

5.0 WATER QUALITY IN THE TOMBIGBEE RIVER BASIN

One of the overarching goals of this basin management plan is to plan for and encourage activities that will clean up the polluted waters of the Tombigbee River Basin and to maintain waterbodies that are in good condition. Therefore, this plan needs to address the question: *What is the current state of water quality in the creeks, rivers, lakes, and ponds of the Tombigbee River Basin?* The answer to this question is told by the data that is collected over the years by government agencies, private industry, and citizen volunteers. And, furthermore, some answers emerge after the Alabama Department of Environmental Management completes the challenging task of organizing the data and interpreting it so that all stakeholders can better understand what the state of the water quality in the Tombigbee River Basin is thought to be. This section looks at the current understanding of water quality in the Tombigbee River Basin.

Authorized by the Clean Water Act (CWA), the U.S. Environmental Protection Agency requires ADEM to complete two periodic water quality inventories and assessments: 1) Section 305(b) of the CWA calls for a bi-annual inventory of the quality of Alabama's waters and, 2) Section 303(d) of the CWA requires Alabama to list, on even-numbered years, all of its polluted and degraded waters that are not achieving their designated uses. The 2004 reporting year marked an evolution of water quality reporting for USEPA and Alabama because these two central water quality reports were integrated into one report called, *Alabama's 2004 Integrated Water Quality and Assessment Report*. This *Integrated Report* is the most current and comprehensive inventory and evaluation of water quality data for the waters of Alabama, including the Tombigbee River. It is vital to the basin management planning effort because it contains data and information that serve as a baseline of our understanding of the conditions of the waters in the Basin.

5.1 Water Quality Monitoring and Data Sources

Over a dozen water quality studies and monitoring programs generate data in support of the *Integrated Report* and inform our overall understanding of water quality in the Tombigbee River Basin. Table 5.1 below lists these water quality monitoring and data collection efforts as well as the type of data they collect. The majority of these efforts are the responsibility of ADEM

and constitute the agency’s comprehensive approach to monitoring called, ASSESS.³³ Other efforts, such as ADPH’s fish consumption advisories, SWCC’s watershed assessments, and the Alabama Water Watch (AWW)’s citizen water quality monitoring data, support ADEM’s efforts to evaluate the waters of the State. In addition, agencies such as USGS and the USACOE perform targeted water quality studies that inform the overall state of knowledge regarding water quality in the basin. The *Integrated Report* contains a more detailed description of each of these programs and how they factor into the overall assessment picture. Several of these efforts are displayed on Map 4 and discussed below.

Table 5.1. Important Sources of Water Quality Data for the Tombigbee River Basin

Agency	Period of Record	Report or Program Title	Information Type
ADEM	2002 – 2003	Alabama’s 2004 Integrated Water Quality and Assessment Report (305b & 303d)	Chemical, physical, habitat, biological
ADEM	2003	Nonpoint Source Assessment Program	Chemical, biological, physical
ADEM	2003	Point Source Assessment Program	Chemical, biological, physical
ADEM	2003	Ecoregion Reference Assessment Program	Chemical, physical, habitat, biological
ADEM	2003	Clean Water Act §303(d) Support Assessments	Chemical, physical
ADEM	2003	Fixed Ambient Trend Monitoring Program	Chemical, physical, habitat, biological
ADEM	1997 – 2003	Alabama Monitoring and Assessment Program (ALAMAP)	Chemical, physical, habitat
ADEM	2000	Surface Water Quality Screening Assessment of the Alabama River	Chemical, habitat, biological
ADEM	2002	Alabama’s 2002 305 (b) Water Quality Report to Congress	Chemical, physical, habitat, biological
EPA, ADEM, ADPH	2004	Fish Tissue Monitoring Studies and Advisories	Biological, public health
AWW	1999 – 2003	Alabama Water Watch - Citizen Volunteer WQ Monitoring	Chemical and bacteria
GSA	1960s to present	Various studies and reports pertaining to water quality, aquatic fauna, and groundwater.	Chemical, physical, biological
SWCC	1998	Statewide Watershed Assessments (by County)	Sediment loading
USGS	1997 – 2001	Flow and water quality data	Chemical, physical
USGS NAWQA	1997 – 2003	National Water-Quality Assessment Program	Chemical, physical, habitat, biological
MSDEQ	2004	Mississippi’s 2004 303d List of Impaired Waters	Chemical, physical, habitat, biological

³³ ASSESS is an acronym for Alabama’s Strategy for Sampling Environmental indicators of Surface water quality Status. The agency strives to maximize resources by prioritizing monitoring needs according to certain objectives and reporting needs, such as those mandated for the 305(b) and 303(d) requirements.

5.1.1 Nonpoint Source Pollution Assessments

This basin management plan primarily focuses on nonpoint source pollution and how to manage activities in the watersheds of the Upper and Lower Tombigbee River Subbasins to minimize it. As mentioned above, the plan is an integral step in implementing the Alabama Nonpoint Source (NPS) Management Program, which focuses on preventing or eliminating water quality impairments related to NPS runoff pollutants and protecting unimpaired waters.³⁴ Through the use of its Section 319 funds, the NPS Program supports county-by-county, citizen-based nonpoint source screening assessments under the administration of the Soil and Water Conservation Committee. These assessments occur on a 5-year rotational basis. The first assessment for the Upper and Lower Tombigbee River Subbasins was completed in 2001; the second rotational assessment is scheduled for 2006.³⁵

5.1.2 Fish Tissue Monitoring

Initiated in 1991, the ADEM Fish Tissue Monitoring Program is conducted in cooperation with the Alabama Department of Public Health (ADPH), the Alabama Department of Conservation and Natural Resources, and the Tennessee Valley Authority. Of the 389 fish, 353 were collected as part of ADEM's Fish Tissue Monitoring Program and 36 collected as part of ADEM's participation in the US EPA National Fish Tissue Study.

Fish are good indicators of the health of a waterbody. Some contaminants, if present, could bioaccumulate in fish. The contaminant could enter the food supply through either crustaceans or bottom feeding fish in a given area. These species would be eaten by larger or more aggressive species, thereby transferring the contaminant from the species consumed to the consumer. In addition to providing valuable information to the cooperating agencies mentioned above, the most important role of this monitoring program is the collection of data that the ADPH can use to inform Alabama citizens who consume their catch of fish. Citizens can use this information to make healthy, informed decisions regarding this important food source.

³⁴ ADEM, 2004. *Alabama's 2004 Integrated Water Quality and Assessment Report*. Page 129.

³⁵ *Ibid*, Page 132.

Fish were analyzed for 23 different materials including contaminants in the water (PCBs, including dioxins), pesticides (endosulfan, hexachlorobenzene, chlordane, lindane, dieldrin, endrin, DDT and its breakdown products and congeners, heptachlors, Mirex, chlorpyrifos, and toxaphene), and heavy metals (arsenic, cadmium, mercury and selenium) to which the fish may have been exposed. Tissue monitoring of fish collected from various waterbodies throughout the state during the fall of 2004 indicates that the quality of water in Alabama generally has continued to improve over the past years, with a single, additional fish consumption advisory issued for 2005.³⁶

The public health advisories for fish consumption relevant to the Tombigbee River are limited to the Olin Basin in Washington County near the community of McIntosh. It is in close proximity to the mainstem of the Tombigbee at river mile 60.5 upstream of the confluence with the Alabama River. The public is warned not to consume largemouth bass and channel catfish because of the presence of mercury and DDT. The Olin Basin is on the National Priority (Superfund) List and has undergone substantial remediation activities for over two decades, which are discussed in more detail below.

5.1.3 National Water-Quality Assessment Program (NAWQA)

NAWQA is implemented by the United States Geological Survey to assess water quality status and trends of the Nations' ground and surface waters on a regional and national scale (USGS, 2003).³⁷ Physical, chemical, and biological data are collected from a wide range of environmental settings to assess overall water quality within a study unit. The Mobile River Basin is one of the study units that NAWQA has assessed since 1997. Several recent reports contain data and analyses pertinent to the management of the Tombigbee River Basin. A list of the most pertinent USGS publications and their area of relevance to the Basin is provided below.

³⁶ ADPH issues annual fish consumption advisories. See 2005 NEWS RELEASE for the ALABAMA DEPARTMENT OF PUBLIC HEALTH, Montgomery, AL 36104. (www.adph.org)

³⁷ United States Geological Survey, 2003. *Occurrence and Distribution of Nutrients, Suspended Sediment, and Pesticides in the Mobile River Basin, Alabama, Georgia, Mississippi, and Tennessee, 1999-2001, as amended*. By Ann K. McPherson, Richard S. Moreland, and J. Brian Atkins. USGS NAWQA Water-Resources Investigations Report 03-4203. Montgomery, Alabama.

Table 5.1.4a. Major USGS Publications pertinent to the Tombigbee River Basin

Title	Principal Author	Relevance to Alabama River Basin Management Plan
<i>Water Resources Data, Alabama, Water Year 2003 (AL-03-1)</i>	W.L. Psinakis	Contains data for records of stage, discharge, and water quality of streams; stages and contents of lakes and reservoirs; and water levels in wells, includes 11 surface water stations in the Alabama River Basin.
<i>Occurrence and distribution of nutrients, suspended sediment, and pesticides in the Mobile River Basin, Alabama, Georgia, Mississippi, and Tennessee, 1999-2001 (WRIR 03-4203)</i>	A.K. McPherson	Targeted water quality analysis (January 1999 to December 2001) to measure levels of nitrogen, phosphorus and pesticides at nine sites. Three sites in the Alabama River Basin: Threemile Branch, Pintlalla Creek and Alabama River.
<i>Environmental setting and water-quality issues of the Mobile River Basin, Alabama, Georgia, Mississippi, and Tennessee (WRIR 02-4162)</i>	G.C. Johnson	Overview of the physiographic and hydrologic features of the Mobile River Basin. Characterization of water quality issues throughout the study area including the Alabama River Basin.
<i>Water Quality in the Mobile River Basin, Alabama, Georgia, Mississippi, and Tennessee, 1999-2001 (USGS Circular 1231)</i>	J. Brian Atkins	Summary of other water quality reports completed for the Mobile River Basin. Contains study highlights that are important for local, state and federal water resource managers and stakeholders (<i>see discussion below</i>).

NAWQA’s publication, *Water Quality in the Mobile River Basin, Alabama, Georgia, Mississippi, and Tennessee, 1999-2001*,³⁸ contains important observations about the effects of land use on water quality in the Mobile River Basin, and more specifically, the Tombigbee River Basin, based on water quality studies conducted from 1998 to 2001. The study investigated stream chemistry, stream ecology, and ground-water chemistry. More specifically, it considered large rivers and streams, for levels of nutrients, pesticides, organochlorine compounds, volatile organic compounds (VOCs), biological communities and radon, including fish tissue contaminant concentrations. It provides a valuable regional comparison (*i.e.*, Tombigbee versus Alabama River Basin), as well as a comparison of water quality based on impacts from urban

³⁸ It may be access online, free-of-charge from USGS Alabama at the following URL: <http://al.water.usgs.gov/publications/onlineALpubs.html>. (Link active as of June 9, 2005).

versus rural (agricultural) land uses. Table 5.1.4b provides a summary of the key conclusions put forth by the NAWQA report.

Table 5.1.4 Major findings related to the water quality of the Mobile River Basin, including the Alabama and Tombigbee Rivers

<i>Major NAWQA Findings related to Surface and Ground Water Quality in the Mobile River Basin</i>
Nonpoint sources are the primary sources of nutrients.
Nutrients were detected frequently in agricultural and urban streams.
Nutrient concentrations varied seasonally in streams.
Concentrations of nitrate and ammonia are elevated in shallow ground water underlying agricultural land.
Pesticide contamination varies with land use.
Pesticides vary seasonally in streams.
Hydrology affects pesticide contamination in major rivers.
Pesticides occur in mixtures and as breakdown products [in water samples].
Pesticide risks to humans and aquatic life remain unclear.
Aquatic biological communities are affected by urban development.

Of the important findings of the NAWQA Study, several are particularly relevant to the Tombigbee and this basin management planning effort. The study concluded that nonpoint sources are the primary sources of nutrients in the Mobile River Basin, with animal wastes and agriculture accounting for approximately 75 of nitrogen and phosphorus. Respective to the Tombigbee, average flow-weighted concentrations of nitrogen and phosphorus were higher than those sampled in the Alabama River. These findings suggest the significant role that row-crop agriculture and fertilizing practices in Mississippi and the western half of Alabama plays with respect to water quality in the Tombigbee River.

On the watershed scale, the study found that water quality varies between urban and rural streams. Generally, rural streams had higher elevations of nutrients than urban streams. In the case of nitrogen, rural streams tended to have higher concentrations of nitrogen in its ammonia form suggesting animal waste and fertilizer was the primary source. Whereas, urban streams revealed higher concentrations of nitrogen in its nitrate form, suggesting waste-treatment discharges and the application of fertilizer on residential land as the primary sources (Atkins, et al, 2004.). The rural stream sampled for this comparison was the Bogue Chitto Creek – a tributary of the Tombigbee - which flows from Mississippi into Alabama in Pickens County.

USGS reports that the flow-weighted concentrations of nutrients within this creek are among the highest in the Nation (Atkins, et al, 2004.).

5.1.4 Alabama Water Watch

An integral part of Alabama's approach to the management of nonpoint source pollution is the reliance on citizen volunteers to monitor water quality in its basins. Alabama Water Watch (AWW) is a statewide program coordinated out of the Department of Fisheries and Allied Aquacultures and the International Center for Aquaculture and Aquatic Environments at Auburn University. It is dedicated to developing citizen volunteer monitoring of Alabama's surface waters. According to ADEM, 75 citizen groups submitted data during the report period for the 2004 Report and one of those groups was new to AWW. Most AWW groups monitored in the Tennessee, Coastal Plains and Mobile River watersheds. Of the 3,930 chemistry data records received from October 2001 through September 2002, monitors in the Coosa, Mobile and Tennessee watersheds submitted 68% of the data (26%, 23% and 19%, respectively). Monitors also submitted a total of 893 bacteriological data records during the report period. Since the inception of the AWW program in late 1992, monitors have sampled 1,400 sites on 575 water bodies and submitted over 21,000 chemistry and over 4,000 data forms.³⁹ AWW is funded by the USEPA, ADEM, Alabama Cooperative Extension System, and Alabama Agricultural Experiment Station.

In the Tombigbee River Basin, seven volunteer monitoring groups have sampled 16 sites since 1993. The majority of the sampling conducted is chemical although there are data collections for biological and bacteriological indicators. Groups in the Tombigbee Basin sampled and measured for air and water temperature, pH, oxygen, total alkalinity, total hardness, turbidity, and secchi disk. Samples and field data are collected and submitted to AWW by volunteers, which is then made available on-line through Auburn University (<http://frontpage.auburn.edu/icaae/index.aspx>). Currently, only one of these groups, the Smith Lake Environmental Preservation Committee, continues to actively monitoring one sites.

³⁹ Ibid, Page 132.

Table 5.1.2. Summary of Alabama Water Watch Monitoring Activity in the Tombigbee River Basin, 1994 – 2005.

Group Name	Waterbodies Sampled	Active/ Inactive Sites	Last Date Sampled	# Chemical Samples	# Bacteria Samples	# Biological Samples	Active?
East Mississippi Community College	Wahalak Creek	0/1	11/20/1997	1	0	0	No
Hamilton High School	Williams Creek Camp Creek Buttahatchee River	0/4	8/26/2003	14	0	2	No
Jackson High School	Lewis Creek Bassett Creek	0/2	9/20/1995	17	0	2	No
Livingston University	Alamuchee Creek	0/1	1/25/1994	1	0	0	No
Smith Lake Environmental Preservation Committee	Smith Lake	0/1	1/20/1998	1	0	0	Yes
Sumter Co. High School	Alamuchee Creek	0/1	9/29/1994	3	0	2	No
University of West Alabama	Ponkabia Creek Alamuchee Creek White Rock Creek Demopolis Lake Duck Pond Lake Livingston	0/6	5/26/1998	15	0	0	No

5.2 Water Quality in the Tombigbee River Basin

ADEM categorizes each waterbody based on the level of available information and its assessment status. This categorization identifies future monitoring needs as well as priorities for pollution management. The table below provides a brief description of each category.

Table 5.2a provides a summary of the categorization for the waters of the Upper and Lower Tombigbee River Basin taken from Alabama's *2004 Integrated Report* of the categorized waters. This list show that six stream segments in the Lower Tombigbee Subbasin meet their designated uses (Category 1), several streams within the Tombigbee River Basin have not been monitored or evaluated. Eight stream segments, three in the Lower Tombigbee and five and in the Upper Tombigbee, are Category 2 or, lack sufficient data to determine if it meets water quality standards. Two segments in the Lower Tombigbee are in Category 3 or, waters where no data and information exists to determine if they meet water quality standards. Waters in these categories represent monitoring needs; these are waters where governmental and volunteer resources have not been mustered to collect the necessary data to assess the waterbody.

Table 5.2. Water Quality Categorization for the State of Alabama

Category	Description
Category 1	Waterbody attains all designated uses. There is data (e.g. chemical, biological and physical) and information that are consistent with the State's 303(d) listing and assessment methodology to support a determination that all water quality standards are attained.
Category 2	There are some data and information available for the waterbody but the information is insufficient to make a determination that the water does or does not support all of its designated uses.
Category 3	No data and information to determine if any designated use is attained. Monitoring on a priority basis needed to obtain data
Category 4	Waterbodies belong in Category 4 if one or more designated uses are impaired or threatened but establishment of a TMDL is not required. Contains three subcategories: Category 4a - A TMDL has been completed for the water-pollutant combination Category 4b - Other required control measures are expected to result in the attainment of water quality standards in a reasonable period of time Category 4c - The impairment is not caused by a pollutant.
Category 5	Category 5 waterbodies constitute those waters in the Section 303(d) list that, "EPA will approve or disapprove under the CWA. Waters should be placed in Category 5 when it is determined, in accordance with the State's assessment and listing methodology, that a pollutant has caused, is suspected of causing, or is projected to cause an impairment or threat." (ADEM, 2003).
Source: <i>Alabama's 2004 Integrated Water Quality and Assessment Report</i> , Appendix C-2	

There are no Category 4 waters listed for the Tombigbee River Basin. However, there are several Category 5 waters and these, by definition, are listed on the State's '303(d) List of Impaired Waters,' which is a major component of its *2004 Integrated Report*. EPA and ADEM have scheduled these waters for the development of a TMDL, or Total Maximum Daily Load, which require ADEM to set limits to the amount of pollutants impacting that water. The TMDL is the prerequisite water quality restoration component that addresses nonpoint sources of pollution within a watershed and is discussed more thoroughly in the next section

Table 5.2a. Summary of Categorized Waters in the Tombigbee River Basin

Name	From	To	Basin	Category	Length (miles)	Year	Counties
Poplar Creek	Chickasaw Bogue	Its source	Lower Tombigbee	1		2004	Marengo
Kinterbish Creek	Tombigbee River	Its source	Lower Tombigbee	1		2004	Choctaw/Sumter
Sucarnoochee River	US Highway 11	Five miles upstream from Livingston	Lower Tombigbee	1	11.7	2004	Sumter
Sucarnoochee River	Tombigbee River	US Highway 11	Lower Tombigbee	1		2004	Sumter
Ulcanish Creek	Tombigbee River	Its source	Lower Tombigbee	1		2004	Clarke
James Creek	Bassett Creek	Its source	Lower Tombigbee	1		2004	Clarke
Toomsuba Creek	Alamuchee Creek	AT&N Railroad	Lower Tombigbee	2	1.1	2004	Sumter
Toomsuba Creek	AT&N Railroad	AL-MS state line	Lower Tombigbee	2	9.3	2004	Sumter
Lake Louise	Toomsuba Creek	Its source	Lower Tombigbee	2	2.4	2004	Sumter
Tombigbee River	One-half mile downstream of Alabama Highway 114	Three miles upstream of Highway 114	Lower Tombigbee	3	3.4	2004	Choctaw/Marengo
Tombigbee River	One-half mile downstream from Southern Railway Cro	Five miles upstream from US Highway 43	Lower Tombigbee	3	8.1	2004	Clarke/Washington
Bassett Creek	Little Bassett Creek	Its source	Lower Tombigbee	5	12.8	2004	Clarke
Tombigbee River	the upper end of Bilbo Island	Olin Basin	Lower Tombigbee	5	3.8	2004	Clarke/Washington
Bilbo Creek	Tombigbee River	Its source	Lower Tombigbee	5	29.3	2004	Washington
Olin Basin	All of Olin Basin		Lower Tombigbee	5	65 acres	1996	Washington
Buttahatchee River	US Highway 278	US Highway 278	Upper Tombigbee	2	8.7	2004	Marion
Beaver Creek	US Highway 78	Its source	Upper Tombigbee	2	6.6	2004	Marion
Luxapallila Creek	US Highway 78	Its source	Upper Tombigbee	2	9.5	2004	Marion
East Branch Luxapallila Creek	Luxapallila Creek	Its source	Upper Tombigbee	2	10.8	2004	Marion
Luxapallila Creek	Fayette County Road 37	6 miles upstream from Alabama	Upper Tombigbee	2	8.2	2004	Fayette
Purgatory Creek	Wickett Creek	US Highway 278	Upper Tombigbee	5	1.8	1998	Marion
Purgatory Creek	US Highway 278	Its source	Upper Tombigbee	5	1.2	1998	Marion
Tombigbee River	Beville Dam	AL-MS state line	Upper Tombigbee	5	5.7	1996	Pickens
Little Bear Creek	Pickens County Road 8	Its source	Upper Tombigbee	5	3.9	1998	Pickens
Factory Creek	Tombigbee River	End of Embayment	Upper Tombigbee	5	1.3	2004	Sumter
Sipsey River	Tombigbee River	Tuscaloosa County line	Upper Tombigbee	5	43.1	1998	Greene/Pickens

5.3 Water Use Classifications for the Lower and Upper Tombigbee River Subbasins

The Alabama Department Of Environmental Management, Water Division – Water Quality Program issues use classifications for all of the State’s waters. As explained in Alabama’s water quality regulations, Chapter 335-6-11 *Water Use Classifications For Interstate and Intrastate Waters*, “Use classifications apply water quality criteria adopted for particular uses based on existing utilization, uses reasonably expected in the future, and those uses not now possible because of correctable pollution but which could be made if the effects of pollution were controlled or eliminated. Of necessity, the assignment of use classifications must take into consideration the physical capability of waters to meet certain uses.” A list of waterbodies in the Tombigbee River Basin and their use classifications is provided as Appendix B. Maps of the Classified Waters within the Lower and Upper Tombigbee River Subbasin are provided as Map 10 and 11. Use classifications utilized by the State of Alabama are summarized below:

Use	Abbreviation
Outstanding Alabama Water	OAW
Public Water Supply	PWS
Swimming and Other Whole Body Water-Contact Sports	S
Shellfish Harvesting	SH
Fish and Wildlife	F&W
Limited Warmwater Fishery	LWF
Agricultural and Industrial Water Supply	A&I

5.4 Priority Water Quality Problems in the Tombigbee River Basin – 303d List of Impaired Waters and TMDLs

ADEM is required to plan for the restoration of all the [Category 5] waters listed on the 303(d) list. Each impaired waterbody is subject to further investigation and analysis to determine the amount of a pollution that would be allowed to enter it and still meet water quality standards. The process of setting these allowable pollutant limits or, Total Maximum Daily Loads (TMDLs), follows a basic formula that considers the allowable load of a particular pollutant from point sources and nonpoint sources, plus a margin of safety to help ensure environmental

protection.⁴⁰ TMDLs are developed for an individual waterbody or, a segment of stream or river, as well as on a watershed basis where technological solutions (e.g. wastewater treatment) would not result in the achievement of water quality standards.

Table 5.4a. Impaired Waters of the Tombigbee River Basin according to the 2002 Alabama 303(d) List

Waterbody Name	Support Status	River Basin	County	Uses	Causes	Sources	Size	Draft TMDL Date
Purgatory Creek	Partial	Upper Tombigbee	Marion	Public Water Supply	pH	Surface mining-abandoned	3.0 miles	2007
				Fish & Wildlife				
Little Bear Creek	Partial	Upper Tombigbee	Pickens	Fish & Wildlife	OE/DO	Urban runoff/Storm sewers	3.9 miles	2002
Tombigbee River	Partial	Upper Tombigbee	Pickens	Fish & Wildlife	OE/DO	Dam construc.	5.7 miles	2002
				Swimming		Flow reg/mod		
Sipsey River	Partial	Upper Tombigbee	Pickens	Fish & Wildlife	Metals (Fe)	Surface mining-abandoned	43.1 miles	2007
Olin Basin	Non	Lower Tombigbee	Washington	Fish & Wildlife	Pesticides	Contaminated sediments	65 acres	2003
					Metals (Hg)			

In the Upper Tombigbee River Subbasin, 55.7 miles of streams are on Alabama’s approved 2002 303d List of Impaired waters (Table 5.4a). One waterbody, Olin Basin, is listed for the Lower Tombigbee. No TMDLs have been prepared for these waters as of the date of this plan’s preparation except for the Olin Basin, which is subject to a clean up effort under Superfund.

⁴⁰ The amount of pollution that a water body can assimilate considers waste load allocation (WLA) for point sources, the load allocation (LA) for nonpoint sources, and a margin of safety (MOS). The formula for a TMDL is as follows: TMDL = WLA + LA + MOS.

5.4.1 Summary of Draft Decision Document (TMDL) for the Olin Basin

Alabama identified the Olin Basin as being impaired on the 303(d) list in 1994, due to pesticides (DDT) and metals (Hg). Olin Basin was also placed on the Alabama Department of Public Health Fish Consumption Advisory for elevated DDT and mercury concentrations in fish tissue. Discharges of wastewater containing mercury from 1952 to 1974 have contaminated the Olin Basin adjacent to the Tombigbee River.

Based on fish tissue data collected by ADEM, the ADPH included the following comments in their News Release for the 2003 Fish Consumption Advisory:

“The levels of DDT have fallen below FDA Advisory Levels for largemouth bass and channel catfish in the Olin Basin at river mile 60.5 of the Tombigbee River. However, the mercury levels in these fish remains in excess of the FDA levels. This is private property and entry to the basin for fishing is not permitted. The Olin Basin property is monitored through the CERCLA program. Therefore, ADEM and ADPH no longer need to monitor these waters as part of the Fish Tissue Monitoring Program and the waterbody has been removed from the current ADPH Fish Consumption Advisory”.

ADEM, in cooperation with EPA Region 4, have determined that a TMDL for pesticides (DDT) and a TMDL for metals (mercury) in Olin Basin are not necessary due to the following:

- ADEM and EPA Region 4, under the CERCLA Program, are jointly managing the ongoing investigation and mitigation activities to address the DDT and mercury contamination within Olin Basin
- The CERCLA and RCRA programs have the statutory authority (i.e. enforcement mechanisms) to ensure that appropriate remedial measures are being taken by the responsible parties to protect human health and the environment
- The CERCLA and RCRA programs are required by law to meet the goals of the Clean Water Act. These requirements are known as an applicable or relevant and appropriate federal standards and more stringent state standards, more commonly referred to as ARARs
- Available resources (time and tax-dollars) will be saved by allowing the remedial actions to be managed under the appropriate programs, thus eliminating duplicative effort among the regulatory programs

5.4.2 Draft 2004 303d List of Impaired Waters

The draft 2004 303(d) List contains four new segments of impaired streams within the Tombigbee River Basin; three in the Lower Tombigbee Subbasin, and one in the Upper Tombigbee Subbasin. Table 5.4b below is adapted from the draft 2004 303d List and provides detail about these segments.⁴¹ Five segments totaling 27.8 miles of the main stem of the Alabama River in Wilcox County are impaired and partially supporting classified uses due to enrichment by organic matter, which leads to below-standard levels of dissolved oxygen in the water. One segment of the Catoma Creek in Montgomery County measuring 23.2 miles is listed for two different causes: organic enrichment/dissolved oxygen and pathogens. Finally, 7.6 miles of the Three Mile Branch in Montgomery County has been listed due to high levels of pesticides found by monitoring. Maps 6 and 7 illustrate these stream segments within the context of the Basin and its subwatersheds.

5.4.3 Management of the Tombigbee River Basin in the State of Mississippi

Nearly half of the Tombigbee River Basin (6,075 out of a total 13,767 square miles) is within the State of Mississippi. Several major tributaries – namely the Buttahatchee River, Luxapallila River, and Noxubee River – and many creeks, flow out of Mississippi and into Alabama as they join the mainstem of the Tombigbee. In this regard, the Tombigbee River is another example of how rivers and their basins do not confine themselves to political jurisdictions, i.e., county lines or state borders. And, due to this fact, the management of the Tombigbee River Basin's water quality is faced with an added element of complexity compared to other basins that fall within one state.

⁴¹ ADEM, 2004. *Alabama's 2004 Integrated Water Quality and Assessment Report, Appendix F.*

Table 5.4b Waterbodies in the Tombigbee River Basin added to the 2002 303(d) List for 2004.

Assessment Unit	Waterbody Name	River Basin	Size	County	Causes	Basis for Addition to the List	Source / Date of Data
AL03160203-1103-102	Tombigbee River	Lower Tombigbee	3.8 miles	Mobile	Mercury	Alabama Fish Consumption Advisory issued by the Alabama Department of Public Health in March 2003 advising “No Consumption” of largemouth bass and channel catfish.	ADPH Fish Consumption Advisory / March 2003
AL03160203-0601-100	Bassett Creek	Lower Tombigbee	12.8 miles	Clarke	Pathogens	One of eight fecal coliform measurements was greater than 2000 at two different stations on Bassett Creek.	ADEM / 2001-02
AL03160203-1103-700	Bilbo Creek	Lower Tombigbee	29.3 miles	Washington	OE/DO	Five of 13 dissolved oxygen measurements were less than 5.0 mg/L.	ADEM / 2001-02
AL03160106-0606-101	Factory Creek	Upper Tombigbee	1.3 miles	Sumter	OE/DO Nutrients	Four of 7 dissolved oxygen measurements were less than 5.0 mg/L. The average chlorophyll-a concentration was over 3 times the average of the other embayment stations on Lake Demopolis.	ADEM / 2001

The additional challenges of managing the water quality of the Tombigbee River and its tributaries are manifested in the inherent differences in the way that state governments operate. In this instance, the challenges result from the differences in the approach and implementation of water quality programs between Alabama and Mississippi. Although every one of the United States must adhere to the mandates of the Clean Water Act, each state executes its responsibilities differently because of factors such as, funding and personnel levels, political priorities, management cycles, and implementation schedules. Very rarely do two states coordinate the basin management process and the same is true for Alabama and Mississippi.

The Mississippi Department of Environmental Quality (MSDEQ), Surface Water Division, Watershed Management Branch serves as Mississippi’s lead office on water quality. This office leads all basin management activities, including planning, assessment, and implementation. Like its sister agency in Alabama, ADEM, it has set a schedule for assessing water quality in the river basins throughout the State. In the case of the Tombigbee River, MSDEQ began planning their basin management in 1998 and will embark on a second round of this activity in 2005 (see Table 5.4.3a).

Table 5.4.3a Tombigbee River Basin Management Schedule of the Watershed Management Branch of the MSDEQ

Year	Management Activity
1998	Planning
1999	Planning / Data Gathering
2000	Data Gathering
2001	Data Evaluation / TMDL Development
2002	TMDL Development and Evaluation / Management Plan Development
2003	Management Plan Development / Management Plan Implementation
2004	Management Plan Implementation
2005	Start 2nd Cycle

MSDEQ promotes a team-based approach to basin management in Mississippi. The Big Black-Tombigbee-Tennessee Basins Group (Basin Team) is the management group that spearheads management activities for the Tombigbee. By October 2002, it completed the prioritization process and TMDLs for several waterbodies. During this process, the Basin Team examined five TMDLs and two [non-TMDL] protection issues in the Tombigbee-Tennessee

River Basins.⁴² By 2004, some of the Basin Teams activities had developed to the point of implementation of enhanced monitoring within the basin and TMDL implementation that led to the revision of the 2004 ‘303d List of Impaired Water Bodies.’

Similar to Alabama, Mississippi completed its statewide water quality report (i.e., 305b Report) and draft 303d List of Impaired Waters in 2004. Mississippi’s draft 2004 303d List of Impaired Waters contains 52 segments that have been monitored and an impairment has been identified (Section A Waters); 25 segments that have been evaluated and an impairment has been identified (Section B Waters); 13 segments for which a TMDL has been developed (Section C Waters); and 61 segments for which information was updated from the 2002 list (Section D Waters).⁴³ Of the 13 segments within the Tombigbee River Basin, five segments have an approved TMDL (see Table 5.4.3b).

⁴² In Mississippi, this basin was the first to complete the 5-year management cycle. In 2002, the MSDEQ published an informative update of basin management activities entitled, *Big Black – Tombigbee – Tennessee River Basins Prioritization and Implementation Process*. This document presents current information about planning and management activities.

⁴³ Mississippi Department of Environmental Quality Surface Water Division of the Office of Pollution Control, 2004. *Mississippi 2004 Section 303(d) List of Impaired Water Bodies, Public Notice Draft, February 18, 2004*. Jackson, MS (www.deq.state.ms.us/MDEQ.nsf/page/WMB_Tombigbee_River_Basin?OpenDocument). Impaired waters bodies are considered “monitored” (Section A) if their impairment (or lack of) was determined by a formal monitoring effort (e.g., M-BISQ). Impaired water bodies are considered “evaluated” (Section B) if their impairment was determined from information other than water quality testing, such as anecdotal information related to known water quality problems or land use issues thought to cause a problem.

Table 5.4.3b Stream Segments within the Tombigbee River Basin that the MSDEQ has an Approved Total Maximum Daily Load (TMDL) – Section D of the 2004 303d List⁴⁴

Waterbody	Pollutant	Pollutant Source(s)	Reference
Bull Mountain Creek	fecal coliform bacteria	Nonpoint sources in the watershed come from wildlife populations, agricultural animal populations, human sources, and urban development, including failing septic systems and other direct inputs to tributaries.	Mississippi Department of Environmental Quality (MDEQ) (2003a). Phase One Fecal Coliform TMDL for Bull Mountain Creek: Tombigbee River Basin. Itawaba County Mississippi. June 2003. 18 pp.
Cedar Creek	fecal coliform bacteria	Nonpoint sources in the watershed come from wildlife populations, livestock populations, and urban development. MDEQ assumed there is a 40% failure rate of septic tanks in the drainage area	Mississippi Department of Environmental Quality (MDEQ) (2002a). Phase One Fecal Coliform TMDL for Cedar Creek: Tombigbee River Basin. Monroe County Mississippi. April 12, 2002. 10 pp.
James Creek	sediment	Wet weather sources of sediment, which are discharged to a receiving waterbody as a result of the storm events, are considered to be the primary concern for this sediment TMDL. A significant proportion of sediment loadings emanates from stream channels.	Mississippi Department of Environmental Quality (MDEQ) (2003b). Total Maximum Daily Load: James Creek Biological Impairment Due to Sediment. Tombigbee River Basin. Monroe County Mississippi. July 2003. 18 pp.
Joes Creek	organic enrichment, ammonia toxicity, and low dissolved oxygen	Low water velocity, water withdrawals (Catfish farming), and point sources (e.g. Brooksville POTW discharge point) result in elevated amounts of organic material and ammonia nitrogen which results in decreased DO levels	Mississippi Department of Environmental Quality (MDEQ) (2002b). Phase 1 TMDL For Organic Enrichment / Low Dissolved Oxygen and Ammonia Toxicity: Joes Creek: Tombigbee River Basin. Noxubee County Mississippi. July 3, 2002. 36 pp.
Noxubee River	fecal coliform bacteria	Nonpoint sources in the watershed come from wildlife populations, agricultural animal populations, human sources, and urban development. Also considered were the nonpoint sources such as failing septic systems and other direct inputs to tributaries of the Noxubee River.	Mississippi Department of Environmental Quality (MDEQ) (2003a). Phase One Fecal Coliform TMDL for Noxubee River: Tombigbee River Basin. Noxubee County Mississippi. April 2003. 24 pp.

The results of the prioritization process for the Tombigbee-Tennessee River Basins by MSDEQ and its partner agencies has promising implications for inter-state coordination and enhanced management of the Tombigbee River Basin. This basin management plan recognizes

⁴⁴ A TMDL for fecal coliform has been developed for the Buttahatchee River in Mississippi but not yet approved.

these efforts as a foundation for further cooperation between basin stakeholders on both sides of the stateline. For example, the ACWP was considered a local partner in Mississippi's Basin Team process and was given opportunities to provide input on issues with inter-state ramifications. (Similarly, the ACWP reached out to MSDEQ in order to continue collaborative efforts.)⁴⁵ Furthermore, several priority waterbodies and watersheds have been identified and continue to be focuses of management activity.

The Basin Team established several priorities for the Tombigbee River Basin. In addition to the impaired waters targeted for TMDL development, two resource protection priorities were named because of ecological concerns. The Noxubee River and Luxapallila Creek are of great concern and priority because they are known for their great diversity of aquatic flora and fauna. The Noxubee River flows through the Noxubee Wildlife Refuge in eastern Mississippi (Noxubee, Oktibbeha and Winston Counties) before flowing into Alabama in northern Sumter County. The Luxapallila Creek is a major tributary of the Buttahatchee River and is habitat for 37 different species of freshwater mussels. As discussed above in Section 3, this creek is considered Critical Habitat for several threatened and endangered mussels and because of this fact several groups have gathered to foster inter-state management of these resources.

⁴⁵ The MSDEQ Basins Coordinator for the Big Black-Tombigbee-Tennessee River Basins, Mary Katherine Brown, is a regular participant at the Alabama-Tombigbee Steering Committee meetings as well as ACWP subbasin stakeholder meetings for the Upper Tombigbee Subbasin. The ACWP Statewide Coordinator has also participated in MSDEQ Basin Team meetings.