Chunky-Okatibbee Watershed Implementation Plan

Prepared by:
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Prepared for:
East Mississippi Foothills Land Trust

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1.0 EXECUTIVE SUMMARY

The Chunky-Okatibbee Watershed incorporates approximately 915 square miles and spans across five counties: Neshoba, Kemper, Newton, Lauderdale and Clarke counties in east Mississippi. General threats across the watershed include sedimentation from urbanization, agriculture, silvaculture, and mining activities. More specific pollutants of concern are non-point sources of pollution such as polluted runoff from impervious areas, sediment and silt, pathogens associated with leaking septic systems in unsewered areas, pathogens associated with animal waste, fertilizers, pesticides, and mercury.

The Chunky-Okatibbee Watershed Implementation Plan is intended to provide the formulation of strategies designed to protect water quality, enhance and protect the natural resources of the watershed, and to allow the watershed as a whole to realize its potential for its intended uses through the application of education measures, sound scientific principles and natural resources management practices. The provisions and strategies of this plan were conceived through a collaborative process that reflected a variety of interests identified from stakeholders located both within the watershed and throughout the State of Mississippi. The strategies incorporated into the plan fit within two primary categories that include Watershed Management Activities (technical) and Education Outreach Activities.

Many of the proposed activities will be conducted throughout the entire watershed; however, some of the proposed activities will target only the Chunky River and associated streams because the Chunky River and associated streams have been identified as the primary priority areas within the watershed via the process of meeting, soliciting feedback, and planning. The implementation of this plan will primarily be carried out by the Watershed Implementation Team (WIT) that is led and directed by the East Mississippi Foothills Land Trust (Land Trust). The Land Trust assumes primary responsibility for the contractual obligations with the Mississippi Department of Environmental Quality (MDEQ) and will direct implementation, evaluation, review and revision activities.

While the primary focus of the WIT is to promote a variety of structural and nonstructural best management practices that address technical and educational aspects of water quality management in the watershed, the primary focus of the Land Trust is to encourage conservation easements, buffer zones and streamside management. More information about specific implementation activities and the Land Trust in general can be obtained by contacting:

East Mississippi Foothills Land Trust
Mr. Tommy Vincent, President
601-484-2564
P.O. Box 790
Meridian, Mississippi 39305

The tables that follow summarize the primary components of the proposed technical and educational activities.

Summary of Watershed Management Activities

Goal/Benefit Desired	Management Action	Where	When
Increase the level of spatial knowledge of the watershed to provide for a higher level of assessment and evaluation of conditions affecting the watershed.	Collection and consolidation of readily available mapping data from a variety of sources including FEMA, USGS, MARIS and others.	Entire Watershed	2007
	Development of a GIS database to contain collected as well as created GIS data.	Entire Watershed	2007
Improvements to public access assets throughout the watershed and promotion of recreational opportunities.	Identification and acquisition of key conservation easements designed to conserve the scenic and recreational attributes of watershed streams through the development of a public access plan	Entire Watershed with a focus on the Chunky River	2007-2008
		Entire Watershed with a focus on the Chunky River	2007-2008
Reduce the input of litter and other objectionable materials, physically remove litter and other materials from streams designed to improve overall water quality and aesthetics.	Organize and conduct stream clean-up activities and events.	Entire Watershed with a focus on the Chunky River	2007-2008
	Identify the location and nature of illegal dumping sites in the watershed.	Entire Watershed	2007-2008
	Identify funding to assist in the enforcement and mitigation of illegal dumping within the watershed.	Entire Watershed	2007-2008
Sampling and monitoring of water quality as appropriate to fill gaps in existing data and to provide data to assist in identification of resource concerns.	Sampling and monitoring of water quality as appropriate to evaluate water quality concerns, to develop specific BMPs, and to evaluate the effectiveness of implemented BMPs.	Entire Watershed	2007-2008
Conservation Easement and Buffer Zone Establishment	Establishment of conservation easements or buffer zones with the goal of long term preservation in mind.	Entire Watershed	Ongoing

Summary of Education Outreach Activities

Education Outreach Activity	Where	When
Conduct meetings and presentations for a variety of stakeholders and interest groups through professional organizations, civic clubs, and other venues as opportunities are presented.	Entire Watershed	2006-2009
Conduct a coordinated media campaign utilizing both print and mass media to increase overall public awareness of the importance of water quality and its potential impacts on quality of life within the watershed.	Entire Watershed	2006-2009
Development of a table-top display that may tour around area schools, libraries, city halls, courthouses, conferences, exhibits, fairs, and other events.	Entire Watershed	2007-2008
Creation of participatory activities including outdoor classrooms or demonstration projects, clean-up events, and Adopt-A-Stream.	Entire Watershed	2008-2009
Creation of a website.	Entire Watershed	2007
Placement of watershed signs on major roads and bridge crossings.	Entire Watershed	2008-2009
Eco-Tours will be identified and provided on website.	Entire Watershed	2007-2009

2.0 INTRODUCTION

The Chunky-Okatibbee Watershed plays a vital role in the overall water quality not only in the Pascagoula River Basin itself, but also in that of the Gulf of Mexico because this watershed comprises the northern-most reaches of the Pascagoula River Basin. As part of the second largest drainage basin in Mississippi, the Chunky-Okatibbee Watershed is critical to the overall health of the basin because activities taking place in the watershed, whether beneficial or detrimental, will have an impact on water quality throughout the basin and the Gulf of Mexico.

Because of the unique characteristics of both the Pascagoula River Basin and the Chunky-Okatibbee Watershed, it has been determined that the development and implementation of a watershed implementation program would address water quality issues and concerns not only within the watershed but throughout the basin. The watershed management program includes the formation of a Watershed Implementation Team (WIT) and subsequent development and implementation of a Watershed Implementation Plan (WIP).

The pages to follow in this document are the result of an intensive planning effort undertaken by a very large and diverse group of local, state, and federal stakeholders. The plan references numerous organizations, agencies and other stakeholders that played a critical role in the development of the plan and its strategies. Many of these are referenced by acronym. While efforts have been made to reduce the number and frequency of acronym usage, a table has been provided as **Appendix A** that provides a guide to acronyms and their meanings.

The process of developing this document has included multiple stages, many of which have been conducted concurrently. These components include planning, public education, development of strategies for watershed and water quality protection, development of strategies for water quality restoration, and development of a plan for on-going monitoring. Each component of this plan will play an integral role in the success of the established goals and objectives of the plan. This plan is the sum of all of its parts and should be viewed, analyzed and implemented in a comprehensive manner in order for the implementation process to be fully successful.

2.1 VISION STATEMENT

The vision of the Chunky-Okatibbee WIT is to establish a watershed management framework designed to protect water quality, enhance and protect the natural resources that exist within the watershed, and to allow the entire watershed, as a natural system, to fully realize its potential for the designated water uses through the application of education measures, sound scientific principles, and natural resource management practices.

2.2 MISSION STATEMENT

The mission of this effort is to develop a Watershed Implementation Plan (WIP) emphasizing practices to assist in the realization of the Land Trust's mission to "conserve, promote, and protect the open spaces and green places of ecological, cultural or scenic significance in East Mississippi." This WIP is being prepared to address suspected and documented water quality impairments within the target watershed, as well as to address concerns identified by the WIT. The goal of the WIP is to improve water quality of impaired waters, protect water quality in unimpaired waters, and promote conservation management of natural resources within the target watershed. The WIP addresses water quality impairment due to erosion, sediment, siltation, litter, organic debris, excess nutrients, suspended solids, and pathogens. Through the development and implementation of this plan, the WIT will promote structural as well as non-structural practices to address issues of concern and priority areas. The goals of the plan will be achieved through a combination of assessment, education, public involvement, targeted management actions, and land conservation easements. Assessment of water quality at key locations in the watershed will be included as the initial steps in identifying causes of impairment.

2.3 WATERSHED IMPLEMENTATION TEAM

The following entities are represented on the Chunky-Okatibbee Watershed Implementation Team:

Audubon Society
City of Meridian
Clarkco State Park
Clarke County Board of Supervisors
Community Foundation of East Mississippi
East Central Mississippi Planning and Development District
East Mississippi Business Development Corporation
East Mississippi Community College – Phi Theta Kappa
East Mississippi Foothills Land Trust

Eco-Systems, Inc. (Eco-Systems, ESI)
Engineering Plus
Engineers and Surveyors, LLC
Garden Club of MS
Individuals
Keep America Beautiful (KAB)
Kemper County Board of Supervisors
Landowners
Lauderdale County Conservation Office
Lauderdale County Board of Supervisors
Leading Edges
Meridian Naval Air Station
Meridian Star
Mid-Mississippi Development District
Mississippi Department of Environmental Quality (MDEQ)
Mississippi Department of Public Health (MDPH)
Mississippi Department of Wildlife Fisheries and Parks (MDWFP)
Mississippi Farm Bureau Federation
Mississippi Forestry Commission (MFC)
Mississippi Power
Mississippi Public Broadcasting (MPB)
Mississippi Soil and Water Conservation Commission (MSWCC)
Mississippi State Extension Service
Mississippi State University (MSU)
Mississippi Wildlife Federation: Adopt-A-Stream Program
MS Canoe and Kayak Club
Neshoba County Board of Supervisors
Newton County Board of Supervisors
Newton County Soil and Water Conservation District
Okatibbee Water Park
Pat Harrison Waterway District (PHWWD)
The Nature Conservancy
The Riley Foundation
United States Department of Agriculture, Natural Resources Conservation Service (NRCS)
United States Geological Survey (USGS)
US Army Corps of Engineers (USACE)
Waste Management
Windmill Properties

The WIT is comprised of over 100 representatives from local, state, and federal agencies; local stakeholders; local colleges and schools; the general public; and

the board of directors for the Land Trust. An invitation was initially sent out to key players identified in the watershed, those serving on the Pascagoula River Basin Team, and those recommended by MDEQ. At the initial kick-off meeting, the attendees were also asked to suggest other potential team members. In addition, at each civic club presentation, landowner/stakeholder presentation, or environmental club presentation, stakeholders were asked to consider serving on the team. Finally, media coverage (newspaper and television) allowed the general public to become more aware of the project. As a result, anyone that contacted the EMFLT and requested to participate on the team was included.

The WIT composition is intended to be comprehensive and all-inclusive, and an addition or modification to the team does not require a formal action or vote. As representatives of their respective organizations, the following individuals are serving in committee roles on the following committees:

Executive Committee (The East Mississippi Foothills Land Trust)

Jimmy Alexander	Andrew Covington	Nell Covington	Tony Dean
Tommy Dulaney	Noel Evans	Winky Glover	Melissa Pringle
Tommy Vincent	Duffee Williams	Dorothy Allen	

Technical Committee

Chris Bowen	Larry Bull	Nell Covington	Larry Estes
Lamar Gunter	James Hall	Roy Higdon	Daryl Jones
Jimmy Kemp	Darrell Lanig	Kenneth Lefleur	Kevin Locke
Don Jemison	Clark Scoggin	John McClure	Becky Stowe
Liz Dudley	Melissa Pringle		

Education Committee

Andrew Whitehurst	Janis Galatas	Susan Shed	Margaret Muse-Lester
Ann Porter	Jeanine May	Vernon Hartley	Marrianna Lee
Barry Murphy	Jay Estes	Victor Warnsley	Susan Cosgrove
Becky Munn	Jimmy Mordica	Wayne Porter	Roman Harrington
Brittany Alexander	Joe Doss	Helen Gough	
Byron Tiller	Laura Bieser	Ed Brown	
Cathy Shropshire	Dawn Smithy	Steven Cullen	
Jack Huntley	Debbie Veeder	Randy Bowles	

3.0 WATERSHED DESCRIPTION

3.1 OVERVIEW


Canoeing the Chunky

The Chunky-Okatibbee Watershed is a sub-basin of the Pascagoula River Basin and is located at the northern-most reaches of the basin. In fact, the Chunky-Okatibbee Watershed forms the headwaters of the Pascagoula River Basin. This watershed is approximately 912 square miles and 586,240 acres and contains important water bodies such as the Chunky Creek, Chunky River, Sowashee Creek, Okatibbee Creek, Bonita Lakes and Okatibbee Lake. Please see **Appendix B** for specific maps related to the Chunky-Okatibbee Watershed.

The Chunky River is located in east-central Mississippi and is a tributary of the Chickasawhay River. The Chunky River begins in Newton County between the towns of Hickory and Chunky and is formed by the confluence of the Chunky Creek and Okahatta Creek. The river flows southeastwardly through the southwest portion of Lauderdale County and the northwest portion of Clarke County. The Chunky River joins Okatibbee Creek near Enterprise to form the Chickasawhay River. Dunn's Falls is a wonderful attraction on the Chunky River just north of Enterprise. Dunn's Falls consists of a 65-foot waterfall that was created to power a mill in the mid 1800's and is now open to visitors as a park operated by the Pat Harrison Waterway District.

The Chunky River is rich in heritage and was named for a Choctaw Indian game called "Chanki" played with a round disc and sticks on the sandy flat banks of the Chunky River. In addition to its historical and cultural importance, the Chunky River is also known for its abundant natural resources.

A portion of the Chunky River from the joining of Chunky Creek and Tallasher Creek and the Chunky River in Newton, Lauderdale, and Clarke counties to the junction with the Chickasawhay River in Clarke County was designated as a scenic river by the Mississippi Legislators in 2003. The river is part of the statewide program for protection of the most scenic and least altered waterways in Mississippi.


Okatibbee Reservoir

Okatibbee Lake is located seven miles northwest of Meridian on the Okatibbee Creek. The lake is a 4,144-acre lake designed primarily for flood control in the 1960's but also serves as an excellent fishing lake. Largemouth bass, catfish, crappie, and bream are abundant in the lake. The land area around Okatibbee Lake is approximately 7,000 acres and is a haven for wildlife such as Bald Eagles, deer, rabbit, dove, ducks, geese, quail, woodcock, and alligators. The Army Corps of Engineers operates the Twitley Branch Campground at the Okatibbee Lake, and Pat Harrison Waterway District operates the campground at Okatibbee Water Park.

Other significant water bodies within the watershed include Bonita Lakes and Dogwood Lake. The Bonita Lake area includes a small chain of lakes totaling approximately 308 acres located in southeast Meridian. The lakes are primarily used for recreation and offer fishing a boating related activities. Dogwood Lake consists of approximately 49 acres and is located north of the City of Meridian.

The Sowashee Creek flows in a southwesterly direction through the City of Meridian and then to the Okatibbee Creek. The development along the Sowashee Creek is a mix of industrial, commercial, and residential land uses. Because of stream encroachment, non-point source urban pollution, and industrial point sources, water quality is considered impaired in this creek. The tables that follow include primary waterways and water bodies that exist in the Chunky-Okatibbee Watershed.

Chunky-Okatibbee Watershed Creeks and Rivers

Name	Length (In Miles)	County				
Allen Creek	5.370	Clarke		Lauderdale		
Bailey Branch	6.831			Lauderdale		
Bales Creek	9.600		Kemper	Lauderdale		
Bethel Branch	4.476					Newton
Bethel Creek	5.682					Newton
Big John Branch	3.183				Neshoba	Newton
Blue Branch	2.897					Newton
Browns Creek	5.087			Lauderdale		
Burwell Creek	6.980			Lauderdale		
Carlton Branch	1.892					Newton
Chickasawhay Creek	18.210		Kemper	Lauderdale		
Chunky Creek	28.889				Neshoba	Newton
Chunky River	26.349	Clarke		Lauderdale		Newton
Clear Branch	4.042			Lauderdale		
Coats Creek	6.164			Lauderdale		
Concobona Creek	5.244					Newton

Cow Creek	9.250			Lauderdale		
Craney Branch	3.127					Newton
Curtis Branch	2.835			Lauderdale		
Dorman Branch	3.633					Newton
Double Reed Brake Branch	5.910				Neshoba	
Dry Branch	7.795					Newton
Dry Creek	7.048		Kemper			
Dunnagin Creek	5.504					Newton
Eason Branch	4.327				Neshoba	
Falema Creek, Bogue	14.332					Newton
Flower, Bogue	8.159			Lauderdale		
Gallagher Creek	6.304			Lauderdale		
Gin Creek	8.182			Lauderdale		
Graham Mill Creek	3.71			Lauderdale		
Gum Pond Branch	2.197					Newton
Gunn Branch	4.183			Lauderdale		
Hale Branch	3.472					Newton
Harper Creek	6.869			Lauderdale		
Hitts Branch	3.014					Newton
Hodge Branch	5.461		Kemper	Lauderdale		
Hognose Creek	6.557			Lauderdale		
House Creek	6.319			Lauderdale		
Houston Creek	9.536		Kemper			
Huckleberry Creek	3.356					Newton
John Cook Branch	2.311					Newton
Kidd Branch	4.482	Clarke				
Laird Branch	2.088					Newton
Little Creek	4.467			Lauderdale		
Little Rock Creek	13.041				Neshoba	Newton
Loper Creek	7.371			Lauderdale		
Mayatte Creek	3.81			Lauderdale		Newton
McLemore Branch	3.948			Lauderdale		
McMullan Branch	3.134					Newton
Murphy Branch	6.178				Neshoba	
Nanabe Creek	8.478			Lauderdale		
Nelson Creek	5.967				Neshoba	Newton
Okahatta Creek	20.39					Newton
Okatibbee Creek	76.65	Clarke	Kemper	Lauderdale	Neshoba	
Parker Branch	5.105				Neshoba	Newton
Penders Creek	9.175		Kemper	Lauderdale		
Possum Creek	7.036			Lauderdale		Newton
Potterchitto Creek	29.026					Newton
Reese Branch	2.788					Newton
Reeves Branch	2.858					Newton
Richardson Mill Creek	4.115					Newton
Riser Creek	6.158					Newton
Robbins Branch	3.937			Lauderdale		
Rock Branch	2.908			Lauderdale		Newton

Rock Creek	2.875			Lauderdale		
Rogers Creek	10.205					
Sand Branch	2.035					Newton
Smith Branch	6.99		Kemper		Neshoba	Newton
Sowashee Creek	20.517			Lauderdale		
Statinea, Bogue	5.476			Lauderdale		
Suqualena Creek	11.069			Lauderdale		
Tallachula Creek	9.39		Kemper			
Tallahatta Creek	31.151			Lauderdale	Neshoba	Newton
Tallashua Creek	22.627				Neshoba	Newton
Tarlow Creek	13.957					Newton
Threat Branch	4.415				Neshoba	Newton
Toles Branch	2.9		Kemper			
Tompeat Creek	10.586		Kemper	Lauderdale		
Tonacana Creek	7.269					Newton
Townsend Branch	2.574					Newton
Tucker Branch	1.998				Neshoba	
Turkey Creek	14.144					Newton
Twitley Branch	2.778			Lauderdale		
Walker Branch	3.76					Newton
Wanita Creek	5.22	Clarke		Lauderdale		
White Branch	2.513		Kemper	Lauderdale		
Wilson Branch	3.738				Neshoba	
Winstead Branch	3.068				Neshoba	
Witt Creek	3.063					Newton

Chunky-Okatibbee Watershed Lakes

Name	Area (In Acres)	County
Bonita Reservoir	32.12	Lauderdale
Burwell Lake	7.91	Lauderdale
Daniel Lake	4.2	Newton
Dogwood Lake	19.27	Lauderdale
Dollar Lake	23.72	Clarke
House Lake	41.27	Neshoba
Irby Lake	24.71	Lauderdale
Joyner Lake	16.31	Neshoba
Kennedy Pond	6.92	Newton
Lakemont Lake	8.15	Lauderdale
Mirror Lake	5.93	Lauderdale
Okatibbee Lake	906.14	Lauderdale
Okatibbee Lake	3312.45	Lauderdale
O'Neil Lake	6.18	Lauderdale
Ozborn Lake	53.37	Newton
Pigford Lake	12.6	Lauderdale
Spring Lake	6.18	Newton
Stamper Pond	4.2	Newton
Walker Lake	6.67	Lauderdale
Wanita Lake	42.5	Lauderdale
Webb Lake	14.83	Lauderdale
Wickware Pond	4.7	Newton

3.2 DEMOGRAPHICS AND PRIMARY LAND USES


Regional Culture

The Chunky-Okatibbee Watershed reaches into five counties in east central Mississippi including: Clarke, Kemper, Lauderdale, Neshoba, and Newton. The watershed also includes the following cities, towns, and populated areas: Union, Decatur, Newton, Hickory, Chunky, Collinsville, Meridian, and Marion. The total estimated population of the watershed is 84,329 according to the 2000 U.S. Census. Of the total watershed population, approximately 51,085 or 60% live within the eight cities and towns listed above. The largest population center within the watershed is the City of Meridian with a population of 39,968 or approximately 47% of the total watershed population. Given the above-detailed population figures and estimates, approximately 40-60% of the total watershed population lives within urban or at least suburban environments, and the remainder live in largely rural environments.

A review of the Census Bureaus population estimate data for 2006 indicates that the population in the region and the watershed is growing at a constant rate with most of the growth occurring in Lauderdale, and Neshoba Counties. Newton, Clarke and Kemper County have lost population according to the latest census estimate data. This follows an emerging state-wide trend of migration to the more urbanized areas of the state. Population projections through 2011 indicated that Lauderdale County will continue to increase in population while the other four counties in the watershed will continue to decrease in population. During a four-year period from 2001-2004 all five counties within the watershed have shown a negative net migration except Neshoba County. Neshoba County's growth is likely due to the increase in economic opportunities offered through the gaming and tourism related industries in the county. Although population in the watershed appears to be declining, there is a general upward trend in median household income that is consistent across all five watershed counties. The following table provides a listing of the top employers across the region:

Top Employers by Number of Employees

Employer Name	Location	Product or Service	Employees
Peavey Electronics Corp	Meridian, MS	Electronic Product Manufacturing	1200
La-Z-Boy South	Newton, MS	Furniture Manufacturing	944
Avery Dennison Corp	Meridian, MS	Printing Activities	533
Peavey Electronics Corp	Decatur, MS	Electronic Product Manufacturing	400
ESCO Corp	Newton, MS	Metal Manufacturing	325
Atlas Roofing Corp	Meridian, MS	Petroleum Products Manufacturing	260
Dart Container Corp	Quitman, MS	Plastic Products Manufacturing	230
Weyerhaeuser Co	Philadelphia, MS	Wood Product Manufacturing	215
La-Z-Boy Plywood Plant No. 21	Newton, MS	Wood Product Manufacturing	200
Sara Lee Bakery Group	Meridian, MS	Food Manufacturing	200
American Greetings Corp	Philadelphia, MS	Printing and Related Support Activities	190
Southern Cast Products Inc	Meridian, MS	Primary Metal Manufacturing	175
Southern Circuits & Components	DeKalb, MS	Electronic Product Manufacturing	160
Richardson Molding Inc	Philadelphia, MS	Plastic Products Manufacturing	160
Peco Foods Feed Mill	Philadelphia, MS	Food Manufacturing	150
Chahta Enterprise	Choctaw, MS	Electrical Equipment	120
Pharma Pac LLC	DeKalb, MS	Chemical Manufacturing	100
Air Vent Inc	Enterprise, MS	Fabricated Metal Manufacturing	100
Meyer Packaging FC	Quitman, MS	Paper Manufacturing	98
Prime Line Catfish	Scooba, MS	Food Manufacturing	90
Southwood Door Co	Quitman, MS	Wood Product Manufacturing	77
Reman Inc	Decatur, MS	Transportation Equipment	50
Alply Inc	DeKalb, MS	Metal Product Manufacturing	50
Dixie Electric	DeKalb, MS	Electronic Product Manufacturing	50
Kelwood Products Inc	Enterprise, MS	Wood Product Manufacturing	50

The predominant land cover in the watershed consists of pine-hardwood forest with nearly equivalent coverage of immature woody vegetation, hardwood forest and pine forest. There is also a statistically significant percentage of relatively new (2000-2003) pine plantations. The amount of urban lands relative to other types of land cover within the watershed is small. The conclusion is that the majority of land cover within the watershed is dominated by a variety of vegetative covers.

3.3 PHYSICAL GEOLOGY

The Chunky-Okatibbee Watershed is located within the North Central Hills region of the Southern Coastal Plain. The watershed stretches across seven distinct geological formations including the Jackson Group Formation, the Cockfield Formation, the Cook Mountain Formation, the Kosciusko Formation, the Zilpha/Winona Formation, the Tallahata/Neshoba Sand Formation, and the Wilcox Formation. The Chunky-Okatibbee Watershed includes approximately fourteen individual soil associations that are typical of soils located throughout the North Central Hills region. A map showing soils class distribution throughout the watershed is located in **Appendix B**.

Soil Class	% of Land Area	Total Land Area (In Acres)	Erosive
arundel	5.18%	30,334.08	No
bibb	12.41%	72,672.96	No
bigbee	0.74%	4,333.44	No
catalpa	0.16%	936.96	No
lauderdale	1.86%	10,892.16	No
mantachie	2.13%	12,473.28	No
mooreville	0.40%	2,342.40	No
ora	5.68%	33,262.08	No
quitman	2.03%	11,887.68	Yes
savannah	1.33%	7,788.48	Yes
smithdale	12.71%	74,429.76	No
sweatman	33.86%	198,284.16	No
vaiden	18.40%	107,750.40	Yes
williamsville	2.78%	16,279.68	No
Percentages do not include surface water areas			

3.4 WETLANDS

Wetlands are considered as areas that contain saturated soils near the surface for extended periods of time and include such areas as springs, seepages, bogs, sloughs, and floodplains. Wetlands provide a number of valuable functions including protection and improvement of water quality and management of floodwaters. Wetlands also typically contain the greatest diversity of wildlife and plant life of any system in the landscape.

In this watershed, wetlands exist primarily in conjunction with streams and are often located in the floodplains of the stream channels. Also present are spring head wetland areas that are often found in many of the steep ravines of the watershed. The dominant wetland type is composed of bottomland hardwood forested areas along streams and in floodplains. Smaller areas of emergent and

shrub type wetlands are present in areas where shallow water pools for extended periods, such as oxbows, sloughs, and beaver ponds. In general, the wetland areas within the watershed are dominated by canopy species of oak, hickory, sweetgum, blackgum, willow, and maple with some areas of cypress and water tupelo present.

Few examples of wetland management activities currently exist in the watershed with the notable exception of "Streamside Management Zones" (SMZs), which are timber harvesting practices encouraged throughout the watershed. Timber production constitutes one of the major land uses in the watershed and practices such as clear-cutting have the potential to result in significant disturbance of soils. The SMZ practice is designed to protect water quality of streams and wetlands by limiting clearing of areas along streams and providing a buffer for managing runoff from adjacent disturbed areas. While it would be expected that an increase in urbanization would lead to impacts on either the quantity or quality of wetlands within the watershed; there is not enough available data to determine that either a positive or negative trend exists.

3.5 ENVIRONMENTAL MANAGEMENT AREAS

The only environmental management area within the watershed is the Okatibbee Wildlife Management Area that surrounds the Okatibbee Reservoir. While there are no national forests within the watershed, the Bienville National Forrest is directly adjacent to the watershed near its southwestern border. In addition to the above-described areas, there are numerous recreational areas within the watershed that include both natural and manmade assets such as roadside parks, boat launches, community and neighborhood parks and the actual streams within the watershed that provide public access.

3.6 PARKS AND RECREATIONAL AREAS

Site Name	City	COUNTY	Facility Type	Associated Water Body
Ben Arthur Davis Park	Meridian	Lauderdale	Neighborhood Park	
Bonita Lake Park	Meridian	Lauderdale	Unique Natural Park/Primitive Natural Park/Recreation Area	Bonita Lake
Briarwood Country Club	Meridian	Lauderdale	Single / Special Purpose Facility	
Campground RV Park	Meridian	Lauderdale	Single / Special Purpose Facility	
Chickasawhay Creek		Kemper	Unique Natural Park/Primitive Natural Park/Recreation Area	Chickasawhay Creek
Chinqupin Lake		Lauderdale	Other	Chinqupin Lake
Chunky Community Ballfield	Chunky	Newton	Community Playfield	
Chunky River		Clarke	Unique Natural Park/Primitive Natural Park/Recreation Area	Chunky River
Chunky River		Lauderdale	Unique Natural Park/Primitive Natural Park/Recreation Area	Chunky River
Chunky River		Newton	Unique Natural Park/Primitive Natural Park/Recreation Area	Chunky River
Chunky River Boat Ramp		Lauderdale	Single / Special Purpose Facility	Chunky River
Clark Memorial College	Newton	Newton	Community Playfield	
Clarksdale Attendance Center		Lauderdale	Community Playfield	
Collinsville Recreation Area	Collinsville	Lauderdale	Destination Park / Recreation Area / National Park	Okatibbee Reservoir
Crestwood Ball Park	Meridian	Lauderdale	Community Playfield	
Crestwood Elementary School	Meridian	Lauderdale	Community Playfield	
Damsite (East Bank) Recreation Area	Collinsville	Lauderdale	Destination Park / Recreation Area / National Park	Okatibbee Reservoir
Damsite (West Bank) Recreation Area	Collinsville	Lauderdale	Destination Park / Recreation Area / National Park	Okatibbee Reservoir
Decatur Town Park	Decatur	Newton	Community Playfield	
Dogwood Lake		Lauderdale	Other	
Dunn's Falls		Lauderdale	Historic Park / Cultural Park / Facility	Dunn's Waterfall
Earl Laird Park	Union	Newton	Major Community Park	
East Central Community College	Decatur	Newton	Community Playfield	
Esco Park	Newton	Newton	Community Playfield	
Frank W. Williams Home	Meridian	Lauderdale	Historic Park / Cultural Park / Facility	
Gin Creek Recreation Area	Collinsville	Lauderdale	Destination Park / Recreation Area / National Park	Okatibbee Reservoir
Grand Opera House Of Mississippi	Meridian	Lauderdale	Historic Park / Cultural Park / Facility	
Hartley Peavey Visitors Center & Museum	Meridian	Lauderdale	Historic Park / Cultural Park / Facility	
Hickory Recreational Playfield	Hickory	Newton	Community Playfield	
Highland Park	Meridian	Lauderdale	Major Community Park	Duck Pond
Highland Park Dentzel Carousel	Meridian	Lauderdale	Historic Park / Cultural Park / Facility	
House Lake		Neshoba	Other	House Lake
Jimmy Rodgers Museum	Meridian	Lauderdale	Historic Park / Cultural Park / Facility	

John Moss Field	Meridian	Lauderdale	Community Playfield	
Kate Griffin Junior High School	Meridian	Lauderdale	Community Playfield	
Lake Irby		Lauderdale	Other	
Lake View Municipal Golf Course	Meridian	Lauderdale	Single / Special Purpose Facility	Long Creek Reservoir
Lamar Middle / High School	Meridian	Lauderdale	Community Playfield	
Magnolia Middle School	Meridian	Lauderdale	Community Playfield	
Marion School Park	Meridian	Lauderdale	Neighborhood Playground	
Meridian Community College	Meridian	Lauderdale	Other	
Meridian High School	Meridian	Lauderdale	Community Playfield	
Meridian Housing Authority Playground	Meridian	Lauderdale	Neighborhood Park	
Meridian National Fish Hatchery	Meridian	Lauderdale	Other	
Meridian Racquet Club	Meridian	Lauderdale	Single / Special Purpose Facility	
Merrehope Mansion	Meridian	Lauderdale	Historic Park / Cultural Park / Facility	
Mississippi Christian Service Camp		Newton	Other	
Ms. 15 Roadside Park (East Side)		Newton	Single / Special Purpose Facility	
Nanabe Creek Campground	Meridian	Lauderdale	Single / Special Purpose Facility	
Naval Air Station Recreation Area	Collinsville	Lauderdale	Destination Park / Recreation Area / National Park	Okatibbee Reservoir
Newton Co. Livestock Arena & Showbarn	Newton	Newton	Other	
Newton Country Club	Newton	Newton	Other	2 Club Ponds
Newton County Academy	Decatur	Newton	Community Playfield	
Newton County High School	Decatur	Newton	Community Playfield	
Newton High School	Newton	Newton	Community Playfield	
Newton Little League Ballfield	Newton	Newton	Community Playfield	
Newton Tennis Center	Newton	Newton	Single / Special Purpose Facility	
North Meridian Swimming Pool Assoc.	Meridian	Lauderdale	Other	
Northeast Lauderdale High School		Lauderdale	Community Playfield	
Northeast Middle School	Meridian	Lauderdale	Neighborhood Playground	
Northeast Park	Meridian	Lauderdale	Major Community Park	
Northwest Junior High School	Meridian	Lauderdale	Community Playfield	
Northwood Country Club	Meridian	Lauderdale	Single / Special Purpose Facility	
Oakland Heights Elementary School	Meridian	Lauderdale	Neighborhood Playground	
Okatibbee Creek		Clarke	Unique Natural Park/Primitive Natural Park/Recreation Area	Okatibbee Creek
Okatibbee Creek		Lauderdale	Unique Natural Park/Primitive Natural Park/Recreation Area	Okatibbee Creek & Reservoir
Okatibbee Creek		Kemper	Unique Natural Park/Primitive Natural Park/Recreation Area	Okatibbee Creek
Okatibbee Lake Water Park	Meridian	Lauderdale	Regional Park	Okatibbee Reservoir
Okatibbee Wildlife Management Area		Lauderdale	Unique Natural Park/Primitive Natural Park/Recreation Area	Okatibbee Reservoir

Okatibbee Reservoir	Meridian	Lauderdale	Destination Park / Recreation Area / National Park	Okatibbee Reservoir
Old Newton Station Depot	Newton	Newton	Historic Park / Cultural Park / Facility	
Osborn Lake	Decatur	Newton	Other	Osborn Lake
Phil Harden Park	Meridian	Lauderdale	Community Playfield	
Pine Lake Fellowship Camp	Meridian	Lauderdale	Other	
Pine Springs Recreation Area	Collinsville	Lauderdale	Destination Park / Recreation Area / National Park	Okatibbee Reservoir
Poplar Springs Elementary School	Meridian	Lauderdale	Neighborhood Playground	
Sammy Davidson Complex	Meridian	Lauderdale	Community Playfield	
Sessums Ballpark	Union	Newton	Community Playfield	
Skewes Park	Meridian	Lauderdale	Neighborhood Park	
Soccer Complex	Meridian	Lauderdale	Community Playfield	
Sowashee Creek		Lauderdale	Unique Natural Park/Primitive Natural Park/Recreation Area	Sowashee Creek
Sun & Fun Swimming Pool		Clarke	Single / Special Purpose Facility	
Tailrace Recreation Area	Collinsville	Lauderdale	Destination Park / Recreation Area / National Park	Okatibbee Reservoir
Tallahatta Creek		Lauderdale	Unique Natural Park/Primitive Natural Park/Recreation Area	Tallahatta Creek
Town & County Swimming Pool		Clarke	Single / Special Purpose Facility	
Turkey Creek Water Park	Decatur	Newton	Regional Park	Turkey Creek Reservoir
Twiltley Branch Recreation Area	Collinsville	Lauderdale	Destination Park / Recreation Area / National Park	Okatibbee Reservoir
U. S. 45 Roadside Park		Lauderdale	Single / Special Purpose Facility	
U. S. 80 Roadside Park		Lauderdale	Single / Special Purpose Facility	
Union Golf Course	Union	Neshoba	Other	
Union High School	Union	Newton	Community Playfield	
Union Municipal Park	Union	Newton	Single / Special Purpose Facility	
Velma Young Park	Meridian	Lauderdale	Major Community Park	
Veterans Park		Lauderdale	Urban Green Space or Open Space	
Wade Park	Newton	Newton	Community Playfield	
Wanita Lake		Lauderdale	Other	Wanita Lake
West End Elementary School	Meridian	Lauderdale	Community Playfield	
West Lauderdale Attendance Center	Collinsville	Lauderdale	Community Playfield	
West Lauderdale Park		Lauderdale	Community Playfield	
Westhills Elementary School	Meridian	Lauderdale	Community Playfield	

4.0 STAKEHOLDER INTERESTS

The stakeholders concerns and issues of interests were solicited via the development of stakeholder surveys **(Appendix C)** and open discussions during numerous stakeholder meetings. The water quality concerns in the Chunky-Okatibbee Watershed appear to be primarily focused on non-point source pollution issues. Specific non-point sources of pollution of concern were identified as siltation/erosion, pathogens, agricultural runoff, litter/trash/debris, and forestry-related pollution. The priority area identified as the primary focus area in this watershed was identified as the Chunky River, specifically, the 26 miles of scenic stream. Other priority areas were identified as, but not limited to, Okatibbee Creek, Okatibbee Lake, Sowashee Creek, Dunn's Falls, Potterchitto Creek, and Tallahatta Creek.

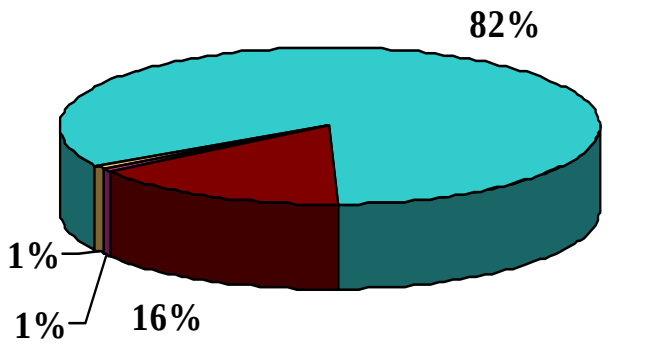
Areas of concern regarding siltation and erosion were identified as the Chunky River and Dunn's Falls. An area of concern regarding pollution from point sources, litter, and flooding was the Sowashee Creek. Areas of concern regarding illegal dumping and littering were identified as access points and bridges. Also, areas of concern regarding pathogens were identified as unsewered areas throughout the watershed and specifically in Okatibbee area. Natural areas of concern were major tributaries, recreational areas, and forestry management areas.

The stakeholders in the Chunky-Okatibbee watershed are interested in preserving the cultural and natural resources in this watershed. Fishing, hunting and other recreational uses associated with the Chunky-Okatibbee Watershed are not only a way of life for East Mississippi; they help define our region. Addressing water quality impairment in this watershed is a priority among the stakeholders and it is imperative to preservation of our cultural and natural resources.

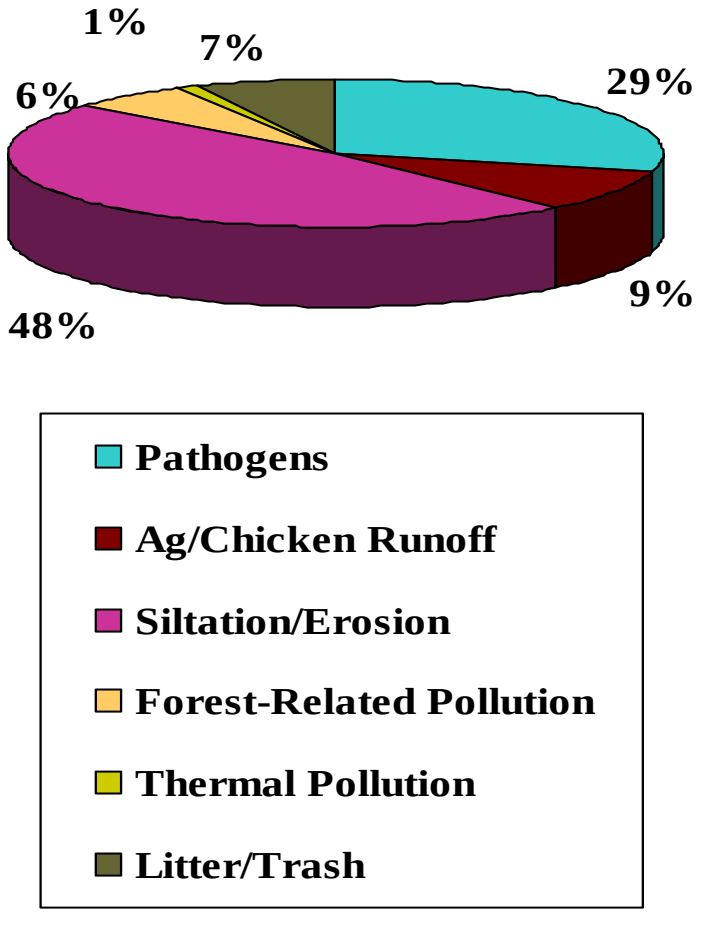
The following graphs represent the results of 56 surveys received and reviewed:

4.1 SURVEY RESULTS

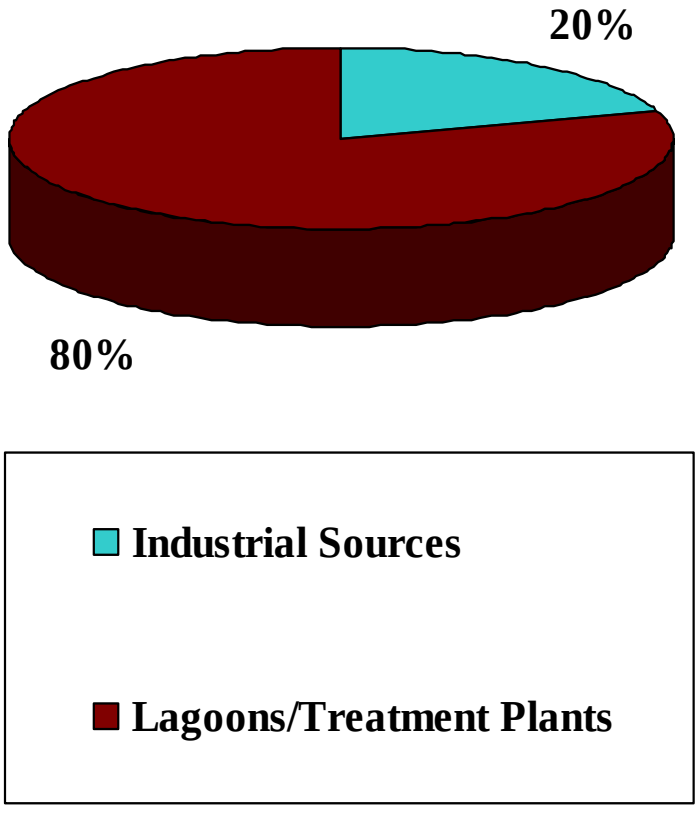
Water Quality Concerns



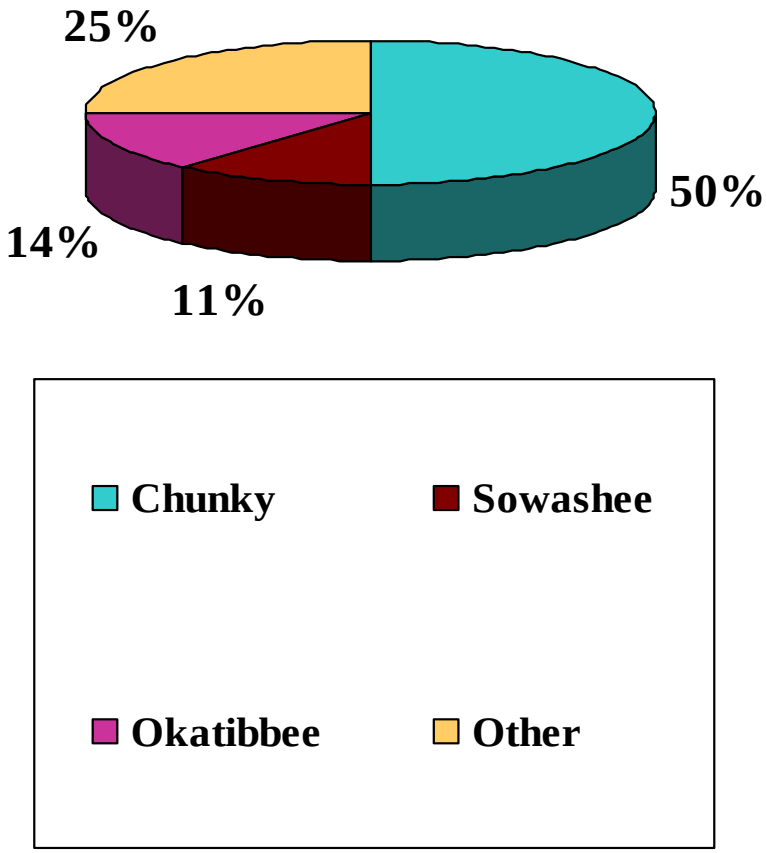
Non-Point Source Pollution Issues of Concern



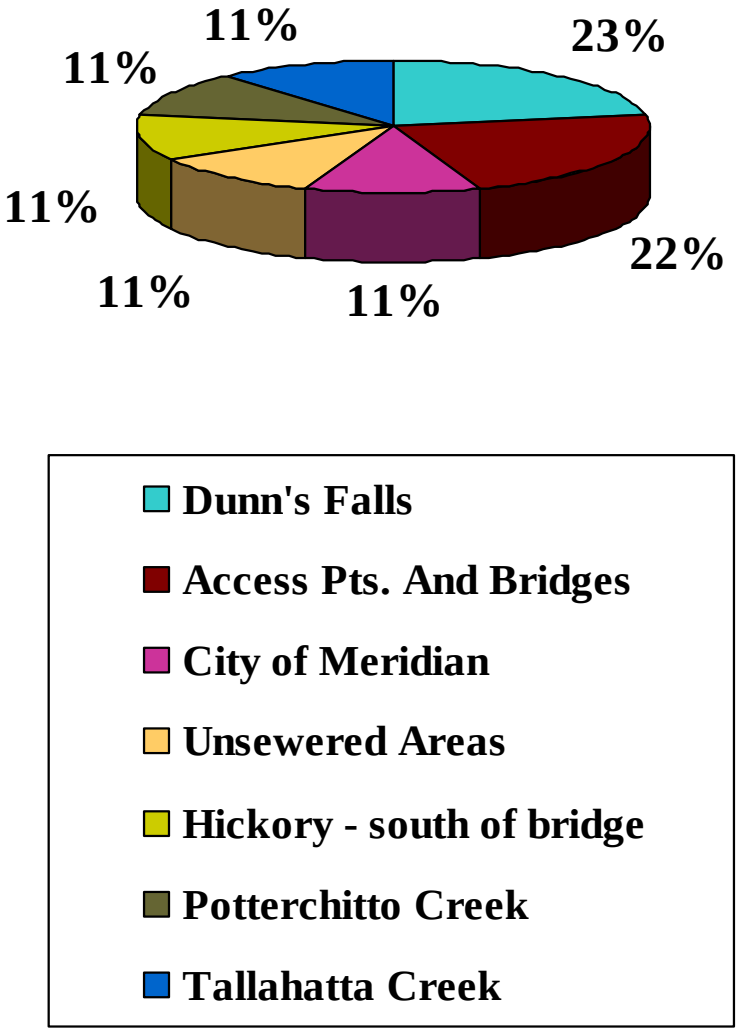
Point Source Pollution Issues of Concern



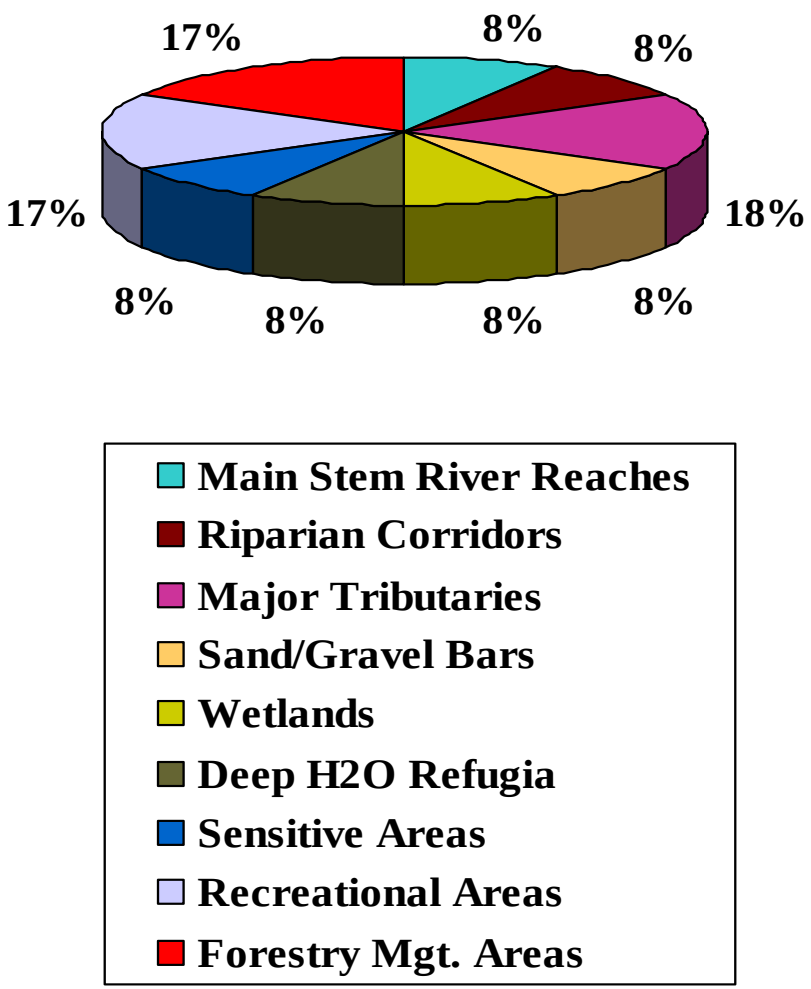
Priority Areas



Priority Areas Classified as Other



Natural Areas Identified as Priority Areas



STRESSOR TABLE: STAKEHOLDERS' PERCEIVED PROBLEMS

Issue	Waterbody	Suspected Stressors or Causes
Siltation	Dunn's Falls	Sediment and sand are traveling within Dunn's Creek to mill pond area. Source unknown but could be from clear-cutting activities upstream or from an old borrow-bit area.
Siltation and Erosion	Chunky River	Lack of sound forestry and timber harvesting practices.
Pathogens and Fecal Coliform	Okatibbee Creek and Lake	Human Waste from Leaking Septic Systems.
Water Quality Impairment	Sowashee Creek	Point Sources, Non-Point Sources, and Flooding.
Litter/Trash/ and Illegal Dumping	Access Points and Bridges	Litter and Trash.
Erosion and Siltation	Forestry Management Areas and Silvaculture Areas	Lack of BMPs.
Water Quality Concern	Tallahatta Creek	Fear of Water Quality Impairment if more Chicken Operations come to Area that Drains to Creek.
Water Quality Concern	Potterchitto Creek	Fear of Water Quality Impairment if more Chicken Operations come to area that Drains to Creek.

In addition to the perceived issues identified by the stakeholders, MDEQ has created a ranking of the water bodies in the Pascagoula River Basin based on resource values and stressors. The ranking system is referred to as the Mississippi Watershed Characterization and Ranking Tool and is currently considered provisional data. The system was created as a way of identifying watersheds of interest and for ranking watersheds for protection and restoration activities. The ranking data is broken down into three primary categories which include: Environmental Resource Values, Human Welfare Resource Values and Potential Stressors.

An analysis of the data for the Chunky-Okatibbee Watershed indicates high environmental and human welfare resource values assigned to sub-watersheds within the Chunky-Okatibbee Watershed. Potential stressors also appear to be assigned to sub-watersheds within this watershed. Additional information specific to the resource value rankings for specific sub-watersheds may be obtained by contacting MDEQ. Generalized maps depicting the overall ranking of the Environmental Resource Values, the Human Welfare Resource Values and the Potential Stressors are located in **Appendix B**. A comparison of data contained in the Mississippi Watershed Characterization and Ranking Tool between potential stressors and perceived stressors indicates that the perceived

stressors are consistent with the potential stressors. The subcategories of data contained within the three broad categories are listed below.

Mississippi Watershed Characterization and Ranking Criteria

Environmental Resource Values

Endangered Species
Bottomland Hardwood Forests
Estuarine Emergent Wetlands
Estuarine Woody Wetlands
Palusturine Emergent Wetlands
Pine Savannahs
Swamps
Freshwater Scrub/Shrub Wetlands
Farmed Wetlands
Palustrurine Nonvegetated Wetlands
National Wildlife Refuges
Wildlife Management Areas
National Forests
Lakes
Perennial Streams

Human Welfare Resource Values

Public Water Supply Lakes
Public Water Supply Streams
Recreational Lakes
Recreational Streams
Public Waterways
Recreational Locations

Potential Stressors

Non-Riparian
Erosion Potential
Impervious Surfaces
Nutrient Potential
Livestock Operations

5.0 WATER RESOURCES

5.1 HISTORY OF ACTIVITY IN THE WATERSHED

The past activities in the watershed have been primarily those of human modifications and began almost immediately upon eastern settlement. Those earliest activities included such modifications as impounding small streams for powering water-driven mills, just as the example at Dunn's Falls Park, and also such practices as ditching and draining of fields, and unmanaged forest clearing.

More recent activities have included such modifications as channelization of streams, construction of impoundments for recreation, and construction of channel modifications for flood control. In many places the water resources remain in a relatively natural condition and the opportunities for eco-tourism and other forms of recreation make the watershed attractive for conservation activities. Through efforts led by the Mississippi Department of Wildlife, Fisheries and Parks (MDWFP) in 2003, local and state involvement resulted in designation by the Mississippi State Legislature of approximately 30 miles of the Chunky River as part of the Mississippi Scenic Streams Program.

Despite the fact that a portion of the Chunky River is designated as a "Scenic Stream," state monitoring data indicate that several of the streams in our watershed do not meet the minimum water quality measures and are listed as impaired. **Appendix D** identifies impaired waterbodies in the Chunky-Okatibbee Watershed.

A number of Total Daily Maximum Loads (TMDL) addressing a variety of water quality concerns have been developed by MDEQ for particular stream segments in the watershed and are provided in **Appendix E** or the MDEQ website at http://www.deq.state.ms.us. Conservation management and water quality management activities within this watershed have primarily been sponsored by federal and state agencies and include programs for conservation and management of forestry and agriculture such as those administered by the Mississippi Forestry Commission (MFC), the U.S. Fish and Wildlife Service (USFS), and the U.S. Department of Agriculture (USDA). Water quality sampling and monitoring activities have been conducted by the Mississippi Department of Environmental Quality (MDEQ) and the U.S. Geological Survey (USGS), and operations of land and wildlife management areas have been conducted by MDWFP, the U.S. Army Corps of Engineers (USACE) and others. Recently, local non-profit and citizen based groups such as the Pascagoula River Basin Alliance, Audubon Society, and Nature Conservancy have been particularly effective in raising public awareness of conservation values in the watershed. The growing public awareness combined with the nature and condition of the natural resources in this watershed has spurred the development of the WIT in September of 2006 and the development of the WIP.

5.2 INTEREST IN WATERSHED

The Chunky-Okatibbee Watershed is a treasure in East Mississippi and contributes to our culture, heritage, and way of life. Over one hundred people have indicated an interest in this watershed and have agreed to serve on the WIT and countless others have demonstrated interest in the watershed via stakeholder meetings, questionnaires, and direct communication. Through continuous and ongoing recruitment efforts, we encourage new members to the WIT. The WIT can be modified through an informal process of indicating interest. Not only is water quality an issue of extreme importance to the residents in this five-county region; it is important to all watersheds downstream. As previously mentioned, the Chunky-Okatibbee Watershed serves as the headwaters for the eastern portion of the Pascagoula River Basin; therefore, water quality impairment occurring upstream has an affect on waters as far south as the Gulf of Mexico.

The Land Trust has taken on this project in the hope of realizing the creation of a sustainable environment in East Mississippi, and it plans to utilize this watershed management program "to conserve, promote, and protect the open spaces and green places of ecological, cultural or scenic significance." We believe the promotion, development, and implementation of non-structural and structural practices will increase awareness and interest in our watershed and ignite water quality improvement.

5.3 WATER QUANTITY

The watershed is currently experiencing no shortage of surface or groundwater quantity. According to MDEQ, this area is characterized as having a good supply of groundwater available and no projections of shortages are currently known. The majority of the drinking water supply is satisfied through publicly maintained groundwater wells and distribution facilities. MDEQ has established a source water protection policy. The protection area around every public well extends to a five-year time of travel period. An interactive map providing information on source water protection areas can be found on MDEQ's website at http://landandwater.deq.ms.gov/swap/onlinemaps/viewer.asp. Factors affecting water quantity are primarily associated with land use, which is largely rural in this watershed. The rural land use is dominated by timber production of various types and is generally thought to not impact overall water quantity.

5.4 WATER CONSERVATION

Water conservation activities in the watershed have been primarily focused on farming practices, and many of these focus on drainage improvements for agriculture. These programs have traditionally included practices such impoundment of water for crop irrigation. A statewide effort has been underway to promote water conservation in households, businesses and industry.

5.5 WILDLIFE AND FISHERIES

Recreational uses associated with wildlife and fisheries accounts for the majority of actual natural resource conservation activities in the watershed. Hunting and fishing are both widely popular in the watershed among locals and also serve to attract visitors to the area. Important recreational species include whitetail deer, redeye bass, and crappie. MDWFP lists Okatibbee Lake as one of the State's best spots for crappie. In fact, last year the crappie catch accounted for approximately 77% of fishing activity in the lake, with an average catch rate of 2.5 fish per hour at an average of 0.65 pounds per fish. The only environmental management area within the watershed is the Okatibbee Wildlife Management area. The Chunky and Okatibbee are both popular with light tackle sport fishermen for Kentucky redeye, or spotted bass, and also support catches of catfish and bream. Other smaller impoundments in the watershed such as Bonita Lakes support outdoor recreation activities such as fishing, and boating. Other quality outdoor recreation areas in the watershed include the Okatibbee Wildlife Management Area surrounding Okatibbee Reservoir and Bonita Lakes in Lauderdale County. Other waters of interest in this watershed were previously provided in Section 3.1.

No specific fish consumption advisories have been established for streams in the watershed, but there is a national advisory for mercury in effect. The largely un-dammed channels, range of stream gradients, and variation of substrate and other habitat conditions support a diversity of non-game aquatic species as well. Occurrence of the federally-protected gulf sturgeon has been documented near the convergence of the Chunky and Okatibbee at the formation of the Chickasawhay River. Additionally, the protected pearl darter has documented occurrence in the watershed. A list of documented fish species occurring within the watershed is included as attachment

5.6 WATER QUALITY

5.6.1 NARRATIVE OF WATER QUALITY ISSUES

Most of the 15,000 miles of streams, rivers, and lakes in the Pascagoula River Basin are classified as fish and wildlife streams and are intended for fishing and propagation of fish and aquatic life and wildlife. These streams and rivers are also designated secondary contact recreation. Many are also classified as recreational and are intended for swimming, skiing and support of other contact recreational activities.

General water quality threats within the watershed include urbanization, agriculture, silvaculture, and mining. More specific pollutants of concern are non-point sources of pollution such as polluted runoff from impervious areas, sediment and silt, pathogens associated with leaking septic systems in unsewered areas, pathogens associated with animal waste, fertilizers, pesticides,

and mercury. Specific threats or concerns for particular waterbodies are detailed in this section.

The issue of concern associated with Okatibbee Creek is biological impairment (nutrients, sediment/siltation, suspended solids, pH, and pathogens). According to the MDEQ's Pascagoula River Basin Status Report of 2001, 17 miles along this waterbody do not meet the designated use for secondary contact recreation, and two TMDLs have been approved for Okatibbee Creek for pathogens to date. The Okatibbee Creek's aquatic life water quality condition rating is identified as good.

Water quality impairment associated with the Sowashee Creek is also biological impairment. The Sowashee Creek's aquatic life water quality condition rating is listed as poor for approximately half of its length and fair for the other half.

The pollutants of concern in the Chunky River are animal waste, pathogens, and sediment. Chunky Creek's aquatic life water quality condition rating is identified as poor but the majority of the Chunky River is identified as fair.

Aquatic life support has been threatened in Richardson Mill and Potterchitto Creeks by biological impairment, nutrients, organic enrichment, low dissolved oxygen, and unionized ammonia. In addition, habitat alterations due to erosion and siltation pose a threat. These creeks are considered impaired near Newton from the headwaters through the mouth at Potterchitto Creek to Potterchitto Creek at I-20 east of Newton. Due to the impairment a Total Daily Maximum Daily Load, or TMDL, for this stream segment has been developed for organic enrichment and ammonia, which establishes that no further inputs that would increase the levels organic enrichment and ammonia.

5.6.2 Designated Use Classifications and Water Quality Standards

In addition to those waterbodies specifically listed in the table below, all waterbodies within this watershed have a designated use classification as Fish and Wildlife.

Waterbody	Designated Use	Water Quality Standard for Use	Aquatic life support threshold M-BISQ score
Chunky River (from Highway 80 to Chickasawhay River)	Recreation	**Please refer to 305(b) reports located at www.deq.state.ms.us**	61.18 (Least Disturbed Areas) and 57.91 (Other Areas)
Okatibbee Creek	Secondary Contact	**Please refer to 305(b) reports located at www.deq.state.ms.us**	64.86 (Least Disturbed Areas) and 74.50 and 44.80 (Other Areas)
Sowashee	Aquatic Life Support	**Please refer to 305(b) reports located at www.deq.state.ms.us**	36.73 (Other Areas)
Okatibbee Reservoir	Public Water Supply	**Please refer to 305(b) reports located at www.deq.state.ms.us**	NA
Okatibbee Reservoir	Recreation	**Please refer to 305(b) reports located at www.deq.state.ms.us**	NA
Potterchitto Creek	Fish and Wildlife	**Please refer to 305(b) reports located at www.deq.state.ms.us**	66.34 (Least Disturbed Areas)
Bonita Reservoir	Pubic Water Supply	**Please refer to 305(b) reports located at www.deq.state.ms.us**	NA
All waterbodies of concern within the Okatibbee-Chunky Watershed	Fish and Wildlife	**Please refer to 305(b) reports located at www.deq.state.ms.us**	NA

5.6.3 Water Quality Status and TMDLs

Data regarding water quality impairment is provided as **Appendix D** and TMDLs are provided in **Appendix E**. Additional details on water quality standards, TMDLs and proposed practices to address load reductions are available on MDEQs website at: http://www.deq.state.ms.us

STRESSOR TABLE: MDEQ and EPA Documented Issues

Issue	Waterbody	Suspected Stressors or Causes
Aquatic Life Support	*Chunky River*	Animal Waste, Pathogens, and Sediment
Biological Impairment	*Sowashee Creek* At Meridian from headwaters to mouth of Okatibbee Creek	Biological Impairment (nutrients, sediment, siltation, suspended solids, pH, and pathogens)
Water Quality Impairment and Biological Impairment for Aquatic Life	*Okatibbee Creek* From confluence with Sowashee Creek to Confluence with Chunky River	Biological Impairment (nutrients, sediment, siltation, suspended solids, pH, and pathogens). According to the MDEQ's Pascagoula River Basin Status Report of 2001, 17 miles do not meet the designated use for secondary contact recreation, and two TMDLs have been approved for Okatibbee Creek for pathogens to date. The Okatibbee Creek's aquatic life water quality condition rating is identified as good.
Aquatic Life Support	*Richardson Mill/Potterchitto Creeks*	Organic Enrichment/Low DO
Aquatic Life Support	*Richardson Mill/Potterchitto Creeks*	Unionized Ammonia
Secondary Contact	*Okatibbee Creek*	Pathogens
Aquatic Life Support	*Chunky Creek*	Nutrients, Pesticides, and Sediment/Siltation
Aquatic Life Support	*Okatibbee Creek* At Arundel from confluence with Sowashee Creek to Confluence with Chunky River	Nutrients, Oil and Grease, Organic Enrichment/Low DO, Pesticides, and Pathogens

Issue	Water body	Suspected Stressors or Causes
Aquatic Life Support	*Richardson Mill/Potterchitto Creeks* Near Newton from headwaters through mouth at Potterchitto Creek to Potterchitto Creek at 1-20 East of Newton	Biological Impairment, Nutrients, Organic Enrichment/Low DO, Other Habitat Alterations, Sedimentation and Siltation, and Unionized Ammonia
Impaired Water body and TMDL	*Okatibbee Creek* At Arundel from confluence with Sowashee Creek to confluence with Chunky River	Pathogens/Fecal Coliform
Impaired Water body and TMDL	*Okatibbee Creek* Drainage Area near Shucktown	Pathogens/Fecal Coliform
Impaired Water body/ TMDL/ Biological Impairment	*Richardson Mill/Potterchitto Creeks* Impaired near Newton from headwaters through mouth at Potterchitto Creek to Potterchittto Creek at I-20 east of Newton	Ammonia-Nitrogen from Point and Non-Point Sources
Impaired Water body/ TMDL/ Biological Impairment	*Richardson Mill/Potterchitto Creeks* Impaired near Newton from headwaters through mouth at Potterchitto Creek to Potterchittto Creek at I-20 east of Newton	BOD (biological oxygen demand) from Point and Non-Point Sources

6.0 WATERSHED TECHNICAL MANAGEMENT ACTIVITIES

The following descriptions of technical management actions and measurable goals include a number of numerical and temporal specifics. It is understood that some of the specific actions and goals are included as planning estimates, and are therefore subject to modifications based on considerations such as additional monitoring results, stakeholder involvement, availability of resources, etc. that have yet to be determined. All management activities are summarized in the following table, the paragraphs to follow provide additional details.

6.1 OBJECTIVES

The primary objective of the technical management activities as outlined in this section is to increase the level of data and technical knowledge of human activities within the watershed and the impact of those activities on overall water quality.

Specific objectives of the technical committee include:

- Increase the level of knowledge and data specific to spatial patterns of habitats, hydraulic systems, geology, land uses, and human population distribution;
- To improve public access to natural elements of the watershed to promote education, recreation and general knowledge of the watershed;
- To reduce the harmful effects of litter and improper disposal of waste materials within the watershed;
- To obtain baseline water quality data to be used as a benchmark against which to measure ongoing water quality monitoring activities; and
- To establish conservation easements and buffer zones containing environmentally sensitive lands or other lands worthy of long-term preservation.

The following table summarizes the technical activities proposed for implementation:

Goal/Benefit Desired	Management Action	Where	When	Budget
Increase the level of spatial knowledge of the watershed to provide for a higher level of assessment and evaluation of conditions affecting the watershed.	Collection and consolidation of readily available mapping data from a variety of sources including FEMA, USGS, MARIS and others.	Entire Watershed	2007	$10,000
	Development of a GIS database to contain collected as well as created GIS data.	Entire Watershed	2007	

Improvements to public access assets throughout the watershed and promotion of recreational opportunities.	Identification and acquisition of key conservation easements designed to conserve the scenic and recreational attributes of watershed streams through the development of a public access plan.	Entire Watershed with a focus on the Chunky River	2007-2008	$35,000
Reduce the input of litter and other objectionable materials, physically remove litter and other materials from streams designed to improve overall water quality and aesthetics.	Organize and conduct stream clean-up activities and events.	Entire Watershed with a focus on the Chunky River	2007-2008	$25,000
	Identify the location and nature of illegal dumping sites in the watershed.	Entire Watershed	2007-2008	
	Identify funding to assist in the enforcement and mitigation of illegal dumping within the watershed.	Entire Watershed	2007-2008	
Sampling and monitoring of water quality as appropriate to fill gaps in existing data and to provide data to assist in identification of resource concerns.	Sampling and monitoring of water quality as appropriate to evaluate water quality concerns, to develop specific BMPs, and to evaluate the effectiveness of implemented BMPs.	Entire Watershed	2007-2008	$150,000
Conservation Easement and Buffer Zone Establishment	Establishment of conservation easements and buffer zones with the goal of long term preservation in mind	Entire Watershed	Ongoing	$55,000*
				$275,000**

*This cost item is estimated, and the total cost will be dependent on the acreage purchased.
**This budget is a best estimate based on unknown quantity of acres to be placed in conservation easements.

Specific activities designed to implement the strategies listed include the following:

- Collection of existing spatial data and the creation of new data to be included in a Geographic Information Systems (GIS) database;
- Development of a public access plan to include inventory of existing public access facilities and strategy to secure lands for improved access;
- Organization and implementation of targeted stream clean up events and activities;
- Identification of existing and potential illegal dumping sites within the watershed;
- Provide technical assistance to individual counties to assist with their efforts to mitigate and minimize littering activities;
- Sample and monitor water quality within the watershed;
- Development of specific BMPs designed to improve water quality;
- Continuous monitoring of BMP effectiveness; and
- Identification and establishment of conservation easements and buffer zones designed to preserve and protect environmentally sensitive lands and to provide for enhanced recreation access.

6.2 WATERSHED MAPS

6.2.1 DESIRED BENEFITS

Comprehensive mapping information for the targeted watershed will be developed. The mapping efforts will include consolidation of existing information as well as development of additional information as appropriate. The purpose of the mapping efforts will be to provide a thorough documentation of existing conditions within the watershed as well as serving as an effective illustration of watershed features. The mapping information will provide a number of indirect benefits through the value the information will have for planning, education, and assessment efforts that are part of the WIP. Creation of the maps will begin immediately and will be on-going as additional mapping information is obtained or generated. The effectiveness of this measure will be determined in large part by the direct usefulness for development and implementation of related actions of the WIP.

6.2.2 ACTIVITIES

The Land Trust has initiated preparation of maps of the watershed based on currently available sources of mapping information. Poster sized maps of the entire watershed were created and are currently being used in conjunction with numerous presentations to local citizen and stakeholder groups in efforts to gain local input. The preliminary mapping has included retrieval of mapping information and GIS information from readily available sources such as U.S. Geological Survey (USGS), Federal Emergency Management Agency (FEMA),

and Mississippi Automated Resource Information System (MARIS). The amount of mapping and related information is anticipated to grow with contributions of additional information.

Development of a GIS database for the watershed is planned to assist management of the mapping information. Existing data regarding water quality, conservation areas, wildlife and fishery resources, parcel ownership and land use contributed by resource agencies will be compiled and used to help establish historic and baseline conditions, identify existing issues and concerns, develop educational materials, plan for additional monitoring, and evaluate and select BMPs. Information identified through additional mapping and monitoring will be incorporated into the database. The mapping and GIS information will be available to the WIT for application in accomplishing actions of the WIP.

6.2.3 PARTICIPANTS

The following activities are proposed according to the listed participant.

EMFLT — Eco-Systems, acting through the Land Trust will compile mapping information and assist in creation of a GIS database for the watershed. The databases will be updated periodically as new information is approved.

MDEQ — Provide monitoring information for watershed regarding locations and parameters monitored. MDEQ has also provided location information for impaired water bodies and those with approved TMDLs.

USGS — Provide monitoring information for watershed regarding locations and parameters monitored. May provide additional mapping resources if determined appropriate.

MDWFP — Provide information for watershed regarding locations of priority conservation sites and records of occurrence for protected species. Has provided parcel ownership including listing of landowners enrolled in the Scenic Stream Stewardship Program for the designated segment of the Chunky River.

USDA — Provide information for watershed regarding locations and nature of agricultural resources, agency sponsored program areas, and where agricultural BMPs are being used.

MARIS — Assist in development of GIS database through contribution of existing data, development of additional data, and assistance with quality assurance.

USFS Provide information for the watershed regarding locations and nature of forest resources such as forest management areas, forest inventories, agency sponsored program areas, and where forestry BMPs are being used.

PHWD Provide information regarding the locations and nature of existing and planned recreational resources in the watershed.

USACE Provide information regarding the locations and nature of existing and planned recreational resources in the watershed.

FEMA Provide information regarding Flood Insurance Rate Maps (FIRM) and floodplain/floodway modeling and locations.

6.2.4 SCHEDULE

Development of mapping information is ongoing. Development of a GIS database has been initiated and the baseline map is anticipated to be completed by June 2007. Due to the nature of many of the actions proposed in the WIP, aspects of the mapping and database development will continue throughout the term of the project.

6.2.5 BUDGET

The budget for this item includes time for collection and compilation of existing GIS data as well as incorporating newly collected data into the GIS database. The budget for Watershed Mapping is anticipated to be at $10,000.00.

6.3 RECREATION ACCESS

6.3.1 DESIRED BENEFITS

The watershed contains publicly managed lakes and water parks offering boating, fishing, camping and swimming as well as miles of public streams with opportunities for fishing and canoeing. However, the recreational opportunities present in the watershed are felt by many stakeholders to be under-utilized with many in need of improvement. Improving access for recreation, as well as promoting the numerous recreational opportunities in the watershed will help stimulate utility of the recreational resources. The Land Trust actively seeks to secure conservation and public access easements to help promote not only water quality but water access for recreational uses. Increased awareness and utilization of the recreational resources will not only provide a direct social benefit to the local community but will also have a direct economic effect with increases in tourism dollars spent.

6.3.2 ACTIVITIES

In an effort to ensure that access to outdoor recreational opportunities within the watershed remain available, it is important to gain an understanding of where opportunities currently exist and where newly created opportunities would be most beneficial. To achieve the goal of maximizing recreational opportunities within the watershed, a watershed management plan will be developed. The development of the plan will involve three primary activities.

The first activity necessary to plan for outdoor recreation within the watershed involves mapping and photographing existing recreational access sites within the watershed. This will provide the spatial knowledge necessary for successful planning and will also provide information needed to assess the effectiveness of existing recreational opportunities. Once the existing sites have been identified and evaluated, a spatial analysis of the entire watershed will be conducted to determine the need for new sites and potential sites for acquisition to create new public access areas. Finally, a strategy will be developed to ensure that problems such as littering, graffiti and erosion don't occur with new and existing sites.

6.3.3 PARTICIPANTS

The following activities are proposed according to the listed participant.

EMFLT — Will pursue streamside easements and access point easements to help protect the streams for conservation and recreation purposes. The Land Trust can provide assistance with improvement and management of access points.

MDWFP — Provide assistance with identifying and monitoring fisheries resource conditions. MDWFP has a variety of grant programs available that can be used to fund site improvements such as boat ramps, fishing piers, and other park amenities.

PHWD — Will provide assistance with identifying and promoting recreational opportunities.

USACE — Will provide assistance with identifying and promoting recreational opportunities. The USACE may also have funding available to assist with site development.

BOS — In some cases, the use of grant funding will necessitate that the counties in question retain ownership of access sites. In these cases, the Boards of Supervisors can assist with acquisition of key sites and facilitate grant funding and administration.

6.3.4 SCHEDULE

Potential access points for improvement will be identified by fall or winter 2007. Improvements and pursuit of easements for selected access points will be completed by December 2008, as appropriate.

6.3.5 BUDGET

The budget for this task will vary based on the number of new sites identified and the level of improvement necessary for existing sites. Budgetary needs may also be offset by the successful acquisition of grant funding to pay for amenities and improvement. The overall budget (not including land acquisition or cost of conservation easements) is anticipated to be approximately $35,000.

Land acquisition and conservation easements costs will depend on the number of public access points targeted and the cost associated with the establishment of new access points or conservation areas to be used for recreation purposes.

6.4 LITTER AND DUMPING

6.4.1 DESIRED BENEFITS

Litter and other materials that are carelessly or intentionally deposited in our water bodies are in direct contradiction to the scenic and recreational attributes of our streams. Not only does litter and illegal dumping pose a serious threat to water quality and the greater aquatic ecosystem, but they also damage public perception of the resource, which hinders development of recreation and conservation initiatives in the watershed.

This action will seek to reduce the inputs of litter and other objectionable materials, physically remove litter and other objectionable materials from the water bodies, and provide improvement of water quality through reduction in inputs of harmful substances and materials. The success of this measure is tied to the identification of littering hot spots and dumping sites and hosting clean-up events. Stricter enforcement of ordinances and strategically-placed signage may also be practices utilized to control litter and illegal dumping. General public education as mentioned in Section 7 will reinforce this management effort by increasing awareness of water quality impairment associated with litter and dumping. Educational practices will focus on prevention as well as response.

6.4.2 ACTIVITIES

The presence of illegal dumping sites along bridge crossings and stream banks is seen as a significant detraction to recreational use and a detriment to water quality. One goal is to organize and conduct stream clean-up activities. Another goal is to identify the location and nature of illegal dumping sites in the

watershed. Types of materials present can be inventoried, if appropriate, to aid in targeted education and public awareness measures. Materials from selected dump sites should be removed and properly disposed of, and the dump site secured as appropriate to discourage future dumping. State and local law enforcement officials will be employed to investigate and prosecute violators if known. Inputs of floatable litter from urbanized areas of Meridian have been suggested as a major source of objectionable materials present in Sowashee and Okatibbee Creeks. Measures to reduce inputs and structural control measures to screen floatable materials may also be considered to address the concern.

6.4.3 PARTICIPANTS

The following activities are proposed according to the listed participant.

EMFLT — Coordinate identification and investigation of litter hot spots and illegal dumping sites in the watershed. May organize and promote stream clean-up efforts.

PHWD — Provide assistance with identifying and removing illegal dump sites. Pat Harrison Waterway District may also assist with clean-up activities.

USACE — Provide assistance with identifying and removing illegal dump sites and may assist with clean-up activities.

BOS — Provide assistance with identifying and removing illegal dump sites. The Boards of Supervisors may provide assistance with investigation and enforcement of violations. Assistance will also be provided for clean-up activities.

MDPH — Provide assistance with removing and securing illegal dump sites.

MDOT — Provide assistance with identifying and removing illegal dump sites.

COM — Provide assistance with design, placement, and operation of controls for removal of floatable material. The City may also provide assistance with development and implementation of BMPs to reduce inputs of objectionable materials.

KMB — Provide assistance with identifying and removing illegal dump sites. KMB will provide support through the donation of garbage bags and will assist with clean-up and educational activities.

6.4.4 SCHEDULE

Littering hot spots and illegal dumping sites will be identified and investigated by summer 2007. Evaluation of options and development of specific BMPs to reduce inputs will be completed by fall 2007. Clean-up of selected sites and segments of streams will be performed by spring 2008. BMPs will be implemented based on availability of resources.

6.4.5 BUDGET

The budget for this task item is anticipated to be at $25,000.00

6.5 WATER QUALITY SAMPLING AND MONITORING

6.5.1 DESIRED BENEFITS

Additional water quality sampling and monitoring may be conducted where identified as appropriate to fill gaps in existing data or more fully identify a resource concern. Additional sampling and monitoring of selected parameters may aid in the evaluation of water quality concerns and development and evaluation of specific BMPs. The success of this measure will be determined by the amount of additional monitoring information provided and the direct usefulness to development and implementation of related actions of the WIP. It is anticipated that monitoring the implementation of BMPs will serve as a tool to determine effectiveness.

6.5.2 ACTIVITIES

Water quality sampling at selected sites may be conducted as appropriate to evaluate water quality concerns and to develop specific BMPs. Monitoring may be conducted to evaluate implementation and effectiveness of BMPs and to identify concerns such as dumping, polluted runoff, siltation, and logjams. Sampling and monitoring of selected locations prior to, and following, establishment of Combined Animal Feeding Operations (CAFO) operations may be considered. Sampling and monitoring activities may include physical assessments such as inspections and ground surveys, surface water sampling for biological and chemical analysis, and biological monitoring for macroinvertebrate and/or fish and may involve contract staff, agency staff, and volunteer (such as Adopt-A-Stream) participation.

6.5.3 PARTICIPANTS

The following activities are proposed according to the listed participant.

EMFLT Conduct sampling and monitoring for effectiveness of BMPs and additional monitoring as determined appropriate.

MDEQ Provide assistance with additional sampling and monitoring as appropriate. MDEQ will also provide assistance by offsetting some of the lab costs associated with the analysis of collected samples.

MDWFP Provide assistance with additional sampling and monitoring if appropriate.

USGS USGS has committed through an agreement with MDEQ to provide sampling and monitoring activities within the watershed.

USACE Provide assistance with additional sampling and monitoring if appropriate.

USDA Provide assistance with additional sampling and monitoring if appropriate.

6.5.4 SCHEDULE

Water quality sampling conducted under this project will be initiated in April 2007 and be completed by December 2008. Additional monitoring will be conducted as determined appropriate and specific schedules will be developed for the monitoring proposed.

6.5.5 BUDGET

The estimated budget for water quality monitoring is $150,000.

6.6 CONSERVATION EASEMENT AND BUFFER ZONE ESTABLISHMENT

6.6.1 DESIRED BENEFITS

The EMFLT has determined that a significant component of its mission as a Land Trust is to establish both conservation easements and buffer zones along critical stream segments. The purpose is to ensure that areas of the watershed characterized as having environmental and/or cultural significance will be protected for future generations. Because of limited budgets for acquisition activities, the Land Trust intends to be very judicious in its selection of sites for acquisition. However, the Land Trust intends to position itself within the watershed as a resource for the donation of critical habitat areas by landowners who desire to see these lands preserved in a manner that will ensure the long-term integrity of the sites.

6.6.2 ACTIVITIES

Activities associated with the establishment of conservation easements and buffer zones will closely correlate with other activities detailed in this plan such as

improvements to recreational access. Activities will involve an analysis of the watershed to determine specific lands to target, prioritization of available lands, and negotiations with landowners and stakeholders.

6.6.3 PARTICIPANTS

EMFLT — The Land Trust will actively seek to establish conservation easements at key recreational access points and also on lands that are demonstrated to have unique environmental qualities that warrant preservation.

MDEQ — Will participate in the process of easement acquisition by providing information on prioritized sites relative to the sites' environmental or recreation qualities.

MDWFP — Will provide information to the Land Trust regarding locations of priority conservation sites. MDWFP will also provide assistance by providing information related to participation in the Mississippi Scenic Streams program.

6.6.4 SCHEDULE

The Land Trust will immediately begin the process of identifying potential acquisition sites. It is anticipated that the progression of this task will be closely related to the Recreational Access task and other tasks such as watershed mapping.

6.6.5 BUDGET

The budget for this task is dependent in part on negotiations with landowners seeking to place conservation easements on targeted properties. Other components of the budget will include analysis of spatial data to determine targeted properties and the identification of sites. Budgets associated with acquisition of conservation easements and buffer zones will be dependent on the price to purchase desired land and to establish such easements and buffer zones. The estimated cost is $55,000 but serves only as a best estimate based on unknown quantity of acres to be placed in conservation easements.

7.0 EDUCATION OUTREACH ACTIVITIES

7.1 OBJECTIVES

The objective of the public education component of the Chunky-Okatibbee Watershed Implementation Plan is designed to increase the level of awareness of watershed issues such as impacts of human activities on water quality impairment not only in the immediate watershed but also in the entire Pascagoula River Basin and beyond. The education committee will accomplish this goal through a variety of creative campaigns and presentations targeted towards multiple stakeholders and demographic groups.

Specific objectives of the education committee include:

- Increase public awareness of watershed systems and the cumulative effects of human activities within the watershed;
- Increase public awareness of the value of clean water;
- Increase awareness of the ways in which best management practices (BMPs) can be used to mitigate the cumulative impacts of poor water quality;
- Increase awareness of the intrinsic economic and environmental value of the natural resources within the Chunky-Okatibbee Watershed; and
- Target younger generations with a positive message relaying the importance of environmental stewardships in all aspects of life.
- Promote education on conservation easements and buffer zones.
- Promote education specific to litter and dumping as associated with water quality impairment.
- Promote educations specific to recreation access.

The following table is derived from the results of surveys completed by stakeholders and committee members. The survey was developed to collect data specific to real and perceived issues existing in the watershed and also included questions specific to education strategies and recommended target audiences. The table consolidates this information and includes broad strategy categories.

Chunky-Okatibbee Watershed Implementation Plan						
Education Strategies						
	Targeted Audience					
Education Strategy	Schools	Developers & Contractors	Civic Clubs	Loggers, Tree Farmers, Forestry	Landowners	Federal, State & County Forestry Managers
Training Workshops / Meetings	**X**	**X**	**X**	**X**	**X**	**X**
School Programs	**X**					
Eco-Tourism			**X**		**X**	
Publicity	**X**	**X**	**X**	**X**	**X**	**X**
Adopt-A-Stream	**X**		**X**		**X**	
Litter Education	**X**	**X**	**X**	**X**	**X**	**X**
Septic System Education		**X**			**X**	
Conferences		**X**		**X**		**X**
Conservation Easements		**X**		**X**	**X**	

Specific activities designed to implement the strategies listed include the following:

- Stakeholder meetings and presentations
- Coordinated media campaign
- Development of a table-top display to tour around area schools, libraries, city halls and courthouses
- Creation of a pamphlet or brochure for distribution
- Development and organization of neighborhood or community "Eco-Teams" throughout the watershed
- Creation of participatory activities including outdoor classrooms or demonstration projects. The outdoor classrooms or demonstration projects may or may not be associated with a school but could be community based (at a local public park for example)
- Creation of a website
- Placement of watershed signs on major roads and bridge crossings throughout the watershed
- Conduct watershed "eco-tours" for stakeholders
- Conduct Growth Readiness (NEMO) training for local officials
- Conduct a summer teacher's workshop
- Participate in SWCD Conservation Field Days

The following table provides a summary of education activities proposed. The paragraphs that follow provide additional detail:

Education Outreach Activity	Where	When	Budget
Conduct meetings and presentations for a variety of stakeholders and interest groups through professional organizations, civic clubs, and other venues as opportunities are presented.	Entire Watershed	2006-2009	$75,000
Conduct a coordinated media campaign utilizing both print and mass media to increase overall public awareness of the importance of water quality and its potential impacts on quality of life within the watershed.	Entire Watershed	2006-2009	$150,000
Development of a table-top display that may tour around area schools, libraries, city halls, courthouses, conferences, exhibits, fairs, and other events.	Entire Watershed	2007-2008	$15,000
Creation of participatory activities including outdoor classrooms or demonstration projects, clean-up events, and Adopt-A-Stream.	Entire Watershed	2008-2009	$10,000
Creation of a website.	Entire Watershed	2007	$5,000
Placement of watershed signs on major roads and bridge crossings.	Entire Watershed	2008-2009	$10,000
Eco-Tours will be identified and provided on website.	Entire Watershed	2007-2009	$5,000
		Total Estimated Budget	$270,000

7.2 STAKEHOLDER MEETINGS AND PRESENTATIONS

Through a strategic approach, specific stakeholder groups will be targeted with an educational message designed to introduce concepts related to non-point source pollution, best management practices, the function of watersheds, conservation easement, buffer zones and the impacts of routine human activities on those watersheds. These groups will be targeted through professional associations, civic organizations, organized meetings, and other venues as opportunities are presented to reach targeted stakeholder groups. Stakeholder meetings will be held twice per year throughout 2007 and 2008. Targeted groups will include civic organizations, local elected officials, builders and developers, landowners, and specific industries such as the timber industry. Specific stakeholder meetings will be planned to promote the acquisition of conservation easements and buffer zones.

7.2.1 PARTICIPANTS

The following activities are proposed according to the listed participant.

EMFLT Provide presentations to various and specific stakeholder groups with presentations to be prepared by the consultant and WIT.

MDEQ Provide data, research, images and other components to be included in the presentations.

MDWFP Provide data, research, images and other components to be included in the presentations.

7.2.2 SCHEDULE

The process of conducting stakeholder meetings and presentations began concurrently with the planning process. The presentations will continue as opportunities are presented throughout the implementation period.

7.2.3 BUDGET

It is anticipated that the presentations will be conducted primarily by volunteers participating in the WIT and costs are anticipated to be at a minimum. However, there will be some costs associated with preparing presentation materials. The Budget for this activity is expected to be around $75,000.00.

7.3 COORDINATED MEDIA CAMPAIGN

In an effort to maximize the effectiveness of the education strategies, local media outlets will be engaged to present feature stories on watershed related activities, plan implementation activities, identify opportunities for public involvement and provide general news stories relating to conservation and best management practices taking place within the watershed. This strategy will utilize both print, radio, and television media to publicize a variety of events.

In addition to the above activities, a public service announcement will be prepared and provided to both local radio and television stations.

The media campaign will also include significant participation from Mississippi Public Broadcasting (MPB). MPB has committed to assisting on this task and is researching the feasibility of producing a video documentary focusing on the Chunky River. In addition, they may assist in providing information and short videos for the website and developing public service announcements for both television and radio. MPB will also focus one of its radio programs on the watershed planning activities taking place within the Chunky-Okatibbee Watershed.

The media campaign will also include the creation of internal media sources such as a brochure or pamphlet that will be provided as a handout at media events, conferences, exhibitions and community events. The brochure will be completed within the first six months of implementation.

7.3.1 PARTICIPANTS

The following activities are proposed according to the listed participant.

EMFLT Lead the media campaign.

MPB Provide documentary, PSAs, and a variety of videos.

7.3.2 SCHEDULE

As with the stakeholder meetings, efforts to communicate the Watershed Implementation Team's efforts through the various media avenues have been taking place concurrent with the planning effort. It is anticipated that communication via the various media avenues will continue throughout the implementation period.

7.3.3 BUDGET

The primary budget item for this task includes the cost of producing a professional documentary and PSAs on the value and characteristics of the watershed. The budget for this item is $150,000 and is expected to be partially underwritten by corporate and other sponsors.

7.4 DEVELOPMENT OF A TABLE-TOP DISPLAY

The Watershed Implementation Team will develop a portable table-top display that can be set up at area schools, libraries, city halls, courthouses, conferences, exhibits, fairs, and other events as part of a strategy to educate a wide variety of stakeholders. The display may include educational information including key facts and statistics about the Chunky-Okatibbee Watershed, pollution prevention strategies, images of key locations throughout the watershed, and a summary of the watershed implementation plan. This activity will be executed in conjunction with the publication and distribution of an informational brochure that will be made available at all of the display "tour stops".

7.4.1 PARTICIPANTS

The following activities are proposed according to the listed participant.

EMFLT Serve as lead in preparing the table-top display with dependence on volunteers to coordinate the placement of the display in appropriate and strategic locations.

MDEQ Provide data and graphics for use in the display.

MDWFP Provide data and graphics for use in the display.

USGS Provide data and graphics for use in the display.

PHWD Provide data and graphics for use in the display.

COM Provide assistance by providing a display location.

BOS Provide assistance by providing a display location.

7.4.2 SCHEDULE

It is anticipated that the display will be created during the first half of 2007 and begin touring at strategic display locations during the second half of 2007 to continue through 2008.

7.4.3 BUDGET

The budget for this task is expected to range from $15,000.

7.5 PARTICIPATORY ACTIVITIES

The WIT will work to identify locations throughout the watershed in which the potential exists to create outdoor classrooms or demonstration projects, to organize groups to “adopt” stream segments, and to schedule clean-up activities.

The demonstration project could be designed to demonstrate the principles of sustainability and to demonstrate non point source pollution prevention best management practices. Examples of potential demonstration projects include the use of porous pavement for sidewalks, the use of grassy pavers for overflow parking, water gardens, slope stabilization, etc. It is the intention of the Education Committee to invoke active stakeholders engaged in land development activities to incorporate demonstrable best management practices into new developments in order to reduce and defray the costs of implementation of this strategy.

A strategy will be developed to encourage and recruit volunteers to participate in the Adopt-A-Stream program. One Adopt-A-Stream training event will be held within the watershed per year. The WIT with work with the Adopt-A-Stream Coordinator to identify both groups and individuals interested in receiving Adopt-A-Stream training and will participate in the coordination and organization of the training sessions.

The WIT will also organize a minimum of one community-wide stream clean-up event per year that will target specific stream segments within the watershed. Student groups will be encouraged to participate in such clean-up events, as well as other community groups.

7.5.1 PARTICIPATION

The following activities are proposed according to the listed participant.

EMFLT — Coordinate development of conceptual ideas for the creation of outdoor classrooms and/or demonstration projects and will draw on other participating agencies and entities for support. The Land Trust will also coordinate volunteer clean-up events and monitoring events.

MWF — The Mississippi Wildlife Federation's Adopt-A-Stream Program will be responsible for training volunteers for monitoring streams.

Volunteers — Participation in the participatory programs is anticipated to come from stakeholders and volunteers.

7.5.2 SCHEDULE

Efforts will begin in 2007 and will continue through 2009.

7.5.3 BUDGET

Because the clean-up events and the monitoring events are largely dependent on volunteers, costs are expected to be minimal. Anticipated budgetary needs for this activity are approximately $10,000.

7.6 CREATION OF A WEBSITE

The WIT will create and establish a website designed to inform the general public on the environmental value of the watershed, and to disseminate information specific to activities within the watershed. Information such as the educational brochure will be provided in digital form on the website. Other information that can be potentially featured on the website includes schedules for eco-tours of the watershed, a schedule of the table-top display locations, procedures for donation of conservations easements and the benefits associated with easements and buffer zones, and a listing and contact information for Adopt-A-Stream teams. The website will include information targeted towards landowners within the targeted watersheds specific to the establishment and benefits of conservation easements and strategies for habitat enhancement for fish, wildlife and plants.

7.6.1 PARTICIPATION

The following activities are proposed according to the listed participant.

EMFLT — Coordinate the development of the website with support from both stakeholders and other participating agencies.

7.6.2 SCHEDULE

It is anticipated that the website will be created and placed online in 2007.

7.6.3 BUDGET

The budget for creation of a website will be $5,000.

7.7 PLACEMENT OF WATERSHED SIGNS ON MAJOR ROADS

A variety of options exist for the content and placement of signs within the watershed. The Educational Committee will initially focus on attempting to secure highway signs. Highway signs could be erected at major highway entrances into the watershed to notify drivers that they are "now entering the Chunky-Okatibbee Watershed". These signs could be erected where Highways 15, 19, 39, 45, 11, 80 and Interstates 20 and 59 enter into the watershed from either direction. The initial focus will target the erection of sixteen signs. Other signs will be considered but will be contingent on the availability of funding. The following table illustrates the frequency of potential exposure of the signs based on average daily traffic counts at major highways within the watershed.

Highway	Direction	Average Daily Traffic Count
Highway 15	North	4,300
Highway 15	South	1,800
Highway 19	North	5,500
Highway 19	South	3,800
Interstate 20	West	19,000
Interstate 59	South	10,000
Interstate 20/59	East	25,000
Highway 80	West	2,200
Highway 80	East	2,300
Highway 11	South	570
Highway 45	North	8,700
Highway 45	South	4,300
Highway 39	North	4,400
	Totals	**91,870**

7.7.1 PARTICIPATION

The following activities are proposed according to the listed participant.

EMFLT — In cooperation with the cities and counties within the watershed, the Land Trust will determine strategic locations for placement of the signs.

MDOT — MDOT will provide technical assistance specific to the placement of signage within the watershed. MDOT's role in this process is critical in that permission is required from them to place signs on state and federal highways.

MDEQ — MDEQ will provide assistance by helping to identify optimum sign placement within the watershed and by coordinating installation activities with MDOT.

7.7.2 SCHEDULE

Signs will be secured and installed in 2008-2009.

7.7.3 BUDGET

It is estimated that the budgetary needs for this task will be $10,000.

7.8 DEVELOP WATERSHED "ECO-TOURS" FOR STAKEHOLDERS

A self-guided tour will be developed and can include maps and guidance documents indicating key features within the watershed. The "tours" may be published on the website. The self-guided tour could highlight unique features within the watershed and could also serve as a guide for eco-tourism activities such as bird watching, canoeing, camping, hiking, and fishing.

7.8.1 PARTICIPATION

The following activities are proposed according to the listed participant.

EMFLT — Lead in developing the tour routes and will include information specific to the tours in other materials to be developed including the brochures, the tabletop display and the website.

Canoe Club — Provide recommendations for key canoeing routes.

Audubon — Provide locations of birding sites.

MWFP — Provide information regarding trails, recreational areas, parks, and other significant locations of interest.

7.8.2 SCHEDULE

The process of developing tour routes will begin in 2007 with publication of the routes to be conducted in conjunction with other education elements as described above.

7.8.3 BUDGET

The budget for development and promotion of eco-tours is anticipated to be at $5,000.

8.0 PLAN EVALUATION

This watershed implementation plan will be evaluated and revised, if necessary, once per year throughout the proposed three-year implementation schedule. The purpose of annual evaluations is to ensure that the provisions of the plan are having the intended effect and to ensure that the goals and objectives of the plan are being met. In the event that the intended results are not being achieved, the plan will be revised as appropriate. It is anticipated that the review process will begin during the third quarter of each calendar year.

The review process will involve a meeting of the WIT to discuss and review progress made during the previous year as determined by on-going monitoring conducted throughout the year. During that meeting, the team will determine if recommendations need to be made concerning the revision of the plan. Once those determinations have been made, participating stakeholders will be notified of the intended revisions and will be given an opportunity to review and comment on the proposed revisions. The following schedule is representative of the review and revision schedule that will be followed by the WIT:

	October				November				December			
Review Activity	**Wk 1**	**Wk 2**	**Wk 3**	**Wk 4**	**Wk 1**	**Wk 2**	**Wk 3**	**Wk 4**	**Wk 1**	**Wk 2**	**Wk 3**	**Wk 4**
WIT Review Meeting												
Submission of Proposed Changes to Stakeholders												
Stakeholder Review and Comment Period												
Incorporation of Comments into Plan Revisions												
Finalize Revisions and Submit to DEQ for Review												

9.0 PLAN REVISION

After the plan has been appropriately evaluated, the WIT and MDEQ will prepare a revised watershed implementation plan that will include changes requested by the stakeholders. If necessary, a follow-up meeting may be called to reconcile conflicting comments or modification requests.

If, in the event that implementation of the plan is achieving the desired results, the plan may still be modified to address different, new or emerging issues that may have the potential to impact water quality and the objectives of the plan. If the evaluated results are satisfactory and changes specific to the scope of the plan are warranted, the same procedure for plan review and revision will be followed to ensure that all appropriate elements of the plan are addressing water quality issues affecting the watershed. In either case, the procedures to be followed for plan review and revision will include those elements listed in the above table.

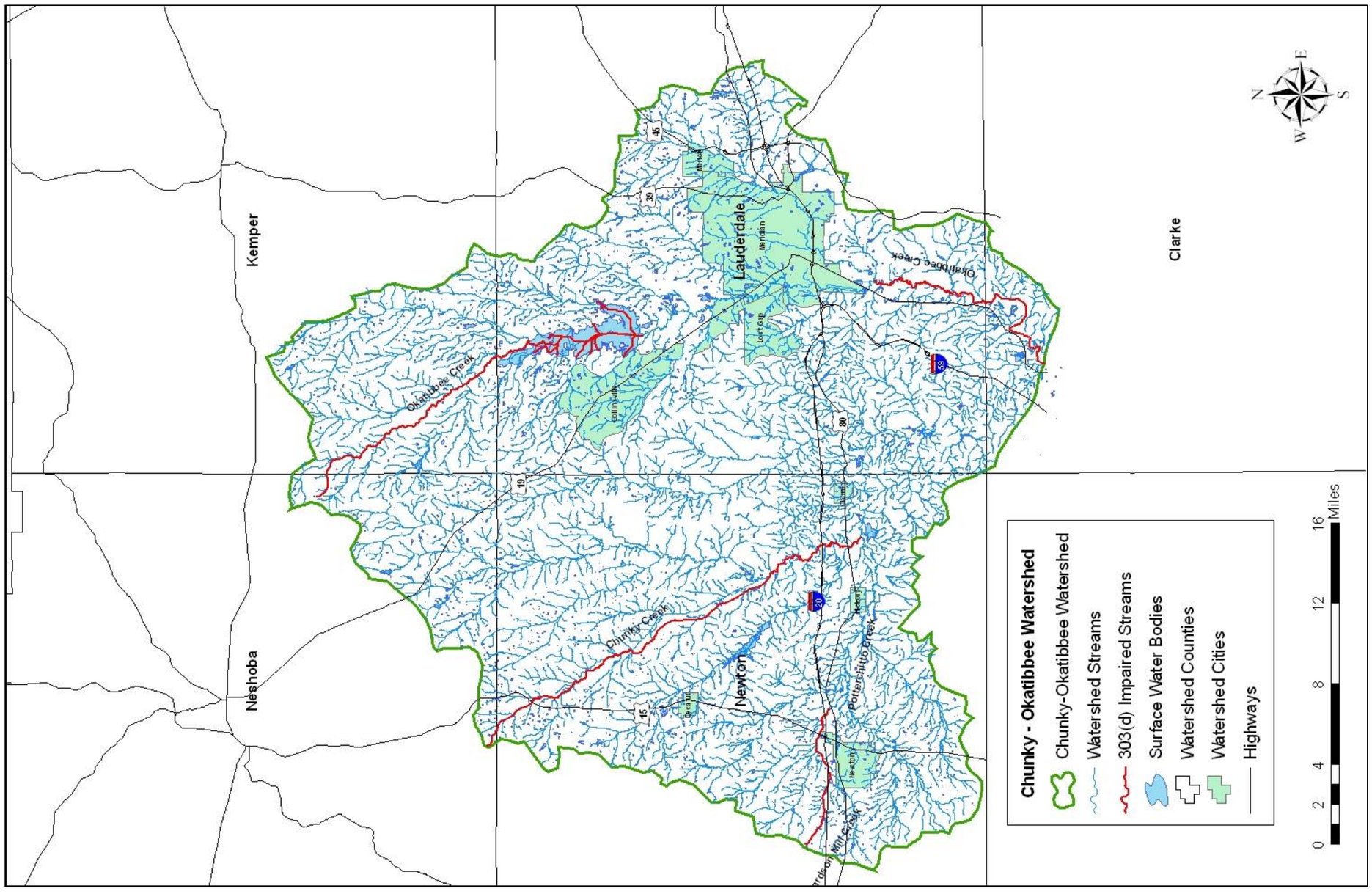
10.0 APPENDICES

APPENDIX A: COMMONLY USED ACRONYMS

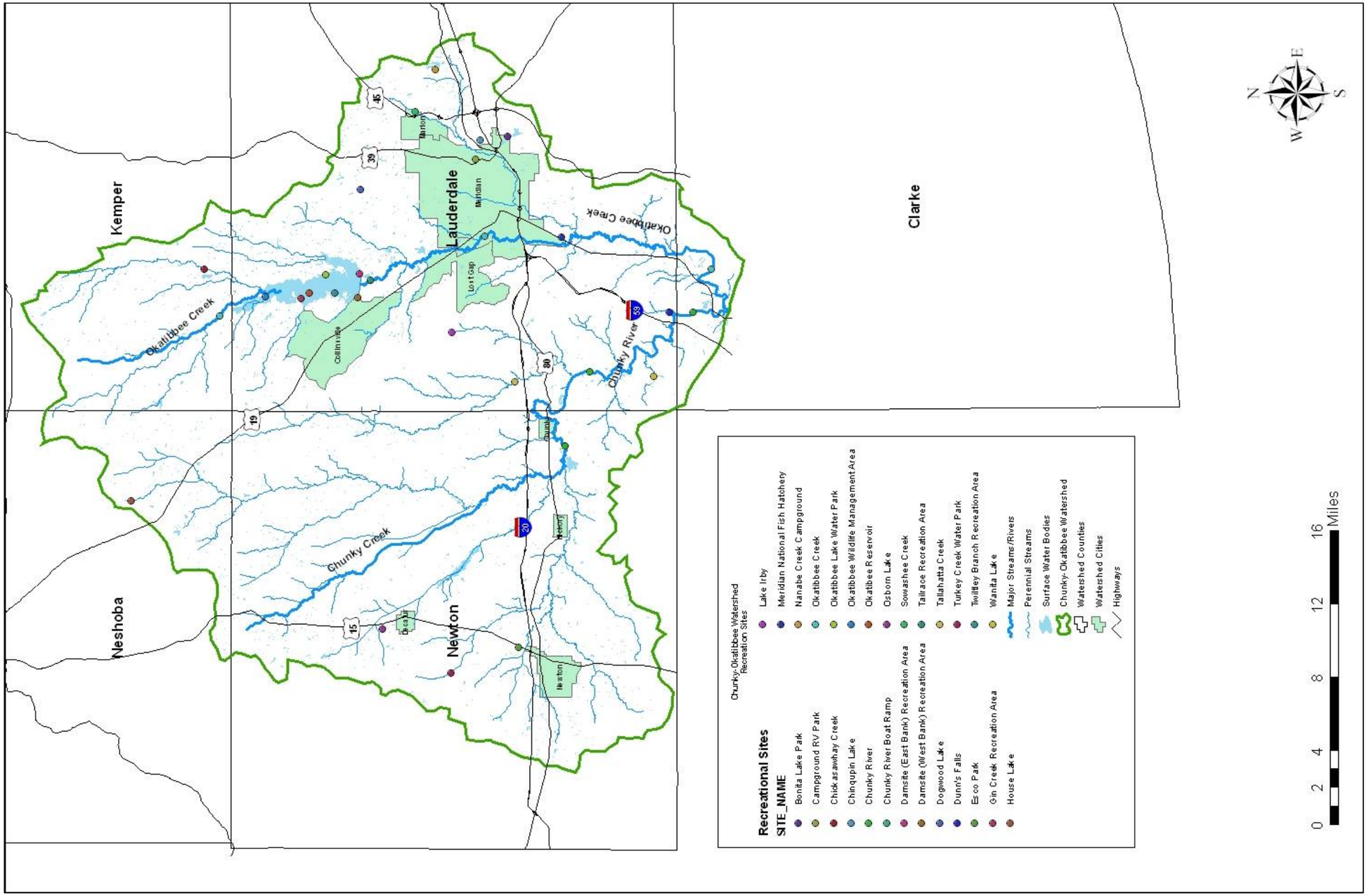
AFO	Animal Feeding Operation
NAS	Naval Air Station
BMP	Best Management Practice
BOS	County Board of Supervisors
CAFO	Concentrated Animal Feeding Operation
COM	City of Meridian
EMFLT	East Mississippi Foothills Land Trust
KMB	Keep Mississippi Beautiful
MARIS	Mississippi Automated Resource Information System
MDEQ	Mississippi Department of Environmental Quality
MDOT	Mississippi Department of Transportation
MDWFP	Mississippi Department of Wildlife, Fisheries and Parks
MFC	Mississippi Forestry Commission
MPB	Mississippi Public Broadcasting
MWF	Mississippi Wildlife Federation
PHWD	Pat Harrison Waterway District
USACE	United Stated Army Corps of Engineers
USDA	United States Department of Agriculture
USFS	United States Forest Service
USGS	United States Geological Survey
WIP	Watershed Implementation Plan
WIT	Watershed Implementation Team

APPENDIX B: MISCELLANEOUS WATERSHED MAPS

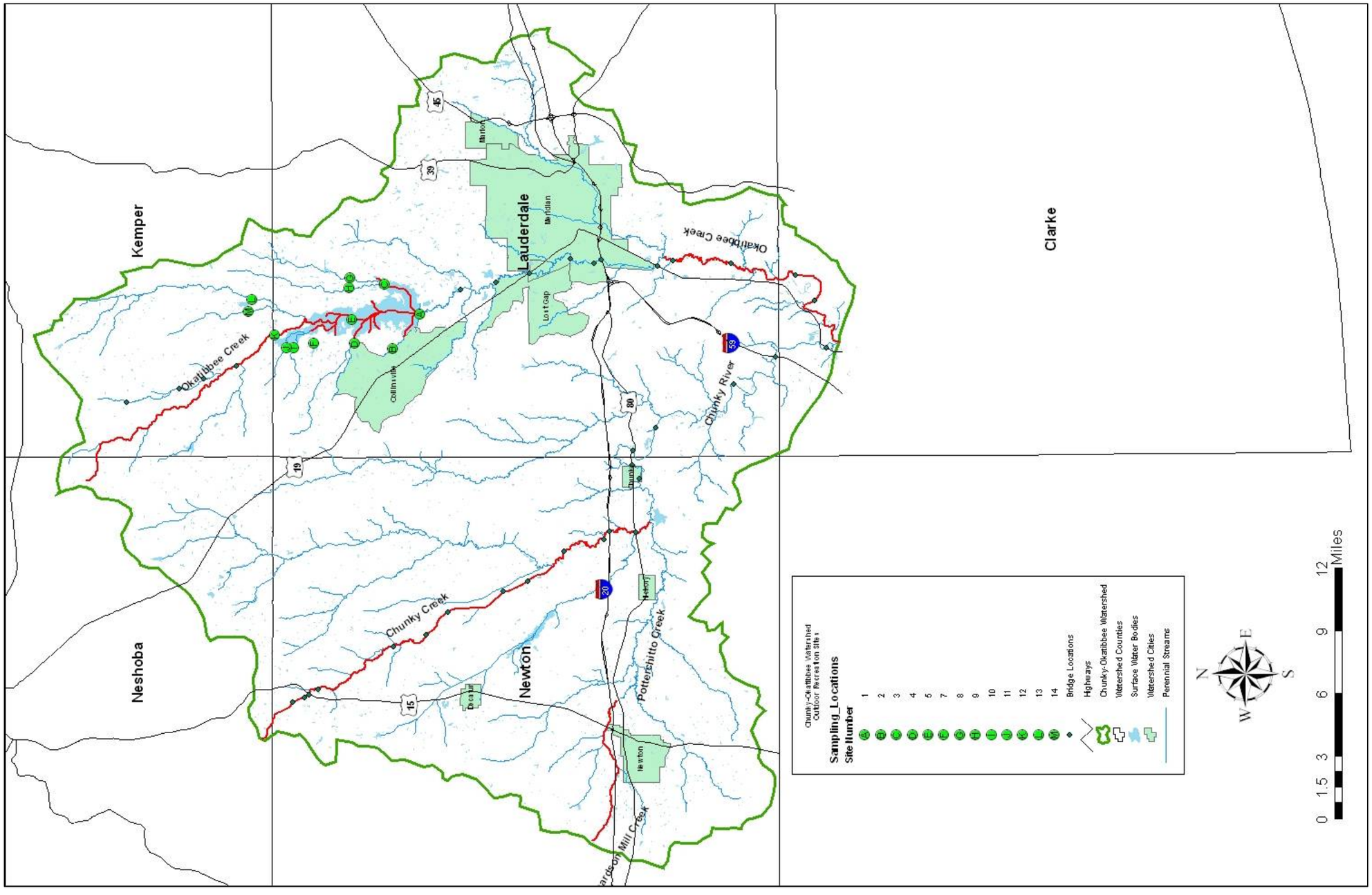
Map 1: General Watershed Map with Impaired Stream Segments



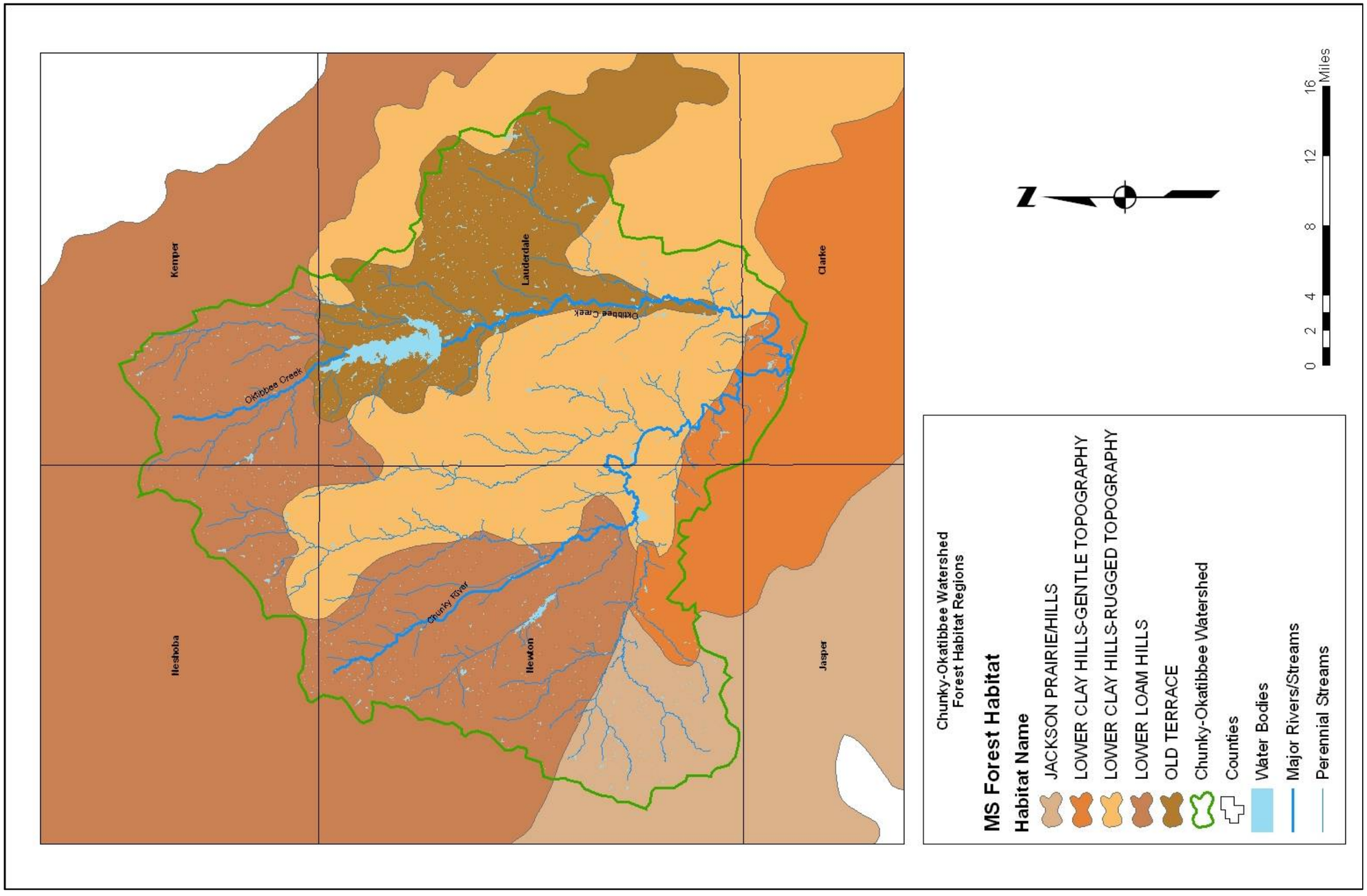
Map 2 Watershed Map with Recreational Access Sites



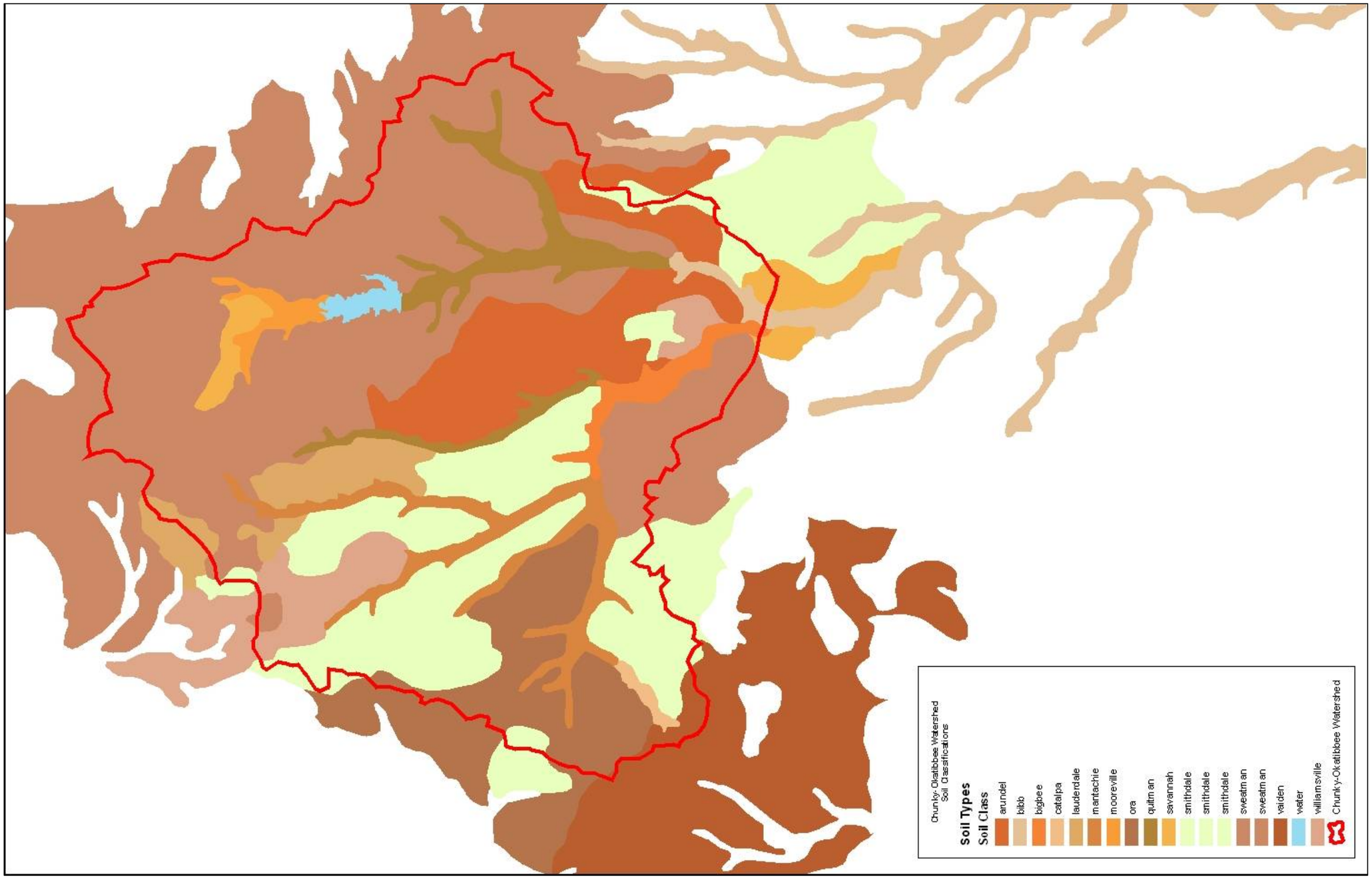
Map 3 Watershed Map with Monitoring Locations



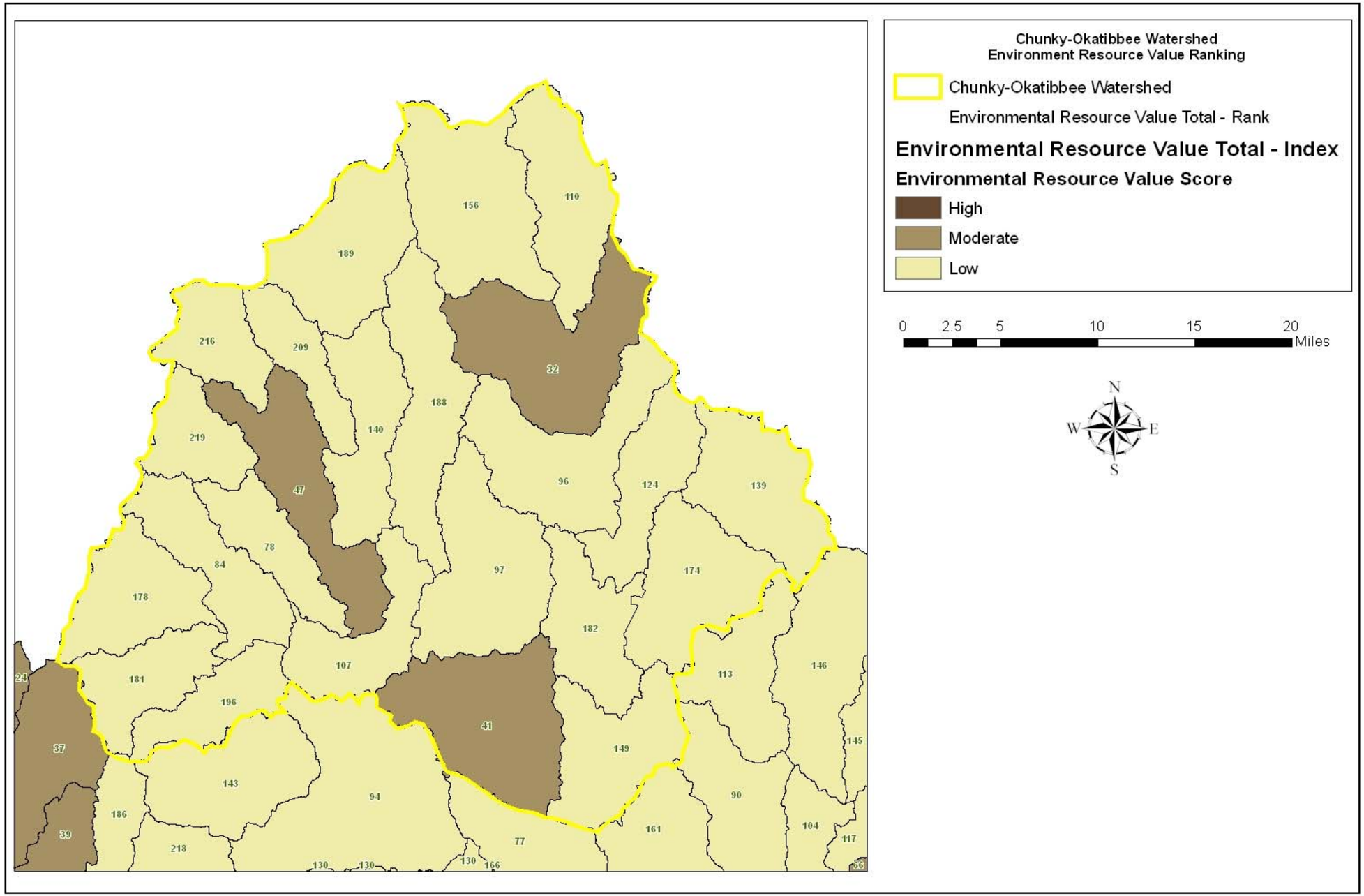
Map 4 Watershed Map with Forest Habitat



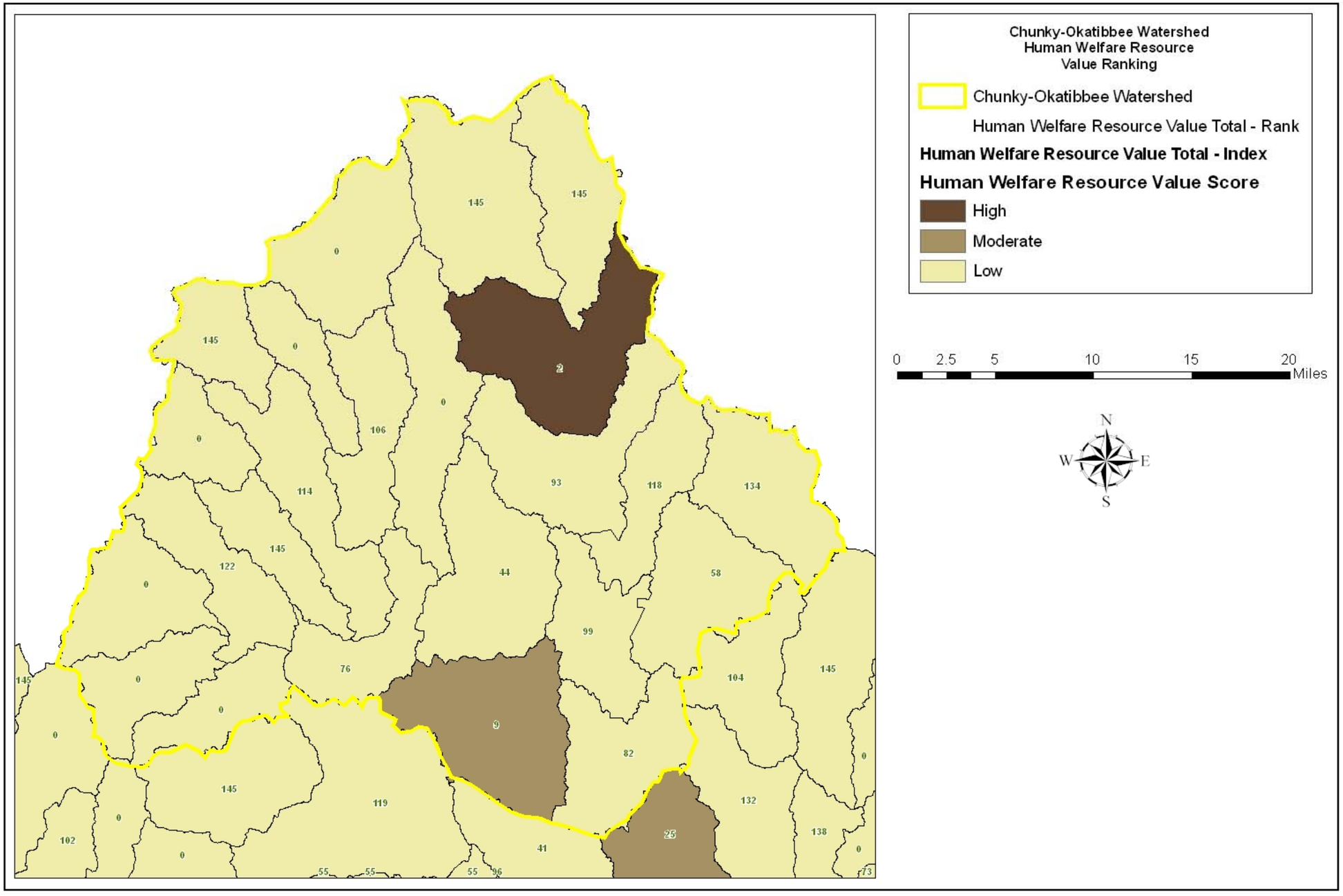
Map 5 Soil Classifications



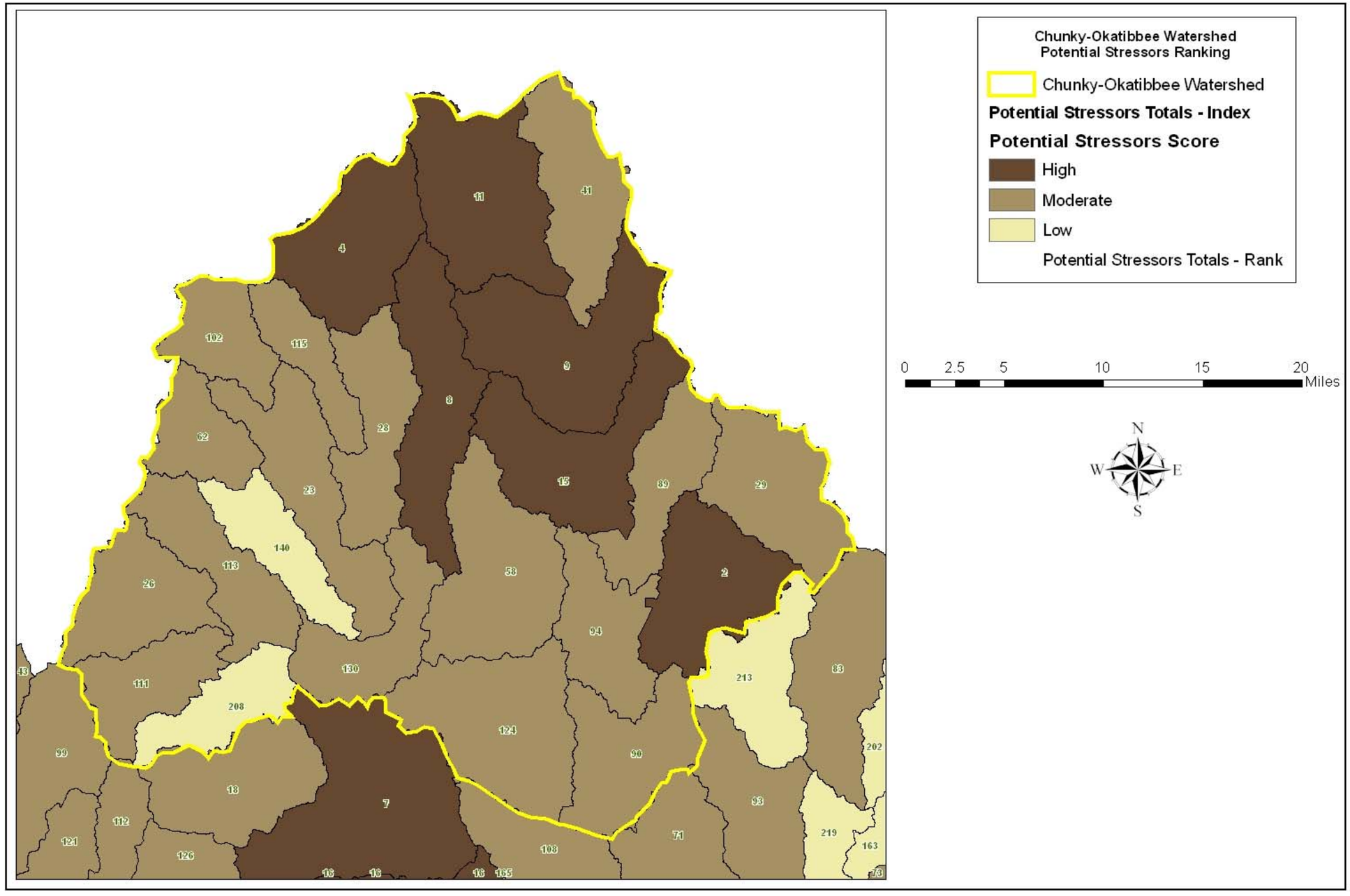
Map 6 Environmental Resource Values



Map 7 Human Welfare Resource Values



Map 8 Potential Stressors Ranking



APPENDIX C: SURVEY

Okatibbee-Chunky Watershed Questionnaire

Contact Information (name, e-mail, address, phone, and fax)

Name:	
E-mail:	
Affiliation:	
Address:	
Phone:	

In general, what are the water quality concerns you have in this watershed? (Examples: pathogens, non-point pollution, siltation, erosion, point source pollution, etc.)

What do you consider as priority areas within this watershed?

Where are these priority areas located (specifically)?

What are the pollution issues or concerns associated with these priority areas?

Do you have any suggestions regarding best management practices to address these issues of concern in these priority areas?

Do you have any suggestions regarding water quality and watershed management education needs within the Okatibbee-Chunky watershed?

Would you like to serve on the watershed implementation team?

Would you like to serve on the technical committee or the education committee?

Melissa Pringle, Ph.D.
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902 20th Avenue
Meridian, MS 39301
Or
E-mail it to melissa.pringle@eco-systemsinc.com

APPENDIX D: MISSISSIPPI 2006 SECTION 303(D) LIST OF IMPAIRED WATERBODIES WITH MONITORING DATA IN THE CHUNKY-OKATIBBEE WATERSHED

Waterbody	County	Location	Impaired Use	Pollutant Cause
Anderson Branch	Newton	Near Decatur from Headwaters to Mouth at Okathatta Creek	Aquatic Life Support	Biological Impairment
Chunky Creek	Newton	Near Union from Headwaters to MWS Boundary 4018	Aquatic Life Support	Biological Impairment
Chunky River	Newton	Near Enterprise from Confluence with Possum Creek to Mouth at Chickasawhay River	Aquatic Life Support	Biological Impairment
Okatibbee Creek	Lauderdale	Near Meridian from Confluence with Sowashee Creek to Confluence with Chunky River	Aquatic Life Support	Biological Impairment
Sowashee Creek	Lauderdale	At Meridian from Headwaters to Mouth at Okatibbee Creek	Aquatic Life Support	Biological Impairment

APPENDIX E: TMDLS IN PASCAGOULA RIVER BASIN

Waterbody Name	Pollutant of Concern	Final Approval Date
Big Creek	Fecal Coliform	May 31, 2005
Black Creek	Pathogens	December 15, 1999
Bluff Creek	Sediment	May 31, 2005
Bogue Homo	Organic Enrichment / Low DO & Nutrients	June 30, 2005
Bostic Branch	Sediment	June 24, 2005
Bouie Creek	Pathogens	December 15, 1999
Bowie Creek and Bowie River	Organic Enrichment / Low DO & Nutrients	June 30, 2004
Bowie Creek and Bowie River	Sediment	May 17, 2005
Bowie River	Toxicity	May 31, 2005
Cedar Creek	Organic Enrichment / Low DO & Nutrients	June 30, 2005
Cedar Creek	Sediment	May 17, 2005
Chickasawhay River	Fecal Coliform	December 15, 1999
Chickasawhay River	Organic Enrichment / Low DO & Nutrients	June 30, 2005
Chickasawhay River	Sediment	May 17, 2005
Country Cub Lake	PCPs- Dioxins	June 27, 2000
Cypress Creek	Pathogens	October 29, 1999
Dry Creek	Sediment	May 17, 2005
Escatawpa River	Mercury	June 29, 2000
Lake Yazoo	Total Toxics	September 30, 2004
Leaf River	Pathogens	April 27, 2000
Leaf River above Hattiesburg	Organic Enrichment / Low DO & Nutrients	June 30, 2005
Leaf River above Hattiesburg	Sediment	May 17, 2005
Leaf River below Hattiesburg	Fecal Coliform	May 31, 2005
Leaf River below Hattiesburg	Organic Enrichment / Low DO & Nutrients	June 30, 2005
Leaf River below Hattiesburg	Sediment	May 18, 2005
Long Branch	Conductivity	January 12, 2004
Mason Creek	Sediment	May 18, 2005
Oakahay Creek	Organic Enrichment / Low DO & Nutrients	June 30, 2005
Oakahay Creek	Sediment	May 18, 2005
Okatibbee Creek	Pathogens	December 15, 1999
Okatoma Creek	Pathogens	December 15, 1999
Pascagoula River	Fecal Coliform	December 15, 1999
Pascagoula River	Mercury	March 18, 2005
Pascagoula River Basin	Pesticides	January 13, 2004
Red Creek	Fecal Coliform	December 15, 1999
Red Creek	Organic Enrichment / Low DO & Nutrients	June 30, 2005
Richardson Mill Creek & Potterchitto Creek	Organic Enrichment Ammonia Toxicity	June 29, 2000
Skiffer Creek	Sediment	May 18, 2005
Tallahala Creek	Biochemical Oxygen Demand	September 22, 1999
Tallahala Creek	Pathogens	December 15, 1999
Thompson Creek	Sediment	May 18, 2005
Unnamed Tributary of Clark Bayou	Organic Enrichment / Low DO & Nutrients	June 2, 2005
Upper Chickasawhay River	Sediment	June 24, 2005
Upper Leaf River	Sediment	June 24, 2005
West Tallahala Creek	Sediment	June 30, 2005
Whiskey Creek	Sediment	May 18, 2005