0	13.1		20	0.6	8.0			0.030	<0.004	0.365	<0.015	0.506		110	
030	Cahaba R.	CABJ-6	020128	1200	11.1	11.7	7.6	105.0	23.5		58	0.6	7.0			0.022	0.012	0.297	<0.015	0.640		60	
030	Cahaba R.	CABJ-6	020219	1220	9.1	12.0	8.1	160.0	4.2		<1	1.1	2.0			<0.004	<0.004	0.393	<0.015	<0.15		66	
030	Cahaba R.	CABJ-6	020327	1200	14.4	12.1	8.1	162.0	6.7		32	0.2	2.0			0.008	<0.004	0.416	<0.015	<0.15		60	
030	Cahaba R.	CABJ-6	020410	1215	17.5	10.5	7.8	176.0	12.2		45	0.6	6.0			0.034	0.006	0.593	<0.015	<0.15		74	
030	Cahaba R.	CABJ-6	020502	1320	20.6	9.4	7.7	125.0	40.4		210	0.5	17.0			0.044	<0.004	0.237	<0.015	0.233		62	
030	Cahaba R.	CABJ-6	020521	1300	20.0	9.0	7.8	180.0	19.9	69.0													
030	Cahaba R.	CABJ-6	020523	1320	19.5	8.8	7.8	191.0	7.6		6	0.2	5.0			0.038	0.017	0.317	<0.015	0.246		88	
030	Cahaba R.	CABJ-6	020618	0915	23.6	8.3	7.9	272.0	11.9		17	0.3	7.0			0.080	0.025	1.083	<0.015	0.251		112	
030	Cahaba R.	CABJ-6	020718	1145	27.0	8.1	7.8	165.0	29.6		104	0.3	11.0			0.083	0.018	0.479	<0.015	0.340		64	
030	Cahaba R.	CABJ-6	020812	1340	28.0	8.8	8.2	279.0	6.3		27	0.6	4.0			0.038	0.011	0.718	0.025	0.482		106	
030	Cahaba R.	CABJ-7	020129	1015	11.9	10.9	7.5	117.0	19.7		50	0.5	7.0			0.022	0.016	0.432	<0.015	<0.15	<1	64	
030	Cahaba R.	CABJ-7	020219	1130	8.8	12.4	8.1	160.0	5.0		11	1.0	2.0			0.059	<0.04	0.471	<0.015	<0.15	<1	64	
030	Cahaba R.	CABJ-7	020327	1125	14.3	12.0	8.2	167.0	10.2		60	0.3	4.0			0.020	0.007	0.444	<0.015	<0.15	1	70	
030	Cahaba R.	CABJ-7	020410	1140	17.2	9.7	7.7	170.0	13.7		164	0.7	7.0			0.034	0.010	0.432	<0.015	<0.15	<1	82	
030	Cahaba R.	CABJ-7	020506	1400	19.5	9.4	7.5	134.0	29.5		132	0.5	14.0			0.034	<0.004	0.149	<0.015	<0.15	<1	56	
030	Cahaba R.	CABJ-7	020523	1150	17.7	8.5	7.3	210.0	8.5		42	0.6	14.0			0.054	0.047	0.432	<0.015	0.363	1.6	94	
030	Cahaba R.	CABJ-7	020617	1350	24.5	8.0	7.9	332.0	9.6	36.4	15	0.6	4.0			0.122	0.037	2.767	<0.015	0.173	<1	120	
030	Cahaba R.	CABJ-7	020718	1110	26.4	8.5	7.6	181.0	31.0	89.8	84	0.5	15.0			0.133	0.025	0.690	<0.015	0.396	2.67	66	
030	Cahaba R.	CABJ-7	020812	1135	26.2	7.7	7.9	320.0	7.1	13.8	21	0.8	5.0			0.055	0.023	1.300	0.015	0.498	4.27	112	
030	Cahaba R.	CAHS-1	030310	1220	14.2	11.2	7.8	161.0	11.3		84	1.1	18.0	99		0.069	0.029	0.452	<0.015	<0.15		68	57
030	Cahaba R.	CAHS-1	030408	0915	18.1	10.2	7.5	190.0	52.2		290	<0.1	32.0	114		0.053	0.004	0.507	0.036	<0.15		74	75
030	Cahaba R.	CAHS-1	030408	0915																			
030	L. Cahaba R.	LCBJ-1	020122	1420	10.3	12.6	8.3	214.0	13.8		44	1.9	7.0			0.004	0.012v	0.220	<0.015	0.334		130	

Appendix P-3. Physical/chemical data collected from stations located in the BWC Basin Group as part of the CWA §303(d) Monitoring Program, 1999-2002 (ADEM 2002l).

Sub-Watershed	Stream	Station	Date	Time	Water Temp.	DO	pH	Conductivity	Turbidity	Flow	Fecal Coliform	BOD_5/ $CBOD_5$ [a]	TSS	TDS	TOC	Total-P	DRP	NO_3+ NO_2-N	NH_3-N	TKN	Chl *a*	Hardness	ALK
			yymmdd	*24hr*	*°C*	*mg/L*	*s.u.*	*μmhos @ 25°C*	*NTU*	*cfs*	*col/ 100mL*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/m³*	*mg/L*	*mg/L*
Cahaba River (0315-0202)																							
030	L. Cahaba R.	LCBJ-1	020213	1315	11.0	11.3	8.2	202.0	3.5	106.9	20	1.1	3.0			0.005	<0.004	0.175	0.115	0.207		116	
030	L. Cahaba R.	LCBJ-1	020326	1200	16.3	10.0	8.2	242.0	5.9	103.3	27	1.4	6.0			0.015	<0.004	0.023	<0.015	<0.15		116	
030	L. Cahaba R.	LCBJ-1	020409	1315	17.5	9.1	8.1	247.0	5.6		22	0.6	6.0			<0.004	<0.004	0.030	<0.015	<0.15		120	
030	L. Cahaba R.	LCBJ-1	020507	1300	22.7	9.0	8.1	250.0	6.2	145.7	7	0.6	6.0			0.010	<0.004	<0.003	<0.015	<0.15		120	
030	L. Cahaba R.	LCBJ-1	020521	1100	20.0	8.9	7.9	236.0	3.1	32.0													
030	L. Cahaba R.	LCBJ-1	020522	1325	19.1	9.4	8.2	265.0		35.6	13	0.1	4.0			<0.004	<0.004	0.044	<0.015	0.334		130	
030	L. Cahaba R.	LCBJ-1	020613	1330	22.1	10.3	8.1	265.0	0.0	31.5	8	4.3	3.0			<0.004	<0.004	0.129	<0.015	<0.15		134	
030	L. Cahaba R.	LCBJ-1	020717	1250	28.5	7.3	7.9	217.0	4.6	83.0	12	0.5	2.0			0.042	<0.004	0.095	<0.015	0.295		94	
030	L. Cahaba R.	LCBJ-1	020808	1200	18.7	9.7	7.8	281.0	6.0	71.2	22	0.8	5.0			0.020	<0.004	<0.003	0.068	0.401		150	
030	Patton Cr.	PA-1	020130	1011	12.0	9.0	6.6	30.0	10.8	35.5	53	0.5	12.0			0.060	0.002	0.664	0.050	0.170		69.3	
030	Patton Cr.	PA-1	020306	0920	14.2	10.5	6.9	192.0	17.7		21	2.9	11.0			0.040	<0.004	0.375	<0.015	<0.15		102	
030	Patton Cr.	PA-1	020328	0920	14.0	10.5	6.8	191.0	17.7		137	0.7	11.0			0.047	<0.004	0.384	0.060	0.780		82.3	
030	Patton Cr.	PA-1	020411	1020	19.0	8.4	6.9	223.0	9.5		153	1.1	16.0			0.037	0.003	0.347	0.119	<0.15		115	
030	Patton Cr.	PA-1	020516	0942	22.0	7.7	7.2	254.0	19.3	5.1	27	4.3	24.0			0.052	0.006	0.141	0.072	0.590		99.6	
030	Patton Cr.	PA-1	020523	1215	22.0	7.2	7.7	231.0	14.2	3.1													
030	Patton Cr.	PA-1	020605	1100	28.7	6.8	7.4	232.0	11.2	4.1	19	1.7	9.0			0.057	0.009	0.177	0.045	1.750		85.6	
030	Patton Cr.	PA-1	020717	0953	24.0	8.6	7.4		3.5		31	1.6	16.0			0.031	0.007	0.502	0.015	0.557		87	
030	Patton Cr.	PA-1	020813	1015	28.0	1.8	7.6				23	1.5	6.0			0.083	0.040	0.228	0.454	1.160	10.32	45.1	
030	Patton Cr.	PA-1A	030326	1130	18.1	10.6	7.8	1007.0	13.2	14.6	4	1.6	7.0	137		<0.004	<0.004	0.297	0.024	0.433		102	84
030	Patton Cr.	PA-1A	030408	1130	17.8	9.0	7.4	181.0	26.0	66.3	680	0.6	15.0	121		<0.004	<0.004	0.590	0.094	<0.15		74	58
030	Patton Cr.	PA-1A	030520	1050	19.7	9.2	7.2	168.0	18.5		1700	0.9	20.0	116		0.041	<0.004	0.659	0.032	<0.15		74	56
030	Patton Cr.	PA-1A	030626	1030	27.9	7.8	8.0	261.0	5.1	13.9													
030	Patton Cr.	PA-1A	030717	1300	30.8	5.3	7.1	289.0	0.0	6.3													
030	Patton Cr.	PATJ-3	020306	1000	7.3	12.1	6.7	418.0	4.4		15 est.	2.4	11.0			0.050	0.010	0.362	<0.015	<0.15		112	
030	Patton Cr.	PATJ-3	020328	0950	12.2	9.7	6.6	213.0	4.1			0.6	2.0			0.049	<0.004	1.130	<0.015	1.080		131	
030	Patton Cr.	PATJ-3	020411	1107	19.0	6.6	8.1	244.0	12.3		153	0.7	9.0			0.035	0.005	0.372	0.072	<0.15		125	
030	Patton Cr.	PATJ-3	020516	0850	19.0	10.9	7.2	254.0	8.7		120	2.9	9.0			0.033	0.005	0.269	0.093	0.135		128	
030	Patton Cr.	PATJ-3	020605	1150	26.0	4.4	7.2	511.0	11.2		22	1.9	21.0			0.043	0.007	0.574	0.265	0.905		185	
030	Patton Cr.	PATJ-3	020717	1010	25.9	5.1	7.5		11.1		480	2.3	19.0			0.032	0.022	0.734	0.295	0.553		142	
030	Patton Cr.	PATJ-3	020813	1100	24.8	3.4	7.7	388.0	9.0		30 est.	3.5	11.0			0.048	0.022	0.031	0.140	0.718		51.7	
030	Patton Cr.	PATJ-3	030326	1015							196	0.7	3.0	143		<0.004	0.004	0.326	<0.015	<0.15	2.13	108	82
030	Patton Cr.	PATJ-3	030326	1030	16.4	7.4	7.5	1009.0	6.1														
030	Patton Cr.	PATJ-3	030408	0945	16.6	8.8	7.4	199.0	7.9		370	5.0	6.0	130		<0.004	<0.004	0.663	<0.015	<0.15	<1	78	61
030	Patton Cr.	PATJ-3	030520	1000					7L		1080	0.5	6.0	116		<0.004	<0.004	0.721	0.020	<0.15	2.13	84	60
030	Patton Cr.	PATJ-3	030520	1015	18.7	8.9	6.5	181.0	0.1														
030	Patton Cr.	PATJ-3	030626	0920	24.2	6.8	7.6	282.0	9.8														

Appendix P-3. Physical/chemical data collected from stations located in the BWC Basin Group as part of the CWA §303(d) Monitoring Program, 1999-2002 (ADEM 2002l).

Sub-Watershed	Stream	Station	Date	Time	Water Temp.	DO	pH	Conductivity	Turbidity	Flow	Fecal Coliform	BOD_5*/ $CBOD_5$[a]	TSS	TDS	TOC	Total-P	DRP	NO_3+ NO_2-N	NH_3-N	TKN	Chl *a*	Hardness	ALK
			yymmdd	*24hr*	^oC	*mg/L*	*s.u.*	*µmhos @ 25 ^oC*	*NTU*	*cfs*	*col/ 100mL*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/m^3*	*mg/L*	*mg/L*
Cahaba River (0315-0202)																							
030	Patton Cr.	PATJ-3	030717	1200	26.5	5.9	7.3	313.0	7.4														
030	Patton Cr.	PATJ-4	020130	0910	12.0	9.5	6.5		12.3		53	0.8	6.0			0.080	<0.004	0.709	<0.015	0.090		77.2	
030	Patton Cr.	PATJ-4	020306	0830	10.4	13.2	7.1	206.0	4.2	11.8	90	2.4	6.0			0.040	0.004	0.532	0.040	0.260		104	
030	Patton Cr.	PATJ-4	020328	0830	10.4	13.2	7.1	206.0	4.2		6 est.	0.9	4.0			0.042	0.010	0.501	<0.015	0.270		88.3	
030	Patton Cr.	PATJ-4	020411	0930	17.0	9.3	7.1	232.0	1.9	7.6	113	0.5	5.0			0.026	0.008	0.375	<0.015	<0.15		120	
030	Patton Cr.	PATJ-4	020516	0825	16.4	6.6	7.4	266.0	2.5	2.1	1010	1.6	12.0			0.024	0.013	0.345	<0.015	0.303		104	
030	Patton Cr.	PATJ-4	020605	1000	23.9	8.8	7.7	304.0	4.0	1.5	830	1.2	4.0			0.060	0.023	0.248	<0.015	0.554		107	
030	Patton Cr.	PATJ-4	020717	0922	24.0	8.6	7.4		3.5		>830	1.9	14.0			0.026	0.014	0.430	<0.015	0.383		123	
030	Patton Cr.	PATJ-4	020813	0925	25.3	4.0	7.6		2.3		90	1.5	6.0			0.050	0.020	0.037	<0.015	0.554	0.36	43.9	
030	Patton Cr.	PATJ-4A	030326	1300	17.8	12.5	8.3	1220.0	3.1	9.5	100	1.2	1.0	137		<0.004	<0.004	0.415	<0.015	<0.15		102	80
030	Patton Cr.	PATJ-4A	030408	1230	16.8	9.6	7.7	213.0	4.2	34.3	280	0.2	2.0	132		<0.004	<0.004	0.755	<0.015	<0.15		86	71
030	Patton Cr.	PATJ-4A	030408	0950							2080	0.7	17.0	126		0.070	0.023	0.387	0.061	<0.15		78	68
030	Patton Cr.	PATJ-4A	030520	1130	19.0	9.8	7.3	186.0	0.0	65.4	1460	0.5	5.0	120		<0.004	<0.004	0.806	0.029	<0.15		82	64
030	Patton Cr.	PATJ-4A	030626	1110	23.9	10.0	8.4	270.0	0.7	6.6													
030	Patton Cr.	PATJ-4A	030717	1350	27.7	7.9	8.0	387.0	9.8	6.5													
040	Buck Cr.	B-1	030310	1130	14.5	11.2	7.6	243.0	5.9		116	0.9	9.0	145		0.061	0.039	0.529	<0.015	<0.15		108	91
040	Buck Cr.	B-1	030408	0950	17.8	10.6	7.7	5.0	21.7		2080	0.7	17.0	126		0.070	0.023	0.387	0.061	<0.15		78	68
050	Cahaba R.	C3	020129	0815	12.4	10.7	7.6	153.0	30.0		500	0.6	18.0			0.060	0.023	0.603	<0.015	<0.15		80	
050	Cahaba R.	C3	020220	0815	11.8	10.6	7.8	213.0	23.7		66	0.9	18.0			0.140	0.064	1.101	<0.015	<0.15		108	
050	Cahaba R.	C3	020328	0945	13.9	10.9	7.6	218.0	10.1		22	1.6	7.0			0.082	0.038	0.751	<0.015	<0.15		90	
050	Cahaba R.	C3	020411	1005	18.7	8.7	7.7	238.0	8.3		114	0.6	7.0			0.092	0.040	0.865	<0.015	<0.15		104	
050	Cahaba R.	C3	020502	1120	20.6	8.5	7.6	175.0	143.0		1080	1.6	79.0			0.121	0.023	0.253	<0.015	0.472		86	
050	Cahaba R.	C3	020523	1345	20.0	8.8	8.0	308.0	7.2	78.5													
050	Cahaba R.	C3	020523	1220	19.6	10.0	7.9	337.0			43	0.5	6.0			0.349	0.270	2.270	<0.015	0.658		134	
050	Cahaba R.	C3	020618	1120	24.4	8.8	7.9	339.0	16.8		26	0.5	9.0			0.346	0.087	1.992	<0.015	0.393		144	
050	Cahaba R.	C3	020716	1020	25.8	7.2	7.4	202.0	63.5		310	0.4	33.0			0.151	0.094	0.782	<0.015	0.539		82	
050	Cahaba R.	C3	020813	1115	26.4	9.0	7.8	429.0	18.1		22	0.3	10.0			0.735	0.741	5.870	<0.015	0.154		166	
050	Cahaba R.	C3	030310	1045	14.0	10.7	7.8	178.0	17.8		230	1.0	25.0	111		0.090	0.021	0.451	<0.015	<0.15		82	64
050	Cahaba R.	C3	030408	1015	18.0	10.5	7.5	182.0	49.2		1000	0.9	32.0	110		0.119	0.012	0.423	0.061	0.419		72	62
070	Cahaba R.	CABB-2	020122	1225	12.0	10.2	6.7				270	1.5	24.0			0.080	0.020	0.267	0.050	<0.15	0.21	45.4	
070	Cahaba R.	CABB-2	020212	1045	10.0	10.5	7.8	256.0			20 est.	1.3	10.0			0.070	0.020	0.350	<0.015	0.560	3.74	64.4	
070	Cahaba R.	CABB-2	020319	1030	18.0	8.5	7.9	179.0				0.7	31.0			0.070	0.050	0.309	0.070	2.350	4.27	59	
070	Cahaba R.	CABB-2	020417	1105	21.0	15.5	7.4	197.0			24	0.5	10.0			0.069	0.048	0.351	<0.015	0.385	1.87	55	
070	Cahaba R.	CABB-2	020506	1120	19.0	8.9	8.1	149.0			320	0.3	67.0			0.089	0.027	0.323	0.094	0.313	2.14	47.3	
070	Cahaba R.	CABB-2	020605	1010	27.0	6.3	7.7	226.0			10 est.	0.2	15.0			0.092	0.051	0.436	<0.015	0.302	0.27	60.1	
070	Cahaba R.	CABB-2	020701	1035	28.0	7.2	8.0	386.0			17 est.	0.9	17.0			0.171	0.121	1.970	<0.015	<0.15	2.14	109	

Appendix P-3. Physical/chemical data collected from stations located in the BWC Basin Group as part of the CWA §303(d) Monitoring Program, 1999-2002 (ADEM 2002l).

Sub-Watershed	Stream	Station	Date	Time	Water Temp.	DO	pH	Conductivity	Turbidity	Flow	Fecal Coliform	BOD_5*/ $CBOD_5$[a]	TSS	TDS	TOC	Total-P	DRP	NO_3+ NO_2-N	NH_3-N	TKN	Chl *a*	Hardness	ALK
			yymmdd	*24hr*	*°C*	*mg/L*	*s.u.*	*µmhos @ 25°C*	*NTU*	*cfs*	*col/ 100mL*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/m³*	*mg/L*	*mg/L*
Cahaba River (0315-0202)																							
070	Cahaba R.	CABB-2	020807	1020	31.0	7.6	8.0	315.0			7 est.	1.5	9.0			0.109	0.035	0.343	<0.015	0.437	13.35	44.6	
070	Caffee Cr.	CAFC-1	020122	1325	13.0	10.1	6.2			103.1	87	1.1	10.0			0.050	0.010	0.038	0.040	<0.15		38.8	
070	Caffee Cr.	CAFC-1	020212	1115	9.0	10.9	7.9	127.0		40.0	11 est.	1.2	4.0			0.040	0.006	0.011	0.060	<0.15		54.8	
070	Caffee Cr.	CAFC-1	020319	1115	18.0	8.5	7.7	133.0				0.8	13.0			0.040	0.007	0.129	0.050	0.280		58.6	
070	Caffee Cr.	CAFC-1	020417	1140	20.0	8.1	7.2	173.0			147	0.7	16.0			0.030	0.016	0.036	<0.015	<0.15		53.5	
070	Caffee Cr.	CAFC-1	020430	1400	21.0	7.2	7.1	264.0	3.6	7.2													
070	Caffee Cr.	CAFC-1	020506	1140	19.0	8.8	7.8	204.0			100	0.8	9.0			0.034	0.016	0.254	0.081	0.373		79.9	
070	Caffee Cr.	CAFC-1	020515	1635	19.0	7.1	7.1	279.0	5.3	3.1													
070	Caffee Cr.	CAFC-1	020605	1030	21.2	7.2	7.6	341.0			39	0.5	8.0			0.043	0.006	0.331	<0.015	0.532		141	
070	Caffee Cr.	CAFC-1	020701	1115	21.0	7.8	7.8	246.0			157	0.5	24.0			0.037	0.002	0.613	<0.015	0.468		101	
070	Caffee Cr.	CAFC-1	020807	1050	25.0	5.6	7.6	382.0			74	0.5	6.0			0.083	0.008	0.029	<0.015	<0.15		51.1	
070	Cane Cr.	CNC-1	990507	1125	17.3	8.15	6.68	32	23				5.0			<0.004		0.035		0.314			
070	Cane Cr.	CNC-1	990511	0900	14.7		6.47				66				1.62								
070	Cane Cr.	CNC-1	990623	1425	23.6	4.48	6.38	91.2	5.9		820		4.0			0.032		0.020	<0.015	0.266			
070	Cane Cr.	CNC-1	990720	1500	26.0	7.36	7.49	87.4		3.8	50		6.0			0.037				0.493		24	
070	Cane Cr.	CNC-1	990812	1345	28.0	5.08	6.8	94	4.1		<1		8.0			0.023		0.006		0.443			
070	Cane Cr.	CNC-1	990922	1000	20.1	2.75	6.28	103.7	7.4		132		3.0			0.022		0.004		0.386			
130	Cahaba R.	CABB-1	020122	1115	12.0	11.0	6.5				550	1.7	67.0			0.060	0.020	0.230	0.050	<0.15		44.3	
130	Cahaba R.	CABB-1	020212	0950	10.0	10.4	7.6	218.0			10 est.	1.0	10.0			0.040	0.020	0.276	<0.015	<0.15		69.6	
130	Cahaba R.	CABB-1	020319	0945	18.0	8.3	8.5	173.0				0.4	29.0			0.070	0.010	0.257	0.070	<0.15		62.2	
130	Cahaba R.	CABB-1	020417	1020	21.0	9.5	7.5	247.0			11 est.	0.5	3.0			0.051	0.025	0.111	<0.015	0.239		58.5	
130	Cahaba R.	CABB-1	020506	1040	19.0	8.6	8.7	171.0			190	0.7	98.0			0.119	0.025	0.297	<0.015	0.515		48.8	
130	Cahaba R.	CABB-1	020605	0930	27.0	7.0	7.8	345.0			20 est.	0.4	11.0			0.108	0.038	0.395	<0.015	0.391		78.6	
130	Cahaba R.	CABB-1	020701	0946	28.0	7.9	8.4	323.0			14 est.	0.4	6.0			0.073	0.033	0.756	<0.015	<0.15		115	
130	Cahaba R.	CABB-1	020807	0945	29.0	7.4	8.0	335.0			12 est.	0.8	12.0			0.088	0.018	0.210	<0.015	<0.15		47.3	
Mulberry Fork (0316-0109)																							
030	Brindley Cr.	BINC-190	011119	1230	15.0	9.9	7.3	45.0	1.2	2.4	5	0.5	4.0			<0.004		0.406	<0.015	0.436		58	
030	Brindley Cr.	BINC-190	011211	0950	12.0	9.9	7.8	60.0	2.5		13	1.0	3.0			<0.004		0.566	0.027	0.581		70	
030	Brindley Cr.	BINC-190	011212	0945	13.5	9.7	8.5	70.0	2.4	21.2	15												
030	Brindley Cr.	BINC-190	011217	1215	13.5	8.3	6.4	68.0	33.5		1140												
030	Brindley Cr.	BINC-190	011218	1040	13.5	10.3	6.9	67.0	38.2		860												
030	Brindley Cr.	BINC-190	020124	0920	12.0	8.0	5.7	66.0	6.7		720	2.9	35.0			0.050		2.135	0.062	0.418		40	
030	Brindley Cr.	BINC-190	020227	1115	4.0	11.7	6.5	40.0	3.5	17.9	2	2.3	4.0			<0.004		2.122	<0.015	<0.15			
030	Brindley Cr.	BINC-190	020314	0910	12.0	10.2	7.2	55.0	2.8		13	2.6	3.0			0.009		1.917	<0.015	0.372		32	
030	Brindley Cr.	BINC-190	020411	0930	18.5	14.0	6.5	60.0	5.5		22	3.2	7.0			0.065		1.853	<0.015	0.849		50	
030	Brindley Cr.	BINC-190	020516	1055	23.0	7.6	7.4	80.0	4.8	17.9	18	2.0	2.0			0.039		1.184	<0.015	0.619		50	

Appendix P-3. Physical/chemical data collected from stations located in the BWC Basin Group as part of the CWA §303(d) Monitoring Program, 1999-2002 (ADEM 2002l).

Sub-Watershed	Stream	Station	Date	Time	Water Temp.	DO	pH	Conductivity	Turbidity	Flow	Fecal Coliform	BOD_{5*}/ $CBOD_5$[a]	TSS	TDS	TOC	Total-P	DRP	NO_3+ NO_2-N	NH_3-N	TKN	Chl *a*	Hardness	ALK
			yymmdd	*24hr*	*°C*	*mg/L*	*s.u.*	*µmhos @ 25°C*	*NTU*	*cfs*	*col/ 100mL*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/m³*	*mg/L*	*mg/L*
Mulberry Fork (0316-0109)																							
030	Brindley Cr.	BINC-190	020529	1420	23.0	7.3	7.8	65.0	4.4	8.3	30												
030	Brindley Cr.	BINC-190	020530	0945	23.0	7.2	8.2	70.0	4.1	9.5	58												
030	Brindley Cr.	BINC-190	020613	1020	26.0	6.9	7.0	85.0	5.7	2.1	240	0.8	11.0			<0.004		0.519	<0.015	0.482		20	
030	Brindley Cr.	BINC-190	020620	1140	27.8	6.5	7.5		5.1		32												
030	Brindley Cr.	BINC-190	030327	1300	18.4	11.3	7.8	1137.0	3.6	24.1	1	<0.1	4.0	59		0.040	<0.004	2.092	<0.015	<0.15	16.55	24	21
030	Brindley Cr.	BINC-190	030409	1045							>620	1.5	6.0	39		0.051	<0.004	1.685	0.019	<0.15	19.24	30	19
030	Brindley Cr.	BINC-190	030409	1220	16.1	9.4	7.5	85.0	16.1	123.9													
030	Brindley Cr.	BINC-190	030610	1440	26.0	7.1	7.3	73.3	4.7	18.0													
030	Brindley Cr.	BINC-191	011119	1130	16.0	5.8	6.9	40.0	3.3		2	0.7	<1			<0.004		0.308	0.147	0.701		50	
030	Brindley Cr.	BINC-191	011211	0815	12.2	7.4	9.4	60.0	3.2		10	1.0	6.0			<0.004		0.508	0.105	0.686		58	
030	Brindley Cr.	BINC-191	011212	0845	12.9	6.3	5.7	270.0	3.3		10												
030	Brindley Cr.	BINC-191	011217	1148	13.5	8.3	6.4	68.0	33.5		1260												
030	Brindley Cr.	BINC-191	011218	0930	13.2	8.7	6.4	67.0	31.7		1260												
030	Brindley Cr.	BINC-191	020124	0845	14.0	7.5	6.7	74.0	6.7		470	1.4	5.0			<0.004		2.203	0.053	0.477		40	
030	Brindley Cr.	BINC-191	020227	0940	5.3	12.1	7.0	40.0			8	2.3	4.0			<0.004		2.142	<0.015	<0.15			
030	Brindley Cr.	BINC-191	020314	0840	11.0	10.9	7.0	50.0	3.3		6	2.7	3.0			0.009		1.958	<0.015	0.407		24	
030	Brindley Cr.	BINC-191	020411	0850	18.8	14.8	6.8	60.0	6.8		7	3.9	7.0			0.066		1.840	<0.015	0.652		52	
030	Brindley Cr.	BINC-191	020516	1020	22.0	11.6	9.2	75.0	4.6		2	2.5	7.0			0.038		1.119	<0.015	0.939		40	
030	Brindley Cr.	BINC-191	020529	1345	24.0	17.6	9.6	80.0	6.1		<1												
030	Brindley Cr.	BINC-191	020530	0910	24.0	14.5	9.3	80.0	4.1		<1												
030	Brindley Cr.	BINC-191	020613	0925	28.0	10.1	7.3	100.0	6.2		7	2.7	7.0			<0.004		0.356	<0.015	0.634		38	
030	Brindley Cr.	BINC-191	020620	1115	29.5	9.9	8.8		7.6		11 est.												
030	Brindley Cr.	BINC-191	030327	1120							<1	1.4	2.0	58		0.045	<0.004	2.194	0.050	0.352	29.37	26	20
030	Brindley Cr.	BINC-191	030327	1130	15.4	13.3	7.9	971.0	6.6														
030	Brindley Cr.	BINC-191	030409	1220							450	2.2	12.0	64		0.050	<0.004	1.566	0.022	0.359	21.36	28	20
030	Brindley Cr.	BINC-191	030409	1104	16.8	8.9	7.4	84.0	14.1														
030	Brindley Cr.	BINC-192	011119	1409	15.0	11.8	7.6	50.0	1.6	1.0	20	0.7	2.0			<0.004		0.048	<0.015	0.312		60	
030	Brindley Cr.	BINC-192	011211	1035	11.8	9.7	7.6	80.0	9.2		340	0.6	4.0			0.093		1.236	0.413	0.843		80	
030	Brindley Cr.	BINC-192	011212	1055	13.5	9.4	7.4	85.0	5.5	10.9	224												
030	Brindley Cr.	BINC-192	011217	1255	13.0	9.7	6.6	78.0	178.0		1100												
030	Brindley Cr.	BINC-192	011218	1110	13.0	9.9	6.4	82.0	26.7		1500												
030	Brindley Cr.	BINC-192	020124	0950	14.0	11.0	5.9	94.0	157.0		4400	3.3	145.0			0.286		2.666	0.898	2.369		56	
030	Brindley Cr.	BINC-192	020227	1225	5.0	11.0	7.0	50.0		8.6	8	1.1	10.0			<0.004		2.245	<0.015	<0.15			
030	Brindley Cr.	BINC-192	020314	0945	12.0	9.0	7.8	75.0	7.5		>620	3.1	3.0			0.136		2.135	0.980	1.802		46	
030	Brindley Cr.	BINC-192	020411	1015	18.0	5.5	6.5	65.0	5.5	16.1	120	0.9	3.0			0.027		1.898	<0.015	0.219		58	
030	Brindley Cr.	BINC-192	020516	1150	21.0	8.7	7.5	90.0	5.2	8.4	40	0.6	1.0			0.034		1.205	<0.015	0.422		48	

Appendix P-3. Physical/chemical data collected from stations located in the BWC Basin Group as part of the CWA §303(d) Monitoring Program, 1999-2002 (ADEM 2002l).

Sub-Watershed	Stream	Station	Date	Time	Water Temp.	DO	pH	Conductivity	Turbidity	Flow	Fecal Coliform	BOD_5*/ $CBOD_5$[a]	TSS	TDS	TOC	Total-P	DRP	NO_3+ NO_2-N	NH_3-N	TKN	Chl *a*	Hardness	ALK
			yymmdd	*24hr*	*^oC*	*mg/L*	*s.u.*	*µmhos @ 25^oC*	*NTU*	*cfs*	*col/ 100mL*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/m^3*	*mg/L*	*mg/L*
Mulberry Fork (0316-0109)																							
030	Brindley Cr.	BINC-192	020529	1555	20.8		7.4	85.0	3.7		100												
030	Brindley Cr.	BINC-192	020530	1130	23.0	8.7	7.5	90.0	5.1	3.3	176												
030	Brindley Cr.	BINC-192	020613	1140	24.3	7.8	7.0	135.0	3.7		74	0.7	2.0			0.087		1.153	<0.015	0.423		56	
030	Brindley Cr.	BINC-192	020620	1258	25.0	7.3	7.1		4.1		120												
030	Brindley Cr.	BINC-192	030327	1040	14.3	12.0	8.3	91.0	9.0	13.6	136	<0.1	3.0	65		<0.004	<0.004	2.316	0.031	<0.15	3.2	24	13
030	Brindley Cr.	BINC-192	030409	1030	13.6	9.1	6.9	91.0	48.4		>620	2.6	76.0	88		0.235	0.081	1.963	0.228	0.495	2.67	30	19
030	Brindley Cr.	BINC-192	030610	1710	21.0	8.2	7.2	89.1	6.1	10.1													
030	Brindley Cr.	BINC-193	011119	1438	12.6	8.7	7.0	60.0	2.3		68	0.7	3.0			0.060		0.345	<0.015	0.237		54	
030	Brindley Cr.	BINC-193	011211	1050	12.0	9.5	7.2	70.0	14.6		>620	1.1	5.0			0.170		2.138	0.046	0.608		80	
030	Brindley Cr.	BINC-193	011212	1145	15.0	9.4	7.1	70.0	4.0	4.4	1240												
030	Brindley Cr.	BINC-193	011217	1310	13.0	9.5	6.6	67.0	231.0		1200												
030	Brindley Cr.	BINC-193	011218	1155	13.0	9.9	6.4	73.0	21.6	37.0	2120												
030	Brindley Cr.	BINC-193	020124	1005	15.0	8.0	5.8	75.0	377.0		7300	4.0	557.0			0.756		2.610	0.077	3.175		44	
030	Brindley Cr.	BINC-193	020227	1310	5.2	13.0	6.7	45.0		3.0	70	2.6	9.0			<0.004		2.838	<0.015	<0.15			
030	Brindley Cr.	BINC-193	020314	1020	13.0	10.7	7.0	70.0	6.5	5.1	>620	2.5	20.0			0.126		2.452	0.113	0.822		40	
030	Brindley Cr.	BINC-193	020411	1100	16.5	6.1	6.7	60.0	4.8	6.1	540	0.9	3.0			0.026		2.479	<0.015	<0.15		62	
030	Brindley Cr.	BINC-193	020516	1235	21.0	8.8	7.5	80.0	3.4	3.3	40	0.4	2.0			0.041		2.035	<0.015	0.285		50	
030	Brindley Cr.	BINC-193	020529	1520	20.0	8.5	7.4	75.0	4.0		340												
030	Brindley Cr.	BINC-193	020530	1055	20.0	8.7	7.5	75.0	6.0	1.3	300												
030	Brindley Cr.	BINC-193	020613	1110	24.0	7.0	6.8	110.0	5.5		240	0.8	3.0			0.075		0.255	<0.015	0.926		48	
030	Brindley Cr.	BINC-193	020620	1240	25.0	7.1	7.2		7.0		490												
030	Brindley Cr.	BINC-193	030327	1130	14.6	11.0	8.1	3.0	2.5	5.5	136	<0.1	4.0	66		0.040	<0.004	2.843	0.061	<0.15	4.27	27	15
070	Mud Cr.	MUDC-1	020130	1000	13.1	9.2	6.5	40.0	12.2	3.1	250	0.6	5.0			0.040	<0.004	0.648	<0.015	<0.15		26	
070	Mud Cr.	MUDC-1	020225	1015	9.0	9.0	8.0	64.0	5.6	8.8	550	1.2	3.0			0.085	<0.004	0.410	<0.015	<0.15		16	
070	Mud Cr.	MUDC-1	020319	1311	15.4	10.6	7.1	45.0	27.5	4.3	>620	0.5	9.0			0.030	0.015	0.401	<0.015	0.193		42	
070	Mud Cr.	MUDC-1	020417	1305	23.8	7.1	7.5	71.0	16.1	9.1	290	0.8	6.0			0.062	0.004	0.092	0.018	0.249		68	
070	Mud Cr.	MUDC-1	020515	1000							350	0.5	11.0			<0.004	<0.004	0.095	<0.015	0.196		44	
070	Mud Cr.	MUDC-1	020617	1010	21.9	4.4	7.4	133.0	13.7		108	0.9	10.0			0.062	0.019	0.126	<0.015	0.453		86	
070	Mud Cr.	MUDC-1	020717	1000	23.1	8.4	7.4	70.0	16.3	47.3	>620	0.2	4.0			0.057	0.012	0.426	<0.015	0.274		36	
070	Mud Cr.	MUDC-1	020725	1045	23.0	7.4	8.0	86.0	99.9	79.3	>1200	4.2	294.0			0.436	0.133	0.274	0.068	1.970		40	
070	Mud Cr.	MUDC-2	020130	1000	14.3	8.1	7.0	65.0	14.0	16.5	92	0.7	4.0			0.041	<0.004	0.746	<0.015	<0.15		36	
070	Mud Cr.	MUDC-2	020225	1055	9.6	9.2	7.6	87.0	24.0	9.5	48	1.3	5.0			<0.004	<0.004	0.408	<0.015	<0.15		32	
070	Mud Cr.	MUDC-2	020319	1245	17.9	9.9	7.2	67.0	20.8		>620	0.8	6.0			0.035	0.009	0.389	<0.015	0.268		50	
070	Mud Cr.	MUDC-2	020417	1140	23.6	7.9	7.9	106.0	12.3	2.8	56	1.0	6.0			0.098	<0.004	0.114	0.054	0.352		64	
070	Mud Cr.	MUDC-2	020515	1040	20.5	7.2	7.7	125.0	14.0	1.3	168	0.6	7.0			0.190	<0.004	0.012	<0.015	0.414		68	
070	Mud Cr.	MUDC-2	020617	1049	22.1	10.8	7.4	140.0	11.9	1.4	290	1.1	8.0			0.043	0.008	0.066	<0.015	0.191		90	

Appendix P-3. Physical/chemical data collected from stations located in the BWC Basin Group as part of the CWA §303(d) Monitoring Program, 1999-2002 (ADEM 2002l).

Sub-Watershed	Stream	Station	Date	Time	Water Temp.	DO	pH	Conductivity	Turbidity	Flow	Fecal Coliform	BOD_{5*}/ $CBOD_5$[a]	TSS	TDS	TOC	Total-P	DRP	NO_3+ NO_2-N	NH_3-N	TKN	Chl *a*	Hardness	ALK
			yymmdd	*24hr*	*°C*	*mg/L*	*s.u.*	*µmhos @ 25°C*	*NTU*	*cfs*	*col/ 100mL*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/m³*	*mg/L*	*mg/L*
Mulberry Fork (0316-0109)																							
070	Mud Cr.	MUDC-2	020717	0930	25.9	7.6	7.9	109.0	13.9		600	0.2	47.0			0.090	0.013	0.307	0.016	0.526		48	
070	Mud Cr.	MUDC-2	020725	1135	23.7	7.6	7.4	91.0	94.0	7.3	>6000	4.1	54.0			0.414	0.308	0.248	<0.015	1.590		34	
100	Old Town Cr.	OTC-1	990518	1300	22.4	7.31	7.37	691	5.2	10.7	43		6.0			<0.004		0.345	<0.015	0.269			
100	Old Town Cr.	OTC-2	990518	1400	21.3	8.06	6.92	90.6	3.3		250		2.0			<0.004		0.112	<0.015	0.400			
130	Buck Cr.	BCK-1	990518	1130	19.0	6.78	6.8	138	6.4	4.44	480		2.0			<0.004		0.146	<0.015	0.414			
130	Buck Cr.	BCK-2	990518	1100	18.9	6.64	6.6	28.5	7.2	1.23	40		3.0			<0.004		0.178	<0.015	0.477			
170	Cane Cr.	CANW-1	020117	1340																			
170	Cane Cr.	CANW-2	020117	1140	4.6	8.1	6.8	300.0	60.4														
170	Cane Cr.	CANW-2	020206	1145	6.6	11.1	6.8	338.0	65.6		>1200	1.9	62.0			0.074	<0.004	0.200	<0.015	0.440		314	
170	Cane Cr.	CANW-2	020220	1529	13.5	10.7	7.8	790.0	57.5	45.0	>620	1.6	36.0			0.066	<0.004	0.131	<0.015	0.216		396	
170	Cane Cr.	CANW-2	020312	1115	10.5	10.4	7.7	725.0	31.9		>620	1.3	23.0			0.043	<0.004	0.056	<0.015	0.334		484	
170	Cane Cr.	CANW-2	020416	1150	19.9	8.8	7.4	1060.0		8.0	29	0.8	5.0			<0.004	<0.004	<0.003	0.018	<0.15		372	
170	Cane Cr.	CANW-2	020523	1140	15.6	9.8	7.7	1138.0		8.8	20	1.2	4.0			<0.004	<0.004	<0.003	<0.015	0.264		366	
170	Cane Cr.	CANW-2	020605	1530	26.0	8.5	8.0	1622.0	1.5	5.7													
170	Cane Cr.	CANW-2	020613	1225	23.3	3.1	7.6	1813.0	2.7	3.4	160	5.5	2.0			<0.004	0.004	<0.003	<0.015	0.715		40	
170	Cane Cr.	CANW-2	020626	1250	24.3	8.0	7.7	1798.0	3.0		68	0.2	<1			0.021	0.030	0.118	<0.015	0.253		1020	
170	Cane Cr.	CANW-2	020724	1030	24.7	7.3	7.5	1747.0	1.2		23	0.2	5.0			0.037	<0.004	<0.003	<0.015	0.480		1940	
170	Cane Cr.	CANW-3	020117	1145	6.4	8.5	6.5	321.0	61.6														
170	Cane Cr.	CANW-3	020206	1115	6.5	10.9	6.5	533.0	32.8		>1200	1.6	60.0			0.058	<0.004	0.056	<0.015	0.451		392	
170	Cane Cr.	CANW-3	020220	1512	12.9	9.5	6.6	1011.0	42.0	40.5	270	0.8	23.0			<0.004	<0.004	0.019	<0.015	<0.15		612	
170	Cane Cr.	CANW-3	020312	1100	10.6	10.2	7.2	748.0	77.5		>620	1.4	52.0			0.051	<0.004	0.034	<0.015	0.385		516	
170	Cane Cr.	CANW-3	020416	1111	19.7	8.4	7.0	513.0		10.5	44	0.9	5.0			0.012	0.011	<0.003	<0.015	<0.15		608	
170	Cane Cr.	CANW-3	020523	1055	16.7	9.2	7.2	1229.0	1.5	16.8	31	0.6	2.0			<0.004	<0.004	<0.003	<0.015	0.161		400	
170	Cane Cr.	CANW-3	020613	1140	23.7	4.1	7.5	1824.0	1.2	6.5	15	4.7	2.0			<0.004	<0.004	<0.003	<0.015	<0.15		1920	
170	Cane Cr.	CANW-3	020626	1220	24.4	7.5	7.5	1870.0	2.2		36	0.2	<1			0.004	0.008v	<0.003	<0.015	0.205		1040	
170	Cane Cr.	CANW-3	020724	1145	25.5	7.5	6.4	1640.0	0.7		22	0.2	4.0			0.025	<0.004	<0.003	<0.015	0.215		1010	
170	Lost Cr.	LOSW-1	020206	0900	7.9	12.9	7.9	729.0	21.1		320	1.1	8.0			0.026	<0.004	0.169	<0.015	<0.15		210	
170	Lost Cr.	LOSW-1	020220	0905	11.1	9.5	7.7	1160.0	12.9		276	0.8	5.0			<0.004	<0.004	0.112	<0.015	<0.15		294	
170	Lost Cr.	LOSW-1	020312	0935	10.8	9.6	8.0	1386.0	14.2		640	0.8	11.0			0.009	<0.004	0.062	<0.015	0.315		348	
170	Lost Cr.	LOSW-1	020416	0835	19.1	11.6	7.9	1068.0	2.2		34	0.6	3.0			<0.004	<0.004	<0.003	0.025	<0.15		270	
170	Lost Cr.	LOSW-1	020523	0930	16.2	8.3	8.3	1292.0	7.2		52	1.0	7.0			<0.004	<0.004	0.032	<0.015	0.337		310	
170	Lost Cr.	LOSW-1	020613	1000	24.6	7.2	7.9				34	3.8	1.0			<0.004	<0.004	<0.003	<0.015	<0.15		516	
170	Lost Cr.	LOSW-1	020626	1000	24.7	8.7	8.5	2320.0	3.0		104	0.4	8.0			0.015	0.010	<0.003	<0.015	0.286		476	
170	Lost Cr.	LOSW-1	020724	1020	26.1	7.7	8.0	1621.0	7.2		64	0.2	11.0			0.036	<0.004	<0.003	<0.015	0.306		336	
170	Lost Cr.	LOSW-2	020206	0930	7.7	6.0	7.7	769.0	28.3		310	1.8	11.0			0.034	<0.004	0.194	<0.015	0.205		216	
170	Lost Cr.	LOSW-2	020220	0950	11.4	10.4	7.8	1211.0	2.4		156	1.0	18.0			<0.004	<0.004	0.133	0.020	0.196		296	

Appendix P-3. Physical/chemical data collected from stations located in the BWC Basin Group as part of the CWA §303(d) Monitoring Program, 1999-2002 (ADEM 2002l).

Sub-Watershed	Stream	Station	Date	Time	Water Temp.	DO	pH	Conductivity	Turbidity	Flow	Fecal Coliform	BOD_5*/ $CBOD_5$[a]	TSS	TDS	TOC	Total-P	DRP	NO_3+ NO_2-N	NH_3-N	TKN	Chl *a*	Hardness	ALK
			yymmdd	*24hr*	*°C*	*mg/L*	*s.u.*	*μmhos @ 25°C*	*NTU*	*cfs*	*col/ 100mL*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/m^3*	*mg/L*	*mg/L*
Mulberry Fork (0316-0109)																							
170	Lost Cr.	LOSW-2	020312	1020	11.5	9.3	8.1	1546.0	15.0		280	0.7	23.0			0.009	<0.004	0.069	<0.015	0.245		388	
170	Lost Cr.	LOSW-2	020416	1020	18.9	10.4	7.8	1166.0	3.7		42	0.8	4.0			<0.004	<0.004	<0.003	0.046	<0.15		284	
170	Lost Cr.	LOSW-2	020523	1025	15.9	7.8	8.2	1438.0	6.5		19	1.0	6.0			<0.004	<0.004	0.030	<0.015	0.475		344	
170	Lost Cr.	LOSW-2	020605	1700	27.0	9.4	8.1	1962.0	2.9	60.6													
170	Lost Cr.	LOSW-2	020613	1045	25.7	6.6	7.9	2364.0			34	7.0	7.0			<0.004	<0.004	<0.003	<0.015	<0.15		520	
170	Lost Cr.	LOSW-2	020626	1045	25.7	8.5	8.0	2316.0	2.1		74	0.5	4.0			0.019	0.006	<0.003	<0.015	0.305		496	
170	Lost Cr.	LOSW-2	020724	1105	26.5	7.4	7.9	1777.0	4.5		76	0.2	11.0			0.096	<0.004	<0.003	<0.015	0.369		344	
170	Lost Cr.	LOSW-3	020206	1000	7.7	6.2	7.7	352.0	12.8		104	1.3	3.0			0.017	<0.004	0.182	<0.015	0.352		164	
170	Lost Cr.	LOSW-3	020220	1035	9.9	9.1	7.8	510.0	0.5		27	0.5	1.0			<0.004	<0.004	0.097	<0.015	<0.15		218	
170	Lost Cr.	LOSW-3	020312	1055	10.9	9.0	8.2	558.0	0.2		10	1.0	5.0			0.009	<0.004	0.071	<0.015	0.182		250	
170	Lost Cr.	LOSW-3	020416	1105	18.8	11.6	8.0	395.0	4.9	86.1	22	0.6	2.0			<0.004	<0.004	<0.003	0.015	<0.15		176	
170	Lost Cr.	LOSW-3	020523	1055	16.3	7.6	8.3	494.0	10.1	117.9	38	1.0	6.0			0.006	<0.004	0.043	<0.015	0.486		226	
170	Lost Cr.	LOSW-3	020613	1220	25.7	7.9	8.0	694.0		22.1	16	6.9	2.0			<0.004	<0.004	0.044	<0.015	<0.15		294	
170	Lost Cr.	LOSW-3	020626	1140	25.8	10.3	8.2	708.0	0.8	19.9	21	0.2	25.0			<0.004	<0.004	0.198	<0.015	0.389		321	
170	Lost Cr.	LOSW-3	020724	1135	26.3	9.4	7.8	561.0	28.9		18	0.6	8.0			0.006	0.004	0.032	<0.015	0.454		206	
170	Lost Cr.	LOSW-4	020206	1040	7.6	5.5	7.6	381.0	18.1		230	0.9	3.0			<0.004	<0.004	0.186	<0.015	<0.15		180	
170	Lost Cr.	LOSW-4	020220	1120	11.0	9.6	7.6	536.0	2.7		160	0.6	3.0			<0.004	<0.004	0.120	<0.015	<0.15		224	
170	Lost Cr.	LOSW-4	020312	1135	10.7	10.5	8.1	566.0	0.8		92	0.9	5.0			0.009	<0.004	0.079	<0.015	0.178		244	
170	Lost Cr.	LOSW-4	020416	1210	18.3	8.2	7.8	425.0	5.9		33	0.6	4.0			0.008	<0.004	<0.003	<0.015	<0.15		194	
170	Lost Cr.	LOSW-4	020523	1205	15.5	8.3	8.2	584.0	9.6		44	1.1	5.0			0.006	<0.004	0.084	<0.015	0.229		248	
170	Lost Cr.	LOSW-4	020613	1115	23.8	7.7	7.7	770.0			25	6.1	4.0			<0.004	<0.004	0.107	<0.015	<0.15		360	
170	Lost Cr.	LOSW-4	020626	1230	23.9	7.7	8.2	727.0	26.2		29	0.2	14.0			0.024	0.019	0.306	<0.015	0.258		308	
170	Lost Cr.	LOSW-4	020724	1210	24.7	8.0	7.9	623.0	14.6		25	0.2	18.0			0.044	<0.004	0.061	<0.015	0.364		232	
170	Lost Cr.	LOSW-5	020206	1135	7.3	5.3	7.6	313.0	37.6		640	1.3	13.0			0.048	<0.004	0.163	<0.015	<0.15		156	
170	Lost Cr.	LOSW-5	020220	1150	12.9	11.0	7.4	537.0	14.0		830	1.3	<1			0.038	<0.004	0.200	0.034	0.341		220	
170	Lost Cr.	LOSW-5	020312	1215	11.4	9.9	7.7	497.0	69.5		>620	2.9	50.0			0.183	<0.004	0.278	0.092	0.849		212	
170	Lost Cr.	LOSW-5	020416	1230	18.1	9.1	7.7	488.0	6.7		144	0.7	7.0			0.057	0.011	0.068	0.039	0.288		206	
170	Lost Cr.	LOSW-5	020523	1310	16.4	7.0	7.8	738.0	5.6	16.8	160	0.7	11.0			0.066	<0.004	0.124	0.069	0.585		318	
170	Lost Cr.	LOSW-5	020613	1145	22.4	6.0	7.4	1056.0			84	5.4	3.0			0.004	0.017v	0.071	0.158	0.472		500	
170	Lost Cr.	LOSW-5	020626	1325	23.2	7.6	8.0	1030.0	1.0		62	0.6	3.0			0.090	0.068	0.155	0.018	0.364		432	
170	Lost Cr.	LOSW-5	020724	1250	24.1	8.4	7.7	868.0	2.6		80	0.2	4.0			0.076	0.040	0.197	0.041	0.341		314	
180	Wolf Cr.	WOFW-1	020206	1230	7.9	10.6	7.0	247.0	14.9		80	1.2	9.0			0.068	<0.004	0.070	<0.015	<0.15		160	
180	Wolf Cr.	WOFW-1	020220	1550	11.6	10.6	7.8	400.0	6.6		8	0.8	4.0			<0.004	<0.004	0.022	<0.015	<0.15		220	
180	Wolf Cr.	WOFW-1	020311	0840							7												
180	Wolf Cr.	WOFW-1	020312	1145	11.1	10.7	8.3	425.0	6.8		9	0.8	4.0			0.009	<0.004	<0.003	<0.015	<0.15		250	
180	Wolf Cr.	WOFW-1	020321	0815							1100												

Appendix P-3. Physical/chemical data collected from stations located in the BWC Basin Group as part of the CWA §303(d) Monitoring Program, 1999-2002 (ADEM 2002l).

Sub-Watershed	Stream	Station	Date	Time	Water Temp.	DO	pH	Conductivity	Turbidity	Flow	Fecal Coliform	BOD_5*/ $CBOD_5$[a]	TSS	TDS	TOC	Total-P	DRP	NO_3+ NO_2-N	NH_3-N	TKN	Chl *a*	Hardness	ALK
			yymmdd	*24hr*	*°C*	*mg/L*	*s.u.*	*µmhos @ 25°C*	*NTU*	*cfs*	*col/ 100mL*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/m³*	*mg/L*	*mg/L*
Mulberry Fork (0316-0109)																							
180	Wolf Cr.	WOFW-1	020325	0900							43												
180	Wolf Cr.	WOFW-1	020402	0950							87												
180	Wolf Cr.	WOFW-1	020416	1242	21.0	7.9	7.6	373.0			13	0.8	6.0			0.004	0.522v	<0.003	<0.015	<0.15		180	
180	Wolf Cr.	WOFW-1	020523	1230	16.6	9.5	7.9	330.0			56	1.2	3.0			0.008	<0.004	<0.003	<0.015	0.449		170	
180	Wolf Cr.	WOFW-1	020605	1510																			
180	Wolf Cr.	WOFW-1	020613	1305	27.7	3.5	7.9	318.0	8.0		<1	6.5	77.0			<0.004	<0.004	<0.003	<0.015	<0.15		110	
180	Wolf Cr.	WOFW-1	020617	1430							20												
180	Wolf Cr.	WOFW-1	020624	1435							20												
180	Wolf Cr.	WOFW-1	020626	1315	27.0	7.9	8.2	371.0	4.9		10	0.6	4.0			0.022	0.014	<0.003	<0.015	0.380		134	
180	Wolf Cr.	WOFW-1	020709	0715							104												
180	Wolf Cr.	WOFW-1	020724	1000	27.7	6.8	7.8	454.0	6.0		132	0.7	4.0			0.062	<0.004	<0.003	<0.015	<0.44		150	
180	Wolf Cr.	WOFW-1	020806	1200																			
180	Wolf Cr.	WOFW-2	020206	1030	6.6	10.9	5.9	193.0	198.0		172	1.1	25.0			0.022	<0.004	0.016	<0.015	<0.15		134	
180	Wolf Cr.	WOFW-2	020220	1500	12.5	10.5	7.5	397.0	14.7		104	0.5	8.0			<0.004	<0.004	<0.003	<0.015	<0.15		204	
180	Wolf Cr.	WOFW-2	020311	0815							34												
180	Wolf Cr.	WOFW-2	020312	1015	10.2	10.5	7.0	323.0	11.1		42	0.8	6.0			0.009	<0.004	<0.003	<0.015	<0.15		210	
180	Wolf Cr.	WOFW-2	020321	0840							900												
180	Wolf Cr.	WOFW-2	020325	0925							46												
180	Wolf Cr.	WOFW-2	020402	0920							88												
180	Wolf Cr.	WOFW-2	020416	1045	19.0	8.6	6.9	320.0			28	0.8	4.0			<0.004	<0.004	<0.003	<0.015	<0.15		160	
180	Wolf Cr.	WOFW-2	020523	1030	14.9	9.8	6.7	344.0	7.5		41	0.8	5.0			<0.004	<0.004	0.047	<0.015	0.203		200	
180	Wolf Cr.	WOFW-2	020613	1055	23.0	4.8	7.1	825.0	4.6		40	7.4	4.0			<0.004	<0.004	<0.003	<0.015	<0.15			
180	Wolf Cr.	WOFW-2	020617	1452							23												
180	Wolf Cr.	WOFW-2	020624	1450							51												
180	Wolf Cr.	WOFW-2	020626	1150	23.3	6.2	6.7	781.0	3.9		86	0.2	<1			<0.004	0.006	<0.003	<0.015	0.236		400	
180	Wolf Cr.	WOFW-2	020709	0815							88												
180	Wolf Cr.	WOFW-2	020724	1115	24.8	6.3	7.3	717.0	2.7		21	0.3	5.0			0.032	<0.004	<0.003	<0.015	0.420		288	
180	Wolf Cr.	WOFW-3	020206	0950	6.4	11.5	5.3	29.0	34.4		240	1.3	11.0			0.049	<0.004	0.025	<0.015	<0.15		34	
180	Wolf Cr.	WOFW-3	020220	1430	13.5	10.1	7.7	35.0	51.5	16.9	112	0.4	15.0			<0.004	<0.004	0.032	<0.015	0.250		26	
180	Wolf Cr.	WOFW-3	020311	0800						2.6	30												
180	Wolf Cr.	WOFW-3	020312	0950	9.8	10.7	6.3	32.0	143.0		450	0.9	66.0			0.071	<0.004	0.005	<0.015	0.324		40	
180	Wolf Cr.	WOFW-3	020321	0920							290												
180	Wolf Cr.	WOFW-3	020325	1045							25												
180	Wolf Cr.	WOFW-3	020402	0835							22												
180	Wolf Cr.	WOFW-3	020416	1003	17.4	8.9	6.5	24.0		13.2	42	0.6	3.0			0.021	<0.004	<0.003	<0.015	<0.15		40	
180	Wolf Cr.	WOFW-3	020523	0930	13.9	9.9	6.5	37.0	8.4	5.4	96	0.6	1.0			0.009	<0.004	0.143	<0.015	<0.15		28	

Appendix P-3. Physical/chemical data collected from stations located in the BWC Basin Group as part of the CWA §303(d) Monitoring Program, 1999-2002 (ADEM 2002l).

Sub-Watershed	Stream	Station	Date	Time	Water Temp.	DO	pH	Conductivity	Turbidity	Flow	Fecal Coliform	BOD_{5}*/ $CBOD_5$[a]	TSS	TDS	TOC	Total-P	DRP	NO_3+ NO_2-N	NH_3-N	TKN	Chl *a*	Hardness	ALK
			yymmdd	*24hr*	*°C*	*mg/L*	*s.u.*	*µmhos @ 25°C*	*NTU*	*cfs*	*col/ 100mL*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/m³*	*mg/L*	*mg/L*
Mulberry Fork (0316-0109)																							
180	Wolf Cr.	WOFW-3	020606	0825	24.0	7.3	6.9	57.0	8.7	0.8													
180	Wolf Cr.	WOFW-3	020613	1010	23.6	6.9	7.7	59.0	10.6		350	5.1	2.0			<0.004	<0.004	<0.003	<0.015	<0.15		360	
180	Wolf Cr.	WOFW-3	020617	1510							30												
180	Wolf Cr.	WOFW-3	020624	1500							<1												
180	Wolf Cr.	WOFW-3	020626	1100	24.5	7.2	6.8	57.0	12.9		188	0.8	3.0			0.019	0.008	<0.003	<0.015	0.271		50	
180	Wolf Cr.	WOFW-3	020709	0900							88												
180	Wolf Cr.	WOFW-3	020724	1320	25.1	7.3	8.5	69.0	13.9		112	0.2	11.0			0.029	<0.004	<0.003	<0.015	0.370		44	
Sipsey Fork (0316-0110)																							
110	Rock Cr.	ROCC-15	020618	1620	23.0	7.9	7.1	69.0	12.9														
110	Ryan Cr.	RYNC-1	020130	1110	14.0	10.9	7.4	104.0	20.1	15.8	130	0.7	4.0			0.054	0.018	0.915	<0.015	<0.15		40	
110	Ryan Cr.	RYNC-1	020227	1230	5.8	12.7	7.3	79.0	7.4		2	1.2	6.0			0.127	<0.004	0.413	0.070	0.358		66	
110	Ryan Cr.	RYNC-1	020311	1140							27												
110	Ryan Cr.	RYNC-1	020319	1145	15.0	10.2	7.3	74.0	26.9		124	0.7	7.0			0.039	0.012	0.331	0.042	<0.15		54	
110	Ryan Cr.	RYNC-1	020321	1125							1340												
110	Ryan Cr.	RYNC-1	020325	1330							304												
110	Ryan Cr.	RYNC-1	020402	1050							390												
110	Ryan Cr.	RYNC-1	020423	1140	19.1	8.6	7.0	187.0	3.6		196	0.8	9.0			0.004	0.076v	0.942	0.679	1.257		46	
110	Ryan Cr.	RYNC-1	020521	1235	15.3	6.4	7.4	122.0	16.0	4.0	104	0.4	3.0			0.074	0.049	0.669	0.017	0.225		60	
110	Ryan Cr.	RYNC-1	020612	1250	23.9	8.5	7.8	253.0	4.7	1.6	38	0.8	1.0			0.120	<0.004	0.447	<0.015	0.316		86	
110	Ryan Cr.	RYNC-1	020617	1240	21.2	12.9	7.2	112.0	13.0		270	1.2	28.0			0.423	0.176	2.878	0.074	0.848		82	
110	Ryan Cr.	RYNC-1	020619	1040	27.0	11.7	8.2	375.0	1.7														
110	Ryan Cr.	RYNC-1	020624	1145							68												
110	Ryan Cr.	RYNC-1	020625	1100	22.8	8.3	8.5	191.0	450.0		>1200	1.9	317.0			0.305	0.125	0.511	<0.015	0.744		102	
110	Ryan Cr.	RYNC-1	020709	1021	25.0	4.5	7.6	247.0	23.9		72	0.8	22.0			0.982	0.947	1.460	0.199	0.829		94	
110	Ryan Cr.	RYNC-2	020130	1025	13.3	10.2	7.3	78.0	10.1	112.6	120	0.5	2.0			0.028	<0.004	1.450	<0.015	<0.15		30	
110	Ryan Cr.	RYNC-2	020319	1115	15.3	10.0	7.5	63.0	22.8		276	0.9	10.0			<0.004	<0.004	0.947	<0.015	0.218		50	
110	Ryan Cr.	RYNC-2	020321	1100							>1200												
110	Ryan Cr.	RYNC-2	020325	1240							120												
110	Ryan Cr.	RYNC-2	020402	1040							250												
110	Ryan Cr.	RYNC-2	020423	1155	19.1	8.1	7.2	101.0	0.0	21.0	148	0.4	5.0			<0.004	<0.004	0.618	0.047	0.432		52	
110	Ryan Cr.	RYNC-2	020521	1115	15.4	8.9	7.7	101.0	10.2	23.5	174	0.4	12.0			0.019	<0.004	0.839	<0.015	0.233		52	
110	Ryan Cr.	RYNC-2	020612	1325	26.2	14.4	7.4	117.0	1.5		140	0.6	3.0			0.004	0.115v	0.166	<0.015	0.183		54	
110	Ryan Cr.	RYNC-2	020617	1213	21.9	7.9	7.4	110.0	14.1	4.5	288	1.2	4.0			0.054	0.018	0.522	<0.015	0.298		58	
110	Ryan Cr.	RYNC-2	020624	1230							260												
110	Ryan Cr.	RYNC-2	020625	1040	23.2	7.4	9.0	133.0	232.0		>1200	1.1	126.0			0.158	<0.004	0.123	<0.015	0.775		70	
110	Ryan Cr.	RYNC-2	020709	0958	26.6	6.3	8.1	122.0	5.6		220	0.6	6.0			0.022	0.008	0.281	<0.015	0.562		58	

Appendix P-3. Physical/chemical data collected from stations located in the BWC Basin Group as part of the CWA §303(d) Monitoring Program, 1999-2002 (ADEM 2002l).

Sub-Watershed	Stream	Station	Date	Time	Water Temp.	DO	pH	Conductivity	Turbidity	Flow	Fecal Coliform	BOD_5*/ $CBOD_5$[a]	TSS	TDS	TOC	Total-P	DRP	NO_3+ NO_2-N	NH_3-N	TKN	Chl *a*	Hardness	ALK
			yymmdd	*24hr*	*°C*	*mg/L*	*s.u.*	*µmhos @ 25°C*	*NTU*	*cfs*	*col/ 100mL*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/m³*	*mg/L*	*mg/L*
Sipsey Fork (0316-0110)																							
110	Ryan Cr.	RYNC-2	020227	1045	6.0	12.6	7.7	53.0	3.4	41.1	2	1.3	6.0			0.004	0.096v	0.980	<0.015	<0.15		50	
110	Ryan Cr.	RYNC-2	020311	1103							23												
110	Ryan Cr.	RYNC-3	020130	0840	12.8	10.2	8.0	71.0	5.4	54.7	64	0.6	3.0			0.027	0.023	1.093	<0.015	<0.15		30	
110	Ryan Cr.	RYNC-3	020226	1000	5.5	12.3	8.0	50.0	3.0	12.8	13	1.3	7.0			<0.004	<0.004	0.753	<0.015	<0.15		50	
110	Ryan Cr.	RYNC-3	020311	1020							19												
110	Ryan Cr.	RYNC-3	020319	1100	14.1	9.9	7.5	56.0	15.2		104	0.6	10.0			0.013	<0.004	0.808	<0.015	<0.15		38	
110	Ryan Cr.	RYNC-3	020321	1040							>1200												
110	Ryan Cr.	RYNC-3	020325	1225							204												
110	Ryan Cr.	RYNC-3	020402	1006							80												
110	Ryan Cr.	RYNC-3	020423	1102	18.3	11.7	7.3	96.0	0.0	9.7	54	0.5	4.0			0.013	<0.004	0.442	0.026	0.164		52	
110	Ryan Cr.	RYNC-3	020521	0930	13.9	7.9	8.3	93.0	8.6	8.8	192	0.6	4.0			<0.004	<0.004	0.411	<0.015	0.257		46	
110	Ryan Cr.	RYNC-3	020612	1200	23.5	9.2	8.2	120.0	2.2		23	0.8	2.0			<0.004	<0.004	0.058	<0.015	<0.15		62	
110	Ryan Cr.	RYNC-3	020617	1138	20.3	7.8	7.5	137.0	42.8		420	1.6	10.0			0.067	0.012	0.470	<0.015	0.418		88	
110	Ryan Cr.	RYNC-3	020624	1315							80												
110	Ryan Cr.	RYNC-3	020625	1000	22.9	7.2	8.1	137.0	13.9		350	0.9	7.0			0.027	<0.004	0.288	<0.015	0.407		82	
110	Ryan Cr.	RYNC-3	020709	0916	24.8	6.2	9.0	165.0	9.2		>620	0.7	7.0			0.035	0.007	0.693	<0.015	0.566		72	
Locust Fork (0316-0111)																							
050	Dry Cr.	DRYB-10	020110	0940	6.5	13.7	6.8	303.0	2.4	4.5	170 est.	3.6	3.0			0.050	<0.004	0.890	0.140	<0.15		113	
050	Dry Cr.	DRYB-10	020213	1020	9.0	13.3	7.6	191.0	4.2	11.2	500	1.8	7.0			0.040	0.010	0.914	<0.015	0.220		112	
050	Dry Cr.	DRYB-10	020321	0905	13.5	10.0	8.1	175.0	21.2		1130	1.5	15.0			0.070	0.030	0.625	<0.015	0.260		84.9	
050	Dry Cr.	DRYB-10	020509	1115	22.0	9.1	7.7	230.0	6.1	6.8	>870	1.5	10.0			0.062		0.829	0.025	0.319		108	
050	Dry Cr.	DRYB-10	020529	1120	20.0	9.2	6.9	320.0	2.6		360												
050	Dry Cr.	DRYB-10	020530	1305	25.0	9.8	7.7	315.0	10.0		96												
050	Dry Cr.	DRYB-10	020620	1420	28.0	11.1	7.5		9.0		63 est.												
050	Dry Cr.	DRYB-10	020626	1240	26.8	8.9	8.3	310.0	7.0		290												
050	Dry Cr.	DRYB-10	020710	1500	29.0	11.3	8.3	230.0	6.8		40 est.	1.1	5.0			0.109	0.105	0.663	<0.015	0.212		125	
050	Dry Cr.	DRYB-10	020716	1150	27.0	9.1	7.5	225.0	8.6		187	1.2	15.0			0.052	0.045	0.599	<0.015	0.781		97.5	
050	Dry Cr.	DRYB-10	020917	1050	24.0	4.2	7.5	567.0	2.6		>1800[h]	1.4	11.0			2.740	0.310	2.050	2.220	3.150		47	
050	Dry Cr.	DRYB-10	020918	1040	24.0	6.3	7.6	531.0	2.5		3790												
050	Dry Cr.	DRYB-10	020919	1000	25.9	3.5	7.3	600.0	4.2		8 est.												
050	Dry Cr.	DRYB-10	020920	0900	25.9	4.2	7.6	600.0	3.1		7 est.												
050	Dry Cr.	DRYB-10	020924	1215						0.2	1960												
050	Dry Cr.	DRYB-10	020926	1200						20.3	1200												
050	Dry Cr.	DRYB-10	020930	1245	22.0	7.6	7.5	340.0	5.5	4.3	1040	0.7	<1			0.064	0.038	1.299	<0.015	0.407		136	
050	Dry Cr.	DRYB-11	020110	1035	6.6	12.0	6.4		2.4	10.9	1133	4.9	7.0			0.170	0.070	1.100	0.170	0.170		148	
050	Dry Cr.	DRYB-11	020213	1100	10.0	12.4	7.6	256.0	4.5	30.6	140	3.3	7.0			0.100	0.070	1.010	0.030	<0.15		151	

Appendix P-3. Physical/chemical data collected from stations located in the BWC Basin Group as part of the CWA §303(d) Monitoring Program, 1999-2002 (ADEM 2002l).

Sub-Watershed	Stream	Station	Date	Time	Water Temp.	DO	pH	Conductivity	Turbidity	Flow	Fecal Coliform	BOD_5/ $CBOD_5$[a]	TSS	TDS	TOC	Total-P	DRP	NO_3+ NO_2-N	NH_3-N	TKN	Chl *a*	Hardness	ALK
			yymmdd	*24hr*	*°C*	*mg/L*	*s.u.*	*µmhos @ 25°C*	*NTU*	*cfs*	*col/ 100mL*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/m^3*	*mg/L*	*mg/L*
Locust Fork (0316-0111)																							
050	Dry Cr.	DRYB-11	020321	0935	14.0	9.6	6.8	90.0	23.8		>6300	1.9	26.0			0.190	0.100	0.694	0.090	<0.15		102	
050	Dry Cr.	DRYB-11	020509	1125	24.0	7.6	7.6	335.0	7.6	18.9	>650	0.6	8.0			0.112	0.063	0.725	<0.015	0.518		145	
050	Dry Cr.	DRYB-11	020529	1445	22.5	10.5	8.3	600.0	3.9	3.4													
050	Dry Cr.	DRYB-11	020529	1145	21.0	7.7	7.1	480.0	3.6	2.9	104												
050	Dry Cr.	DRYB-11	020530	1320	27.0	8.8	7.9	600.0	4.2		220												
050	Dry Cr.	DRYB-11	020620	1436	35.0	13.3	9.1		3.5		66												
050	Dry Cr.	DRYB-11	020626	1210	32.0	10.1	8.2	700.0	10.6	1.7	1110												
050	Dry Cr.	DRYB-11	020710	1520	36.1	14.0	9.1	550.0	7.2		7 est.	1.1	12.0			0.282	0.257	0.551	<0.015	<0.15		251	
050	Dry Cr.	DRYB-11	020716	1100	27.0	9.0	7.5	230.0	12.0	1.1	480	1.2	17.0			0.346	0.333	1.150	<0.015	0.753		204	
050	Dry Cr.	DRYB-11	020917	1125																			
050	Dry Cr.	DRYB-11	020918	1200																			
050	Dry Cr.	DRYB-11	020919	1100	25.0	8.5	8.3	800.0	20.7		1170												
050	Dry Cr.	DRYB-11	020920	0945	27.4	8.7	8.5	850.0	20.2		480												
050	Dry Cr.	DRYB-11	020924	1300						3.6	1360												
050	Dry Cr.	DRYB-11	020926	1120						70.9	>6000												
050	Dry Cr.	DRYB-11	020930	1200	22.1	4.6	7.4	392.0	13.6	8.1	2100	2.3	7.0			0.180	0.136	1.020	<0.015	0.767		160	
050	Graves Cr.	GRVB-1	000405	1500	17.4	9.0	6.9	79.3	14.6	22.5	128	0.4	25.0			0.130		1.593	<0.015	0.586		30	
050	Graves Cr.	GRVB-1	000504	1215	20.5	7.0	7.3	188.0	25.8	1.1	220	0.9	19.0			0.074		0.585	<0.015	0.939		96	
050	Graves Cr.	GRVB-1	000712	1255	26.0	4.0	7.4	310.1	21.8	.1	92	0.6	17.0			0.068		0.103	0.267	0.565		156	
050	Graves Cr.	GRVB-1	000906	1100	21.2	4.0	7.3	327.0	14.2	.019	20	1.6	17.0			0.018		0.079		0.785		160	
050	Graves Cr.	GRVB-1	001003	1200	18.0	4.0	7.8	300.0	28.7		192	1.0				0.210		<0.003	0.287	0.817		166	
050	Graves Cr.	GRVB-1	010117	1240	6.8	11.2	7.1	167.0	3.3	.8	76	0.9	5.0			<0.004		1.772	<0.015	0.346		78	
050	Graves Cr.	GRVB-1	010215	1215	14.4	8.3	7.0	107.0	8.2	5.0	60	0.3	40.0			0.009		1.700	<0.015	0.605		52	
050	Graves Cr.	GRVB-1	010315	1420	16.2	8.6	6.4	72.0	36.1	49.2	>2400	1.4	35.0			0.380		1.380	0.060	1.050		22.5	
050	Graves Cr.	GRVB-1	010404	1220	14.5	8.2	8.2	80.0	25.5	22.2	1500	0.9	30.0			0.200		1.470	0.028	0.613		28.7	
050	Graves Cr.	GRVB-2	000405	1430	17.3	9.0	7.0	70.3	12.1		100	0.5	5.0			0.058		1.059	<0.015	0.431		28	
050	Graves Cr.	GRVB-2	000504	1145	18.3	4.0	7.3	182.0	10.2	0.0	132	0.6	9.0			0.027		0.503	<0.015	0.404		96	
050	Graves Cr.	GRVB-2	000712	1235	26.9	2.0	7.4	246.8	9.4	0.0	210	1.5	11.0			0.065		0.041	<0.015	0.471		136	
050	Graves Cr.	GRVB-2	000906	1045	24.3	2.0	7.3	248.0	8.1		48	4.3	13.0			0.118		<0.003		1.480		118	
050	Graves Cr.	GRVB-2	001003	1140	18.6	7.0	8.0	244.0	11.6		156	2.5				0.112		<0.003	<0.015	0.620		136	
050	Graves Cr.	GRVB-2	010117	1205	7.3	7.8	7.3	167.0	0.8		72	0.8	4.0			<0.004		1.468	<0.015	0.147		82	
050	Graves Cr.	GRVB-2	010215	1145	14.3	6.2	7.2	112.0	6.7		52	<0.1	7.0			0.040		1.445	<0.015	0.534		50	
050	Graves Cr.	GRVB-2	010315	1405	16.8	8.8	6.7	70.0	35.0		>2400	1.1	14.0			0.200		1.170	0.070	0.940		17.9	
050	Graves Cr.	GRVB-2	010404	1205	14.5	8.6	8.4	74.0	20.5		960	0.6	6.0			0.220		1.110	0.029	0.771		27.7	
050	Graves Cr.	GRVB-3	000405	1300	12.8	9.0	7.0	66.5	25.1	87.9	132	0.5	29.0			0.063		0.878	<0.015	0.533		30	
050	Graves Cr.	GRVB-3	000504	1045	20.6	9.0	7.7	136.8	6.5	3.3	55	0.6	6.0			0.027		0.392	<0.015	0.416		84	

Appendix P-3. Physical/chemical data collected from stations located in the BWC Basin Group as part of the CWA §303(d) Monitoring Program, 1999-2002 (ADEM 2002l).

Sub-Watershed	Stream	Station	Date	Time	Water Temp.	DO	pH	Conductivity	Turbidity	Flow	Fecal Coliform	BOD_5/ $CBOD_5$[a]	TSS	TDS	TOC	Total-P	DRP	NO_3+ NO_2-N	NH_3-N	TKN	Chl *a*	Hardness	ALK
			yymmdd	*24hr*	*°C*	*mg/L*	*s.u.*	*μmhos @ 25°C*	*NTU*	*cfs*	*col/ 100mL*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/m^3*	*mg/L*	*mg/L*
Locust Fork (0316-0111)																							
050	Graves Cr.	GRVB-3	000712	1145	30.2	7.0	7.8	194.3	5.0	.029	20	0.6	49.0			0.020		<0.003	<0.015	0.155		108	
050	Graves Cr.	GRVB-3	000906	1020	23.3	3.0	7.5	216.0	3.2		42	1.7	<1			0.020		<0.003		0.577		106	
050	Graves Cr.	GRVB-3	001003	1115	18.0	4.0	8.1	202.0	3.2		<1	1.7				0.083		0.012	0.026	0.888		110	
050	Graves Cr.	GRVB-3	010117	1140	6.8	11.6	7.7	136.0	1.1	3.8	100	1.0	<1			<0.004		1.233	<0.015	0.158		66	
050	Graves Cr.	GRVB-3	010215	1120	14.0	8.9	7.0	103.0	10.0	22.9	45	<0.1	7.0			<0.004		1.248	<0.015	0.633		44	
050	Graves Cr.	GRVB-3	010315	1340	14.2	8.3	6.5	67.0	73.1	349.8	>2400	0.8	62.0			0.210		0.920	0.040	0.930		18.6	
050	Graves Cr.	GRVB-3	010404	1045	13.5	8.7	7.9	69.0	25.0	93.2	1560	0.9	22.0			0.130		0.558	0.030	0.808		28.7	
050	Graves Cr.	GRVB-4	000405	1035	11.9	9.0	7.2	90.2	22.1		240	0.6	20.0			0.339		1.684	0.116	0.961		52	
050	Graves Cr.	GRVB-4	000504	0920	19.1	6.0	7.4	328.1	9.0		140	0.5	11.0			3.158		5.421	0.378	0.558		136	
050	Graves Cr.	GRVB-4	000712	1115	24.6	6.0	7.3	859.0	2.1		76	0.3	1.0			11.380		42.600	<0.015	<0.15		264	
050	Graves Cr.	GRVB-4	000906	1000	22.1	7.0	7.0	1120.0	0.0		380	1.1	2.0			14.580		54.040		<0.15		318	
050	Graves Cr.	GRVB-4	001003	1045	18.1	8.0	7.4	1154.0	0.0		410	0.7				12.374		62.000	<0.015	<0.015		400	
050	Graves Cr.	GRVB-4	010117	1035	7.4	9.0	8.0	418.0	1.6		304	1.8	<1			3.040		15.470	<0.015	<0.015		158	
050	Graves Cr.	GRVB-4	010215	1000	14.1	8.3	7.2	197.0	9.7		60	0.3	1.0			<0.004		3.677	<0.015	0.631		84	
050	Graves Cr.	GRVB-4	010315	1215	14.1	5.1	7.7	116.0	59.1		>2400	0.7	47.0			0.210		1.240	0.100	1.050		42	
050	Graves Cr.	GRVB-4	010404	1005	13.9	8.9	6.9	134.0	21.8		820	1.1	15.0			0.280		1.850	<0.015	0.624		63.5	
050	Tributary to	TYWW-1	000405	1235	21.0	8.0	7.2	963.0	17.0	2.5	>1200	3.4	16.0			16.200		50.181	0.353	<0.15		320	
050	Tributary to	TYWW-1	000504	1010	23.4	8.0	7.1	1008.0	2.0	2.50	800	1.0	8.0			19.294		31.664	0.606	<0.15		278	
050	Tributary to	TYWW-1	000712	1045	28.6	7.0	6.3	1333.0	1.0	1.8	<1	<0.1	4.0			21.580		75.980	<0.015	<0.15		352	
050	Tributary to	TYWW-1	000906	1145	26.8	8.0	6.7	1439.0	4.7	1.96	7	1.5	4.0			22.260		82.670		<0.15		408	
050	Tributary to	TYWW-1	001003	1220	24.5	8.0	7.2	1471.0	0.0	2.2	<1	0.7				18.545		87.340	0.006	<0.015		436	
050	Tributary to	TYWW-1	010117	1305	15.2	9.4	6.3	1442.0	2.0	1.375	<1	1.1	<1			19.500		87.000	<0.015	<0.015		900	
050	Tributary to	TYWW-1	010215	1245	17.8	8.2	6.6	1274.0	49.8	1.27	<1	0.1	9.0			18.190		78.820	<0.015	<0.15		390	
050	Tributary to	TYWW-1	010315	1240	18.9	8.7	6.9	1249.0	4.9	1.178	<1	0.5	9.0			1.630		12.400	0.060	2.050		351	
050	Tributary to	TYWW-1	010404	1020	19.2	8.8	6.5	1350.0	6.2	1.522	<1	1.3	10.0			19.100		99.300	0.138	0.706		437	
090	Gurley Cr.	GYC-1	990513	1500	21.2	8.92	7.7	178.9	12.1	21.7	84	0.3	2.0		2.02	<0.004		0.194	<0.015	0.446		92	
090	Gurley Cr.	GYC-1	990610	1200	25.9	8.54	6.74	209	12.3	14.5		0.7	10.0			0.169		0.161	<0.015	0.700		118	
090	Gurley Cr.	GYC-1	990715	1345	26.4	9.41	8.87			26	108	<0.1	1.0		1.84	0.020		0.075	<0.015	0.360		100	
090	Gurley Cr.	GYC-1	990811	1250	28.2	7.83	7.92			5.6	17	<0.1	4.0		1.26	0.014		0.012	<0.015	0.461			
090	Gurley Cr.	GYC-1	990908	1145	25.3	7.94	7.94	257	2.4		130	<0.1	4.0		2.8	<0.004		0.026	<0.015	<0.15		124	
090	Gurley Cr.	GYC-2	990513	1330	20.2	8.1	8.98	217	5.5		>240	0.2	8.0		1.57	<0.004		0.190	<0.015	0.277		114	
090	Gurley Cr.	GYC-2	990610	1115	22.9	7.87	7.19	243	15.3			0.7	15.0		1.36	0.050		0.170	<0.015	0.196		120	
090	Gurley Cr.	GYC-2	990715	1230	23.5	8.1	8.41				240	<0.1	4.0		1.3	0.012		0.125	<0.015	0.188		120	
090	Gurley Cr.	GYC-2	990811	1210	26.4	7.2	7.46				112	1.3	7.0		1.26	0.018		0.057	<0.015	0.527			
090	Gurley Cr.	GYC-2	990908	1100	24.3	7.75	7.99	248	5.2		140	<0.1	10.0		2.01	0.016		0.045	<0.015	0.209		130	
090	Gurley Cr.	GYC-3	990518	1250	21.5	6.82	6.79	165	23		>240	1.8	106.0		2.03	<0.004		0.102	<0.015	0.417		114	

Appendix P-3. Physical/chemical data collected from stations located in the BWC Basin Group as part of the CWA §303(d) Monitoring Program, 1999-2002 (ADEM 2002l).

Sub-Watershed	Stream	Station	Date	Time	Water Temp.	DO	pH	Conductivity	Turbidity	Flow	Fecal Coliform	BOD_5*/ $CBOD_5$[a]	TSS	TDS	TOC	Total-P	DRP	NO_3+ NO_2-N	NH_3-N	TKN	Chl *a*	Hardness	ALK
			yymmdd	*24hr*	*°C*	*mg/L*	*s.u.*	*µmhos @ 25°C*	*NTU*	*cfs*	*col/ 100mL*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/m³*	*mg/L*	*mg/L*
Locust Fork (0316-0111)																							
090	Gurley Cr.	GYC-3	990624	1110	22.8	6.74	7.17	214	9.5	3.5	290	0.6	9.0		2.65	0.032		0.106	<0.015	0.161		120	
090	Gurley Cr.	GYC-3	990721	1040	25.2	7.58	7.44			3.2	106	0.6	3.0		2.28	0.073		0.089	<0.015	<0.15		118	
090	Gurley Cr.	GYC-3	990818	1130	24.6	7.1	6.85	258	4.9		14	1.4	2.0		1.39	0.017		0.049	<0.015	0.283		14	
090	Gurley Cr.	GYC-3	990921	1130	20.2	5.5	6.93	246			37	1.0	6.0		2.14	0.018		0.046	<0.015	0.172		138	
090	Self Cr.	SFC-1	990513	1430	19.9	7.6	7.1	174	12.1	4	90	0.1	2.0		1.66	<0.004		0.169	<0.015	0.327		62	
090	Self Cr.	SFC-1	990610	1300	23.6	7	7.53	268	7.1			0.5	8.0		2.55	0.388		0.175	0.060	1.343		84	
090	Self Cr.	SFC-1	990715	1500	24.7	7.3	8.38			1.3	128	<0.1	8.0		1.97	0.015		0.222	<0.015	0.337		80	
090	Self Cr.	SFC-1	990811	1345	29	6.45	8.8			too	10	0.9	165.0		3.53	0.052		0.042	<0.015	0.679			
090	Self Cr.	SFC-1	990908	1215	26.3	6.5	8.24	531	6.1	0	350	1.7	12.0			0.044		<0.003	<0.015	0.464		46	
090	Self Cr.	SFC-2	990513	1300	24.9	10.44	8.9	112	6.4		196	0.2	<1		1.83	<0.004		0.117	<0.015	0.188		46	
090	Self Cr.	SFC-2	990610	1500	23.9	7.41	7.6	225	6.7			0.6	16.0		1.87	<0.004		0.205	<0.015	0.180		122	
090	Self Cr.	SFC-2	990715	1600	25.4	5.9	8.02				17	0.3	3.0		2.23	<0.004		0.038	<0.015	1.010		41	
090	Self Cr.	SFC-2	990811	1415	26.4	6.24	7.26			0	55	<0.1	6.0		1.72	0.009		0.143	<0.015	0.398			
090	Self Cr.	SFC-2	990908	1245						0													
090	Sand Valley Cr.	SVC-1	990518	1335	20.3	6.4	6.77	216	3.3		530	0.1	1.0		1.58	<0.004		0.217	<0.015	0.658		144	
090	Sand Valley Cr.	SVC-1	990624	1020	23	6.23	7.18	278	3.8	1.0	15	0.3	4.0		2.57	0.101		0.261	<0.015	<0.15		160	
090	Sand Valley Cr.	SVC-1	990721	1000	26.5	5.57	6.63			0.8	<1	0.3	1.0		2.48	0.067		0.249	<0.015	<0.15		158	
090	Sand Valley Cr.	SVC-1	990818	1100	24.1	5.5	6.78	341	<1.0		6	0.3	3.0		2.58	0.042		0.077	<0.015	0.235		176	
090	Sand Valley Cr.	SVC-1	990921	1100	21	5.1	5.91	342			17	0.5	1.0		2.78	0.035		0.118	<0.015	0.237		186	
130	Fivemile Cr.	FMCJ-1	020110	1100	9.5	13.6	8.4	326.0	14.0		26	1.7	4.0			<0.004	<0.004	0.834	<0.015	<0.15		184	
130	Fivemile Cr.	FMCJ-1	020205	1000	7.5	11.7	8.3	289.0	13.2		112	0.5	<1			<0.004	<0.004	1.050	<0.015	<0.15		184	
130	Fivemile Cr.	FMCJ-1	020306	0945	7.5	13.6	8.4	290.0	0.0		7	1.0	<1			0.009	<0.004	0.766	<0.015	<0.15		178	
130	Fivemile Cr.	FMCJ-1	020402	1045	16.8	12.3	8.4	312.0	1.8		50	0.9	2.0			<0.004	<0.004	0.884	<0.015	<0.15		154	
130	Fivemile Cr.	FMCJ-1	020417	1120	21.1	11.5	8.4	309.0	1.7		88	0.7	4.0			0.011	<0.004	0.591	<0.015	<0.15		198	
130	Fivemile Cr.	FMCJ-1	020515	1015	16.8	11.0	8.4	351.0	7.6		140	0.8	58.0			0.026	<0.004	0.848	<0.015	0.152		184	
130	Fivemile Cr.	FMCJ-1	020605	1030	22.7	7.9	7.7	201.0	2.4		>620	0.9	31.0			0.052	0.021	0.755	<0.015	<0.423		112	
130	Fivemile Cr.	FMCJ-1	020708	1100	24.9	8.1	7.9	320.0	15.0		100	0.7	9.0			0.016	<0.004	0.587	<0.015	0.227		170	
130	Fivemile Cr.	FMCJ-1	020801	1020	24.4	7.9	7.9	317.0	13.5		490	0.4	10.0			0.030	0.004	0.504	<0.015	0.204		178	
130	Fivemile Cr.	FMCJ-2	020110	1230	11.8	14.5	8.3	512.0	0.2		20	1.3	5.0			10.080	<0.004	2.271	<0.015	33.500		210	
130	Fivemile Cr.	FMCJ-2	020205	1040	9.2	11.4	8.2	383.0	4.5		51	0.4	2.0			0.021	<0.004	1.954	<0.015	<0.15		208	
130	Fivemile Cr.	FMCJ-2	020306	1100	10.0	13.1	8.3	450.0	2.4		30	0.8	2.0			0.048	<0.004	1.826	<0.015	0.332		200	
130	Fivemile Cr.	FMCJ-2	020402	1135	17.1	12.0	8.1	405.0	8.0		72	0.4	5.0			<0.004	<0.004	1.162	<0.015	<0.15		190	
130	Fivemile Cr.	FMCJ-2	020417	1200	20.8	10.3	8.1	417.0	11.9		36	0.4	4.0			0.048	<0.004	1.254	0.019	0.168		204	
130	Fivemile Cr.	FMCJ-2	020515	1100	18.3	7.7	8.3	489.0	5.9		116	0.4	21.0			0.038	0.015	1.810	<0.015	0.335		210	
130	Fivemile Cr.	FMCJ-2	020522	1300	18.0	12.2	8.5	332.0	1.8	16.2													
130	Fivemile Cr.	FMCJ-2	020605	1115	23.4	8.0	7.7	365.0	82.7		>620	1.9	19.0			0.143	0.047	1.590	1.684	2.203		132	

Appendix P-3. Physical/chemical data collected from stations located in the BWC Basin Group as part of the CWA §303(d) Monitoring Program, 1999-2002 (ADEM 2002l).

Sub-Watershed	Stream	Station	Date	Time	Water Temp.	DO	pH	Conductivity	Turbidity	Flow	Fecal Coliform	BOD_5*/ $CBOD_5$[a]	TSS	TDS	TOC	Total-P	DRP	NO_3+ NO_2-N	NH_3-N	TKN	Chl *a*	Hardness	ALK
			yymmdd	*24hr*	*$^o C$*	*mg/L*	*s.u.*	*µmhos @ $25^o C$*	*NTU*	*cfs*	*col/ 100mL*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/m^3*	*mg/L*	*mg/L*
Locust Fork (0316-0111)																							
130	Fivemile Cr.	FMCJ-2	020708	1200	25.6	9.5	8.1	504.0	8.1		220	0.7	11.0			0.057	<0.04	2.460	<0.015	0.321		198	
130	Fivemile Cr.	FMCJ-2	020801	1100	25.2	8.2	8.4	509.0	9.1		80	1.1	5.0			0.214	0.149	2.890	1.690	2.510		188	
130	Fivemile Cr.	FMCJ-3	020110	1315	12.0	11.6	8.6	574.0	6.4		20	9.3	6.0			0.004	0.128v	1.852	0.251	0.217		206	
130	Fivemile Cr.	FMCJ-3	020205	1140	10.0	10.1	8.3	443.0	8.0	46.0	108	2.2	2.0			0.113	0.029	1.493	0.804	1.211		210	
130	Fivemile Cr.	FMCJ-3	020306	1215	11.7	12.3	8.9	484.0	8.9	36.9	20	3.7	5.0			0.178	<0.004	1.324	1.044	2.566		196	
130	Fivemile Cr.	FMCJ-3	020402	1240	18.3	10.8	8.2	464.0	19.7	70.4	100	2.5	14.0			0.034	<0.004	1.201	2.056	2.888		182	
130	Fivemile Cr.	FMCJ-3	020417	1252	22.1	10.1	8.4	487.0	29.3	46.6	43	1.6	8.0			0.161	0.022	1.552	0.614	2.391		198	
130	Fivemile Cr.	FMCJ-3	020515	1210	19.6	10.0	8.4	501.0		43.9	74	1.4	8.0			0.059	0.012	1.670	0.271	1.094		200	
130	Fivemile Cr.	FMCJ-3	020522	1100	18.0	9.2	8.3	559.0	4.8	24.4													
130	Fivemile Cr.	FMCJ-3	020605	1215	24.8	8.1	8.0	419.0	65.9	45.4	>620	3.0	16.0			2.052	1.163	2.980	1.549	2.124		158	
130	Fivemile Cr.	FMCJ-3	020708	1300	27.3	9.3	8.4	557.0	16.1	19.6	88	5.6	12.0			0.934	0.484	3.990	0.275	2.170		174	
130	Fivemile Cr.	FMCJ-3	020801	1150	26.4	8.2	8.5	528.0	10.6	41.3	72	1.7	8.0			2.780	2.070	3.940	1.290	2.140		178	
130	Fivemile Cr.	FMCJ-4	020109	1400	9.4	14.5	8.2	544.0	6.3		50	1.9	6.0			0.280	0.227	2.906	1.168	1.531		188	
130	Fivemile Cr.	FMCJ-4	020305	1300	9.9	15.2	8.3	491.0	3.2		16	1.3	3.0			0.263	0.006	2.535	<0.015	0.173		174	
130	Fivemile Cr.	FMCJ-4	020401	1240	16.8	8.0	7.7	403.0	16.3		290	0.7	1.0			0.102	0.027	1.652	0.321	0.419		160	
130	Fivemile Cr.	FMCJ-4	020402	1300	12.0	10.8	8.0	423.0	5.7		40	0.8	7.0			0.181	0.104	2.231	0.109	0.499		190	
130	Fivemile Cr.	FMCJ-4	020417	1215	20.6	11.6	8.0	607.0	3.2		75	0.4	1.0			0.288	0.240	2.985	0.022	0.272		190	
130	Fivemile Cr.	FMCJ-4	020516	1215	19.2	11.8	8.0	591.0	1.1		84	0.3	4.0			0.238	0.215	2.666	<0.015	0.275		202	
130	Fivemile Cr.	FMCJ-4	020604	1244	24.7	9.2	7.7	575.0			124	0.5	4.0			0.802	0.294	3.963	<0.015	<0.15		190	
130	Fivemile Cr.	FMCJ-4	020709	1345	23.0	8.7	8.1	588.0	3.2														
130	Fivemile Cr.	FMCJ-4	020709	1312	26.6	9.1	7.9	597.0	2.6		70	0.2	8.0			0.643	0.615	4.720	<0.015	2.350		166	
130	Fivemile Cr.	FMCJ-4	020801	1215	25.1	9.3	7.7	588.0	0.1		230	0.3	4.0			1.140	1.170	4.470	0.036	<0.15		180	
130	Newfound Cr.	NFDJ-1	020109	1100	4.7	13.8	7.8	213.0	56.5		50	0.2	8.0			0.004	0.03v	0.548	<0.015	0.256		104	
130	Newfound Cr.	NFDJ-1	020204	1030	9.6	11.2	7.7	153.0	50.4		76	0.2	10.0			0.034	<0.004	0.617	<0.015	0.596		80	
130	Newfound Cr.	NFDJ-1	020305	1045	7.2	11.9	7.0	196.0	13.3		3	0.8	7.0			0.188	<0.004	0.435	<0.015	<0.15		74	
130	Newfound Cr.	NFDJ-1	020401	1000	15.6	6.2	7.6	154.0	91.8		700	0.8	20.0			0.020	<0.004	0.542	<0.015	<0.15		76	
130	Newfound Cr.	NFDJ-1	020417	1000	21.2	8.8	7.6	233.0	9.1		3	0.4	3.0			<0.004	<0.004	0.228	0.034	<0.15		102	
130	Newfound Cr.	NFDJ-1	020516	0950	20.8	8.9	7.4	246.0	13.3		4	0.3	1.0			<0.004	<0.004	0.296	0.020	0.288		112	
130	Newfound Cr.	NFDJ-1	020528	945	22.0	6.8	7.7	308.0	3.6	1.6													
130	Newfound Cr.	NFDJ-1	020604	1015	25.5	9.5	7.1	213.0	13.6		28	0.3	10.0			0.004	0.008[v]	0.208	<0.015	0.359		120	
130	Newfound Cr.	NFDJ-1	020709	1131	27.5	6.3	7.2	209.0	244.0		60	0.4	28.0			0.047	<0.004	0.450	<0.015	0.414		102	
130	Newfound Cr.	NFDJ-1	020801	1020	26.8	6.7	6.4	286.0	17.1		3	0.2	6.0			0.030	<0.004	<0.003	0.041	0.420		122	
130	Newfound Cr.	NFDJ-2	020109	1330	5.3	13.7	7.6	288.0	16.5	14.0	17	0.2	7.0			0.004	0.03v	0.418	<0.015	0.214		144	
130	Newfound Cr.	NFDJ-2	020204	1130	9.7	10.6	7.5	218.0	33.8	32.6	53	0.5	6.0			0.050	<0.004	0.492	<0.015	<0.15		116	
130	Newfound Cr.	NFDJ-2	020305	1200	6.2	12.0	7.3	255.0	6.4	12.0	<1	1.2	4.0			0.017	<0.004	0.320	<0.015	0.280		200	
130	Newfound Cr.	NFDJ-2	020401	1145	16.6	8.6	7.6	210.0	56.7	45.0	184	0.7	14.0			<0.004	<0.004	0.431	<0.015	<0.15		102	

Appendix P-3. Physical/chemical data collected from stations located in the BWC Basin Group as part of the CWA §303(d) Monitoring Program, 1999-2002 (ADEM 2002l).

Sub-Watershed	Stream	Station	Date	Time	Water Temp.	DO	pH	Conductivity	Turbidity	Flow	Fecal Coliform	BOD_{5*}/ $CBOD_5$[a]	TSS	TDS	TOC	Total-P	DRP	NO_3+ NO_2-N	NH_3-N	TKN	Chl *a*	Hardness	ALK
			yymmdd	*24hr*	*°C*	*mg/L*	*s.u.*	*µmhos @ 25°C*	*NTU*	*cfs*	*col/ 100mL*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/m³*	*mg/L*	*mg/L*
Locust Fork (0316-0111)																							
130	Newfound Cr.	NFDJ-2	020417	1130	20.1	9.9	7.3	324.0	4.7	9.6	26	0.3	2.0			<0.004	<0.004	0.124	<0.015	<0.15		142	
130	Newfound Cr.	NFDJ-2	020516	1115	18.8	9.4	7.1	365.0	0.0	6.5	84	0.2	1.0			<0.004	0.004	0.128	<0.015	<0.15		170	
130	Newfound Cr.	NFDJ-2	020528	1100	22.0	8.0	7.2	375.0	2.2	3.1													
130	Newfound Cr.	NFDJ-2	020604	1135	24.5	9.7	7.2	346.0			39	0.3	3.0			<0.004	0.004	0.090	<0.015	<0.15		148	
130	Newfound Cr.	NFDJ-2	020709	1237	26.5	6.9	7.4	290.0	22.6	2.3	86	0.2	7.0			<0.004	<0.004	0.298	<0.015	0.232		126	
130	Newfound Cr.	NFDJ-2	020801	1145	25.7	8.2	7.3	386.0	0.2	2.6	40	0.2	3.0			0.024	<0.004	<0.003	<0.015	0.155		180	
130	Tarrant Spring Br.	TSB-1	990513	1030	16.6	6.33	6.45	351	6.5		23	<0.1	2.0		0.56	<0.004		1.437	<0.015	<0.15		200	
130	Tarrant Spring Br.	TSB-1	990617	1130	26.5	8.3	7.9	318	5.36	9.0													
130	Tarrant Spring Br.	TSB-1	990715	1135	23	9.43	8.52			0	490	<0.1	<1			<0.004		0.426	<0.015	0.159			
130	Tarrant Spring Br.	TSB-1	990817	0900		5.85	6.58				15		2.0					13.410		0.229			
130	Tarrant Spring Br.	TSB-1	990908	1030	20.4	7.20	7.39	296	3.4	0	5		9.0			0.007		0.155		0.318			
140	Bayview Lake	BVLJ-1	020129	1130	13.8	7.1	7.5		8.2		620	2.8	14.0			0.110	0.040	1.360	0.170	0.170	5.61	113	
140	Bayview Lake	BVLJ-1	020305	1115	9.9	6.6	6.5	389.0	2.7		<3	3.8	11.0			0.130	0.110	2.910	0.320	0.660	8.01	172	
140	Bayview Lake	BVLJ-1	020327	1126	15.0	9.0	6.7	325.0	4.6		57	1.5	6.0			0.177	0.090	2.170	0.150	1.160	10.68	140	
140	Bayview Lake	BVLJ-1	020410	1115	17.5	12.6	7.4	369.0	3.5		3 est.	3.7	7.0			0.119	0.018	1.950	<0.015	0.494	22.7	187	
140	Bayview Lake	BVLJ-1	020515	1048	23.0	14.1	8.4	346.0			3 est.	4.9	10.0			0.122	<0.004	1.709	<0.015	1.190	27.8	127	
140	Bayview Lake	BVLJ-1	020604	1035	25.9	15.8	9.0	351.0	3.1		<1	9.9	11.0			0.230	0.049	2.020	<0.015	0.525	129.23	124	
140	Bayview Lake	BVLJ-1	020716	1130	25.8	4.6	6.7	330.0	14.9		310	3.2	19.0			0.112	0.076	1.500	<0.015	1.630	27.63	115	
140	Bayview Lake	BVLJ-1	020812	1126	28.9	8.5	7.5	440.0	2.5		10 est.	3.5	13.0			0.165	0.084	2.220	0.085	0.889	58.21	48	
140	Bayview Lake	BVLJ-2	020129	1215	14.4	6.7	6.5	40.0	7.5		200	0.4	9.0			0.120	0.040	1.770	0.140	<0.15	2.67	134	
140	Bayview Lake	BVLJ-2	020305	1143	10.3	9.3	6.6	383.0			37	3.3	10.0			0.310	0.240	3.200	0.180	0.210	9.88	162	
140	Bayview Lake	BVLJ-2	020327	1222	16.6	7.7	6.6	337.0	11.9		>970	1.5	5.0			0.244	0.110	2.380	0.160	1.370	9.61	148	
140	Bayview Lake	BVLJ-2	020410	1350	18.3	6.5	6.6	428.0	4.4		55	1.3	8.0			0.210	0.098	2.270	0.215	6.060	12.82	192	
140	Bayview Lake	BVLJ-2	020515	1125	23.3	10.4	7.9	343.0	4.5		4 est.	4.1	12.0			0.161	0.082	2.240	0.033	0.935	42.7	125	
140	Bayview Lake	BVLJ-2	020604	1237	26.5	13.7	8.1	455.0	3.9		7 est.	3.4	6.0			0.238	0.159	2.540	0.045	3.090	37.38	132	
140	Bayview Lake	BVLJ-2	020716	1230	25.9	7.5	6.9	331.0	12.6		280	3.7	29.0			0.131	0.042	1.570	<0.015	1.750	49.66	126	
140	Bayview Lake	BVLJ-2	020812	1249	28.8	13.1	7.9	459.0	6.1		3 est.	5.9	17.0			0.257	0.148	2.750	<0.015	1.400	92.59	48.6	
140	Bayview Lake	BVLJ-3	020129	1300	13.1	9.2	6.6		8.9		77	0.6	9.0			<0.07	0.010	0.765	<0.015	<0.37	14.95	63.1	
140	Bayview Lake	BVLJ-3	020305	1252	10.2	10.3	6.7	397.0	7.1		3 est.	3.8	9.0			0.240	0.200	3.160	0.220	0.240	25.1	170	
140	Bayview Lake	BVLJ-3	020327	1253	15.6	13.3	7.7	203.0	5.0		12 est.	3.2	11.0			0.071	0.009	0.725	<0.015	<0.15	66.22	93	
140	Bayview Lake	BVLJ-3	020410	1250	17.9	14.9	7.5	285.0	5.5		1 est.	3.4	11.0			0.075	0.004	1.090	<0.015	<0.258	43.79	136	
140	Bayview Lake	BVLJ-3	020515	1159	23.1	8.2	7.7	276.0	6.6		4 est.	4.0	14.0			0.091	0.021	1.020	0.129	1.010	38.4	101	
140	Bayview Lake	BVLJ-3	020604	1150	25.3	14.6	8.4	323.0	5.2		<1	7.9	11.0			0.114	0.003	1.090	<0.015	2.010	111.07	103	
140	Bayview Lake	BVLJ-3	020716	1203	25.9	6.9	7.0	220.0	19.1		100	4.4	30.0			0.094	0.008	0.617	<0.015	1.200	60.74	83.5	
140	Bayview Lake	BVLJ-3	020812	1215	28.4	6.8	6.9	396.0	6.9		3 est.	5.5	11.0			0.122	0.020	1.260	<0.015	1.410	107.33	47.1	
140	Bayview Lake	BVLJ-4	020129	1345	16.1	7.1	6.5	44.0	12.4		320	0.6	10.0			0.120	0.070	2.560	0.040	0.270	1.34	156	

Appendix P-3. Physical/chemical data collected from stations located in the BWC Basin Group as part of the CWA §303(d) Monitoring Program, 1999-2002 (ADEM 2002l).

Sub-Watershed	Stream	Station	Date	Time	Water Temp.	DO	pH	Conductivity	Turbidity	Flow	Fecal Coliform	BOD$_5$*/ CBOD$_5$[a]	TSS	TDS	TOC	Total-P	DRP	NO_3+ NO_2-N	NH_3-N	TKN	Chl *a*	Hardness	ALK
			yymmdd	*24hr*	*°C*	*mg/L*	*s.u.*	*µmhos @ 25°C*	*NTU*	*cfs*	*col/ 100mL*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/m^3*	*mg/L*	*mg/L*
Locust Fork (0316-0111)																							
140	Bayview Lake	BVLJ-4	020305	1340	9.7	11.5	6.6	432.0	4.8		10 est.	2.7	6.0			0.470	0.380	5.590	0.120	0.370	0.8	190	
140	Bayview Lake	BVLJ-4	020327	1405	15.6	6.5	6.5	319.0	17.7		>1120	2.0	12.0			0.364	0.200	2.750	0.170	1.900	2.67	140	
140	Bayview Lake	BVLJ-4	020410	1445	18.9	6.4	6.5	428.0	11.1		197	1.3	12.0			0.406	0.265	3.010	0.229	0.797	2.49	199	
140	Bayview Lake	BVLJ-4	020515	1230	20.7	5.8	7.1	440.0	8.6		220	1.5	13.0			0.669	0.013	4.750	0.479	1.160	2.14	148	
140	Bayview Lake	BVLJ-4	020604	1315	26.0	5.1	7.3	479.0	5.4		70	0.4	7.0			0.414	0.384	3.830	0.141	1.710	3.2	154	
140	Bayview Lake	BVLJ-4	020716	1303	23.9	4.9	6.4	235.0	43.2		280	2.5	53.0			0.092	0.027	1.320	<0.015	1.290	7.63	93.6	
140	Bayview Lake	BVLJ-4	020812	1334	26.5	6.0	6.7	498.0	9.1		100	3.7	7.0			0.374	0.307	4.280	0.076	1.520		47.8	
140	Bayview Lake	BVLJ-5	020129	1403	11.7	9.2	6.3		27.6		310	1.0	9.0			0.080	0.010	0.624	0.040	<0.15	7.74	81.1	
140	Bayview Lake	BVLJ-5	020305	1402	8.1	9.0	6.1	341.0				3.9	7.0			0.050	0.010	0.484	0.040	<0.15	14.69	150	
140	Bayview Lake	BVLJ-5	020327	1436	15.7	11.2	6.7	283.0	4.0		1 est.	1.7	5.0			0.042	0.009	0.461	0.020	<0.15	11.21	125	
140	Bayview Lake	BVLJ-5	020410	1400	18.3	12.3	7.4	307.0	4.1		<1	1.9	6.0			0.026	<0.004	0.312	<0.015	<0.15	19.76	144	
140	Bayview Lake	BVLJ-5	020515	1257	23.6	9.3	7.1	319.0	2.5		2 est.	3.0	10.0			0.022	0.009	0.404	0.034	0.677	13.3	110	
140	Bayview Lake	BVLJ-5	020604	1410	27.6	15.7	9.2	348.0	4.9		1 est.	6.6	9.0			<0.004	<0.004	0.607	<0.015	1.390	34.71	109	
140	Bayview Lake	BVLJ-5	020716	1332	27.8	9.3	7.0	348.0	5.8		10 est.	3.3	17.0			0.046	0.007	0.698	<0.015	1.140	79.34	114	
140	Bayview Lake	BVLJ-5	020812	1405	29.8	10.9	8.0	351.0	4.8			2.2	10.0			0.069	0.015	0.518	0.039	1.170	45.92	43.5	
140	Camp Br.	CMBJ-1	011120	1140	12.5	0.7	3.1	800.0	5.4		937	160.0	4.0			<0.004		<0.003	0.463	0.893		434	
140	Camp Br.	CMBJ-1	011210	1055	13.0	6.0	5.7	350.0	10.2		90	1.5	6.0			<0.004		0.006	0.126	0.422		242	
140	Camp Br.	CMBJ-1	020123	1015	14.2	6.2	6.0	226.0	4.6		7	2.0	7.0			<0.004		0.758	<0.015	0.372		134	
140	Camp Br.	CMBJ-1	020226	1010	9.6	7.7	4.2	370.0			<1	2.4	8.0			<0.004		0.166	0.103	0.221			
140	Camp Br.	CMBJ-1	020313	1000	12.0	7.7	6.5	185.0	10.5		30	1.1	13.0			0.009		0.644	<0.015	0.326		122	
140	Camp Br.	CMBJ-1	020410	1025	22.0	6.2	5.7	410.0	5.6		<1	1.3	8.0			<0.004	<0.004	0.176	0.145	<0.15		178	
140	Camp Br.	CMBJ-1	020515	1100	22.0	5.1	5.8	450.0	11.4		<1	1.8	11.0			<0.004		<0.003	0.036	0.365		210	
140	Camp Br.	CMBJ-1	020612	1035	26.8	4.7	3.7	750.0	5.7		<1	1.9	2.0			<0.004		<0.003	0.143	0.788		276	
140	Camp Br.	CMBJ-2	011120	1410	12.0	7.2	7.1	240.0	3.5		1500	2.0	7.0			<0.004		0.016	<0.015	0.398		140	
140	Camp Br.	CMBJ-2	011210	1150	12.0	8.4	5.5	220.0	10.2		>620	1.0	6.0			<0.004		0.416	<0.015	<0.15		150	
140	Camp Br.	CMBJ-2	020123	1110	15.0	6.8	6.4	240.0	7.6		350	1.2	1.0			<0.004		0.874	<0.015	0.249		120	
140	Camp Br.	CMBJ-2	020226	1105	9.2	10.5	5.9	190.0			660	1.1	<1			<0.004		0.342	<0.015	<0.15			
140	Camp Br.	CMBJ-2	020313	1055	12.0	8.8	5.8	130.0	11.9		560	0.9	9.0			0.009		0.879	<0.015	0.268		100	
140	Camp Br.	CMBJ-2	020410	1120	18.8	9.9	6.5	240.0	4.1		290	1.0	4.0			<0.004		0.305	<0.015	<0.15		126	
140	Camp Br.	CMBJ-2	020515	1215	21.0	9.3	7.5	270.0	3.5		188	0.8	2.0			<0.01		445.200	<0.015	<0.15		138	
140	Camp Br.	CMBJ-2	020612	1145	26.0	5.5	6.7	365.0	6.1		80	2.3	3.0			<0.004		0.012	<0.015	0.399		140	
140	Camp Br.	CMBJ-3	011210	1305	12.0	9.0	6.9	170.0	7.4		490	0.6	14.0			<0.004		0.184	<0.015	0.314		136	
140	Camp Br.	CMBJ-3	020123	1150	18.5	4.5	6.8	383.0	7.0	11.2	80	0.6	5.0			<0.004		0.718	<0.015	<0.15		110	
140	Camp Br.	CMBJ-3	020226	1205	8.6	11.0	5.0	180.0		2.0	50	1.0	8.0			<0.004		0.369	<0.015	<0.15			
140	Camp Br.	CMBJ-3	020313	1155	12.4	9.8	6.2	120.0	10.2	31.3	128	0.7	14.0			0.009		0.773	<0.015	0.196		90	
140	Camp Br.	CMBJ-3	020410	1145	18.0	11.1	7.2	250.0	3.9	2.6	42	0.9	4.0			<0.004	<0.004	0.275	<0.015	<0.15		120	

Appendix P-3. Physical/chemical data collected from stations located in the BWC Basin Group as part of the CWA §303(d) Monitoring Program, 1999-2002 (ADEM 2002l).

Sub-Watershed	Stream	Station	Date	Time	Water Temp.	DO	pH	Conductivity	Turbidity	Flow	Fecal Coliform	BOD_5*/ $CBOD_5$[a]	TSS	TDS	TOC	Total-P	DRP	NO_3+ NO_2-N	NH_3-N	TKN	Chl *a*	Hardness	ALK
			yymmdd	*24hr*	*°C*	*mg/L*	*s.u.*	*µmhos @ 25°C*	*NTU*	*cfs*	*col/ 100mL*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/m³*	*mg/L*	*mg/L*
Locust Fork (0316-0111)																							
140	Camp Br.	CMBJ-3	020515	1315	19.0	8.4	7.7	250.0	3.8	1.1	28	1.0	3.0			<0.004		0.392	<0.015	0.274		128	
140	Camp Br.	CMBJ-3	020528	1440	22.0	7.9	7.7	352.0	5.4	0.3													
140	Camp Br.	CMBJ-3	020612	1235	24.0	7.4	7.2	395.0	6.2		138	0.8	8.0			<0.004		0.107	<0.015	<0.15		134	
140	Camp Br.	CMBJ-4	011120	1345	11.0	8.9	6.9	220.0	5.3		500	2.1	1.0			<0.004		0.029	<0.015	<0.15		120	
140	Camp Br.	CMBJ-4	011210	1250	12.3	9.3	6.4	190.0	16.1	3.4	>620	0.8	15.0			0.045		0.509	<0.015	0.191		148	
140	Camp Br.	CMBJ-4	020123	1200	19.0	4.4	6.7	421.0	7.0	9.7	540	1.0	3.0			<0.004		1.112	<0.015	<0.15		110	
140	Camp Br.	CMBJ-4	020226	1200	8.9	12.3	6.1	190.0		1.4	280	1.2	3.0			0.010		0.352	<0.015	<0.15			
140	Camp Br.	CMBJ-4	020313	1215	13.0	9.6	7.0	140.0	9.9	8.3	1120	1.1	6.0			0.009		1.013	<0.015	0.189		98	
140	Camp Br.	CMBJ-4	020410	1205	17.5	9.8	7.1	190.0	2.1	1.9	124	0.3	<1			<0.004		0.455	<0.015	<0.15		126	
140	Camp Br.	CMBJ-4	020515	1305	20.0	8.1	7.5	250.0	1.8	1.1	140	0.8	1.0			<0.004		0.216	<0.015	0.414		136	
140	Camp Br.	CMBJ-4	020528	1250	22.0	8.5	7.6	303.0	1.9	0.6													
140	Camp Br.	CMBJ-4	020612	1245	25.0	8.2	7.3	325.0	2.0		50	0.8	2.0			<0.004		0.161	<0.015	<0.15		130	
140	Village Cr.	VI-3	020109	1615	13.6	10.5	6.6	480.0	3.7		50	3.5	3.0			0.370	0.270	4.870	0.250	0.600	<0.1	166	
140	Village Cr.	VI-3	020212	1650	14.2	9.8	7.6	366.0	4.3		45	1.4	7.0			0.760	0.660	3.640	0.030	1.440	0.8	168	
140	Village Cr.	VI-3	020320	1645	19.0	7.4	7.2	320.0	22.9		1300	3.0	50.0			0.460	0.340	3.200	0.090	<0.15	4.27	175	
140	Village Cr.	VI-3	020508	1620	25.4	6.9	7.5	450.0	7.2		500	1.6	17.0			0.324	0.341	0.020	0.034	0.632	1.87	160	
140	Village Cr.	VI-3	020619	1215	26.0	6.8	7.8	400.0	6.1		330	1.3	12.0			0.601	0.597	4.110	<0.015	0.509	0.53	140	
140	Village Cr.	VI-3	020709	1310	28.0	9.1	7.2	445.0	3.9		88	2.2	5.0			0.697	0.673	6.230	<0.015	<0.15	2.67	152	
140	Village Cr.	VI-3	020715	1740	28.0	6.8	7.9	120.0	7.9		380	1.7	23.0			0.316	0.307	3.700	<0.015	0.162	0.53	163	
140	Village Cr.	VI-3	020917	1645	27.0	6.1	7.2	362.0	15.0		>1470	1.0	14.0			0.958	0.150	5.640	0.244	1.300		44.1	
140	Village Cr.	VLGJ-1	020109	1230	10.0	12.0	7.5	382.0	1.6		300	4.0	3.0			0.090	<0.004	0.968	0.050	<0.15		169	
140	Village Cr.	VLGJ-1	020212	1340	15.6	11.7	8.4	295.0	3.1		44	1.8	8.0			0.040	0.010	1.120	<0.015	2.130		173	
140	Village Cr.	VLGJ-1	020320	1415	20.2	8.2	7.3	250.0	11.8		>3000	2.3	14.0			0.050	0.020	0.792	0.070	<0.15		151	
140	Village Cr.	VLGJ-1	020508	1320	26.6	8.0	8.1	360.0	2.5		175	1.9	5.0			<0.004	0.003	0.915	<0.015	0.348		189	
140	Village Cr.	VLGJ-1	020522	1430	20.0	14.3	8.2	349.0	2.6	6.3													
140	Village Cr.	VLGJ-1	020619	0940	24.1	8.0	7.3	350.0	2.8		>9600	1.8	8.0			0.062	0.007	0.818	0.152	0.562		167	
140	Village Cr.	VLGJ-1	020709	1010	28.6	8.2	7.3	360.0	3.1		730	2.7	5.0			0.050	0.008	0.759	<0.015	<0.15		145	
140	Village Cr.	VLGJ-1	020715	1330	26.9	7.6	7.7	335.0	6.7	12.5	>6500	2.5	13.0			0.027	0.016	1.240	<0.015	<0.15		164	
140	Village Cr.	VLGJ-1	020917	1245	23.7	8.1	7.8	317.0	6.0		>1980[h]	0.3	9.0			0.055	0.013	0.747	0.162	0.288		48.3	
140	Village Cr.	VLGJ-2	020109	1330	10.6	14.9	7.8	416.0	3.2		18 est.	3.4	3.0			0.110	0.007	0.865	0.170	0.990		180	
140	Village Cr.	VLGJ-2	020212	1445	15.3	14.7	8.7	339.0	10.4		25	2.3	15.0			0.090	0.020	1.140	0.020	0.320		182	
140	Village Cr.	VLGJ-2	020320	1445	20.0	7.7	7.3	170.0	45.0		>5930	5.6	41.0			0.120	0.060	0.546	0.230	0.835		94.7	
140	Village Cr.	VLGJ-2	020508	1405	27.6	9.4	8.5	440.0	10.0		180 est.	1.6	17.0			0.058	0.021	0.940	<0.015	<0.15		186	
140	Village Cr.	VLGJ-2	020522	0730	15.0	7.6	8.0	364.0	3.3														
140	Village Cr.	VLGJ-2	020619	1025	24.0	7.4	7.7	355.0	3.0		200	1.3	4.0			0.061	0.028	0.622	<0.015	0.578		172	
140	Village Cr.	VLGJ-2	020709	1055	28.5	8.3	7.5	385.0	2.4		220	2.0	4.0			0.081	0.049	0.652	0.059	0.435		153	

Appendix P-3. Physical/chemical data collected from stations located in the BWC Basin Group as part of the CWA §303(d) Monitoring Program, 1999-2002 (ADEM 2002l).

Sub-Watershed	Stream	Station	Date	Time	Water Temp.	DO	pH	Conductivity	Turbidity	Flow	Fecal Coliform	BOD_5*/ $CBOD_5$[a]	TSS	TDS	TOC	Total-P	DRP	NO_3+ NO_2-N	NH_3-N	TKN	Chl *a*	Hardness	ALK
			yymmdd	*24hr*	*°C*	*mg/L*	*s.u.*	*µmhos @ 25°C*	*NTU*	*cfs*	*col/ 100mL*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/m^3*	*mg/L*	*mg/L*
Locust Fork (0316-0111)																							
140	Village Cr.	VLGJ-2	020715	1445	29.0	8.0	8.2	430.0	3.7		520	1.9	11.0			0.058	0.055	1.460	0.061	<0.15		182	
140	Village Cr.	VLGJ-2	020917	1310	25.4	8.1	7.9	278.0	8.8		>860	1.3	14.0			0.075	0.030	0.634	0.159	0.562		45.6	
140	Village Cr.	VLGJ-3	020109	1500	10.1	12.5	7.4	457.0	3.3		47 est.	3.5	3.0			0.100	0.006	0.874	0.040	0.440		202	
140	Village Cr.	VLGJ-3	020212	1545	13.6	13.3	8.2	300.0	4.9		25	1.4	6.0			0.060	0.010	1.060	0.110	0.360		193	
140	Village Cr.	VLGJ-3	020320	1540	19.0	7.2	7.3	225.0	67.9		>5300	8.1	59.0			0.130	0.030	0.609	0.180	1.190		143	
140	Village Cr.	VLGJ-3	020508	1515	25.0	8.4	8.2	210.0	6.8		>1420	2.2	11.0			0.039	0.015	1.140	<0.015	0.634		199	
140	Village Cr.	VLGJ-3	020619	1110	25.4	7.1	8.1	370.0	2.6		>1300	1.1	6.0			0.051	0.012	0.780	0.021	0.296		161	
140	Village Cr.	VLGJ-3	020709	1200	27.9	8.8	7.6	390.0	1.9		1570	2.2	6.0			0.037	0.008	0.535	<0.015	<0.15		149	
140	Village Cr.	VLGJ-3	020715	1550	26.5	7.4	8.1	398.0	6.8		>2167	2.5	15.0			0.053	0.035	1.220	<0.015	<0.15		180	
140	Village Cr.	VLGJ-3	020715	1555																			
140	Village Cr.	VLGJ-3	020917	1500	26.0	6.6	7.7	275.0	14.5		>2200	1.1	18.0			0.085	0.040	0.822	0.256	0.899		44.9	
140	Village Cr.	VLGJ-4	020109	1540	11.8	12.2	7.4	442.0	3.4		19 est.	3.4	2.0			0.090	0.003	0.960	0.130	<0.15		186	
140	Village Cr.	VLGJ-4	020212	1625	13.8	12.8	8.3	344.0	4.1		23	1.3	13.0			0.060	0.010	1.150	0.160	0.210		187	
140	Village Cr.	VLGJ-4	020320	1615	19.0	7.3	7.5	300.0	34.1		>6800	4.3	61.0			0.120	0.050	0.842	0.080	<0.15		196	
140	Village Cr.	VLGJ-4	020508	1600	26.0	10.7	8.4	425.0	4.4		90	1.4	4.0			0.043	0.012	1.200	0.023	0.744		187	
140	Village Cr.	VLGJ-4	020522	1640	21.0	10.0	8.5	372.0	2.4	38.6													
140	Village Cr.	VLGJ-4	020619	1145	25.0	10.6	8.2	370.0	2.6		150	0.6	10.0			0.053	0.017	0.834	<0.015	0.306		145	
140	Village Cr.	VLGJ-4	020709	1230	31.0	13.1	7.6	420.0	3.4		41	3.5	7.0			0.051	0.010	0.861	<0.015	<0.15		142	
140	Village Cr.	VLGJ-4	020715	1600	30.2	7.7	8.0	280.0	6.6	67.7	<1	1.9	13.0			0.040	0.023	1.290	0.088	0.494		170	
140	Village Cr.	VLGJ-4	020917	1555	27.0	8.3	8.0	309.0	20.5		>2480	0.7	21.0			0.075	0.019	0.956	0.038	0.750		45.9	
150	Locust Fork	LFKB-1	020124	0930	12.0	10.8	6.8	91.0	76.0		780	1.2	45.0			0.106	0.038	1.717	0.021	0.722		54	
150	Locust Fork	LFKB-1	020212	1130	8.4	11.6	7.8	102.0	8.1		46	1.0	6.0			0.059	0.032	2.382	0.069	<0.15		52	
150	Locust Fork	LFKB-1	020313	1000	10.9	11.3	6.9	141.0	41.2		2000	2.4	44.0			0.158	0.034	1.598	<0.015	1.025		86	
150	Locust Fork	LFKB-1	020404	1220	14.2	10.9	8.0	114.0	20.4		176	0.6	19.0			0.056	0.036	1.705	<0.015	<0.15		66	
150	Locust Fork	LFKB-1	020508	1130	19.9	9.5	7.6	109.0	22.0		216	1.0	19.0			0.080	0.050	1.604	<0.015	0.177		46	
150	Locust Fork	LFKB-1	020522	1030	15.7	11.1	7.4	133.0	4.5		88	0.1	4.0			0.156	0.136	1.836	<0.015	0.348		70	
150	Locust Fork	LFKB-1	020611	0940	25.1	8.5	7.7	206.0	1.3		26	0.5	3.0			0.371	0.367	3.061	<0.015	<0.15		94	
150	Locust Fork	LFKB-1	020715	1210	26.6	8.5	7.7	188.0	15.8		92	0.8	10.0			0.164	0.127	0.912	<0.015	0.583		74	
150	Locust Fork	LFKB-1	020807	1130	28.0	7.4	8.5	298.0			25	0.8	2.0			0.778	0.716	5.670	0.032	0.156		114	
150	Locust Fork	LFKB-2	020124	1030	12.0	10.5	7.2	98.0	77.0		1320	0.9	59.0			0.094	0.034	1.221	<0.015	0.552		60	
150	Locust Fork	LFKB-2	020212	1220	9.6	10.9	7.8	106.0	8.8		33	1.0	7.0			0.052	0.017	1.655	<0.015	0.279		56	
150	Locust Fork	LFKB-2	020313	1100	11.4	11.1	7.7	177.0	25.5		2040	2.4	26.0			0.110	0.006	0.840	<0.015	0.639		88	
150	Locust Fork	LFKB-2	020404	1320	15.4	10.4	7.8	120.0	21.9		80	0.7	21.0			0.032	0.010	1.135	<0.015	<0.15		82	
150	Locust Fork	LFKB-2	020508	1200	21.5	9.1	7.5	116.0	21.2		84	0.7	17.0			0.056	0.029	1.058	<0.015	<0.15		50	
150	Locust Fork	LFKB-2	020522	1130	18.5	8.9	7.1	130.0			28	1.2	3.0			0.092	0.054	0.950	<0.015	0.566		66	
150	Locust Fork	LFKB-2	020611	1040	28.4	8.6	8.2	190.0	5.9		55	0.7	5.0			0.054	0.054	0.577	<0.015	0.247		92	

Appendix P-3. Physical/chemical data collected from stations located in the BWC Basin Group as part of the CWA §303(d) Monitoring Program, 1999-2002 (ADEM 2002l).

Sub-Watershed	Stream	Station	Date	Time	Water Temp.	DO	pH	Conductivity	Turbidity	Flow	Fecal Coliform	BOD_5*/ $CBOD_5$[a]	TSS	TDS	TOC	Total-P	DRP	NO_3+ NO_2-N	NH_3-N	TKN	Chl *a*	Hardness	ALK
			yymmdd	*24hr*	*^oC*	*mg/L*	*s.u.*	*μmhos @ 25^oC*	*NTU*	*cfs*	*col/ 100mL*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/m^3*	*mg/L*	*mg/L*
Locust Fork (0316-0111)																							
150	Locust Fork	LFKB-2	020702	1010	24.0	7.6	7.6	228.0	3.3	184.4													
150	Locust Fork	LFKB-2	020718	1245	28.8	8.5	8.0	204.0	7.1		16	0.6	7.0			0.108	0.079	0.500	<0.015	0.456		76	
150	Locust Fork	LFKB-2	020807	1230	30.0	7.1	8.2	180.0			15	0.4	3.0			0.099	0.056	<0.003	<0.015	0.553		102	
150	Locust Fork	LFKJ-3	020124	1115	11.8	11.1	7.2	109.0	81.0		600	0.8	67.0			0.110	0.030	0.924	<0.015	0.535	5.34	60	
150	Locust Fork	LFKJ-3	020212	1345	9.5	10.0	7.6	126.0	12.4		53	0.8	9.0			0.028	0.010	1.243	0.116	<0.15	11.62	70	
150	Locust Fork	LFKJ-3	020313	1200	11.6	10.8	7.5	143.0	77.5		560	1.7	3650			0.074	<0.004	0.557	<0.015	0.565	16	74	
150	Locust Fork	LFKJ-3	020404	1400	15.4	9.7	7.4	135.0	30.2		94	0.5	29.0			0.040	0.005	0.898	<0.015	<0.15	<1	84	
150	Locust Fork	LFKJ-3	020508	1300	21.2	8.2	7.2	143.0	29.3		92	0.5	28.0			0.061	0.017	0.765	<0.015	<0.15	<1	58	
150	Locust Fork	LFKJ-3	020522	1245	18.3	7.3	6.6	187.0			43	0.6	8.0			0.055	0.021	0.842	<0.015	0.572	4.2	88	
150	Locust Fork	LFKJ-3	020611	1140	27.2	9.1	7.8	257.0	36.5		35	1.1	19.0			<0.004	<0.004	0.337	<0.015	0.422	22.428	120	
150	Locust Fork	LFKJ-3	020715	1345	24.9	7.4	7.4	159.0	174.0		>620	0.6	59.0			0.091	0.012	0.331	<0.015	0.544	1.6	66	
150	Locust Fork	LFKJ-3	020807	1330	30.2	6.7	7.8	168.0			9	0.6	9.0			0.053	<0.004	0.054	<0.015	0.908	5.34	122	
150	Locust Fork	LFKJ-4	020124	1215	11.8	6.3	7.1		64.8		520	0.7	77.0			0.110	0.021	0.823	<0.015	0.864		68	
150	Locust Fork	LFKJ-4	020207	1245	7.9	11.7	7.5	144.0	13.3		490	0.8	58.0			0.067	0.005	0.908	0.079	0.257		62	
150	Locust Fork	LFKJ-4	020311	1300	10.7	12.8	8.5	239.0	4.9		2	1.1	5.0			0.009	<0.004	0.811	<0.015	0.237		118	
150	Locust Fork	LFKJ-4	020408	1320	15.3	10.2	7.5	205.0	13.5		21	0.8	11.0			0.024	<0.004	0.989	<0.015	<0.15		88	
150	Locust Fork	LFKJ-4	020418	1250	21.2	9.1	7.5	219.0	7.1		21	0.5	6.0			0.047	0.017	0.854	<0.015	0.185		84	
150	Locust Fork	LFKJ-4	020509	1300	22.0	8.6	7.4	194.0	23.7		66	0.4	18.0			0.047	0.018	0.815	<0.015	<0.15		78	
150	Locust Fork	LFKJ-4	020612	1250	27.7	7.4	7.6	359.0	20.3		4	1.3	11.0			0.118	0.075	0.812	<0.015	0.397		142	
150	Locust Fork	LFKJ-4	020711	1200	29.8	6.9	7.4	381.0	53.7		160	0.9	28.0			0.253	0.179	0.990	<0.015	0.559		138	
150	Locust Fork	LFKJ-4	020806	1305	30.5	7.7	7.9	374.0	16.7		10	0.9	10.0			0.209	0.126	0.694	0.017	0.622		144	
150	Locust Fork	LFKJ-4	030325	1050							19	1.6	11.0	136		<0.004	<0.004	0.930	<0.015	<0.15	<1	84	47
150	Locust Fork	LFKJ-4	030325	1110	15.4	10.6	7.5	595.0	16.4														
150	Locust Fork	LFKJ-4	030410	1050	14.7	9.7	7.6	198.0	24.9		140	0.8	25.0	136		<0.004	0.008	0.633	0.028	<0.15	3.2	80	45
150	Locust Fork	LFKJ-4	030513	1030	19.6	10.9	7.2		68.1		270	1.4	44.0	132		0.079	<0.004	0.645	0.059	<0.15	<1	76	38
150	Locust Fork	LFKJ-4	030623	1115	23.9	8.2	6.6	230.0	10.3														
150	Locust Fork	LFKJ-4	030710	1210	27.8	8.8	7.6	279.0	9.5														
150	Locust Fork	LFKJ-5	020124	1145	11.7	7.3	7.7		67.5		800	1.2	54.0			0.088	0.024	0.836	<0.015	0.738	3.05	70	
150	Locust Fork	LFKJ-5	020207	1200	8.0	11.7	7.5	153.0	60.5		330	0.6	55.0			0.063	0.004	0.942	0.083	0.222	<1	70	
150	Locust Fork	LFKJ-5	020311	1240	11.1	12.8	8.4	248.0	6.7		<1	0.8	3.0			0.009	<0.004	0.804	<0.015	0.257	5.3	120	
150	Locust Fork	LFKJ-5	020408	1300	15.2	10.2	7.5	210.0	12.6		19	0.7	9.0			0.028	<0.004	0.969	<0.015	<0.15	2.67	88	
150	Locust Fork	LFKJ-5	020418	1220	21.4	9.0	7.4	226.0	8.3		15	0.6	8.0			0.051	0.009	0.802	<0.015	0.237	4.27	92	
150	Locust Fork	LFKJ-5	020509	1230	22.1	8.5	7.3	196.0	22.4		52	0.5	15.0			0.046	0.013	0.796	<0.015	<0.15	12.6	76	
150	Locust Fork	LFKJ-5	020612	1225	27.0	7.0	7.3	373.0	19.6		<1	2.8	7.0			0.088	0.022	0.721	<0.015	0.477	32.04	150	
150	Locust Fork	LFKJ-5	020711	1120	29.3	6.9	7.1	407.0	62.6		20	1.9	12.0			0.259	0.167	1.020	<0.015	0.476	22.42	144	
150	Locust Fork	LFKJ-5	020806	1330	29.9	7.1	7.5	426.0	19.6		8	1.7	6.0			0.122	0.038	0.460	<0.015	0.807	19.2	160	

Appendix P-3. Physical/chemical data collected from stations located in the BWC Basin Group as part of the CWA §303(d) Monitoring Program, 1999-2002 (ADEM 2002l).

Sub-Watershed	Stream	Station	Date	Time	Water Temp.	DO	pH	Conductivity	Turbidity	Flow	Fecal Coliform	BOD$_{5*}$/ CBOD$_5$[a]	TSS	TDS	TOC	Total-P	DRP	NO_3+ NO_2-N	NH_3-N	TKN	Chl *a*	Hardness	ALK
			yymmdd	*24hr*	^oC	*mg/L*	*s.u.*	*µmhos @ 25 ^oC*	*NTU*	*cfs*	*col/ 100mL*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/m^3*	*mg/L*	*mg/L*
Locust Fork (0316-0111)																							
150	Locust Fork	LFKJ-5A	030325	1300	16.0	10.3	7.7	1141.0	14.2		9	1.9	9.0	167		<0.004	<0.004	1.018	<0.015	<0.15	10.14	110	54
150	Locust Fork	LFKJ-5A	030410	1145							82	0.2	16.0	146		0.030	0.027	0.764	0.042	<0.15	5.34	92	50
150	Locust Fork	LFKJ-5A	030410	1150	15.0	9.3	7.6	232.0	14.5														
150	Locust Fork	LFKJ-5A	030513	1130	20.2	10.2	6.9		65.2		108	0.9	36.0	162		0.066	<0.004	0.719	0.050	<0.15	2.67	94	42
150	Locust Fork	LFKJ-5A	030623	1215	24.5	7.7	7.1	275.0	13.8														
150	Locust Fork	LFKJ-5A	030710	1245	28.1	10.3	7.9	360.0	7.3														
150	Locust Fork	LFKJ-6	020124	1100	11.5	5.5	7.0		64.0		>1240	0.9	41.0			0.074	0.019	0.820	<0.015	0.509	5.34	76	
150	Locust Fork	LFKJ-6	020207	1115	8.6	11.3	7.6	210.0	13.0		310	1.0	37.0			0.065	0.007	1.208	<0.015	0.239	<1	92	
150	Locust Fork	LFKJ-6	020311	1030	10.9	12.7	8.3	300.0	6.3		<1	1.3	5.0			0.009	<0.004	1.196	<0.015	0.202	<1	150	
150	Locust Fork	LFKJ-6	020408	1400	15.4	10.1	7.6	235.0	16.0		32	0.7	8.0			0.030	<0.004	1.023	<0.015	<0.15	5.34	100	
150	Locust Fork	LFKJ-6	020418	1130	20.7	8.6	7.4	256.0	11.7		9	1.1	6.0			0.059	0.011	0.939	0.020	0.374	5.87	108	
150	Locust Fork	LFKJ-6	020509	1145	21.8	8.2	7.2	212.0	23.8		60	0.4	9.0			0.046	0.013	0.808	0.022	<0.15	<1	84	
150	Locust Fork	LFKJ-6	020612	1120	28.1	10.7	8.4	404.0	6.0		<1	2.4	5.0			0.004	0.01v	0.714	<0.015	0.523	17.8	166	
150	Locust Fork	LFKJ-6	020711	1240	30.2	9.6	8.2	399.0	5.5		<1	4.1	10.0			0.069	<0.004	0.609	<0.015	0.944	33.01	178	
150	Locust Fork	LFKJ-6	020806	1205	30.1	10.1	8.3	428.0	7.9		<1	2.6	4.0			0.094	<0.004	0.360	<0.015	1.140	29.9	170	
150	Locust Fork	LFKJ-7	030325	1420	17.0	10.1	7.7	1256.0	12.2		7	1.5	9.0	169		<0.004	<0.004	1.056	<0.015	<0.15	9.07	106	65
150	Locust Fork	LFKJ-7	030410	1245							41	0.4	10.0	169		<0.004	0.014	0.665	<0.015	<0.15	9.07	100	53
150	Locust Fork	LFKJ-7	030410	1250	15.9	8.6	7.5	256.0	15.7														
150	Locust Fork	LFKJ-7	030513	1230	20.7	10.1	6.8		71.1		196	2.3	49.0	159		0.081	<0.004	0.666	0.061	0.146	4.11	100	43
150	Locust Fork	LFKJ-7	030623	1300	24.6	7.9	7.1	252.0	7.0														
150	Locust Fork	LFKJ-7	030710	1345	27.4	9.7	7.7	344.0	15.4														
150	Short Cr.	SHTJ-1	011120	1035	12.0	8.5	7.1	105.0	2.5		625	1.0	2.0			<0.004		<0.003	<0.015	0.213		60	
150	Short Cr.	SHTJ-1	011211	1445	12.7	9.9	7.8	95.0	6.9	2.9	400	0.2	3.0			<0.004		0.092	0.015	<0.15		68	
150	Short Cr.	SHTJ-1	020123	1250																			
150	Short Cr.	SHTJ-1	020226	1440	10.0	12.0	5.7	90.0		1.7	6	1.1	3.0			<0.004		0.090	<0.015	<0.15			
150	Short Cr.	SHTJ-1	020313	1440																			
150	Short Cr.	SHTJ-1	020410	1430																			
150	Short Cr.	SHTJ-1	020515	1605	21.0	8.8	7.6	140.0	4.4	0.5	40	0.6	2.0			<0.004		0.015	<0.015	0.346		46	
150	Short Cr.	SHTJ-1	020612	1525	27.2	8.2	7.2	150.0	3.2		148	0.8	3.0			<0.004		0.005	<0.015	<0.15		58	
150	Short Cr.	SHTJ-2	011120	0900	11.9	8.2	7.4	500.0	5.9		1000	2.7	5.0			<0.004		0.919	<0.015	0.303		314	
150	Short Cr.	SHTJ-2	011210	1535	13.0	8.4	6.4	335.0	12.3		128	0.7	7.0			<0.004		0.069	<0.015	0.150		240	
150	Short Cr.	SHTJ-2	020123	1300	18.0	4.3	6.5	253.0	26.1		25	1.2	10.0			<0.004		0.170	<0.015	<0.15		122	
150	Short Cr.	SHTJ-2	020226	1300	12.6	9.5	6.1	500.0			12	1.3	<1			<0.004		0.239	<0.015	<0.15			
150	Short Cr.	SHTJ-2	020313	1405		10.0	6.1	310.0	16.0		55	0.6	4.0			0.009		0.216	<0.015	0.213		182	
150	Short Cr.	SHTJ-2	020410	1320	21.3	8.3	7.3	700.0	5.7		8	0.2	4.0			<0.004		0.232	<0.015	<0.15		264	
150	Short Cr.	SHTJ-2	020515	1440	24.0	7.0	7.3	500.0	7.3		15	1.3	2.0			<0.004		<0.003	<0.015	0.429		276	

Appendix P-3. Physical/chemical data collected from stations located in the BWC Basin Group as part of the CWA §303(d) Monitoring Program, 1999-2002 (ADEM 2002l).

Sub-Watershed	Stream	Station	Date	Time	Water Temp.	DO	pH	Conductivity	Turbidity	Flow	Fecal Coliform	BOD_5*/ $CBOD_5$[a]	TSS	TDS	TOC	Total-P	DRP	NO_3+ NO_2-N	NH_3-N	TKN	Chl *a*	Hardness	ALK
			yymmdd	*24hr*	*°C*	*mg/L*	*s.u.*	*µmhos @ 25°C*	*NTU*	*cfs*	*col/ 100mL*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/m³*	*mg/L*	*mg/L*
Locust Fork (0316-0111)																							
150	Short Cr.	SHTJ-2	020612	1400	30.0	7.0	7.6	800.0	2.6		24	1.8	5.0			<0.004		0.621	<0.015	0.533		246	
150	Short Cr.	SHTJ-3	011120	0815	12.7	9.0	7.3	370.0	5.1		1125	2.3	4.0			<0.004		1.200	<0.015	<0.15		250	
150	Short Cr.	SHTJ-3	011210	1515	12.6	8.4	5.8	290.0	12.9		60	5.8	6.0			0.046		0.791	<0.015	0.351		160	
150	Short Cr.	SHTJ-3	020123	1415	19.0	4.1	6.9	229.0	59.2		62	1.1	22.0			<0.004		0.155	<0.015	0.247		110	
150	Short Cr.	SHTJ-3	020226	1520	10.6	11.5	5.4	300.0	<7[L]		10	1.4	<1			<0.004		0.982	<0.015	<0.15			
150	Short Cr.	SHTJ-3	020313	1430	14.0	9.8	6.6	310.0	30.2		67	0.6	18.0			0.009		0.179	<0.015	0.339		156	
150	Short Cr.	SHTJ-3	020410	1410	23.0	10.2	7.7	270.0	5.9		8	1.0	12.0			0.027		0.962	<0.015	<0.15		116	
150	Short Cr.	SHTJ-3	020515	1735	25.0	10.0	8.0	305.0	7.7		9	2.1	19.0			0.022		0.797	<0.015	0.531		158	
150	Short Cr.	SHTJ-3	020612	1625	25.0	11.4	8.0	500.0	6.3		4	3.5	6.0			0.046		0.737	<0.015	0.692		172	
Upper Black Warrior River (0316-0112)																							
020	Opossum Cr.	OPOJ-1	020124	1120	19.0	7.1	7.6	426.0	5.6		76	6.1	8.0			0.004	0.012v	0.547	<0.015	0.971		204	
020	Opossum Cr.	OPOJ-1	020206	1140	8.0	9.4	7.8	228.0	96.4		>1200	3.0	49.0			0.168	0.015	0.441	0.026	0.766		124	
020	Opossum Cr.	OPOJ-1	020307	1330	20.1	9.9	8.3	488.0	4.3		13	1.7	2.0			0.056	<0.004	2.049	<0.015	0.486		184	
020	Opossum Cr.	OPOJ-1	020403	1200	22.1	8.6	8.3	558.0	5.9		380	1.8	6.0			0.070	0.018	0.539	<0.015	<0.15		186	
020	Opossum Cr.	OPOJ-1	020418	1122	25.9	7.8	7.9	531.0	6.5		40	1.1	6.0			0.060	0.023	0.707	<0.015	0.395		180	
020	Opossum Cr.	OPOJ-1	020514	1230	22.3	8.9	7.9	500.0	3.3		9	0.5	2.0			0.056	<0.004	0.557	<0.015	0.519		180	
020	Opossum Cr.	OPOJ-1	020606	1236	27.7	6.6	7.6	518.0	4.8		6	0.8	3.0			0.011	0.024v	0.383	<0.015	0.323		186	
020	Opossum Cr.	OPOJ-1	020710	1151	29.3	6.4	7.9	529.0	2.9		46	0.6	7.0			0.072	0.043	1.110	<0.015	0.592		160	
020	Opossum Cr.	OPOJ-1	020805	1205	28.8	6.1	7.8	552.0	1.1		>1200	0.3	5.0			0.173	0.068	<0.003	<0.015	0.490		528	
020	Opossum Cr.	OPOJ-2	020124	1030	19.5	6.6	7.9	444.0	5.2		96	7.8	5.0			0.036	0.011	0.434	<0.015	1.039		214	
020	Opossum Cr.	OPOJ-2	020206	1115	9.0	9.2	8.1	272.0	62.6		1640	3.3	32.0			0.152	0.011	0.463	<0.015	0.475		136	
020	Opossum Cr.	OPOJ-2	020307	1215	20.6	6.7	8.0	482.0	6.3		7	3.2	4.0			0.086	<0.004	1.036	0.121	1.106		188	
020	Opossum Cr.	OPOJ-2	020402	1100	23.0	7.3	8.7	573.0	6.1		>620	3.0	5.0			0.103	0.019	0.410	<0.015	0.313		186	
020	Opossum Cr.	OPOJ-2	020418	1040	26.2	5.0	7.9	597.0	5.7		120	2.8	5.0			0.004	0.019v	0.598	<0.015	0.737		174	
020	Opossum Cr.	OPOJ-2	020514	1135	23.0	6.2	7.7	501.0	5.0		35	2.5	4.0			0.083	0.008	0.720	<0.015	0.741		176	
020	Opossum Cr.	OPOJ-2	020606	1145	27.3	5.0	7.4	516.0	5.2		41	2.0	4.0			0.004	0.011v	0.287	<0.015	0.655		172	
020	Opossum Cr.	OPOJ-2	020710	1053	30.5	5.1	8.1	522.0	6.5		124	1.6	9.0			0.097	0.042	0.782	<0.015	0.805		150	
020	Opossum Cr.	OPOJ-2	020805	1115	29.1	3.7	7.6	552.0	13.1		20	2.0	5.0			0.079	0.017	0.387	0.034	0.580		142	
020	Opossum Cr.	OPOJ-3	020124	1000	20.4	7.1	7.9	447.0	6.5		118	7.9	7.0			0.045	0.012	0.352	<0.015	0.846		210	
020	Opossum Cr.	OPOJ-3	020206	1100	10.4	9.1	8.7	327.0	47.0		2320	5.2	22.0			0.165	0.014	0.395	<0.015	0.481		158	
020	Opossum Cr.	OPOJ-3	020307	1145	21.4	7.3	8.5	459.0	13.7		6	4.9	12.0			0.114	<0.004	0.210	<0.015	0.903		186	
020	Opossum Cr.	OPOJ-3	020403	1030	24.1	7.5	8.9	579.0	7.8		>620	3.6	6.0			0.107	0.017	0.292	<0.015	0.425		188	
020	Opossum Cr.	OPOJ-3	020418	1025	27.2	5.9	8.4	529.0	7.8		41	4.3	30.0			0.004	0.017v	0.216	0.022	1.091		164	
020	Opossum Cr.	OPOJ-3	020514	1115	24.3	7.0	7.8	493.0	10.6		25	4.6	27.0			0.146	<0.004	<0.003	<0.015	1.015		170	
020	Opossum Cr.	OPOJ-3	020606	1125	28.6	6.5	7.6	521.0	11.2		>620	3.0	11.0			0.081	0.006	0.100	<0.015	0.785		168	
020	Opossum Cr.	OPOJ-3	020710	1030	31.5	5.6	8.5	519.0	11.4		32	2.9	13.0			0.108	0.032	0.358	<0.015	0.859		156	

Appendix P-3. Physical/chemical data collected from stations located in the BWC Basin Group as part of the CWA §303(d) Monitoring Program, 1999-2002 (ADEM 2002l).

Sub-Watershed	Stream	Station	Date	Time	Water Temp.	DO	pH	Conductivity	Turbidity	Flow	Fecal Coliform	BOD_5/ $CBOD_5$[a]	TSS	TDS	TOC	Total-P	DRP	NO_3+ NO_2-N	NH_3-N	TKN	Chl *a*	Hardness	ALK
			yymmdd	*24hr*	*°C*	*mg/L*	*s.u.*	*µmhos @ 25°C*	*NTU*	*cfs*	*col/ 100mL*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/m³*	*mg/L*	*mg/L*
Upper Black Warrior River (0316-0112)																							
020	Opossum Cr.	OPOJ-3	020805	1050	30.5	4.2	8.0	556.0	7.2		30	3.2	5.0			0.103	0.012	0.053	0.050	0.821		146	
020	Opossum Cr.	OPOJ-4	020124	0920	16.6	9.0	7.7	586.0	3.6		>620	0.8	4.0			0.051	0.018	0.607	<0.015	0.612		324	
020	Opossum Cr.	OPOJ-4	020206	1015	6.6	10.8	7.8	199.0	60.8		2060	2.8	25.0			0.132	0.019	0.303	<0.015	0.364		120	
020	Opossum Cr.	OPOJ-4	020307	1100	14.9	11.4	7.9	1496.0	49.5	2.0	26	0.6	30.0			0.160	<0.004	0.288	<0.015	0.379		250	
020	Opossum Cr.	OPOJ-4	020403	0945	18.3	10.7	7.8	664.0	8.9	2.7	92	0.6	7.0			0.052	0.015	0.378	<0.015	<0.15		306	
020	Opossum Cr.	OPOJ-4	020418	1000	21.1	9.7	7.8	536.0	2.4	2.3	>620	0.8	4.0			5.957	0.006	0.099	<0.015	0.309		222	
020	Opossum Cr.	OPOJ-4	020514	1045	18.7	10.8	8.0	536.0	1.5	1.5	97	0.8	4.0			0.004	0.08v	0.210	<0.015	0.564		240	
020	Opossum Cr.	OPOJ-4	020606	1015	23.6	8.2	7.8	384.0	1.5	1.5	220	0.3	3.0			0.004	0.008v	0.198	<0.015	<0.15		170	
020	Opossum Cr.	OPOJ-4	020710	1009	24.8	8.5	8.0	457.0	2.2	1.7	152	0.5	6.0			0.100	0.064	0.286	<0.015	0.505		190	
020	Opossum Cr.	OPOJ-4	020805	1020	24.6	7.6	7.8	155.0	0.8	1.0	870	0.6	4.0			0.045	0.015	0.273	<0.015	0.222		176	
020	Opossum Cr.	OPOJ-5	020110	1440	12.6	12.1	8.0	1007.0	0.3		59	1.2	3.0			0.065	0.044	0.268	<0.015	<0.15		452	
020	Opossum Cr.	OPOJ-5	020205	1240	9.8	10.3	7.9	872.0	1.4		360	0.8	1.0			0.065	0.017	0.519	0.110	0.323		472	
020	Opossum Cr.	OPOJ-5	020306	1300	12.1	13.3	8.1	739.0	1.4		28	1.0	<1			1.377	0.199	0.270	<0.015	0.227		356	
020	Opossum Cr.	OPOJ-5	020402	1340	20.1	8.6	7.8	829.0	4.0		37	0.5	6.0			0.225	0.057	0.374	<0.015	<0.15		760	
020	Opossum Cr.	OPOJ-5	020417	1355	21.6	8.5	7.8	921.0	3.5		130	0.6	3.0			0.561	0.291	0.159	<0.015	0.151		448	
020	Opossum Cr.	OPOJ-5	020515	1300	19.9	5.7	7.8	1053.0			250	0.6	9.0			0.084	0.045	0.077	<0.015	0.243		244	
020	Opossum Cr.	OPOJ-5	020605	1320	24.9	6.3	7.7	987.0	2.6		290	2.8	6.0			0.004	0.077v	0.016	<0.015	0.226		464	
020	Opossum Cr.	OPOJ-5	020708	1340	25.8	6.8	7.6	994.0	5.5		104	0.6	3.0			1.710	0.932	0.267	<0.015	0.413		374	
020	Opossum Cr.	OPOJ-5	020801	1250	25.5	4.7	7.6	1157.0	4.3		>1200	0.3	5.0			0.173	0.068	<0.003	<0.015	0.490		528	
030	Lick Cr.	LCK-1	990518	1035	20.3	6.2	6.59			2.3	26		2.0			<0.004		0.134		0.350			
030	Lick Cr.	LCK-1	990610	0825	21.8	5.31	7.55	1081	9.1	2.0			11.0			<0.004		0.073		0.202			
030	Lick Cr.	LCK-1	990715	1010	22.9	6.47	8.05			1.0	2	<0.1	<1			<0.004		0.157		0.174			
030	Lick Cr.	LCK-1	990811	1015	24.8	5.4	6.66			0	27		6.0		2.68	<0.004		0.266		0.529			
030	Lick Cr.	LCK-1	990908	0920	22.5	4.12	7.78	2150	1.4		<1		4.0			<0.004		0.059		0.275			
030	Mud Cr.	MUDJ-1	020124	0945	13.7	6.1	6.9		10.7		500	0.4	8.0			0.012	0.013	0.069	<0.015	0.163		130	
030	Mud Cr.	MUDJ-1	020207	1020	9.1	11.5	7.3	361.0	14.0		40	0.7	25.0			<0.004	<0.004	0.089	0.049	<0.15		170	
030	Mud Cr.	MUDJ-1	020325	1040	13.2	9.1	7.1	477.0	2.0	98.3	11	0.4	2.0			0.008	0.004	0.089	<0.015	<0.15		196	
030	Mud Cr.	MUDJ-1	020408	1125	15.6	10.2	7.4	611.0	1.9	58.4	46	0.8	3.0			<0.004	<0.004	0.013	<0.015	<0.15		250	
030	Mud Cr.	MUDJ-1	020418	1045	19.3	9.0	7.4	753.0	1.7	32.8	15	0.5	3.0			<0.004	0.007	<0.003	<0.015	<0.15		326	
030	Mud Cr.	MUDJ-1	020509	1100	22.4	8.3	7.2	692.0	2.3	35.6	144	0.3	3.0			<0.004	<0.004	<0.003	<0.015	<0.15		294	
030	Mud Cr.	MUDJ-1	020612	1020	23.9	7.6	7.5	1029.0	1.9	10.5	76	0.6	3.0			0.016	0.038v	<0.003	<0.015	<0.15		424	
030	Mud Cr.	MUDJ-1	020716	1245	24.8	7.4	7.2	782.0	4.5	17.4	68	0.2	3.0			<0.004	0.004	0.059	<0.015	0.213		294	
030	Mud Cr.	MUDJ-1	020806	1100	26.6	6.9	7.5	985.0	0.2	8.1	232	0.5	2.0			0.027	0.015	<0.003	<0.015	0.306		392	
030	Mud Cr.	MUDJ-2	020124	1300	13.8	9.9	7.4	322.0	9.1	103.5	25	0.6	5.0			0.004	0.011v	0.077	<0.015	0.518		154	
030	Mud Cr.	MUDJ-2	020206	1230	8.9	9.4	7.6	595.0	51.9		820	1.0	26.0			0.036	<0.004	0.203	<0.015	<0.15		316	
030	Mud Cr.	MUDJ-2	020325	1140	14.2	10.5	7.5	625.0	3.5	45.5	12	0.4	2.0			0.009	<0.004	0.092	<0.015	<0.15		252	

Appendix P-3. Physical/chemical data collected from stations located in the BWC Basin Group as part of the CWA §303(d) Monitoring Program, 1999-2002 (ADEM 2002l).

Sub-Watershed	Stream	Station	Date	Time	Water Temp.	DO	pH	Cond.	Turbidity	Flow	Fecal Coliform	BOD_5*/ $CBOD_5$[a]	TSS	TDS	TOC	Total-P	DRP	NO_3+ NO_2-N	NH_3-N	TKN	Chl *a*	Hardness	ALK
			yymmdd	*24hr*	*°C*	*mg/L*	*s.u.*	*µmhos @ 25°C*	*NTU*	*cfs*	*col/ 100mL*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/m³*	*mg/L*	*mg/L*
Upper Black Warrior River (0316-0112)																							
030	Mud Cr.	MUDJ-2	020403	1300	16.8	10.9	7.6	691.0	4.2	40.2	16	0.8	<1			<0.004	<0.004	0.044	<0.015	<0.15		288	
030	Mud Cr.	MUDJ-2	020417	1300	20.7	8.6	7.5	1013.0	2.8	20.4	14	0.2	2.0			<0.004	<0.004	<0.003	<0.015	<0.15		440	
030	Mud Cr.	MUDJ-2	020514	1400	21.6	9.2	7.8	1036.0	7.1	12.2	15	0.2	4.0			<0.004	<0.004	<0.003	<0.015	0.169		222	
030	Mud Cr.	MUDJ-2	020523	0800	17.0	8.2	7.7	1014.0	19.9	10.2													
030	Mud Cr.	MUDJ-2	020606	1405	26.0	8.2	7.6	1232.0	5.1	7.4	>620	0.3	3.0			0.013	<0.004	<0.003	<0.015	<0.15		508	
030	Mud Cr.	MUDJ-2	020710	1303	27.6	8.3	7.8	1324.0	5.7	5.6	21	0.4	6.0			<0.004	<0.004	0.100	<0.015	0.189		464	
030	Mud Cr.	MUDJ-2	020805	1330	27.6	7.4	7.7	1387.0	3.6		21	0.5	4.0			0.011	<0.004	<0.003	<0.015	<0.15		530	
030	UT to Valley Cr.	UTML-1	990518	1055	20.9	7.34	6.71				78		219.0		3.69	0.245		0.014		1.677			
030	UT to Valley Cr.	UTML-1	990610	0950	26.1	5.87	6.18	61.2	18.5				14.0			0.117		0.018	<0.015	1.239			
030	UT to Valley Cr.	UTML-1	990715	0930	26.3	5.41	6.25			0	25	2.1	9.0		4.17	<0.004		0.007		0.590			
030	UT to Valley Cr.	UTML-1	990811	1100	25	3.92	7.61			0	100		42.0			0.062		0.025		1.329			
030	UT to Valley Cr.	UTML-1	990908	0900		2.76		58.5	33		<1		30.0			0.080		<0.003		1.920			
030	Valley Cr.	VA-1	020523	1000	20.0	9.0	8.0	416.0	2.7	120.1													
050	Big Yellow Cr.	BYC-1	990513	1510	20.3	7.82	6.84	53.5	4.9	4.33	12		<1			<0.004		0.024		0.182			
050	Big Yellow Cr.	BYC-1	990623	1400	22.5	5.26	7.61	60.5	5.2		124		6.0			0.019		0.049		<0.15			
050	Big Yellow Cr.	BYC-1	990727	1400	27.3	5.3	7.04	61.6	6.6	0	10		3.0			<0.004		0.013		0.215			
050	Big Yellow Cr.	BYC-1	990811	1310		4.03		77.1	5.7		22		2.0			0.019		0.279		0.500			
050	Big Yellow Cr.	BYC-1	990922	1350																			
050	Big Yellow Cr.	BYET-65a	020123	1015	13.0	10.2	6.6				103	1.5	9.0			0.040	0.005	0.126	<0.015	0.340		12.1	
050	Big Yellow Cr.	BYET-65a	020212	1515	9.0	11.2	7.8	104.0	6.8[L]	20.9	<1	0.5	3.0			0.040	0.006	0.078	<0.015	<0.15		12.9	
050	Big Yellow Cr.	BYET-65a	020319	1505	18.0	9.4	8.6	42.0		44.6		1.1	11.0			0.040	<0.004	0.042	0.100	<0.15		13	
050	Big Yellow Cr.	BYET-65a	020417	1510	21.0	0.0	7.1	59.0		5.7	20	1.3				0.032	0.006	<0.003	<0.015	<0.15		12.8	
050	Big Yellow Cr.	BYET-65a	020506	1540	19.0	9.2	8.3	52.0		15.5	36	0.5	17.0			0.021	0.005	0.081	<0.015	<0.15		13.5	
050	Big Yellow Cr.	BYET-65a	020605	1405	25.0	5.4	8.5	63.0		1.0	48	0.9	4.0			0.063	0.004	0.012	<0.015	0.156		15.3	
050	Big Yellow Cr.	BYET-65a	020701	1350	24.0	7.9	8.8	54.0		12.4	133	0.3	10.0			0.045	0.001	0.136	0.049	<0.15		15.8	
050	Big Yellow Cr.	BYET-65a	020807	1430	27.0	5.5	8.2	62.0			35	1.1	10.0			0.082	0.026	0.013	0.091	<0.15		7.96	
050	L. Yellow Cr.	LYC-1	990513	1405	21.8	9.05	6.95	84.5	2.8	4.7	26		<1			0.092		0.038		<0.15			
050	L. Yellow Cr.	LYC-1	990623	1345	23.6	8.65	7.82	140.9	1.4		180		4.0			0.021		0.034		<0.15			
050	L. Yellow Cr.	LYC-1	990727	1330	28.6	7.8	7.52	138	1.3	too	60		1.0			0.147		0.018		0.201			
050	L. Yellow Cr.	LYC-1	990811	1245		5.8		128.5	1.9		27		4.0			0.011		0.212		0.555			
050	L. Yellow Cr.	LYC-1	990922	1340																			
050	L. Yellow Cr.	LYCT-1	020123	1045	13.0	10.0	6.1				13 est.	1.6	16.0			0.050	0.010	0.079	0.050	<0.15		16.4	
050	L. Yellow Cr.	LYCT-1	020212	1420	9.0	11.2	8.0	74.0		27.6	10 est.	0.8	3.0			0.040	0.010	0.063	<0.015	<0.15		20	
050	L. Yellow Cr.	LYCT-1	020319	1430	18.0	9.2	7.9	61.0		52.8		1.1	13.0			0.040	0.008	0.054	0.130	0.180		17.3	
050	L. Yellow Cr.	LYCT-1	020417	1415	24.0	8.2	7.3	85.0		8.6	7 est.	0.8	4.0			0.027	0.011	<0.003	<0.015	0.769		20.8	
050	L. Yellow Cr.	LYCT-1	020506	1440	19.0	9.4	7.5	84.0		13.9	48	0.4	6.0			0.032	0.006	0.061	<0.015	<0.15		26.6	

Appendix P-3. Physical/chemical data collected from stations located in the BWC Basin Group as part of the CWA §303(d) Monitoring Program, 1999-2002 (ADEM 2002l).

Sub-Watershed	Stream	Station	Date	Time	Water Temp.	DO	pH	Conductivity	Turbidity	Flow	Fecal Coliform	BOD_5/ $CBOD_5$[a]	TSS	TDS	TOC	Total-P	DRP	NO_3+ NO_2-N	NH_3-N	TKN	Chl *a*	Hardness	ALK
			yymmdd	*24hr*	*°C*	*mg/L*	*s.u.*	*µmhos @ 25°C*	*NTU*	*cfs*	*col/ 100mL*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/m^3*	*mg/L*	*mg/L*
Upper Black Warrior River (0316-0112)																							
050	L. Yellow Cr.	LYCT-1	020605	1330	29.0	8.1	7.4	148.0		1.6	25	0.7	5.0			0.044	0.007	0.052	<0.015	0.491		35	
050	L. Yellow Cr.	LYCT-1	020701	1325	24.0	8.4	8.0	91.0		16.3	49	0.7	6.0			0.022	0.001	0.110	<0.015	<0.15		24.4	
050	L. Yellow Cr.	LYCT-1	020807	1350	29.0	8.3	8.6	107.0		1.5													
060	Clifty Cr.	CFC-1	990513	1200	19.8	8.26	7.58	690	3.2	0	29		<1			<0.004		0.009		0.143			
060	Clifty Cr.	CFC-1	990623	1300	22	6.63	7.11	1463	1.6		37		3.0			0.018		0.038		<0.15			
060	Clifty Cr.	CFC-1	990727	1455	27.3	6.27	6.27	1572	3.2	0	15		10.0			<0.004		0.020		0.330			
060	Clifty Cr.	CFC-1	990811	1400		5.72		1491	<1.0		15		5.0			0.009		0.140		0.531			
060	Clifty Cr.	CFC-1	990922	1430	19.7	5.35	7.19	12922	<1.0		57		5.0			0.025		<0.003		0.417			
070	Jock Cr.	JKC-1	990526	1140	19.9	8.87	6.41	578	<1.0	1.05	152		1.0			0.081		0.074		0.252			
070	Jock Cr.	JKC-1	990616	0935	26	8.2	7.06	580	18	0.9													
070	Jock Cr.	JKC-1	990623	1050	21.1	8.91	6.73	649	<1.0		15		1.0			0.004		0.095		<0.15			
070	Jock Cr.	JKC-1	990729	1100	24.4	8	7.26	563	0.25	0	17		<1			<0.004		0.110		<0.15			
070	Jock Cr.	JKC-1	990811	1110		8.2		619	<1.0		92		25.0			<0.004		0.282		0.337			
070	Jock Cr.	JKC-1	990922	1115	16.7	9.92	6.97	611	1.2		84		6.0			<0.004		<0.003		0.141			
070	Little Bear Cr.	LBC-1	990526	1320	19.7	8.32	6.72	41.1	2.4		7		<1			0.081		0.076		0.153			
070	Little Bear Cr.	LBC-1	990623	1140																			
070	Little Bear Cr.	LBC-1	990729	1150	25.4	7.69	7.37	44.6	4.7	too	204		2.0			<0.004		0.072		0.240			
070	Little Bear Cr.	LBC-1	990811	1145		6.68		48.4	1.8		25		1.0			<0.004		0.179		0.370			
070	Little Bear Cr.	LBC-1	990922	1030																			
080	Daniel Cr.	DNC-1	990512	1030	19	8.88	7.05	1703.0	5.8	13.9	35		3.0			<0.004		0.140		0.302			
080	Daniel Cr.	DNC-1	990622	1045	22	8.3	7	1945.0	6.6	8.2	15		10.0			0.013		0.224		<0.15			
080	Daniel Cr.	DNC-1	990622	1115	21.49	8.3	7	2128.0	6.21	7.2													
080	Daniel Cr.	DNC-1	990728	1000	24.5	7.98	6.98	1535.0	4.5	14.9	65		1.0			<0.004		0.161		0.241			
080	Daniel Cr.	DNC-1	990810	1000	24	8.2	7.24	1950.0	2.1	4.3	72		5.0			<0.004		0.406		0.581			
080	Daniel Cr.	DNC-1	990921	1030	20.5	9.13	7.12	2270.0	2.6	7.7	20		4.0			<0.004		0.373		0.416			
080	Hanna Mill Cr.	HNC-1	990512	1400	20.4	8.56	4.17	959	8.6	1.5	<1		6.0			<0.004		0.145		0.351			
080	Hanna Mill Cr.	HNC-1	990622	1450																			
080	Hanna Mill Cr.	HNC-1	990728	1130	26.7	7.67	5.8	860	2.6	0.9	10		2.0			<0.004		0.120		<0.15			
080	Hanna Mill Cr.	HNC-1	990810	1125																			
080	Hanna Mill Cr.	HNC-1	990921	1245																			
080	Prudes Cr.	PDC-1	990512	1310	19.3	7.84	6.23	111	1.7	0	>240		<1			<0.004		0.051		0.320			
080	Prudes Cr.	PDC-1	990622	1405	25.7	7.75	7.72	123.7	7		7		4.0			0.017		0.025		<0.15			
080	Prudes Cr.	PDC-1	990728	1400	28.8	5	7.19	126	6.7		20		15.0			<0.004		0.007		0.209			
080	Prudes Cr.	PDC-1	990810	1300																			
080	Prudes Cr.	PDC-1	990921	1230																			
080	Pegues Cr.	PGC-1	990512	1230	19.4	8.76	6.44	632		4.3	188		<1			<0.004		0.256		0.152			

Appendix P-3. Physical/chemical data collected from stations located in the BWC Basin Group as part of the CWA §303(d) Monitoring Program, 1999-2002 (ADEM 2002l).

Sub-Watershed	Stream	Station	Date	Time	Water Temp.	DO	pH	Conductivity	Turbidity	Flow	Fecal Coliform	BOD$_5$*/ CBOD$_5$[a]	TSS	TDS	TOC	Total-P	DRP	NO_3+ NO_2-N	NH_3-N	TKN	Chl *a*	Hardness	ALK
			yymmdd	*24hr*	*^oC*	*mg/L*	*s.u.*	*μmhos @ 25^oC*	*NTU*	*cfs*	*col/ 100mL*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/m^3*	*mg/L*	*mg/L*
Upper Black Warrior River (0316-0112)																							
080	Pegues Cr.	PGC-1	990622	1315	23.8	8.1	7.37	876	3.3	1	35		<1			0.008		0.426		<0.15			
080	Pegues Cr.	PGC-1	990622	1312	23.74	8.1	7.35	963	4.34	1.0													
080	Pegues Cr.	PGC-1	990728	1245	27.4	7.16	6.91	525	3	4.9	196		<1			<0.004		0.469		<0.15			
080	Pegues Cr.	PGC-1	990810	1345	32.2	8.69	7.02	835		too	63		2.0			0.029		0.315		0.490			
080	Pegues Cr.	PGC-1	990921	1200	21.2	7.75	7.06	845	<1.0		52		<1			<0.004		0.018		<0.15			
090	North R.	NORF-28c	020528	1740	24.0	8.4	6.8	47	6.9	0.7													
100	North R.	NRRF-3	020123	0930	13.0	10.1	6.8				100 est.	1.9	29.0			0.070	0.010	0.093	<0.015	<0.15		23.5	
100	North R.	NRRF-3	020213	1020	10.0	10.5	7.8	88			10 est.	1.1	6.0			0.130	0.005	0.108	<0.015	0.890		33.3	
100	North R.	NRRF-3	020220	1350	14.0	10.0	6.3	150		9.4	<1	0.6	2.0			<0.004		0.162	<0.015	0.204		50	
100	North R.	NRRF-3	020320	1115	18.0	8.9	6.8	62				1.3	18.0			0.050	0.009	0.057	0.060	<0.15		26.5	
100	North R.	NRRF-3	020418	1100	20.0	7.7	6.7	78			43	0.8	8.0			0.028	0.001	0.051	<0.015	0.348		21.1	
100	North R.	NRRF-3	020507	1100	19.0	9.4	7.4				>2880	0.5	13.0			0.045	<0.004	0.079	<0.015	<0.15		25.1	
100	North R.	NRRF-3	020606	1015	25.0	6.8	7.5	119			20 est.	0.9	5.0			0.091	0.007	0.037	<0.015	0.536		35.5	
100	North R.	NRRF-3	020702	1010	23.0	7.9	7.6	97			93	1.2	11.0			0.050	0.074	0.099	<0.015	0.165		33.3	
100	North R.	NRRF-3	020808	1045	28.0	5.2	8.5	100				2.4	7.0			0.079	0.010	0.029	<0.015	0.163		15.2	
100	North R.	NRRT-1	020123	0750	13.0	10.2	6.7				140	1.9	30.0			0.060	0.020	0.128	<0.015	<0.15		18.6	
100	North R.	NRRT-1	020213	0845	10.0	10.7	8.0	112			27	1.4	4.0			0.050	0.008	0.157	<0.015	<0.15		24.6	
100	North R.	NRRT-1	020320	0840	18.0	8.9	8.0	102				0.6	11.0			0.050	0.009	0.102	0.020	<0.15		21.1	
100	North R.	NRRT-1	020418	0845	19.0	6.5	6.5	163			110	0.4	7.0			0.028	0.008	<0.003	<0.015	1.060		19.8	
100	North R.	NRRT-1	020507	0920	19.0	9.5	8.4	119			>2500	0.6	16.0			0.054	0.007	0.123	<0.015	0.451		22.7	
100	North R.	NRRT-1	020606	0830		6.7	7.8	517			60 est.	0.7	11.0			0.063	0.012	0.054	<0.015	<0.15		33.3	
100	North R.	NRRT-1	020702	0845	25.0	7.8	8.9	147			>287	1.4	18.0			0.052	0.305v	0.227	<0.015	<0.15		26.4	
100	North R.	NRRT-1	020808	0900	28.0	6.1	8.3	885			113	0.7	7.0			0.081	0.008	0.058	0.051	<0.15		21.1	
100	North R.	NRRT-2	020123	0830	13.0	10.4	6.8				>630	1.6	29.0			0.060	0.010	0.104	0.050	0.200		20.6	
100	North R.	NRRT-2	020213	0945	10.0	10.7	8.1	82			47 est.	1.4	8.0			0.060	0.010	0.117	0.030	<0.15		28.4	
100	North R.	NRRT-2	020320	1030	18.0	8.9	6.8	64				0.9	18.0			0.050	0.010	0.073	0.040	<0.15		23.3	
100	North R.	NRRT-2	020418	1045	20.0	8.3	6.8	83			74	0.7	6.0			0.032	0.015	0.064	<0.015	<0.15		19	
100	North R.	NRRT-2	020507	1040	19.0	9.6	7.1	80			>1500	0.4	16.0			0.039	0.008	0.103	<0.015	0.159		24	
100	North R.	NRRT-2	020606	1000	24.0	7.3	7.1	155			120 est.	0.7	8.0			0.048	0.003	0.057	0.064	0.230		32.3	
100	North R.	NRRT-2	020702	0950	23.0	8.0	7.8	96			103	0.5	16.0			0.043	0.002	0.216	<0.015	<0.15		29.6	
100	North R.	NRRT-2	020808	1025	28.0	6.7	8.6	149			230	1.0	8.0			0.082	0.005	0.040	0.041	0.669		18.6	
Lower Black Warrior River (0316-0113)																							
140	Needham Cr.	NHC-2	990624	1215	24.6	6.99	7.23	127	108		>1200	5.6	144.0		16.4	0.588		0.440	<0.015	1.168			
140	Needham Cr.	NHC-2	990513	1140	23	7.95	7.2	608	N/A		164	2.1	12.0		5.59	0.098		0.005	<0.015	0.932			
140	Needham Cr.	NHC-2	990727	1100	27.3	4.85	5.36	284	10.5		680	2.0	12.0		9.38	0.149		0.076	<0.015	1.063			
140	Needham Cr.	NHC-2	990802	1400	33	7.67	7.87	318	8.4		2	0.8	11.0		6.87	0.046		0.013	<0.015	0.686			

a. BOD$_5$ was analyzed during the 1999 CWA §303(d) sampling; CBOD$_5$ was 2000-2002.

hg analyzed out of holding time; L anlayzed in the lab; v DRP>TP (outside of acceptable % deviation)

Appendix Q. Periphyton Bioassessment Pilot Project

Lead agency: ADEM

Purpose: Three periphyton bioassessment methods (periphyton biomass as chlorophyll *a*, diatom community assessment, and a field-based rapid periphyton survey) were tested at 20 stream segments with known or suspected impairment caused by nutrient enrichment. The methods were also tested at 14 ecoregional reference sites for comparison. Assessments of habitat quality, water quality, and the macroinvertebrate and fish communities are provided in Appendies O and P. Water quality data were also collected. These data are provided in Appendices O and P. Preliminary results suggest that periphyton chlorophyll *a* and percent cover of suitable substrate (CSS) effectively detect nutrient enrichment problems.

Appendix Q. Periphyton bioassessment results.

References:

ADEM. 2004. Evaluation of three algal bioassessment techniques as indicators of nutrient enrichment and changes in stream loading. Field Operations Division, Alabama Department of Environmental Management. Montgomery, AL.

Appendix Q. Summary of periphyton assessment results. Phosphorus-limited conditions are shown in red.

Periphyton Metrics	Reference Reaches											
	MAYB-1 020430	WLFS-9 020524	BRSL-3 020606	INMW-1 020610	MRTC-1 020522	DRYC-2 020625	FRMB-8 020430	HNMB-4 020524	BERD-9 020625	BLVC-1 020610	TPSL-1 020605	SF-2 020606
Level IV Ecoregion	67h	67g	68e	68e	68e	67h	67f	67f	68d	68d	68e	68e
Mean Diatom Diversity	3.13	5.36	3.51	3.16	3.20	3.42	3.61	4.47	4.16	3.08	3.14	3.47
Periphyton Chl a mg/m^2	0.97	13.10	2.20	1.81	0.95	4.09	0.68	0.49	1.24	2.03	5.04	2.45
RPS Mean algal density	0.69	0.46	0.56	0.68	0.47	0.93	0.64	0.53	0.61	0.74	0.76	1.48
RPS Mean % filamentous algal cover	9.0	1.0	20.0	22.0	0.0	0.0	24.0	0.0	25.3	34.2	0.0	32.0
Ave. % Periphyton cover on suitable substrate	9.0	2.0	28.0	23.0	0.0	0.0	24.0	0.0	35.3	45.3	0.0	36.0
Ave. Max Periphyton Length inches	0.6	0.4	0.5	0.4	0.0	0.0	1.0	0.0	1.0	0.5	0.0	2.1
Max Periphyton Length inches	3.0	0.4	1.0	2.0	0.0	0.0	1.5	0.0	4.0	1.0	0.0	8.0
Ave TP µg/L	43.8	84.1	43.0	34.8	35.8	29.2	45.4	32.2	28.7	37.8	42.3	
Max TP µg/L	77	305	108	74	43	47	76	38	64	51	77	
Ave TN µg/L	395	488	241	591	805	236	446	368	1106	5062	321	
Max TN µg/L	757	8781	509	1118	1913	596	752	682	4577	31970	1020	
TN:TP	9	6	6	17	22	8	10	11	38	139	8	

Appendix Q. Summary of periphyton assessment results. Phosphorus-limited conditions are shown in red.

Periphyton Metrics	Study Reaches																	
	CAFC-1 020430	PA-1 020613	BINC-190 020522	BWCUA-1 020612	CANW-2 020612	DRYB-11 020523	DUCC-69 020523	EMIC-73a 020523	FMCJ-4 020612	GRVB-4 020523	MUDC-2 020621	MUDJ-2 020607	NORF-28c 020616	RYNC-1 020522	VA-1 020613	VLGJ-4 020613	GSAMF-35 020709	LFKB-2 020702
Level IV Ecoregion	67h	67h	68d	68f	68f	68d	68d	68d	68f	68d	68d	68f	68f	68e	68f	68f	68e	68e
Mean Diatom Diversity	3.05	4.58	4.31	3.63	3.69	4.02	3.38	4.25	4.11	3.14	3.96	2.94	3.34	4.03	3.68	3.27	4.41	4.44
Periphyton Chl a mg/m^2	0.05	11.10	0.86	1.14	9.88	5.44	3.42	7.80	17.10	5.12		5.67	0.45	10.20	22.30	9.93	26.90	18.90
RPS Mean algal density	0.32	1.94	0.58	1.47	0.60	2.66	0.61	0.90	0.75	0.49	0.96	0.93	0.81	1.27	1.16	1.62	0.03	0.86
RPS Mean % filamentous algal cover	0.0	81.0	24.4	45.0	53.0	80.0	20.0	90.0	0.0	0.0	53.0	12.0	0.0	26.0	26.0	23.0	90.0	31.0
Ave. % Periphyton cover on suitable substrate	0.0	81.0	28.0	45.0	61.0	80.0	20.0	92.0	0.0	0.0	63.0	16.0	0.0	31.0	26.0	30.0	93.0	36.0
Ave. Max Periphyton Length inches	0.0	6.0	0.5	1.4	0.8	3.6	0.1	0.9	0.0	0.0	0.5	0.2	0.0	0.6	2.4	5.0	7.4	1.1
Max Periphyton Length inches	0.0	24.0	1.1	6.0	2.5	8.0	0.7	2.0	0.0	0.0	1.0	0.7	0.0	1.3	8.0	15.0	24.0	4.0
Ave TP µg/L	446.0	54.6	27.8		30.9	197.1			393.7		103.3	8.4	51.8	236.2		66.5	176.0	77.4
Max TP µg/L	83	84	65		66	346			1140		414	36	82	982		75	176	110
Ave TN µg/L	424	1016	2091	453	411	1149		1740	3755	17342	765	205	292	1477		1268	2405	1264
Max TN µg/L	1145	2414	2984	581	846	1903		1740	5494	43561	2336	721	885	4135		2034	2405	2294
TN:TP	9	19	75	18	13	6		29	9	10	7	24	6	6		19	14	16

Appendix R. Ambient Trend Monitoring Data

Lead agency: ADEM

***Purpose*:** Long-term water quality and biological monitoring has been conducted at fixed ambient monitoring stations located throughout Alabama. Stations were established primarily to monitor water quality below point source discharges. During 1996, with the addition of ADEM's ALAMAP Program, the ambient trend monitoring program was modified to focus on wadeable streams and rivers. Sites more applicable to the rivers and reservoirs were transferred to ADEM's Reservoir Monitoring Program.

Eighteen ambient trend monitoring stations were established in the BWC Basin Group along the mainstem of the Cahaba River and Locust Fork and several tributaries. The program constituted a large portion of the data collected within the basins during the '70s and '80s. In general, intensive water quality sampling was conducted at these sites using ADEM's SOP's and QA/QC manuals. Data collected since 1998 are presented.

Appendix R. Physical/chemical data

References:

ADEM. 2004. In-house Ambient Monitoring Databases. Alabama Department of Environmental Management. Montgomery, Alabama.

ADEM. In press. Fifty years of water quality in Alabama; a comparison of water quality data from 1948-1949 through 1999. Field Operations Division. Alabama Department of Environmental Management. Montgomery, Alabama.

Appendix R. Physical/chemical data collected in conjunction with ADEM's Ambient Monitoring Program, 1998-2002.

Sub-watershed	Station	Date	Time 24hr	Air Temp (oC)	Water Temp (oC)	pH (su)	Cond (µmhos @25C)	DO (mg/L)	Turbidity (NTU)	Flow (cfs)	Fecal Coliform	TDS (mg/L)	TSS (mg/L)	TP (mg/L)	NO2+NO3 N (mg/L)	BOD-5 (mg/L)	NH3-N (mg/L)	Cl (mg/L)
Cahaba River (0315-0202)																		
010	C1	000606	1140	17.0	22.0	7.5	261.0	8.3	6.9	9.0e	88	232	1	0.934	2.272	0.8	<0.015	<0.5
010	C1	000808	1100	30.0	27.0	7.5	283.0	8.5	26.0	0.4e	350	236	13	0.746	2.806	0.8	<0.015	14.0
010	C1	001010	1230	14.0	11.4	7.7	215.0	11.7	13.1	3.0e	120	168	5	1.456	3.489	1.2	<0.015	14.7
010	C1	010605	1215	25.0	22.2	7.5	277.0	8.3	17.8	12e	56	169	13	0.420	2.770	1.3	<0.015	21.4
010	C1	010807	1115	25.0	25.2	7.6	291.0	7.0	32.9	35e	>12000	170	40	0.420	3.510	2.5	0.200	18.6
010	C1	011009	1315	16.0	15.7	8.1	194.9	10.6	2.5	4	77	140	3	0.170	0.566	0.6	0.030	13.7
010	C1	020604	1145	34.0	26.7	7.6	259.0		7.0	6	27	153	9	0.187	1.988	0.8	<0.015	13.6
010	C1	020805	1130	29.0	26.9	6.3	322.0	8.8	1.9	<1	116	194	4	0.217	3.300	0.6	<0.015	14.7
020	LC1	000606	1240	17.0	20.0	7.6	280.0	7.2	46.0		500	251	21	<0.004	1.285	0.7	<0.015	5.8
020	LC1	000808	1130	30.0	25.0	7.4	296.0	8.8	3.0	6.4	210	203	5	0.236	0.291	1.4	<0.015	17.0
020	LC1	001010	1300	15.0	15.2	7.8	290.0	9.9	14.2	18	100	232	12	0.015	0.857	0.8	<0.015	1.9
020	LC1	010605	1245	24.0	20.3	7.4	416.0	7.8	23.5	27	240	266	17	0.070	1.790	0.9	<0.015	8.3
020	LC1	010807	1145	24.0	23.5	7.4	263.0	5.9	141.3	21	>12000	198	117	0.120	1.420	3.6	0.190	6.6
020	LC1	011009	1345	16.0	16.3	8.7	314.0	8.8	4.3	13	70	211	4	0.040	0.238	0.3	<0.015	8.3
020	LC1	020604	1320	35.0	23.0	7.4	395.0		4.0	9.4	160	<1	11	0.072	2.083	0.5	<0.015	9.8
020	LC1	020805	1200	29.0	22.9	7.0	421.0	7.6	2.4	9.7	232	258	6	0.082	1.750	0.6	<0.015	<0.5
030	C2	000606	1315	22.0	25.0	7.7	264.0	7.0	3.6	5.0	22	223	<1	0.697	1.391	1.5	<0.015	14.3
030	C2	000808	1210	31.0	29.0	7.8	389.0	9.3	13.5	5.0	15	286	10	0.058	2.507	0.4	<0.015	7.0
030	C2	001010	1350	18.0	17.3	8.0	215.0	9.3	3.6	4.0	15	146	3	0.366	1.089	1	<0.015	4.4
030	C2	010605	1320	25.0	23.4	7.8	230.0	7.7	44.2	128	100	156	10	0.100	0.452	1	0.095	7.3
030	C2	010807	1300	26.0	22.3	7.6	243.0	7.6	30.5	100	>1200	204	38	0.040	0.300	4.2	<0.015	5.6
030	C2	011009	1430	17.0	18.4	8.7	216.5	8.8	2.8	35	49	139	4	0.120	0.054	0.6	<0.015	6.8
030	C2	020604	1400	34.0	28.9	7.6	239.0		6.8	6.5	23	151	5	0.133	0.385	1.3	<0.015	7.1
030	C2	020805	1240	30.0	30.2	7.2	152.0	8.9	17.7	3.5	54	181	5	0.390	0.949	1.5	0.031	<0.5
030	PA1	010808								4.2								
030	PA1A	000607	1000		24.0	6.9	206.0	5.6	7.5		7	228	18	<0.004	0.174	1.9	<0.015	6.7
030	PA1A	000809	0945	30.0	30.0	6.6	169.0	4.4	7.2		45	164	7	0.021	0.354	1.2	<0.015	3.0
030	PA1A	001011	1100	17.0	15.3	7.8	289.0	8.1	10.2	0.2e	160	175	4	0.046	0.216	1.9	<0.015	3.0
030	PA1A	010606	1000	25.0	25.2	8.0	176.9	5.9	13.4	6e	42	156	15	0.060	0.342	2.2	<0.015	5.9
030	PA1A	010808	1000	23.0	25.5	7.3	151.6	8.0	31.0	4e	700	118	43	0.030	0.390	1.5	0.330	5.0
030	PA1A	011010	1115	15.2	19.2	7.7	323.0	8.1	9.6	2.5	32	194	29	<0.004	0.053	0.4	<0.015	7.7
030	PA1A	020605	1015	30.0	27.9	6.7	234.0	7.6	14.1	7.0	40	204	9	<0.004	0.152	1.5	<0.015	5.3
030	PA1A	020806	1100	31.0	31.0	7.5	210.5	4.8	5.5	1.1	42	145	5	0.106	0.321	2.4	<0.015	<0.5
040	B1	000809	1015	31.0	30.0	7.4	330.0	8.0	6.0	16e	1420	278	17	0.692	3.275	0.5	<0.015	13.0
040	B1	001011	1200	22.0	15.2	8.4	380.0	10.1	49.2	12e	>240	238	19	0.614	3.156	0.8	<0.015	10.6
040	B1	010606	1030	25.0	22.4	7.8	342.7	6.8	10.5	80e	1040	283	13	0.390	0.869	3.3	0.454	14.2
040	B1	010808	1030	24.0	24.4	7.5	184.1	7.6	85.0	120e	1340	173	96	0.170	0.820	1.2	<0.015	7.2
040	B1	011010	1150	17.8	17.9	7.8	440.0	10.1	5.2	25	37	261	8	0.440	0.534	0.1	0.020	15.4
040	B1	020605	1050	32.0	23.8	7.6	382.0	9.5	29.2	60	156	166	15	0.130	1.211	0.6	<0.015	16.0

Appendix R. Physical/chemical data collected in conjunction with ADEM's Ambient Monitoring Program, 1998-2002.

Sub-watershed	Station	Date	Time 24hr	Air Temp (oC)	Water Temp (oC)	pH (su)	Cond (µmhos @25C)	DO (mg/L)	Turbidity (NTU)	Flow (cfs)	Fecal Coliform	TDS (mg/L)	TSS (mg/L)	TP (mg/L)	NO2+NO3 N (mg/L)	BOD-5 (mg/L)	NH3-N (mg/L)	Cl (mg/L)
Cahaba River (0315-0202)																		
040	B1	020806	1135	31.0	26.6	7.6	436.5	7.2	9.5	16	148	270	13	0.431	2.540	0.4	0.015	<0.5
040	BC04	000607	1145	26.0	20.0	7.8	249.0	6.6	19.2		152	264	16	0.469	2.793	0.7	<0.015	14.0
040	BC04	000809	1110	31.5	30.0	7.1	414.0	6.0	9.0		88	263	11	1.306	8.140	0.1	<0.015	24.0
040	BC04	001011	1140	20.0	14.0	7.6	491.0	8.1	55.2		>240	317	22	1.084	0.737	1	<0.015	21.7
040	BC04	010606	1140	27.0	22.1	7.8	99.5	5.8	10.0		131	204	25	0.300	2.120	1.2	<0.015	10.8
040	BC04	010808	1200	25.0	24.3	7.0	227.4	6.6	56.0		880	211	66	0.190	1.080	0.5	0.180	8.0
040	BC04	011010	1235	18.0	18.0	7.6	466.0	9.4	13.1		80	269	7	0.550	1.990	0.2	0.030	20.1
040	BC04	020605	1145	34.0	23.3	7.5	413.0	8.1	32.5		120	257	12	0.260	2.017	0.7	<0.015	21.4
040	BC04	020806	1245	31.0	25.1	7.6		8.1	8.6		124	315	<1	0.629	7.500	0.5	<0.015	<0.5
050	C3	000607	1045	25.0		8.1	271.0	7.2	6.6		65	277	9	0.799	3.903	1	<0.015	19.5
050	C3	000809	1040	30.0	28.0	7.3	274.0	6.3	15.9	42	80	241	14	0.470	2.430	0.8	<0.015	11.0
050	C3	001011	1230	22.0	13.9	8.7	315.0	9.7	28.4	26	88	199	11	0.644	2.888	0.7	<0.015	11.1
050	C3	010606	1110	26.0	24.2	7.9	210.1	5.7	9.5	246	102	177	48	0.220	1.280	1.4	<0.015	9.1
050	C3	010808	1130	24.0	25.6	7.3	173.2	4.8	43.0	300	720	168	14	0.210	0.910	0.6	0.240	7.5
050	C3	011010	1210	18.5	17.9	7.7	366.0	10.0	2.4	80	33	225	6	0.420	0.764	0.3	<0.015	13.4
050	C3	020605	1120	33.0	25.9	7.5	339.0	8.7	39.4	225	116	183	25	0.280	1.744	0.8	<0.015	14.7
050	C3	020806	1210	31.0	28.4	7.9	381.2	7.7	14.4	42	74	319	15	0.560	4.800	1.6	<0.015	12.6
060	SH1A	980819	0930	27.0	25.4	7.8	200.0	7.2	8.9		340	169	6	0.080	0.540	0.9	<0.005	<1
060	SH1A	981014	0935	25.0	16.2	7.0	262.0	7.6	1.5	6	37	172	<1	<0.005	<0.005	0.2	<0.05	<1
060	SH1A	990602	0900	23.0	23.0	6.2	163.0	7.1	35.0	30	550	120	9	0.093	0.431	0.4		3.0
060	SH1A	990805	0935	27.0	25.0	7.5	290.0	5.9	9.9	9	120	215	53	0.027	0.095	0.9		22.0
060	SH1A	991013	0910	21.4	20.5	6.9	236.0	4.5	9.2	17	200	191	8	0.042	0.816	1.7	0.096	<1
060	SH1A	000607	0930	20.0	20.0	7.1	140.0	6.5	6.6	12	92	158	8	<0.004	0.400	0.9	<0.015	6.2
060	SH1A	000809	0910	29.0	26.5	6.3	23500.0	6.3	3.5	6.5	128	211	<1	0.007	0.320	1.4	<0.015	9.0
060	SH1A	001011	1000	16.0	10.4	7.7	147.0	9.4	6.8	1.5	84	125	<1	0.005	0.160	1.1	<0.015	2.8
060	SH1A	010606	0920	25.0	23.0	8.2	187.9	6.4	9.3	21	92	158	6	0.040	0.402	1.3	<0.015	6.3
060	SH1A	010808	0925	23.0	24.7	7.2	163.5	8.1	20.0	45	600	424	14	<0.004	0.440	0.7	0.120	4.8
060	SH1A	011010	1030	14.8	15.7	7.8	258.0	9.3	0.1	6.2	152	167	4	<0.004	0.053	0.4	<0.015	7.5
060	SH1A	020605	0945	26.0	24.9	6.3	222.0	7.8	58.8	9	<1	147	26	0.022	0.006	5	1.837	6.7
060	SH1A	020806	0945	31.0	25.6	7.5	289.2	6.4	2.5	5.5	27	192	7	0.055	<0.003	0.6	<0.015	<0.5
120	C4	000608	1430	26.0	26.0	8.1	213.0	8.8	15.4		22	195	25	<0.004	0.139	2	<0.015	5.7
120	C4	000810	1400		30.0	8.0	235.0	11.6	18.9	265	34	140	16	0.073	0.192	2.4	<0.015	<0.5
120	C4	001012	1500	22.0	17.3	7.7	254.0	11.7	14.6	190	20	23	22	0.065	1.797	2.1	<0.015	7.5
120	C4	010607	1430	27.0	25.3	8.3	201.0	7.8	10.0	750	25	134	16	0.080	0.369	0.5	0.102	5.2
120	C4	010809	1205	28.0	26.5	7.8	227.4	7.0	11.0	1000	80	170	28	0.080	0.579	1.2	0.090	7.9
120	C4	011011	1415	18.0	19.6	8.0	296.0	10.5	6.0	320	14	165	12	0.070	0.365	0.9	<0.015	7.1
120	C4	020610	0940	25.0	26.1	6.5	251.0	8.3	16.6	840	26	149	14	0.009	0.252	1	<0.015	5.7
120	C4	020807	1620	36.0	30.4	8.3	158.0	11.4	17.0	300	16	162	6	0.118	<0.003	2.1	0.025	<0.5

Appendix R. Physical/chemical data collected in conjunction with ADEM's Ambient Monitoring Program, 1998-2002.

Sub-watershed	Station	Date	Time 24hr	Air Temp (oC)	Water Temp (oC)	pH (su)	Cond (µmhos @25C)	DO (mg/L)	Turbidity (NTU)	Flow (cfs)	Fecal Coliform	TDS (mg/L)	TSS (mg/L)	TP (mg/L)	NO2+NO3 N (mg/L)	BOD-5 (mg/L)	NH3-N (mg/L)	Cl (mg/L)
Mulberry Fork (0316-0109)																		
050	BR1	000606	1005	17.0	21.0	6.6	236.0	6.8	4.0		164	245	<1	0.930	5.758	1.4	<0.015	31.9
050	BR1	000808	0930	29.0	28.0	7.1	310.0	8.2	3.7	7.5	104	200	<1	1.001	6.635	0.9	<0.015	28.0
050	BR1	001010	1100	8.0	11.8	7.4	279.0	11.0	1.8	4.5	700	256	2	1.162	9.750	1.3	<0.015	42.1
050	BR1	010605	1015	22.0	21.9	7.7	152.0	7.1	11.0	50	440	120	8	0.280	1.880	1.4	<0.015	7.5
050	BR1	010807	0945	24.0	26.0	6.5	416.0	6.3	0.9	17	228	260	13	1.450	11.800	1.7	0.120	29.1
050	BR1	011009	1115	16.0	14.2	7.8	194.9	9.6	3.0	16	88	148	4	0.580	1.820	0.7	0.350	19.0
050	BR1	020604	1015	28.5	24.6	6.8	71.0		2.7	38	72	85	4	0.161	1.423	1.2	<0.015	9.4
050	BR1	020805	1000	28.0	25.8	5.3	150.0	6.7	5.8	26	132	112	1	0.291	2.980	0.9	0.018	<0.5
Locust Fork (0316-0111)																		
130	FM1	980818	0925	27.0	24.3	7.7	511.0	7.3	14.4		1200	476	12	0.254	0.906	0.6	<0.005	20.0
130	FM1	981013	1000	29.0	17.5	7.6	919.0	9.8	2.9	13e	220	676	3	0.947	0.965	1.4	<0.005	37.0
130	FM1	990602	0925	29.0	22.4	7.5	784.0	6.5	18.1	24e	680	575	8	0.637	1.466	1.3	<0.005	54.0
130	FM1	990805	0840	24.5	24.0	7.6	306.0	8.1	4.6	16e		573	4	0.263	1.860	0.8	0.060	51.0
130	FM1	991012	1000	20.6	24.3	7.6	718.0	7.9	8.7	14e	520	532	6	0.557	1.981	0.4	1.330	37.0
130	FM1	000606	0900	18.0	20.0	7.4	527.0	7.2	19.6	20e	230	527	3	0.923	1.437	7.4	0.258	29.5
130	FM1	000808	0930		26.0	6.3	853.0	6.8	7.5	15e	144	708	2	0.221	1.518	3	<0.015	51.0
130	FM1A	001010	1105	15.0	11.7	7.4	960.0	10.3	7.5	6e	59	655	6	1.134	2.781	1.6	0.446	61.9
130	FM1A	010605	0930	22.0	21.0	7.5	464.3	5.6	13.7	25e	132	402	15	1.010	2.000	1.1	0.180	18.1
130	FM1A	010807	0915	24.0	23.7	7.6	140.8	7.3	61.2	80e	>12000	205	155	0.360	0.650	5.6	0.260	8.0
130	FM1A	011009	0940	13.0	14.1	8.2	816.0	10.6	2.2	13	38	447	3	0.810	1.390	0.7	0.180	37.6
130	FM1A	020604	0950	27.0	24.0	7.0	632.0	9.0	4.4	20	84	371	5	1.087	3.408	0.7	<0.015	26.7
130	FM1A	020805	0945	28.0	24.8	8.3	513.0	6.6	3.8	22	51	431	6	2.360	2.720	1.6	<0.015	25.3
130	FM2	000606	0940	19.0	21.0	7.7	516.0	7.8	3.8	37	144	468	<1	1.254	2.968	0.8	<0.015	38.7
130	FM2	000808	1000		27.0	7.9	682.0	7.3	7.1	26	>620	561	4	0.499	3.668	2.5	<0.015	43.0
130	FM2	001010	1155	16.0	14.1	7.4	719.0	10.1	9.4	15	84	486	3	1.335	0.499	1	0.052	42.6
130	FM2	010605	1000	22.0	21.1	7.8	409.1	5.6	6.4	44	700	386	14	0.940	3.210	1.3	<0.015	20.1
130	FM2	010807	0945	25.0	24.8	7.6	216.5	6.2	31.4	122	>12000	278	170	0.640	1.700	6.1	0.050	15.6
130	FM2	011009	0955	13.1	15.8	8.3	682.0	10.2	1.1	28	84	401	3	0.890	3.020	0.3	0.150	32.4
130	FM2	020604	1020	28.0	23.9	7.3	601.0	9.2	4.4	40	124	354	5	0.894	4.265	0.7	<0.015	24.4
130	FM2	020805	1010	28.0	25.2	7.9	423.0	6.7	2.4	45	210	385	2	1.720	4.780	1	0.024	21.3
140	VI1	980818	1055	30.0	26.7	7.9	219.0	7.5	10.1		67	121	3	0.119	1.309	0.8	<0.005	11.0
140	VI1	981013	1130	32.0	21.1	7.4	353.0	8.5	0.7	90	13	241	1	0.244	1.824	0.8	<0.005	1.0
140	VI1	990602	1100	33.3	24.8	7.6	428.0	7.1	1.6	125	13	284	1	0.188	2.967	0.8	<0.005	27.0
140	VI1	990805	1000	25.5	27.2	7.6	412.0	5.2	3.1	90	10	296	9	0.236	2.264	1	0.060	26.0
140	VI1	991012	1200	22.1	23.4	7.8	272.0	8.1	6.9		530	219	8	0.326	2.569		0.166	23.0
140	VI1	000606	1040	20.0	24.0	7.8	339.0	7.4	2.0	120	17	300	<1	0.218	3.494	1.5	0.106	25.8
140	VI1	000808	1050		29.0	6.0	274.0	7.8	4.9	90	40	231	<1	0.159	1.192	2.2	<0.015	11.0
140	VI1	001010	1315	18.0	17.6	7.6	332.0	10.0	0.6	85	9	262	8	0.294	2.867	0.8	0.058	19.5
140	VI1	010605	1115	24.0	23.9	7.9	320.6	6.2	1.8	105	12	230	4	0.220	2.420	2.3	0.072	14.3

Appendix R. Physical/chemical data collected in conjunction with ADEM's Ambient Monitoring Program, 1998-2002.

Sub-watershed	Station	Date	Time 24hr	Air Temp (oC)	Water Temp (oC)	pH (su)	Cond (µmhos @25C)	DO (mg/L)	Turbidity (NTU)	Flow (cfs)	Fecal Coliform	TDS (mg/L)	TSS (mg/L)	TP (mg/L)	NO2+NO3 N (mg/L)	BOD-5 (mg/L)	NH3-N (mg/L)	Cl (mg/L)
Locust Fork (0316-0111)																		
140	VI1	010807	1050	24.0	27.5	7.8	164.2	6.7	3.3	300	96	239	16	0.230	3.260	3.6	0.270	18.9
140	VI1	011009	1050	15.3	18.6	8.6	391.0	6.4	1.7	98	38	190	5	0.040	0.280	2.3	<0.015	14.9
140	VI1	020604	1130	29.0	27.6	7.9	359.0	5.1	2.6	90	7	221	4	0.131	2.122	2.2	<0.015	13.8
140	VI1	020805	1110	28.0	29.0	7.8	269.0	4.8	2.1	100	<1	250	3	0.153	1.900	1.5	<0.015	<0.5
140	VI3	000606	1010	19.0	22.0	7.0	310.0	5.7	2.8	105	1040	317	<1	0.359	3.841	1.1	0.177	23.7
140	VI3	000808	1030		27.0	7.2	44000.0	6.2	3.2	80	>1200	350	<1	0.769	5.871	0.7	<0.015	23.0
140	VI3	001010	1230	17.0	17.3	6.8	423.0	7.5	10.8	75	204	255	6	1.053	0.739	1	<0.015	23.4
140	VI3	010605	1045	24.0	22.3	7.8	331.7	4.7	4.7	90	1600	275	10	0.410	4.290	0.7	0.224	17.9
140	VI3	010807	1025	24.0	24.7	7.6	259.9	4.7	35.1	225	>12000	152	54	0.310	2.020	5.6	0.320	9.3
140	VI3	011009	1025	15.3	18.8	8.3	481.0	7.2	2.2	89	600	275	6	0.880	3.000	0.4	0.020	24.6
140	VI3	020604	1050	28.0	24.9	7.4	462.0	7.2	4.6	82	250	290	3	0.678	4.972	0.7	<0.015	21.6
140	VI3	020805	1040	28.0	26.1	8.0	315.0	5.7	3.9	92	230	277	5	0.588	5.990	1	<0.015	17.6
150	LF1	980819	1200	35.0	27.5	7.2	239.0	4.4	23.0		40	226	12	0.116	0.947	1.6	<0.005	1.0
150	LF1	981014	1110	25.0	20.7	7.5	631.0	5.4	6.0		0	476	6	0.173	1.285	0.9	<0.005	1.0
150	LF1	990602	1100	26.0	25.8	7.9	455.0	7.4	6.0		4	320	6	0.099	0.853		<0.005	<1
150	LF1	990804	1215	29.0	30.1	7.4	343.0	5.8	6.1	norm		303	9	0.055	0.716	1.9	<0.005	14.0
150	LF1	991013	1200	22.7	22.6	7.6	460.0	7.2	5.1		19	355	8	0.279	2.322	3.4	<0.005	30.0
150	LF1	000607	1150	28.0	26.0	7.4	453.0	6.0	6.9		<1	426	11	<0.004	1.501	0.9	0.048	14.0
150	LF1	000809	1045		29.0	7.9	585.0	7.9	12.6		35	410	6	0.174	1.383	2	<0.015	18.0
150	LF1	001011	1200	16.0	19.7	8.5	629.0	7.8	19.5		2	440	17	0.183	0.726	2.2	0.137	21.6
150	LF1	010606	1050	27.0	21.9	7.2	143.7	6.6	45.5		140	138	44	0.120	0.552	1.4	0.142	4.8
150	LF1	010808	1045	24.0	28.9	8.1	491.0	4.8	4.4		1	327	15	0.040	0.920	0.7	0.180	11.2
150	LF1	011010	1110	18.0	19.3	7.7	411.4	8.2	5.9		<1	394	12	0.010	0.054	0.9	<0.015	10.3
150	LF1	020606	1135	36.0	26.6	7.6	407.0	7.8	10.9		<1	233	3	<0.004	0.906	1.8	<0.015	8.4
150	LF1	020806	1215	34.0	30.7	8.0	668.0	7.8	6.1		52	320	8	0.105	0.531	1.1	0.134	<0.5
Upper Black Warrior River (0316-0112)																		
030	VA1	980819	0955	30.0	26.0	7.1	346.0	6.2	1.4		108	274	1	0.302	3.957	1.1	<0.005	1.0
030	VA1	981014	0930	25.0	17.3	7.7	421.0	7.2	1.0	65	27	304	1	0.409	5.382	0.6	<0.005	1.0
030	VA1	990602	0925	24.0	24.1	7.5	379.0	5.8	2.7	150	184	242	<1	0.146	2.009	0.2	<0.005	<1
030	VA1	990804	1000	28.0	27.0	6.5	368.0	5.6	1.5	90	63	291	4	0.478	5.256	0.9	0.055	39.0
030	VA1	991013	1015	22.3	21.5	7.5	355.0	6.3	2.4	110	240	384	10	0.249	2.166	2	0.107	25.0
030	VA1	000607	1040	26.0	22.0	6.6	314.0	6.2	2.3	80	188	281	6	0.450	2.838	0.9	<0.015	29.1
030	VA1	000809	0925		27.0	7.6	482.0	7.4	1.8	75	164	308	4	0.446	5.146	0.9	<0.015	26.0
030	VA1	001011	1000	14.0	15.2	7.6	451.0	6.4	0.8	80	44	282	<1	0.602	0.618	1.5	0.300	32.8
030	VA1	010606	0915	27.0	24.0	8.1	331.7	6.7	3.2	120	176	271	8	0.370	3.980	1.2	<0.015	24.5
030	VA1	010808	0945	23.0	23.5	7.7	372.0	6.6	10.9	200	500	217	15	0.150	1.590	0.3	0.200	15.2
030	VA1	011010	1000	18.0	20.2	7.7	292.3	7.1	1.2	140	43	257	5	0.320	1.320	0.5	0.050	25.4
030	VA1	020606	1015	30.0	24.5	7.4	480.0	8.6	6.1	120	58	382	4	0.387	4.834	0.9	<0.015	34.9
030	VA1	020806	1025	28.0	26.9	7.6	469.0	7.3	0.5	90	40	305	3	0.390	5.800	1	0.062	22.3

Appendix R. Physical/chemical data collected in conjunction with ADEM's Ambient Monitoring Program, 1998-2002.

Sub-watershed	Station	Date	Time 24hr	Air Temp (oC)	Water Temp (oC)	pH (su)	Cond (µmhos @25C)	DO (mg/L)	Turbidity (NTU)	Flow (cfs)	Fecal Coliform	TDS (mg/L)	TSS (mg/L)	TP (mg/L)	NO2+NO3 N (mg/L)	BOD-5 (mg/L)	NH3-N (mg/L)	Cl (mg/L)
Upper Black Warrior River (0316-0112)																		
030	VC-5	000607	1010	25.0	21.0	7.4	238.0	7.0	2.7	30	370	219	7	<0.004	1.150	0.7	<0.015	4.8
030	VC-5	000809	0845		27.0	7.7	427.0	7.5	1.8	50	310	273	3	0.018	0.551	0.6	<0.015	6.0
030	VC-5	001011	0935	12.0	11.8	7.6		9.4	0.4	50	124	250	2	0.005	0.680	0.8	<0.015	6.9
030	VC-5	010606	0840	25.0	22.7	7.8	385.0	7.3	4.1	72	270	257	6	0.070	0.221	1	<0.015	7.8
030	VC-5	010808	0915	23.0	24.7	7.9	354.0	5.9	4.5	78	760	197	8	0.020	0.730	0.4	0.260	5.6
030	VC-5	011010	0915	18.0	16.7	7.5	281.5	7.5	1.3	54	136	304	6	0.020	0.054	0.7	<0.015	9.5
030	VC-5	020606	0945	30.0	25.5	7.2	372.0	6.2	4.0	68	750	199	1	<0.004	0.683	1.7	<0.015	11.0
030	VC-5	020806	0945	28.0	26.5	7.7	470.0	7.2	0.0	38	116	219	2	0.055	0.587	0.7	<0.015	15.9
120	H1	000608	1235	26.0	25.0	7.9	347.0	8.1	1.4		7	420	10	<0.004	0.122	0.7	<0.015	5.7
120	H1	000810	1200		28.7	7.2	513.0	10.0	1.4		29	409	<1	0.019	0.139	0.6	<0.015	<0.5
120	H1	001012	1345	19.0	14.6	7.2	467.0	10.9	1.7		72	444	4	0.031	2.017	0.6	<0.015	5.5
120	H1	010607	1310	26.0	24.4	8.9	191.0	8.8	19.3		84	154	15	0.040	0.139	0.7	<0.015	5.7
120	H1	010809	0750	24.0	26.3	7.9	281.5	7.7	3.8		92	287	11	<0.004	0.191	1.4	0.080	7.5
120	H1	020807	1415	36.5	32.0	7.5	167.0	8.7	11.3		70	199	5	0.033	<0.003	0.6	0.018	<0.5

Appendix S. University Reservoir Tributary Nutrient Loading Study

Lead Agencies*:* Cooperative effort by the University of Alabama, Auburn University, Tennessee Valley Authority and Auburn University at Montgomery funded by ADEM.

Purpose: Intensive chemical sampling was conducted October 1998-March 2000 to study nutrient loading from tributaries to 26 reservoirs in Alabama. These data were used to quantify tributary nutrient loads to reservoirs and to provide estimates of nonpoint source nutrient contributions. These loading estimates will be essential to the Department's effort to address lake eutrophication concerns across the state. Samples were collected monthly, June-November and biweekly, December-May. All samples and in-situ measures were collected in accordance with ADEM Standard Operating Procedures manual. Duplicate samples were collected at 10% of the stations.

Appendix S. Physical/chemical data

References:

ADEM. 2000d. Water quality monitoring data from tributaries of the Alabama River basin reservoirs collected by University of Alabama (unpublished). Field Operations Division, Alabama Department of Environmental Management. Montgomery, Alabama.

Appendix S. Physical/chemical data collected as part of the Statewide Tributary Nutrient Loading Project, 1998-1999.

Sub-watershed	Stream Name	Station ID	Sample Date	Sample Time	Water Temp., °C	Flow, cfs	D.O., mg/L	pH, s.u.	Cond., mS/cm	Turb, NTU	TSS, mg/L	TDS, mg/L	TKN, mg/L	NH3-N, mg/L	NO2+NO3-N, mg/L	Total P, mg/L
Cahaba River																
020	L. Cahaba R.	LCRUA01	981122	1136	13.2	11.0	9.5	7.3	279.0	5.0	10	255	0.27	BDL	1.27	0.13
020	L. Cahaba R.	LCRUA01	981205	1000	16.3	7.1	8.5	8.1	308.0	8.1	9	244	0.37	0.02	1.39	BDL
020	L. Cahaba R.	LCRUA01	981219	1200	10.7	15.0	10.6	7.8	375.0	30.0	4	282	0.55	BDL	1.29	BDL
020	L. Cahaba R.	LCRUA01	990116	1100	11.0	29.0		7.6	9300.0	5.0	5	275	0.31	0.00	1.05	BDL
020	L. Cahaba R.	LCRUA01	990130	1100	15.0	184.0		7.4	179.0	62.0	45	110	0.60	BDL	0.48	0.06
020	L. Cahaba R.	LCRUA01	990206	1120	13.5	55.0	10.5	7.7	288.0	4.4	6	209	0.28	BDL	0.82	BDL
020	L. Cahaba R.	LCRUA01	990219	1430	14.0	45.0	8.0	6.5	271.0	4.9	6	228	0.30	0.01	0.91	BDL
020	L. Cahaba R.	LCRUA01	990312	1330	13.4	55.0	11.7	7.7	247.0	3.3	6	222	0.22	0.00	0.66	0.05
020	L. Cahaba R.	LCRUA01	990326	1300	14.5	29.0	12.5	8.2	237.0	8.6	13	142	0.47	BDL	0.94	0.05
020	L. Cahaba R.	LCRUA01	990416	1300	16.5	32.0	7.6	7.6	248.0	19.8	9	239	0.29	0.07	1.04	0.05
020	L. Cahaba R.	LCRUA01	990430	1400	16.8	19.0	8.9	8.0	379.0	7.8	10	291	0.40	0.11	1.48	BDL
020	L. Cahaba R.	LCRUA01	990513	1130	19.8	17.0	8.0	7.9	374.0	6.9	15	272	0.30	0.04	1.15	<.05
020	L. Cahaba R.	LCRUA01	990608	1320	23.2	16.0	7.9	7.9	356.0	10.0	11	268	0.40	0.01	0.95	0.07
020	L. Cahaba R.	LCRUA01	990727	1115	23.5	24.0	7.6	7.9	400.3	13.4	14	234	0.26	0.03	0.94	<.05
020	L. Cahaba R.	LCRUA01	990910	1620	22.6	6.7	7.2	7.8	394.5	6.0	6	239	0.47	0.02	1.80	0.08
020	L. Cahaba R.	LCRUA01	991029	1145	14.1	11.0	8.9	8.1	428.7	5.8	2	245	0.37	0.01	1.68	0.05
Mulberry Fork																
100	Mulberry Fk.	MUFUA01	981122	1345	12.5	55.0	9.4	6.8	209.0	10.0	11	142	0.41	0.04	0.21	0.85
100	Mulberry Fk.	MUFUA01	981205	1145	15.2	34.0	10.0	7.6	308.0	12.0	13	242	0.69	0.03	8.30	0.94
100	Mulberry Fk.	MUFUA01	981219	1315	8.5	94.0	11.8	7.5	204.0	31.0	7	208	0.25	0.01	3.90	0.47
100	Mulberry Fk.	MUFUA01	990116	1300	9.4	2220.0	14.0	6.9	2510.0	7.5	33	107	1.06	0.01	3.20	0.10
100	Mulberry Fk.	MUFUA01	990130	1330	14.5	1830.0		6.3	74.8	45.0	83	89	1.02	0.01	2.66	0.09
100	Mulberry Fk.	MUFUA01	990206	1300	11.8	1200.0	11.1	7.2	89.0	5.6	21	97	0.52	0.03	2.93	BDL
100	Mulberry Fk.	MUFUA01	990219	0500	12.3	2350.0	9.9	6.3	66.8	4.8	29	86	0.63	0.03	2.37	BDL
100	Mulberry Fk.	MUFUA01	990305	1820	11.5	1590.0	11.7	6.4	1380.0	3.3	22	80	0.47	BDL	2.14	0.08
100	Mulberry Fk.	MUFUA01	990319	1745	14.3	1050.0	12.1	7.2	90.0	4.6	2	463	0.52	0.02	2.34	0.08

Appendix S. Physical/chemical data collected as part of the Statewide Tributary Nutrient Loading Project, 1998-1999.

Sub-watershed	Stream Name	Station ID	Sample Date	Sample Time	Water Temp., °C	Flow, cfs	D.O., mg/L	pH, s.u.	Cond., mS/cm	Turb, NTU	TSS, mg/L	TDS, mg/L	TKN, mg/L	NH3-N, mg/L	NO2+NO3-N, mg/L	Total P, mg/L
Mulberry Fork																
100	Mulberry Fk.	MUFUA01	990409	1800	20.8	1300.0	8.4	7.2	105.0	13.0	27	47	0.61	0.04	1.99	0.08
100	Mulberry Fk.	MUFUA01	990423	1830	21.7	340.0	8.5	6.7	131.0	3.3	5	34	0.31	0.12	2.12	BDL
100	Mulberry Fk.	MUFUA01	990513	1330	21.3	520.0	9.6	7.6	113.0	8.4	13	83	0.07	0.03	2.03	0.09
100	Mulberry Fk.	MUFUA01	990526	1515	24.7	180.0	7.6	7.6	144.0	6.2	8	130	0.36	0.06	0.39	0.19
100	Mulberry Fk.	MUFUA01	990608	1500	26.0	590.0	8.4	7.4	105.0	12.9	27	97	0.69	<0.009	1.34	0.18
100	Mulberry Fk.	MUFUA01	990708	1615	27.7	800.0	7.6	7.3	105.0	31.6	57	56	0.35	<0.009	1.31	0.16
100	Mulberry Fk.	MUFUA01	990823	1425	29.0	25.0	8.2	7.8	299.2	10.5	14	222	0.82	0.02	1.12	0.14
100	Mulberry Fk.	MUFUA01	990910	1807	26.1	27.0	6.2	7.5	298.9	10.0	16	149	0.75	0.05	2.27	0.23
100	Mulberry Fk.	MUFUA01	991007	1400	18.9	32.0	8.8	6.8	387.5	5.6	8	198	0.80	0.01	3.13	0.22
130	Blackwater Cr.	BWCUA01	981122	1535	12.6	32.0	10.7	7.1	127.0	7.0	9	89	0.22	BDL	0.08	BDL
130	Blackwater Cr.	BWCUA01	981205	1330	15.7	26.0	10.5	8.1	166.0	4.0	2	113	2.36	0.01	0.03	BDL
130	Blackwater Cr.	BWCUA01	981219	1500	8.9	77.0	11.9	7.1	105.0	41.0	1	153	0.38	BDL	0.28	BDL
130	Blackwater Cr.	BWCUA01	990116	1430	11.8	474.0	11.3	6.6	1710.0	7.0	10	98	1.35	0.08	0.33	BDL
130	Blackwater Cr.	BWCUA01	990130	1445	14.2	995.0		4.8	63.0	40.0	43	76	0.76	0.01	0.29	0.07
130	Blackwater Cr.	BWCUA01	990206	1415	13.5	452.0	10.3	6.8	70.3	5.2	7	83	0.26	BDL	0.32	BDL
130	Blackwater Cr.	BWCUA01	990219	0700	10.5	561.0	10.3	6.2	58.2	6.3	14	91	0.30	0.01	0.20	BDL
130	Blackwater Cr.	BWCUA01	990305	1630	11.2	448.0	11.4	6.1	1000.0	3.5	12	52	0.30	BDL	0.20	BDL
130	Blackwater Cr.	BWCUA01	990319	1620	15.5	397.0	10.4	6.5	61.4	6.7	2	10351	0.21	BDL	0.19	BDL
130	Blackwater Cr.	BWCUA01	990409	1615	21.1	436.0	6.6	6.9	67.0	9.6	10	110	0.33	0.03	0.13	BDL
130	Blackwater Cr.	BWCUA01	990423	1630	19.6	166.0	8.9	6.8	92.5	5.7	5	3	0.44	0.11	0.14	BDL
130	Blackwater Cr.	BWCUA01	990513	1500	21.6	247.0	9.6	7.7	89.4	8.2	8	82	0.25	0.02	0.18	<.05
130	Blackwater Cr.	BWCUA01	990526	1650	21.6	101.0	8.8	7.7	127.0	6.7	3	107	0.34	<0.009	0.03	<.05
130	Blackwater Cr.	BWCUA01	990608	1600	25.9	92.0	8.4	7.6	130.0	16.4	4	97	0.36	<0.009	0.14	<.05
130	Blackwater Cr.	BWCUA01	990823	1310	26.8	9.4	8.8	8.1	248.4	1.6	1	176	0.51	0.01	0.02	0.05
130	Blackwater Cr.	BWCUA01	990917	1315	20.1	11.0	8.6	7.4	250.3	0.6	0	176	0.27	0.01	0.01	0.05
130	Blackwater Cr.	BWCUA01	991007	1130	16.5	19.0	8.6	6.9	222.8	0.9	1	131	0.49	0.01	0.01	0.05
170	Lost Cr.	LOCUA01	981122	1630	11.5	28.0	10.6	8.2	2180.0	4.6	52	1382	0.24	BDL	1.38	BDL
170	Lost Cr.	LOCUA01	981205	1415	15.1	32.0	9.8	8.4	2510.0	5.0	5	2102	0.39	0.01	0.21	BDL
170	Lost Cr.	LOCUA01	981219	1545	8.5	47.0	12.1	8.3	1330.0	25.0	23	1743	0.36	BDL	0.29	BDL
170	Lost Cr.	LOCUA01	990116	1530	11.4	381.0	10.6	7.7	11700.0	8.5	15	400	0.45	0.00	0.39	BDL
170	Lost Cr.	LOCUA01	990130	1530	14.2	1030.0		4.9	285.0	83.0	114	213	0.43	0.05	0.33	BDL
170	Lost Cr.	LOCUA01	990206	1500	13.0	328.0	10.5	7.9	582.0	5.1	10	502	0.28	0.02	0.79	BDL
170	Lost Cr.	LOCUA01	990219	0815	10.8	355.0	9.5	7.6	629.0	5.2	11	561	0.39	0.04	0.62	BDL
170	Lost Cr.	LOCUA01	990305	1520	13.8	405.0	9.8	6.9	6260.0	5.6	14	353	0.23	0.02	0.26	BDL
170	Lost Cr.	LOCUA01	990319	1520	17.6	295.0	9.0	8.0	604.0	7.9	477	181	0.31	0.00	0.33	BDL
170	Lost Cr.	LOCUA01	990409	1515	20.8	304.0	8.1	7.8	518.0	8.4	9	379	0.27	0.03	0.21	BDL
170	Lost Cr.	LOCUA01	990423	1600	20.4	108.0	9.7	7.0	986.0	3.0	4	670	0.44	0.10	0.31	0.10
170	Lost Cr.	LOCUA01	990512	0000	20.1	273.0	10.3	8.0	672.0	11.4	4	646	0.46	0.05	0.31	<.05
170	Lost Cr.	LOCUA01	990526	1750	22.3	66.0	8.6	8.3	1530.0	4.1	7	1040	0.30	<0.009	0.50	<.05
170	Lost Cr.	LOCUA01	990608	1700	25.2	60.0	9.8	8.3	1590.0	6.1	13	967	0.19	0.09	0.20	<.05

Appendix S. Physical/chemical data collected as part of the Statewide Tributary Nutrient Loading Project, 1998-1999.

Sub-watershed	Stream Name	Station ID	Sample Date	Sample Time	Water Temp., °C	Flow, cfs	D.O., mg/L	pH, s.u.	Cond., mS/cm	Turb, NTU	TSS, mg/L	TDS, mg/L	TKN, mg/L	NH3-N, mg/L	NO2+NO3-N, mg/L	Total P, mg/L
Mulberry Fork																
170	Lost Cr.	LOCUA01	990708	1315	26.9	396.0	7.2	7.8	1628.0	9.3	50	1052	0.35	0.04	0.34	<.05
170	Lost Cr.	LOCUA01	990823	1230	25.9	15.0	7.6	8.2	2553.0	5.4	7	1738	0.53	0.02	0.05	0.05
170	Lost Cr.	LOCUA01	990917	1200	19.6	13.0	6.6	8.2	2463.0	5.0	7	1759	0.29	0.01	0.01	0.05
170	Lost Cr.	LOCUA01	990917	1200	19.6		6.6	8.2	2463.0	5.0	7	1779	0.25	0.01	0.01	0.05
170	Lost Cr.	LOCUA01	991007	1515	17.5	7.0	7.0	8.1	3164.0	3.2	4	2184	0.49	0.01	0.01	0.05
Sipsey Fork																
130	Smith Dam	SIFUA01	981130	1730	14.7	1170.0	7.2	7.2	31.1	2.0	4	28	0.28	BDL	0.24	BDL
130	Smith Dam	SIFUA01	981205	1245	13.0	0.0	3.8	6.8	43.0	4.0	7	43	0.41	0.04	0.62	BDL
130	Smith Dam	SIFUA01	981219	1420	13.5	0.0	7.6	6.8	52.0	5.1	1	104	0.37	BDL	0.64	BDL
130	Smith Dam	SIFUA01	990116	1400	11.1	0.0	8.3	6.5	1090.0	1.0	1	69	0.18	BDL	0.43	0.05
130	Smith Dam	SIFUA01	990130	1415	12.6	3030.0		5.2	40.9	2.8	1	49	0.57	0.00	0.33	BDL
130	Smith Dam	SIFUA01	990206	1335	12.0	5550.0	8.0	6.9	39.8	1.6	2	63	0.43	0.21	0.34	BDL
130	Smith Dam	SIFUA01	990219	0615	13.0	822.0	6.6	6.4	36.3	2.0	2	72	0.24	0.02	0.37	BDL
130	Smith Dam	SIFUA01	990305	1730	12.2	763.0	6.7	6.4	690.0	0.9	5	37	0.32	BDL	0.41	BDL
130	Smith Dam	SIFUA01	990319	1700	12.5	2160.0	8.9	6.1	39.7	2.2	2	489	0.49	BDL	0.46	0.64
130	Smith Dam	SIFUA01	990409	1700	13.6	2600.0	7.9	6.8	49.3	1.8	1	95	0.32	0.03	0.52	BDL
130	Smith Dam	SIFUA01	990423	1745	13.3	2060.0	7.8	6.9	54.4	1.3	2	93	0.51	0.10	0.54	BDL
130	Smith Dam	SIFUA01	990513	1400	14.9	2680.0	9.9	7.3	44.6	1.3	4	40	0.32	<0.009	0.40	<.05
130	Smith Dam	SIFUA01	990526	1615	13.2	47.0	7.2	7.4	44.0	1.1	1	61	0.21	<0.009	0.15	<.05
130	Smith Dam	SIFUA01	990608	1530	12.8	3130.0	6.5	7.0	47.3	1.0	1	51	0.47	<0.009	0.38	<.05
130	Smith Dam	SIFUA01	990708	1525	14.2	0.0	6.5	7.3	51.9	1.0	1	23	0.36	<0.009	0.52	<.05
130	Smith Dam	SIFUA01	990823	1340	14.5	1900.0	4.8	6.9	58.3	2.2	1	84	0.47	0.05	0.42	0.05
130	Smith Dam	SIFUA01	990910	7:00PM	15.9	2270.0	7.6	6.1	48.3	1.2	2	24	0.42	0.04	0.42	0.05
130	Smith Dam	SIFUA01	991007	1215	13.6	500.0	5.9	7.3	48.4	0.6	0	10	0.54	0.01	0.50	0.05
Locust Fork																
120	Locust Fk.	LOFUA01	981120	1630	14.9	151.0	8.6	6.8	472.0	35.0	41	155	0.34	BDL	0.05	BDL
120	Locust Fk.	LOFUA01	981206	1145	17.1	82.0	9.3	8.0	365.0	5.2	26	278	0.44	0.04	0.17	0.14
120	Locust Fk.	LOFUA01	981220	1300	11.0	171.0	10.7	7.4	365.0	28.0	5	279	0.41	0.01	0.59	0.10
120	Locust Fk.	LOFUA01	990117	1245	10.7	2360.0	11.1	7.0	3580.0	9.0	51	150	1.42	0.07	2.79	0.11
120	Locust Fk.	LOFUA01	990131	1200	12.2	9760.0	9.2	7.1	67.0	15.0	141	44	0.82	0.02	0.93	0.08
120	Locust Fk.	LOFUA01	990207	1130	14.8	1850.0	8.4	7.0	159.0	5.4	15	96	0.27	BDL	1.92	BDL
120	Locust Fk.	LOFUA01	990220	1400	12.5	3720.0	9.8	7.7	81.8	9.5	47	145	1.48	0.02	1.50	BDL
120	Locust Fk.	LOFUA01	990312	1445	12.9	1970.0	9.1	7.6	118.0	3.6	12	115	0.24	BDL	1.23	0.08
120	Locust Fk.	LOFUA01	990326	1635	13.7	1500.0	10.7	7.1	159.0	7.4	34	160	0.26	0.03	1.08	0.07
120	Locust Fk.	LOFUA01	990416	1500	18.9	1190.0	9.7	7.3	143.0	6.8	8	156	0.37	0.05	1.02	0.10
120	Locust Fk.	LOFUA01	990430	1600	19.3	793.0	7.6	7.4	143.0	8.8	10	147	0.67	0.13	0.70	0.10
120	Locust Fk.	LOFUA01	990521	1300	25.0	486.0	8.3	8.0	204.0	4.4	3	219	0.61	<0.009	0.41	0.06
120	Locust Fk.	LOFUA01	990525	1425	26.9	391.0	8.3	8.0	216.0	4.5	15	157	0.36	0.17	0.48	<.05
120	Locust Fk.	LOFUA01	990610	1500	28.6	307.0	7.8	8.3	224.0	5.4	11	173	0.52	<0.009	0.59	0.08
120	Locust Fk.	LOFUA01	990721	1200	29.4	317.0	8.1	8.3	236.3	4.0	6	123	0.37	<0.009	0.47	0.32

Appendix S. Physical/chemical data collected as part of the Statewide Tributary Nutrient Loading Project, 1998-1999.

Sub-watershed	Stream Name	Station ID	Sample Date	Sample Time	Water Temp., °C	Flow, cfs	D.O., mg/L	pH, s.u.	Cond., mS/cm	Turb, NTU	TSS, mg/L	TDS, mg/L	TKN, mg/L	NH3-N, mg/L	NO2+NO3-N, mg/L	Total P, mg/L
Locust Fork																
120	Locust Fk.	LOFUA01	990823	1514	31.6	83.0	5.7	7.7	357.1	4.2	6	232	0.59	0.05	0.20	0.05
120	Locust Fk.	LOFUA01	990926	1900	23.1	60.0	8.3	7.7	437.6	3.0	3	269	0.35	0.01	0.03	0.05
120	Locust Fk.	LOFUA01	991029	1345	15.9	64.0	8.8	7.7	435.3	4.2	2	252	0.50	0.03	0.04	0.05
130	Five Mile Cr.	FICUA01	981120	1530	16.0	19.0	9.3	7.3	686.0	1.8	3	532	0.39	BDL	2.84	0.97
130	Five Mile Cr.	FICUA01	981206	1100	17.2	31.0	9.9	8.3	684.0	1.5	1	500	0.63	0.03	3.82	0.48
130	Five Mile Cr.	FICUA01	981220	1200	11.7	50.0	11.9	8.2	692.0	11.0	0	485	0.57	0.01	3.81	0.39
130	Five Mile Cr.	FICUA01	990117	1140	10.9	175.0	13.7	7.1	8700.0	3.8	7	268	0.46	0.01	1.10	0.15
130	Five Mile Cr.	FICUA01	990131	1115	12.5	flood	9.4	7.2	136.0	15.0	121	103	0.82	BDL	0.69	0.09
130	Five Mile Cr.	FICUA01	990220	1420	12.6	271.0	11.5	7.7	293.0	3.8	8	321	0.34	0.00	1.14	0.07
130	Five Mile Cr.	FICUA01	990226	1645	13.9	128.0	12.7	8.4	407.0	1.0	2	355	0.47	0.00	1.09	0.05
130	Five Mile Cr.	FICUA01	990312	1530	12.9	210.0	11.6	7.5	345.0	2.0	4	283	0.39	0.01	3.11	0.09
130	Five Mile Cr.	FICUA01	990326	1600	14.7	153.0	13.1	8.8	566.0	2.6	17	150	0.37	0.02	1.72	0.14
130	Five Mile Cr.	FICUA01	990416	1400	17.9	101.0	5.1	8.0	334.0	51.2	39	291	0.47	0.04	1.65	0.24
130	Five Mile Cr.	FICUA01	990430	1515	18.8	50.0	9.4	8.1	571.0	6.3	8	438	0.73	0.35	2.56	0.36
130	Five Mile Cr.	FICUA01	990521	1200	23.5	36.0	11.8	8.7	675.0	2.7	11	496	0.49	0.02	2.34	0.58
130	Five Mile Cr.	FICUA01	990525	1500	24.4	52.0	11.5	8.9	498.0	3.9	5	341	0.40	0.01	1.42	0.52
130	Five Mile Cr.	FICUA01	990610	1545	27.1	38.0	9.8	8.6	730.0	3.1	5	434	0.54	<0.009	1.54	0.64
130	Five Mile Cr.	FICUA01	990721	1245	27.6	57.0	9.9	8.6	556.0	6.5	7	304	0.51	0.03	2.56	<.05
130	Five Mile Cr.	FICUA01	990826	1520	28.3	43.3	10.3	8.7	771.0	5.1	6	476	0.92	0.03	2.67	1.53
130	Five Mile Cr.	FICUA01	990926	1811	21.3	31.6	10.5	8.5	859.0	3.5	4	577	0.44	0.04	4.26	0.73
130	Five Mile Cr.	FICUA01	991029	1300	14.2	33.0	8.6	8.6	880.0	3.7	1	544	0.54	0.01	2.98	0.09
140	Village Cr.	VICUA01	981130	1530	13.8	37.0	15.3	9.1	370.0	1.8	3	404	0.55	BDL	0.16	1.45
140	Village Cr.	VICUA01	981206	1315	17.9	47.0	12.6	8.8	386.0	1.0	1	295	0.52	0.03	2.59	0.33
140	Village Cr.	VICUA01	981220	1420	13.5	83.0	11.7	8.3	466.0	11.0	3	319	0.59	0.03	2.94	0.30
140	Village Cr.	VICUA01	990117	1400	11.7	202.0	14.9	7.1	11400.0	2.5	4	332	1.25	BDL	1.94	0.14
140	Village Cr.	VICUA01	990131	1245	13.3	flood	9.3	7.6	160.0	10.0	43	137	2.34	0.02	1.21	0.14
140	Village Cr.	VICUA01	990220	1300	12.7	505.0	12.1	7.7	386.0	1.8	4	398	0.23	0.01	0.34	BDL
140	Village Cr.	VICUA01	990226	1530	14.0	157.0	15.7	8.8	423.0	0.9	2	454	0.37	0.02	3.17	BDL
140	Village Cr.	VICUA01	990324	1630	15.8	176.0	14.5	8.8	540.0	2.5	3	425	BDL	BDL	3.15	0.06
140	Village Cr.	VICUA01	990326	1710	14.7	184.0	14.9	8.9	592.0	2.3	15	221	0.41	0.01	2.90	0.08
140	Village Cr.	VICUA01	990416	1550	19.2	117.0	8.9	8.3	488.0	3.7	7	421	0.48	0.03	3.46	0.17
140	Village Cr.	VICUA01	990430	1640	19.8	91.0	9.9	8.3	602.0	2.3	5	462	0.75	0.10	4.59	0.30
140	Village Cr.	VICUA01	990525	1330	25.8	85.0	11.8	8.8	499.0	4.3	14	369	0.74	0.02	2.04	0.21
140	Village Cr.	VICUA01	990610	1345	27.4	67.0	10.3	8.6	540.0	2.5	3	402	0.51	<0.009	1.91	0.15
140	Village Cr.	VICUA01	990727	1250	30.3	76.0	10.1	8.3	567.0	3.3	5	354	0.61	0.05	2.38	0.31
140	Village Cr.	VICUA01	991025	1700	13.7	38.9	12.6	8.6	557.0	1.6	0	343	0.81	0.01	2.51	0.21
140	Village Cr.	VICUA02	990816	1415	29.3	42.1	10.5	8.4	664.0	3.7	6	372	0.91	0.04	1.79	0.25
140	Village Cr.	VICUA04	990924	1840	20.4	38.5	10.3	8.4	560.0	5.2	4	382	1.01	0.03	3.00	0.25

Appendix S. Physical/chemical data collected as part of the Statewide Tributary Nutrient Loading Project, 1998-1999.

Sub-watershed	Stream Name	Station ID	Sample Date	Sample Time	Water Temp., °C	Flow, cfs	D.O., mg/L	pH, s.u.	Cond., mS/cm	Turb, NTU	TSS, mg/L	TDS, mg/L	TKN, mg/L	NH3-N, mg/L	NO2+NO3-N, mg/L	Total P, mg/L
Upper Black Warrior																
030	Valley Cr.	VACUA01	981123	1620	16.2	117.0	10.0	8.3	492.0	2.0	2	429	0.50	0.12	3.77	0.74
030	Valley Cr.	VACUA01	981205	1515	18.5	92.0	13.0	8.9	700.0	1.6	1	451	0.74	0.04	6.50	0.42
030	Valley Cr.	VACUA01	981219	1630	11.4	148.0	11.7	8.4	615.0	15.0	5	417	0.45	BDL	3.96	0.28
030	Valley Cr.	VACUA01	990116	1630	11.2	240.0	14.1	8.0	10200.0	3.0	1	315	0.75	BDL	2.16	0.17
030	Valley Cr.	VACUA01	990130	1645	15.8	3490.0		4.8	131.0	91.0	95	89	0.71	BDL	0.47	0.12
030	Valley Cr.	VACUA01	990206	1600	14.9	35.0	11.7	8.0	382.0	3.0	3	328	0.36	0.04	1.46	0.07
030	Valley Cr.	VACUA01	990220	1130	12.4	373.0	11.9	7.7	327.0	4.5	4	334	0.48	0.01	1.76	0.08
030	Valley Cr.	VACUA01	990305	1400	13.3	477.0	11.9	6.8	6650.0	2.5	5	312	0.07	0.11	0.90	0.10
030	Valley Cr.	VACUA01	990319	1340	16.6	443.0	13.6	8.1	297.0	2.9	9	150	0.40	BDL	1.33	0.10
030	Valley Cr.	VACUA01	990409	1400	22.6	240.0	10.9	8.5	532.0	3.0	2	372	0.36	0.02	2.30	0.20
030	Valley Cr.	VACUA01	990423	1500	22.9	148.0	10.6	7.1	656.0	2.1	1	388	0.49	0.13	2.42	0.25
030	Valley Cr.	VACUA01	990507	1545	21.7	337.0	8.1	7.8	397.0	17.2	9	343	0.96	0.55	0.75	0.26
030	Valley Cr.	VACUA01	990924	1740	21.0	85.0	9.9	8.5	521.0	3.1	2	289	0.81	0.14	3.92	0.42
030	Valley Cr.	VACUA01	991025	1555	14.4	88.0	12.7	8.5	574.0	4.2	1	369	0.40	0.01	4.15	0.05
030	Valley Cr.	VACUA02	990525	1245	24.2	134.0	9.4	8.5	589.0	1.5	1	438	0.62	0.05	2.13	0.31
030	Valley Cr.	VACUA03	990610	1300	26.0	108.0	9.8	8.6	5.8	1.8	5	422	0.46	<0.009	2.58	0.34
030	Valley Cr.	VACUA04	990727	1350	29.4	121.0	8.4	8.2	680.0	5.0	6	406	0.79	0.08	2.11	0.23
030	Valley Cr.	VACUA05	990816	1330	28.4	90.0	9.2	8.7	725.0	3.7	4	427	1.26	0.07	3.71	0.55
070	Blue Cr.	BLCUA01	981129	1430	12.9	2.0	10.1	7.9	640.0	0.8	0	496	0.20	BDL	0.03	BDL
070	Blue Cr.	BLCUA01	981209	1600	14.5	10.0	8.7	7.3	626.0	1.8	2	697	0.28	BDL	0.02	BDL
070	Blue Cr.	BLCUA01	981219	1411	9.2	7.0	11.6	7.7	356.0	2.4	1	342	0.21	BDL	0.02	BDL
070	Blue Cr.	BLCUA01	990119	1610	7.0	70.0	12.0	6.2	204.0	4.4	3	181	0.16	0.04	0.04	0.05
070	Blue Cr.	BLCUA01	990128	0900	12.0	64.0	12.4	7.6	251.0	5.0	3	257	0.29	0.03	0.05	0.05
070	Blue Cr.	BLCUA01	990202	1646	13.6	154.0	12.9	6.9	266.0	7.5	8	237	0.36	0.04	0.07	BDL
070	Blue Cr.	BLCUA01	990219	1430	10.9	81.0	11.3	6.7	258.0	4.5	2	236	0.22	0.01	0.04	BDL
070	Blue Cr.	BLCUA01	990302	1450	12.3	88.0	10.8	7.0	196.0	3.4	2	207	0.22	0.01	0.03	BDL
070	Blue Cr.	BLCUA01	990330	0900	13.1	54.0	12.0	7.3	411.0	15.4	8	538	0.18	0.01	0.04	0.08
070	Blue Cr.	BLCUA01	990408	1730	20.3	33.0	8.3	7.4	356.0	3.5	1	242	0.42	0.07	0.01	BDL
070	Blue Cr.	BLCUA01	990422	1530	20.0	13.0	8.5	8.0	564.0	1.5	1	421	0.40	0.10	0.02	BDL
070	Blue Cr.	BLCUA01	990511	1400	21.4	15.0	8.7	7.3	445.0	3.1	4	349	0.13	<0.009	0.03	<.05
070	Blue Cr.	BLCUA01	990531	1600	23.9	5.0	8.6	8.0	965.0	1.6	1	688	0.19	<0.009	0.03	<.05
070	Blue Cr.	BLCUA01	990614	1400	26.6	-5.0	7.6	8.0	968.0	1.5	7	796	0.25	<0.009	0.02	<.05
070	Blue Cr.	BLCUA01	990707	1430	29.3	4.0	8.4	7.9	557.0	2.8	3	365	0.24	0.01	0.04	<.05
070	Blue Cr.	BLCUA01	990903	1645	26.1	-2.7	7.5	6.2	1520.0	1.8	7	1519	0.30	0.04	0.02	0.05
070	Blue Cr.	BLCUA01	991013	1120	20.8	-1.0	7.7	7.6	894.0	1.2	3	625	0.31	0.01	0.01	0.05
080	Davis Cr.	DACUA01	981123	1530	14.5	49.0	9.9	7.8	829.0	2.0	23	763	0.17	BDL	BDL	BDL
080	Davis Cr.	DACUA01	981206	1410	17.5	29.0	10.0	8.3	1390.0	1.1	1	1175	0.30	0.04	0.04	BDL
080	Davis Cr.	DACUA01	981220	1520	11.6	24.0	11.0	7.9	908.0	16.0	2	634	0.26	BDL	0.20	BDL
080	Davis Cr.	DACUA01	990117	1530	11.3	161.0	12.6	7.1	14900.0	4.1	8	449	0.17	BDL	0.14	BDL
080	Davis Cr.	DACUA01	990131	1440	13.2	flood	9.0	7.0	107.0	15.0	95	81	0.56	BDL	0.10	BDL

Appendix S. Physical/chemical data collected as part of the Statewide Tributary Nutrient Loading Project, 1998-1999.

Sub-watershed	Stream Name	Station ID	Sample Date	Sample Time	Water Temp., °C	Flow, cfs	D.O., mg/L	pH, s.u.	Cond., mS/cm	Turb, NTU	TSS, mg/L	TDS, mg/L	TKN, mg/L	NH3-N, mg/L	NO2+NO3-N, mg/L	Total P, mg/L
Upper Black Warrior																
080	Davis Cr.	DACUA01	990219	1300	11.8	205.0	10.5	7.6	443.0	4.3	6	432	0.32	0.01	0.16	BDL
080	Davis Cr.	DACUA01	990226	1315	12.6	93.0	11.2	7.8	656.0	1.1	2	738	0.44	0.01	0.16	BDL
080	Davis Cr.	DACUA01	990312	1800	12.2	175.0	10.7	7.5	556.0	2.5	5	411	0.18	BDL	0.11	BDL
080	Davis Cr.	DACUA01	990329	1240	14.3	142.0	13.1	7.4	575.0	3.5	9	141	0.19	0.02	0.11	BDL
080	Davis Cr.	DACUA01	990409	1320	21.4	108.0	8.3	8.1	777.0	1.7	1	605	0.23	0.02	0.14	BDL
080	Davis Cr.	DACUA01	990423	1335	21.9	59.0	8.8	6.9	1000.0	1.4	1	725	0.42	0.09	0.08	BDL
080	Davis Cr.	DACUA01	990507	1445	21.8	95.0	9.0	8.1	720.0	6.4	14	716	0.25	0.01	0.04	<.05
080	Davis Cr.	DACUA01	990525	1145	23.3	17.0	8.8	8.3	1550.0	0.4	1	1346	0.17	<0.009	1.32	<.05
080	Davis Cr.	DACUA01	990610	1200	25.4	15.0	8.3	8.3	1750.0	0.5	0	1480	0.30	<0.009	0.02	<.05
080	Davis Cr.	DACUA01	990721	1400	29.4	22.0	7.9	8.3	1621.0	0.6	1	1175	0.30	<0.009	0.01	<.05
080	Davis Cr.	DACUA01	990816	1215	28.1	8.8	7.6	8.3	2535.0	0.9	2	1745	0.50	0.01	0.03	0.05
080	Davis Cr.	DACUA01	990924	1647	19.6	4.2	9.4	8.2	2544.0	1.0	1	1944	0.15	0.01	0.00	0.05
080	Davis Cr.	DACUA01	991025	1500	11.7	2.7	11.0	8.2	21.2	3.4	1	1525	0.32	0.01	0.03	0.05
120	Oliver Dam	BWRUA01	981130	1730	17.3	7220.0	9.5	7.2	318.0	8.7	7	61	0.27	0.01	0.06	0.06
120	Oliver Dam	BWRUA01	981209	1640	18.0	3000.0	7.4	6.8	357.0	7.4	7	279	0.38	0.05	0.35	BDL
120	Oliver Dam	BWRUA01	981221	1423	15.1	338.0	10.2	6.0	270.0	3.5	5	256	0.24	BDL	0.36	BDL
120	Oliver Dam	BWRUA01	990119	1515	10.8	8900.0	10.2	6.8	167.0	5.8	8	151	0.51	0.03	0.97	0.07
120	Oliver Dam	BWRUA01	990126	1445	14.0	30700.0	8.9	7.1	147.0	15.0	131	163	0.55	0.04	0.92	0.11
120	Oliver Dam	BWRUA01	990202	1430	13.3	44000.0	9.9	7.1	122.0	14.0	26	147	0.37	0.02	0.59	BDL
120	Oliver Dam	BWRUA01	990219	1030	11.0	18000.0	13.8	7.1	140.0	3.5	7	144	0.28	0.03	0.91	BDL
120	Oliver Dam	BWRUA01	990302	1420	13.8	11500.0	10.0	7.4	159.0	3.8	20	161		0.00	0.69	
120	Oliver Dam	BWRUA01	990330	1430	14.2	5200.0	11.0	7.1	173.0	7.4	19	196	0.44	0.00	0.65	BDL
120	Oliver Dam	BWRUA01	990408	1400	17.8	9800.0	9.5	7.0	156.0	6.6	10	87	0.31	0.09	0.67	BDL
120	Oliver Dam	BWRUA01	990422	1430	23.1	5430.0	9.2	8.2	231.0	8.6	16	113	0.50	0.14	0.62	BDL
120	Oliver Dam	BWRUA01	990511	1130	22.3	10800.0	8.4	6.9	220.0	5.3	7	211	<.05	0.01	0.49	<.05
120	Oliver Dam	BWRUA01	990614	1300	27.4	1570.0	7.5	7.6	244.0	5.1	8	149	0.55	<0.009	0.31	<.05
120	Oliver Dam	BWRUA01	990707	1800	27.5	10200.0	7.9	7.2	268.2	5.6	8	139	0.48	<0.009	0.58	<.05
120	Oliver Dam	BWRUA01	990903	1530	28.6	8970.0	7.3	6.2	290.2	7.7	8	142	0.42	0.03	0.14	0.05
120	Oliver Dam	BWRUA01	991013	1000	23.8	182.0	9.4	7.8	288.4	4.8	7	90	0.42	0.01	0.19	0.05
120	Selden Dam	BWRUA02	981115	1510	17.0	4760.0	9.6	6.5	335.0	14.2	8	267	0.21	0.02	0.02	0.05
120	Selden Dam	BWRUA02	981205	1447	17.2	564.0	10.2	7.4	242.0	10.5	15	190		0.06	0.29	
120	Selden Dam	BWRUA02	981213	1423	16.6	2830.0	12.6	7.4	277.0	5.5	10	238	0.52	0.02	0.31	BDL
120	Selden Dam	BWRUA02	990109	1330	9.5	9620.0	12.2	7.1	212.0	25.0	13	232	0.42	0.06	0.65	BDL
120	Selden Dam	BWRUA02	990115	1440	9.6	12400.0	12.6	7.0	174.0	56.0	10	169	0.52	0.06	0.84	BDL
120	Selden Dam	BWRUA02	990203	1615	14.1	27500.0	8.6	6.6	117.0	10.0	59	107	0.36	BDL	0.51	BDL
120	Selden Dam	BWRUA02	990222	1430	12.5	9270.0	10.9	6.8	135.0	3.2	9	185	0.38	0.08	0.81	BDL
120	Selden Dam	BWRUA02	990311	1523	13.0	9720.0	10.6	6.4	159.0	4.7	14	190	0.27	BDL	0.73	BDL
120	Selden Dam	BWRUA02	990324	1400	16.3	9220.0	9.9	6.7	128.0	10.4	10	134	0.37	BDL	0.72	BDL

Appendix S. Physical/chemical data collected as part of the Statewide Tributary Nutrient Loading Project, 1998-1999.

Sub-watershed	Stream Name	Station ID	Sample Date	Sample Time	Water Temp., °C	Flow, cfs	D.O., mg/L	pH, s.u.	Cond., mS/cm	Turb, NTU	TSS, mg/L	TDS, mg/L	TKN, mg/L	NH3-N, mg/L	NO2+NO3-N, mg/L	Total P, mg/L
Upper Black Warrior																
120	Selden Dam	BWRUA02	990413	1412	20.0	5070.0	10.5	7.2	138.0	9.2	29	191	0.55	0.02	0.55	BDL
120	Selden Dam	BWRUA02	990427	1745	22.3	3700.0	10.7	6.9	229.0	9.9	17	172	0.40	0.13	0.37	0.06
120	Selden Dam	BWRUA02	990519	1230	25.2	150.0	9.1	7.9	289.0	6.9	12	174	0.30	0.02	0.34	0.06
120	Selden Dam	BWRUA02	990524	1245	26.4	2750.0	8.4	7.9	271.0	6.8	9	177	0.46	0.04	0.08	<.05
120	Selden Dam	BWRUA02	990604	1300	27.3	2900.0	9.7	8.1	359.0	6.9	14	211	0.40	<0.009	0.27	<.05
120	Selden Dam	BWRUA02	990720	1020	29.6	3400.0	7.2	7.6	230.7	8.2	11	107	0.59	0.06	0.36	<.05
120	Selden Dam	BWRUA02	990908	1705	29.2	1910.0	7.4	7.5	336.3	7.0	9	158	0.30	0.05	0.18	0.05
120	Selden Dam	BWRUA02	991022	1600	22.5		8.7	7.2	284.7	8.2	11	192	0.48	0.02	0.24	0.05
120	Hurricane Cr.	HUCUA01	981127	1640	13.7	68.0	10.0	7.1	186.0	4.6	3	117	0.27	BDL	0.03	BDL
120	Hurricane Cr.	HUCUA01	981202	1600	13.8	56.0	9.7	7.0	166.0	4.1	2	169	0.42	0.09	0.08	BDL
120	Hurricane Cr.	HUCUA01	981231	1645	7.9	246.0	11.7	7.1	99.5	7.1	8	118	0.30	0.01	0.17	BDL
120	Hurricane Cr.	HUCUA01	990127	1645	12.7	242.0	10.6	6.7	97.0	81.0	19	104	0.28	BDL	0.15	BDL
120	Hurricane Cr.	HUCUA01	990131	1530	13.9	flood	9.8	6.2	46.3	22.0	204	43	0.64	BDL	0.11	BDL
120	Hurricane Cr.	HUCUA01	990222	1630	9.4	118.0	11.3	6.8	159.0	3.5	6	223	0.53	0.05	0.18	BDL
120	Hurricane Cr.	HUCUA01	990227	0830	12.4	112.0	10.5	6.4	169.0	1.7	3	195	0.28	0.02	0.20	BDL
120	Hurricane Cr.	HUCUA01	990310	1430	13.5	305.0	11.1	6.0	102.0	8.5	15	104	0.38	BDL	0.14	BDL
120	Hurricane Cr.	HUCUA01	990329	1440	14.6	198.0	10.8	6.3	116.0	10.3	6	99	0.20	BDL	0.15	BDL
120	Hurricane Cr.	HUCUA01	990406	1400	21.1	189.0	10.1	7.6	128.0	5.7	4	86	0.16	0.03	0.13	BDL
120	Hurricane Cr.	HUCUA01	990427	1320	21.4	87.0	10.5	7.0	159.0	5.2	3	174	0.21	0.12	0.19	BDL
120	Hurricane Cr.	HUCUA01	990511	1245	23.1	64.0	8.4	6.9	300.0	3.7	11	53	0.16	0.02	0.15	<.05
120	Hurricane Cr.	HUCUA01	990604	1045	24.9	40.0	8.4	7.6	300.0	6.9	4	233	0.25	<0.009	0.13	<.05
120	Hurricane Cr.	HUCUA01	990707	1720	30.9	29.0	7.9	7.4	240.8	4.9	4	142	0.34	<0.009	0.17	<.05
120	Hurricane Cr.	HUCUA01	990903	1420	25.3	9.6	10.5	6.3	425.0	1.7	3	260	0.36	0.01	0.15	0.05
120	Hurricane Cr.	HUCUA01	991013	1220	21.6	15.6	9.0	7.4	206.0	9.8	10	106	0.35	0.01	0.17	0.05
Lower Black Warrior																
030	Big Sandy Cr.	BSCUA01	981127	1530	14.6	169.0	9.2	7.0	92.5	10.5	12	23	0.20	BDL	0.00	BDL
030	Big Sandy Cr.	BSCUA01	981205	1642	16.9	169.0	8.9	7.2	187.0	8.0	9	140	0.36	0.04	0.06	BDL
030	Big Sandy Cr.	BSCUA01	981231	1000	8.4	314.0	10.9	6.8	78.4	7.5	30	106	0.30	0.02	0.09	BDL
030	Big Sandy Cr.	BSCUA01	990115	1215	11.4	259.0	10.2	6.9	128.0	80.0	23	132	0.27	0.00	0.08	BDL
030	Big Sandy Cr.	BSCUA01	990131	1445	14.5	flood	9.3	5.0	18.3	19.0	131	29	0.51	0.04	0.03	0.05
030	Big Sandy Cr.	BSCUA01	990203	1330	13.8	850.0	9.5	6.5	141.0	13.0	64	116	0.21	0.04	0.07	BDL
030	Big Sandy Cr.	BSCUA01	990227	1540	13.6	223.0	10.6	6.2	164.0	3.7	14	172	0.45	0.02	0.08	BDL
030	Big Sandy Cr.	BSCUA01	990310	1600	13.7	449.0	10.4	6.0	76.9	7.5	47	107	0.53	0.01	0.08	0.08
030	Big Sandy Cr.	BSCUA01	990324	1630	15.2	231.0	8.6	6.4	165.0	13.5	11	154	0.22	0.04	0.08	BDL
030	Big Sandy Cr.	BSCUA01	990406	1600	20.6	229.0	9.3	7.1	158.0	11.5	22	17	0.28	0.03	0.07	BDL
030	Big Sandy Cr.	BSCUA01	990427	1445	20.5	187.0	9.0	6.5	222.0	16.8	29	206	0.31	0.17	0.10	BDL
030	Big Sandy Cr.	BSCUA01	990519	0945	20.3	69.0	8.9	6.9	317.0	9.6	2	187	0.19	0.03	0.10	<.05
030	Big Sandy Cr.	BSCUA01	990524	1030	21.4	95.0	8.3	7.4	256.0	9.2	12	175	0.27	0.03	0.10	<.05
030	Big Sandy Cr.	BSCUA01	990607	1205	24.0	98.0	7.8	6.9	191.0	11.9	11	145	0.23	<0.009	0.09	<.05
030	Big Sandy Cr.	BSCUA01	990714	1245	24.6	97.0	8.4	7.0	199.9	13.7	12	90	0.31	0.02	0.10	<.05

Appendix S. Physical/chemical data collected as part of the Statewide Tributary Nutrient Loading Project, 1998-1999.

Sub-watershed	Stream Name	Station ID	Sample Date	Sample Time	Water Temp., °C	Flow, cfs	D.O., mg/L	pH, s.u.	Cond., mS/cm	Turb, NTU	TSS, mg/L	TDS, mg/L	TKN, mg/L	NH3-N, mg/L	NO2+NO3-N, mg/L	Total P, mg/L
Lower Black Warrior																
030	Big Sandy Cr.	BSCUA01	990830	1530	25.8	98.7	7.7	7.6	272.5	5.2	5	145	0.53	0.04	0.07	0.05
030	Big Sandy Cr.	BSCUA01	990913	1500	23.7	53.7	8.4	7.4	262.3	7.7	8	133	0.38	0.03	0.08	0.05
030	Big Sandy Cr.	BSCUA01	991022	1355	14.7	68.6	10.0	7.3	295.8	6.4	6	150	0.30	0.01	0.06	0.05
060	Elliot's Cr.	ELLUA01	981115	1605	15.5	107.0	8.2	6.7	50.0	7.9	18	105	0.45	0.04	0.03	BDL
060	Elliot's Cr.	ELLUA01	981206	1400	19.0	24.0	8.1	6.3	19.2	5.7	5	54	0.32	0.06	0.11	BDL
060	Elliot's Cr.	ELLUA01	981227	1130	12.8	44.0	8.5	6.5	20.0	4.7	16	70	0.23	1.00	0.11	BDL
060	Elliot's Cr.	ELLUA01	990115	1400	10.5	45.0	11.5	6.7	15.7	33.0	3	58	0.17	BDL	0.08	BDL
060	Elliot's Cr.	ELLUA01	990121	1354	15.4	32.0	9.3	5.3	17.2	3.0	4	66	0.37	BDL	0.10	BDL
060	Elliot's Cr.	ELLUA01	990203	1500	15.5	113.0	9.1	6.0	15.1	4.6	5	81	0.36	0.03	0.07	BDL
060	Elliot's Cr.	ELLUA01	990222	1520	9.1	37.0	11.4	5.5	14.7	2.5	3	129	0.29	0.00	0.11	BDL
060	Elliot's Cr.	ELLUA01	990310	1745	15.9	61.0	10.1	5.8	13.8	3.0	4	80	0.26	0.01	0.07	0.05
060	Elliot's Cr.	ELLUA01	990316	1325	12.4	68.0	10.7	5.8	12.0	39.0	16	69	0.29	BDL	0.07	0.06
060	Elliot's Cr.	ELLUA01	990406	1530	22.7	41.0	8.1	5.8	34.6	6.0	6	23	0.36	0.02	0.09	BDL
060	Elliot's Cr.	ELLUA01	990427	1600	21.2	36.0	8.4	6.4	24.7	9.7	12	70	1.77	0.14	0.16	BDL
060	Elliot's Cr.	ELLUA01	990519	1100	19.9	21.0	8.4	6.6	23.5	8.6	16	51	1.22	0.04	0.17	<.05
060	Elliot's Cr.	ELLUA01	990604	1145	22.6	36.0	7.5	6.3	23.0	8.9	8	76	0.47	<0.009	0.10	<.05
060	Elliot's Cr.	ELLUA01	990908	1430	24.2	19.0	7.4	7.1	23.1	4.5	5	18	0.30	0.02	0.07	0.05
060	Elliot's Cr.	ELLUA01	991022	1440	1.8	16.0	9.6	6.0	27.5	5.4	4	20	0.33	0.02	0.10	0.05
120	Big Brush Cr.	BBCUA01	981127	1325	15.2	66.0	9.4	7.1	111.0	9.2	7	169	0.27	0.08	0.02	0.06
120	Big Brush Cr.	BBCUA01	981205	1530	17.4	55.0	8.9	7.1	123.0	9.1	6	112	0.64	BDL	0.05	BDL
120	Big Brush Cr.	BBCUA01	981230	1430	9.1	248.0	10.5	6.5	41.6	10.0	38	98	0.71	0.02	0.09	BDL
120	Big Brush Cr.	BBCUA01	990121	1430	12.6	292.0	11.0	6.0	124.0	6.0	38	95	0.45	BDL	0.07	0.08
120	Big Brush Cr.	BBCUA01	990131	1400	14.9	flood	8.8	5.7	16.4	12.0	4	30	0.64	1.22	0.05	0.15
120	Big Brush Cr.	BBCUA01	990203	1530	14.1	1025.0	8.9	6.1	34.7	7.0	65	97	0.51	0.03	0.08	BDL
120	Big Brush Cr.	BBCUA01	990224	1500	9.4	164.0	11.8	6.1	56.6	5.0	12	103	0.37	0.03	0.08	BDL
120	Big Brush Cr.	BBCUA01	990316	1400	11.4	1082.0	9.8	6.1	27.3	9.0	60	113	0.39	0.03	0.05	0.08
120	Big Brush Cr.	BBCUA01	990324	1515	15.7	214.0	9.2	5.7	70.7	13.6	13	131	0.45	0.02	0.06	BDL
120	Big Brush Cr.	BBCUA01	990413	1310	20.0	103.0	9.0	6.6	73.6	11.5	11	145	0.46	0.08	0.10	BDL
120	Big Brush Cr.	BBCUA01	990427	1700	21.2	167.0	8.9	6.6	140.0	43.6	96	159	0.70	0.17	0.13	BDL
120	Big Brush Cr.	BBCUA01	990519	1130	22.2	31.0	7.8	6.9	309.0	11.4	6	200	0.31	0.06	0.16	<.05
120	Big Brush Cr.	BBCUA01	990524	1200	23.6	26.0	7.5	7.1	235.0	10.1	6	188	0.11	0.06	0.17	0.07
120	Big Brush Cr.	BBCUA01	990604	1230	25.8	18.0	11.7	7.4	126.0	9.7	5	117	0.48	<0.009	0.14	<.05
120	Big Brush Cr.	BBCUA01	990714	1140	25.3	78.0	7.9	6.7	115.9	13.5	12	71	0.46	0.07	0.11	<.05
120	Big Brush Cr.	BBCUA02	990913	1500	25.1	8.5	7.6	6.9	1658.0	9.8	7	884	0.55	0.20	0.15	0.05
120	Big Brush Cr.	BBCUA03	991022	1515	16.7	12.2	9.3	6.5	167.0	6.7	2	91	0.45	0.02	0.07	0.05
130	Holt Dam	BWRUA03	981130	1645	17.3	1710.0	9.3	7.4	327.0	3.3	3	163	0.32	BDL	0.05	1.45
130	Holt Dam	BWRUA03	981202	1630	18.3	1750.0	8.4	7.4	33.8	5.0	4	238	0.34	0.02	0.16	BDL
130	Holt Dam	BWRUA03	981228	1600	13.0	10700.0	10.1	7.7	281.0	4.0	6	281	0.50	BDL	0.66	BDL
130	Holt Dam	BWRUA03	990109	1435	8.6	13600.0	11.1	7.2	208.0	25.0	14	198	0.43	0.05	0.89	BDL
130	Holt Dam	BWRUA03	990123	1138	10.7	24800.0	15.6	6.8	186.0	10.0	58	193	0.48	BDL	1.21	0.06

Appendix S. Physical/chemical data collected as part of the Statewide Tributary Nutrient Loading Project, 1998-1999.

Sub-watershed	Stream Name	Station ID	Sample Date	Sample Time	Water Temp., °C	Flow, cfs	D.O., mg/L	pH, s.u.	Cond., mS/cm	Turb, NTU	TSS, mg/L	TDS, mg/L	TKN, mg/L	NH3-N, mg/L	NO2+NO3-N, mg/L	Total P, mg/L
Lower Black Warrior																
130	Holt Dam	BWRUA03	990222	1610	13.4	12800.0	9.8	6.9	207.0	1.5	4	231	0.46	0.02	1.11	BDL
130	Holt Dam	BWRUA03	990227	0804	12.6	11400.0	9.3	6.8	152.0	1.5	3	198	0.35	0.01	1.05	BDL
130	Holt Dam	BWRUA03	990310	1345	13.7	20700.0	12.1	6.4	169.0	2.0	4	169	0.29	0.00	0.84	0.05
130	Holt Dam	BWRUA03	990329	1120	14.1	7690.0	10.1	6.5	157.0	7.4	3	106	0.59	0.01	0.75	BDL
130	Holt Dam	BWRUA03	990406	1340	16.8	12700.0	10.5	7.8	179.0	3.4	3	72	0.32	0.03	0.63	BDL
130	Holt Dam	BWRUA03	990427	1400	20.7	4630.0	9.6	6.8	189.0	3.5	3	185	1.71	0.11	0.63	0.05
130	Holt Dam	BWRUA03	990511	1230	23.3	12100.0	8.7	7.3	234.0	2.4	11	218	0.31	0.04	0.50	<.05
130	Holt Dam	BWRUA03	990525	1045	24.6	4650.0	9.5	8.4	252.0	2.6	4	190	0.39	<0.009	0.42	<.05
130	Holt Dam	BWRUA03	990604	1030	26.6	6940.0	7.7	8.3	295.0	2.1	3	204	0.35	<0.009	0.38	<.05
130	Holt Dam	BWRUA03	990707	1630	27.4	3090.0	7.8	7.4	248.7	3.0	3	128	0.50	0.09	0.62	<.05
130	Holt Dam	BWRUA03	990903	1450	29.0	938.0	6.2	6.3	287.0	2.9	3	150	0.50	0.32	0.23	0.05
130	Holt Dam	BWRUA03	991018	1330	24.5	850.0	7.4	7.8	362.5	2.8	4	156	0.39	0.01	0.15	0.05

BDL=Below Detection Limit

Appendix T. ALAMAP (Alabama Monitoring and Assessment Program)

***Lead agencies*:** ADEM and USEPA

***Purpose*:** ADEM's ALAMAP Program is made up of two separate components that monitor Alabama's coastal and upland waters. The Upland ALAMAP (ALAMAP-U) Program is a statewide monitoring effort to provide data that can be used to estimate the current status of all wadeable streams within Alabama. Evaluated assessment data, including chemical, physical, and habitat parameters are collected once at 250 stations, randomly selected by USEPA-Gulf Breeze over a 5-year period using ADEM's SOPs and QA/QC manuals.

Appendix T-1. ALAMAP-U habitat assessment data

Appendix T-2. ALAMAP U physical/chemical data

References:

ADEM. 2002n. Alabama Monitoring and Assessment Program (ALAMAP-U) data collected by ADEM 1997 to 2002 (unpublished). Field Operations Division, Alabama Department of Environmental Management. Montgomery, Alabama.

Appendix T-1. Results of habitat assessments conducted in the Black Warrior and Cahaba River Basins during ADEM's ALAMAP Program, 1998-2002.

CU		0202	0202	0202	0202	0202	0202	0109	0109	0109	0109	0109	0109
Sub-watershed		030	040	050	080	130	160	010	020	020	020	020	020
Station		CA2U5-27	CA01U2-46[h]	CA01U3-29	CA3U5-30	CA1U5-10[e]	CA1U6-30	BW07U3-51	BW05U3-5	BW1U4-5	BW1U5-5	BW1U6-5	BW05U2-5[a]
Date (YYMMDD)		010807	980818	990811	010807	010814	020806	990818	990818	000808	010815	020808	980818
Subecoregion		67h	67h	67f	67f	65p	65i	68d	68d	68d	68d	68d	68d
Width (ft)		4	20	10	20	250	15.00	8	20	50	40	37.00	20
Canopy cover[b]		MS	O	S	MS	O	MS	MS	MO	50/50	MO	MO	50/50
Depth (ft)	Riffle	0.3	0.5	0.5	0.5			0.2	0.2	0.0	0.5	0.1	
	Run	0.5	1.5	0.8	2.0		0.8	0.5	1.5	1.0	1.0	2.0	
	Pool	1.0	3.0	4.0	2.5		2.5			2.5	2.0	2.0	4.5
Substrate (%)	Bedrock	17	0	0	6	0	0	0	0	15	30	6	35
	Boulder	8	0	1	1	0	0	20	20	15	30	30	35
	Cobble	20	5	30	18	0	0	40	30	25	10	34	5
	Gravel	40	10	25	35	0	0	20	20	10	10	1	5
	Sand	5	15	30	12	0	67	5	5	10	15	12	5
	Silt	5	45	5	8	0	16	5	5	5	0	5	10
	Detritus	5	5	7	12	0	10	5	10	15	5	10	2
	Clay	0	10	0	3	0	0	0	5	0	0	0	0
	Organic silt	0	10	2	5	0	7	5	5	5	0	2	3
Habitat assessment form[c]		RR	RR	RR	GP	GP	GP	RR	RR	RR	RR	RR	GP
	Instream habitat quality	70	48	67	72	23	53	50	50	74	87	80	53
	Sediment deposition	76	40	53	65	55	68	80	75	69	91	66	65
	Sinuosity	100	55	45	70	60	33	100	90	78	88	98	50
	Bank and vegetative stability	54	70	68	59	40	73	60	93	66	88	76	80
	Riparian measurements	81	85	85	38	100	100	100	100	76	90	94	93
Habitat assessment score		178	153	165	148	129	158	173	184	177	215	194	158
% Maximum		74	64	69	67	59	72	72	77	74	90	81	72
Assessment[j]		Excellent	Good	Excellent	Good	NG	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

a. Small stream; unable to measure flow

b. Canopy cover: S=shaded; MS=mostly shaded; 50/50=50% shaded; MO=mostly open; O=open

c. Habitat assessment form: RR=riffle/run (Barbour et al. 1999); GP=glide/pool (Barbour et al. 1999)

d. Stream no longer existed

e. Not wadeable; No flow taken

f. No flow; did not collect samples, habitat assessment, or flow

g. No flow, standing pools only

h. No flow measured

i. Habitat assessment not conducted

j. NG=no assessment guidelines; for 68b, used guidelines from adjacent subecoregion 68d; limited reference data available for 68f; 68f guidelines calculated from combintion of reference data from 68f, and adjacent subecoregions 65i, 67f, and 68e.

Appendix T-1. Results of habitat assessments conducted in the Black Warrior and Cahaba River Basins during ADEM's ALAMAP Program, 1998-2002.

CU		0109	0109	0109	0109	0109	0109	0110	0110	0111	0111
Sub-watershed		080	090	100	120	130	170	010	120	030	050
Station		BW04U2-37[a]	BW04U3-58[f]	BW2U6-36[f]	BW02A2-41	BW10U4-55	BW11U4-59	BW01A2-59[a]	BW9U4-53[g, i]	BW06U2-38	BW06U3-38
Date (YYMMDD)		980825	990818	020813	980812	000809	000809	980813	000808	980819	990818
Subecoregion		68e	68b	68e	68e	68e	68f	68e	68e	68d	68d
Width (ft)		115		6.00	30	5	10	28	7	12	30
Canopy cover[b]		O		S	50/50	MS	MO	MS	S	50/50	50/50
Depth (ft)	Riffle				1.0	0.2	0.3	0.3	0.0		0.1
	Run				2.5	0.8	0.5	0.5	0.0		0.5
	Pool				3.0	1.5	1.5	1.0	0.5	4.0	
Substrate (%)	Bedrock	0		0	0	0	5	50	0	20	70
	Boulder	0		30	2	3	10	0	65	12	15
	Cobble	0		40	0	2	25	35	10	0	5
	Gravel	0		20	2	10	25	10	5	2	3
	Sand	88		5	15	65	5	5	15	40	2
	Silt	5		0	60	5	5	0	0	2	0
	Detritus	7		5	11	10	10	0	5	20	3
	Clay	0		0	0	0	15	0	0	2	0
	Organic silt	0		0	10	5	0	0	0	2	2
Habitat assessment form[c]		GP			RR	RR	RR	RR		GP	RR
	Instream habitat quality	35			33	40	65	47		60	32
	Sediment deposition	40			15	33	45	93		35	95
	Sinuosity	35			100	35	70	100		60	100
	Bank and vegetative stability	50			20	15	33	85		50	75
	Riparian measurements	70			100	5	30	100		70	95
Habitat assessment score		106			128	80	124	188		135	171
% Maximum		48			53	33	52	78		61	71
Assessment[j]		Fair			Fair	Poor	Fair	Excellent		Good	Good

a. Small stream; unable to measure flow

b. Canopy cover: S=shaded; MS=mostly shaded; 50/50=50% shaded; MO=mostly open; O=open

c. Habitat assessment form: RR=riffle/run (Barbour et al. 1999); GP=glide/pool (Barbour et al. 1999)

d. Stream no longer existed

e. Not wadeable; No flow taken

f. No flow; did not collect samples, habitat assessment, or flow

g. No flow, standing pools only

h. No flow measured

i. Habitat assessment not conducted

j. NG=no assessment guidelines; for 68b, used guidelines from adjacent subecoregion 68d; limited reference data available for 68f; 68f guidelines calculated from combintion of reference data from 68f, and adjacent subecoregions 65i, 67f, and 68e.

Appendix T-1. Results of habitat assessments conducted in the Black Warrior and Cahaba River Basins during ADEM's ALAMAP Program, 1998-2002.

CU		0111	0111	0111	0112	0112	0112	0112	0112	0112	0112
Sub-watershed		050	130	130	020	030	070	070	090	090	100
Station		BW3U5-44[a]	BW7A4-42[d]	BW4U6-43[f]	BW3U6-38	BW8U4-50[g]	BW02U3-43	BW4U5-50[a]	BW01A3-27	BW4U4-39	BW6U6-54
Date (YYMMDD)		010815	000802	020814	020814	000802	990825	010823	990824	000802	020820
Subecoregion		68d	68f	68f	67f	68f	68f	68f	67h	68f	65i
Width (ft)		1		10	53	50	5	5	40	35	15
Canopy cover[b]		S		S	MO	MS	S	S	MO	MO	S
Depth (ft)	Riffle	0.1				1.0	0.1	0.1	0.5	0.3	0.2
	Run	0.2			1.3	2.0	0.5	0.3	2.0	0.6	0.5
	Pool	0.5			5.0			1.0		1.5	2.5
Substrate (%)	Bedrock	0		0	18	40	20	0	20	40	70
	Boulder	0		0	5	1	24	30	15	5	0
	Cobble	1		30	16	20	24	40	20	10	1
	Gravel	45		35	33	4	20	10	15	10	1
	Sand	7		35	19	30	4	13	20	10	23
	Silt	5		0	5	1	5	4	8	15	1
	Detritus	20		0	3	1	3	3	2	10	3
	Clay	20		0	0	1	0	0	0	0	0
	Organic silt	2		0	1	2	0	0	0	0	1
Habitat assessment form[c]		RR			GP	RR	RR	RR	RR	RR	RR
	Instream habitat quality	60			61	54	80	74	53	58	23
	Sediment deposition	45			68	65	90	90	65	73	83
	Sinuosity	60			20	5	90	100	10	50	13
	Bank and vegetative stability	63			76	98	95	79	75	46	79
	Riparian measurements	60			98	75	100	100	75	80	94
Habitat assessment score		149			160	163	210	201	152	157	148
% Maximum		62			73	68	88	84	63	65	62
Assessment[j]		Good			Excellent	Excellent	Excellent	Excellent	Good	Good	Good

a. Small stream; unable to measure flow

b. Canopy cover: S=shaded; MS=mostly shaded; 50/50=50% shaded; MO=mostly open; O=open

c. Habitat assessment form: RR=riffle/run (Barbour et al. 1999); GP=glide/pool (Barbour et al. 1999)

d. Stream no longer existed

e. Not wadeable; No flow taken

f. No flow; did not collect samples, habitat assessment, or flow

g. No flow, standing pools only

h. No flow measured

i. Habitat assessment not conducted

j. NG=no assessment guidelines; for 68b, used guidelines from adjacent subecoregion 68d; limited reference data available for 68f; 68f guidelines calculated from combintion of reference data from 68f, and adjacent subecoregions 65i, 67f, and 68e.

Appendix T-1. Results of habitat assessments conducted in the Black Warrior and Cahaba River Basins during ADEM's ALAMAP Program, 1998-2002.

CU		0112	0112	0112	0112	0113	0113	0113	0113
Sub-watershed		100	110	120	140	020	020	040	050
Station		BW5U6-45	BW2U4-29	BW03U3-53[i]	BW03U2-48[a]	BW5U4-40	BW6A4-41	BW2U5-34[f]	BW3U4-37
Date (YYMMDD)		020820	000803	990825	980818	000803	000803	010821	000825
Subecoregion		65i	68f	65i	67f	65i	65i	65p	65p
Width (ft)			50		6	6	18		40
Canopy cover[b]		O	MO		S	MS	MS		MS
Depth (ft)	Riffle				0.1	0.2	0.0		
	Run				0.3	0.5	1.0		1.0
	Pool	4.0			0.5	1.5	3.0		2.0
Substrate (%)	Bedrock	0			14	0	0		0
	Boulder	0			0	0	0		0
	Cobble	0			5	0	0		0
	Gravel	0			60	10	0		0
	Sand	0			20	75	50		0
	Silt	0			0	5	5		0
	Detritus	15			1	8	15		55
	Clay	0			0	0	5		30
	Organic silt	85			0	2	25		15
Habitat assessment form[c]		GP	GP		RR	RR	GP		GP
	Instream habitat quality	80	63		67	38	64		52
	Sediment deposition	55	60		83	9	25		50
	Sinuosity	30	60		65	63	55		63
	Bank and vegetative stability	90	61		93	10	59		56
	Riparian measurements	95	100		100	10	91		76
Habitat assessment score		179	167		203	56	148		145
% Maximum		81	76		85	23	67		66
Assessment[j]		Excellent	Excellent		Excellent	Poor	Excellent		NG

a. Small stream; unable to measure flow

b. Canopy cover: S=shaded; MS=mostly shaded; 50/50=50% shaded; MO=mostly open; O=open

c. Habitat assessment form: RR=riffle/run (Barbour et al. 1999); GP=glide/pool (Barbour et al. 1999)

d. Stream no longer existed

e. Not wadeable; No flow taken

f. No flow; did not collect samples, habitat assessment, or flow

g. No flow, standing pools only

h. No flow measured

i. Habitat assessment not conducted

j. NG=no assessment guidelines; for 68b, used guidelines from adjacent subecoregion 68d; limited reference data available for 68f; 68f guidelines calculated from combintion of reference data from 68f, and adjacent subecoregions 65i, 67f, and 68e.

Appendix T-2. Physical/chemical water quality data collected in conjunction with ADEM's ALAMAP Program, 1998-2002.

Sub	Station	Waterbody	Date yymmdd	Time 24 hr	Temp-H_2O ^oC	DO mg/L	SpCond mmho/cm	Turb NTU	pH su	Flow cfs	BOD_5 mg/L	$CBOD_5$ mg/L	TDS mg/L	TSS mg/L	Chloride mg/L	NO_3+NO_2-N mg/L	TP mg/L	DRP mg/L	Coliform org/100 mL
Cahaba River (0315-0202)																			
030	CA2U5-27	Tributary to Little Cahaba R.	010807	1040	23.8	8.24	170.0	33.1	7.51	0.1	2.6		116	20	3.5	0.130	<0.004		740
040	CA01U2-46[f]	Peavine Cr.	980818	1110	24.9	6.2	116.0	21.0	7.0		0.5		96	7	4.6	0.104	0.079		1260
050	CA01U3-29	Beaverdam Cr.	990811	1030	23.6	6.2	325.0	4.7	7.7	0.9	<0.1		202	10	<0.5	0.237	0.005		102
080	CA3U5-30	Shoal Cr.	010807	1430	26.2	7.7	231.0	17.7	8.9	11.7									>1200
130	CA1U5-10[b]	Cahaba R.	010814	1200	26.9	7.9	235.0	45.3	7.7		1.3		153	79	6.3	0.042	0.120		270
160	CA1U6-30	Holsombeck Cr.	020806	1230	22.0	8.1	100.0	14.9	6.0	3.4	0.9		24	34	<0.5	<0.003	0.041	<0.004	800
Mulberry Fork (0316-0109)																			
010	BW07U3-51	Hurricane Cr.	990818	1500	26.0	6.1	199.6	1.6	7.2		1.6		128	1	10.4	0.507	0.040		50
020	BW05U3-5	Duck R.	990818	1130	24.6	6.6	122.6	2.1	6.7		2.6		85	<1	12.6	0.035	0.053		3
020	BW1U4-5	Duck R.	000808	0900	25.5	4.2	95.5	2.6	6.7	0.0	3.0		77	2	2.6	<0.003	0.033		10
020	BW1U5-5	Duck R.	010815	1215	22.2	9.1	96.0	10.1	6.6	79.6	0.5		90	9	6.6	2.430	0.070		460
020	BW1U6-5	Duck R.	020808	1130	26.1	6.8	111.0	4.6	7.1		1.6		69	1	<0.5	<0.003	0.032	0.007	88
020	BW05U2-5[a]	Smith Br.	980818	1130	25.2	7.0	85.5	3.5	6.6		0.8		75	2	4.1	0.511	0.122		50
080	BW04U2-37[a]	Black Warrior R.	980825	1200	27.7	8.0	116.3	---	6.7		0.8		102	<1	11.4	1.242	0.130		10
090	BW04U3-58[c]	Williams Cr.	990818																
100	BW2U6-36[c]	Tributary to Mulberry Fork	020813																
120	BW02A2-41	Splunge Cr.	980812	1200	24.5	6.9	56.5	8.7	7.4	39.4 est.	0.7		59	1	<1	0.121	0.023		140
130	BW10U4-55	Bunkum Cr.	000809	1000	23.5	4.1	104.0	10.2	6.6	0.1	2.8		67	7	2.6	0.249	0.110		680
170	BW11U4-59	Jess Creek	000809	1130	32.6	6.0	65.0	11.6	6.3	0.1	1.7		64	3	<0.5	<0.003	0.007		54
Sipsey Fork (0316-0110)																			
010	BW01A2-59[a]	Hagood Cr.	980813	1345	22.1	6.9	143.8	1.1	6.8		0.8		136	1	<1	0.056	0.005K		42
120	BW9U4-53	Tributary to Little Crooked Cr.	000808	1130	24.4	4.4	216.0	6.1	7.2	0.0	1.2		123	19	<0.5	0.082	0.007		29
Locust Fork (0316-0111)																			
030	BW06U2-38	Big Mud Cr.	980819	1045	23.6	5.0	69.5	9.8	6.4	<0.1	1.9		76	5	<1	0.511	0.105		>240
050	BW06U3-38	Dry Cr.	990818	1000	26.1	8.2	899.0	3.3	7.5		1.8		782	11	17.3	1.105	0.476		440
050	BW3U5-44[a]	Dry Cr.	010815	1440	22.0	9.2	282.0	17.7	7.1		0.7		232	8	5.8	0.030	<0.004		>600
130	BW7A4-42[d]	Tributary to Five Mile Cr.	000802																
130	BW4U6-43[c]	Tributary to Five Mile Cr.	020814																
Upper Black Warrior River (0316-0112)																			
020	BW3U6-38	Valley Cr.	020814	1415	26.7	9.0	388.0	2.1	8.1	14.7	0.9		282	5	7.8	0.500	0.030	<0.004	96
030	BW8U4-50[e]	Mud Cr.	000802	1130	25.9	6.0	1237.0	0.8	7.8	3.2	0.4		908	11	6.6	<0.003	0.027		17
070	BW02U3-43	McDuff Spring Br.	990825	1100	22.8	5.6	156.0	3.2	6.4		2.4		119	5	4.1	0.064	0.015		1520
070	BW4U5-50[a]	Pewter Cr.	010823	1315	23.6	6.4	21.0	10.7	6.5		0.2		42	5	4.16	0.093	<0.004		25
090	BW01A3-27	North R.	990824	1700	27.4	6.7	1853.0	3.6	7.6	2.6	2.7		1253	6	153	0.028	0.015		44
090	BW4U4-39	North R.	000802	1230	27.2	5.1	133.0	1.7	7.6	0.4	1.3		81	4	<0.5	0.010	0.009		37
100	BW6U6-54	Barbee Cr.	020820	1200	23.5	7.8	222.0	16.4	6.6	2.2	0.9	0.9	157	6	3.8	0.412	0.021	<0.004	770
100	BW5U6-45	Binion Cr.	020820	1425	25.7	0.5	32.0	7.7	5.7			0.9	50	4	<0.5	<0.003	0.026	<0.004	244
110	BW2U4-29	Yellow Cr.	000803	0915	25.0	3.6	304.0	4.6	5.6	0.0	0.6		223	6	0.5	0.122	<0.004		<1
120	BW03U3-53[g]	Tributary to Kepple Cr.	990825	1400	30.4	8.4		13.2	6.7	0.0	4.0		49	10	9.7	<0.003	0.027		<1
140	BW03U2-48[a]	Opossum Cr.	980818	0945	24.4	5.5	724.0	6.9	6.8		<0.1		622	18	<1	0.211	0.099		>1200
Lower Black Warrior River (0316-0113)																			
020	BW5U4-40	Cypress Cr.	000803	1100	25.9	7.5	135.0	1.0	7.0	0.4	0.5		111	5	3.7	0.135	<0.004		>620
020	BW6A4-41	Grant Cr.	000803	1415	24.5	7.1	87.0	30.8	6.9	2.2	0.3		68	7	16.9	0.119	0.005		108
040	BW2U5-34[c]	Tributary to Black Warrior R.	010821	1200															
050	BW3U4-37	Grant Creek	000825	1250	26.2	4.1	58.0	11.7	6.5	0.0	1.2		58	9	4.5	0.046	0.041		228

a. Small stream; unable to measure flow
b. Not Wadeable. No flow taken.
c. No flow; did not collect samples, habitat assessment, or flow
d. Stream no longer existed
e. No flow, standing pools only
f. No flow measured
g. Habitat assessment not conducted