MISSISSIPPI
NONPOINT SOURCE MANAGEMENT PROGRAM
2014 UPDATE

Prepared by the Mississippi Department of Environmental Quality

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List of Acronyms

AFO	Animal Feeding Operation
AgChem	Mississippi Agricultural Chemical Groundwater Monitoring
AST	Above Ground Storage Tank
BA	Brownfields Assistance Program
BLM	Bureau of Land Management
BMP	Best Management Practices
BOD	Biochemical Oxygen Demand
BP2K	MDEQ BP2K Revenue and Expenditure System
CAFO	Concentrated Animal Feeding Operation
CALM	Consolidated Assessment and Listing Methodology
CCR	Consumer Confidence Report
CDL	Cropland Data Layer
CERCLA	Comprehensive Environmental Response and Compensation, and Liability Act
CES	USDA, Cooperative Extension Service
cfs	Cubic Feet per Second (water or waste flow)
COE	U.S. Army Corps of Engineers
CRO	MDEQ's Central Regional Office
CRP	Conservation Reserve Program
CWA	Clean Water Act
CWAP	Clean Water Action Plan
CWSRF	Clean Water State Revolving Fund
CZARA	Coastal Zone Act Reauthorization Amendments
DO	Dissolved Oxygen
DQO	Data Quality Objectives
ECED	Environmental Compliance and Enforcement Division
EPA	U.S. Environmental Protection Agency
EPD	Environmental Permitting Division
EQIP	USDA Environmental Quality Incentive Program
FFR	Federal Financial Report
FFY	Federal Fiscal Year
FSA	USDA Farm Services Agency
FSD	MDEQ Field Services Division
GRTS	Grants Reporting and Tracking System
HUC	Hydrologic Unit Code
IWI	Impaired Waters Index
LUST	Leaking Underground Storage Tank
MAES	Mississippi Agriculture Extension Service
MARIS	Mississippi Automated Resource Information System
MCL	Maximum Contaminant Levels

MDA	Mississippi Development Authority
MDAC	Mississippi Department of Agriculture and Commerce
MDEQ	Mississippi Department of Environmental Quality
MDMR	Mississippi Department of Marine Resources
MDOT	Mississippi Department of Transportation
MDWFP	Mississippi Department of Wildlife, Fisheries, & Parks
MFA	Mississippi Forestry Association
MFC	Mississippi Forestry Commission
MOA	Memoranda of Agreement
MOE	Maintenance of Effort
MOU	Memoranda of Understanding
MS	Mississippi
MSDH	Mississippi Department of Health
MSWCC	Mississippi Soil & Water Conservation Commission
MWCRT	Mississippi Watershed Characterization and Ranking Tool
NASS	National Agriculture Statistics Service
NAWQA	National Water Quality Assessment
NEPA	National Environmental Policy Act
NHD	National Hydrography Dataset
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NPS	Nonpoint Source
NRCS	USDA, Natural Resource Conservation Service
NRO	MDEQ's North Regional Office
NTU	Nephelometric Turbidity Unit
NWI	National Wetlands Inventory
OAS	MDEQ Office of Administrative Services
OPC	Mississippi Office of Pollution Control
PAD-US	Protected Areas Database of the United States
PPA	Performance Partnership Agreement
PPG	Performance Partnership Grant
PWSs	Public Water Supply Systems
QA	Quality Assurance
QA/QC	Quality Assurance/Quality Control
QAM	MDEQ Quality Assurance Manager
QAPP	Quality Assurance Project Plan
QC	Quality Control
QMP	Quality Management Plan
RFP	Request for Proposals
SAP	Sampling and Analysis Plan
SARA	Superfund Amendments and Reauthorization Act

SDWA	Safe Drinking Water Act
SDWS	Safe Drinking Water Information System
SIC	Standard Industrial Classification
SMZ	Streamside Management Zone
SOP	Standard Operating Procedure
SRF	State Revolving Fund
SRO	MDEQ's South Regional Office
STORET	Storage and Retrieval Data Warehouse
SWAP	Source Water Assessment Program
SWCD	Soil & Water Conservation District
SWIM	Surface Water Information Management
TMDL	Total Maximum Daily Load
TTH	Total Trihalomethanes
TVA	Tennessee Valley Authority
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USDA-FS	U.S. Department of Agriculture - Forest Service
USDW	Underground Sources of Drinking Water
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
UST	Underground Storage Tank
UWA	Unified Watershed Assessment
VOC	Volatile Organic Compounds
WBP	Watershed Based Plan
WIP	Watershed Implementation Plan (See also WBP)
WIT	Watershed Implementation Team
WLA	Waste Load Allocation
WQMB	Water Quality Management Branch
WQX	Water Quality Exchange
WRAS	Watershed Restoration Action Strategy
WRMS	Watershed Resource Management System

Acknowledgements

The Mississippi Nonpoint Source Management Plan update was written by the Nonpoint Source (NPS) Management Branch of the Mississippi Department of Environmental Quality (MDEQ), Surface Water Division (SWD), with significant input from other MDEQ staff. This plan describes NPS pollution control measures that will be used by MDEQ in coordination with activities conducted by other agencies and watershed groups at the federal, state, and local levels. Many of these agencies provided input on this management plan and their input is highly appreciated. The MDEQ would also like to acknowledge the agencies, watershed groups, private landowners, and other citizens who continue to invest time, energy, and financial and technical resources to protect and restore Mississippi's water resources.

Executive Summary

The Mississippi Nonpoint Source (NPS) Pollution Management Program was developed in 1989 in response to a federal mandate set forth in Section (§) 319 of the Water Quality Act of 1987 amendments to the Clean Water Act (CWA) of 1972. The Mississippi NPS Program is led by the NPS Management Branch of the Surface Water Division (SWD) within the Office of Pollution Control (OPC) of the Mississippi Department of Environmental Quality (MDEQ). The NPS Management Branch staff interfaces with a broad network of federal, state, and local resource and land management agencies whose responsibilities support the mission of addressing NPS pollution in Mississippi.

The program will continue to be guided by the Mississippi Department of Environmental Quality's Mission Statement:

The Mission of the Mississippi Department of Environmental Quality is to safeguard the health, safety and welfare of present and future generations of Mississippians by conserving and improving our environment and fostering wise economic growth through focused research and responsible regulation.

In April 2013, the U.S. Environmental Protection Agency (US EPA) released revised guidelines for implementation of state NPS management programs and the award of § 319 grants under the CWA. These revised guidelines emphasize the importance of states updating their NPS management programs on a five-year basis and prioritizing watersheds for protection and restoration to which grant funds will be directed. Improvements were made to the Program in order to comply with the updated 2013 guidelines that include the development of a programmatic and quantitative five-year action plan (2014 – 2018). This action plan described in Chapter 7 was designed to support the implementation of strategies targeting priority water resource issues. The plan also identifies specific goals, objectives, supportive actions, and tracking measures. Included among these goals is an overarching and salient goal that states the following: "The State will continue to maintain program quality, efficiency, and transparency using quantifiable science-based methods and data management and reporting tools to 1) document water-quality trends; 2) conduct watershed characterization and prioritization; 3) support watershed based planning and implementation; 4) track progress of program activities; and 5) facilitate data sharing and technology transfer."

Mississippi, like elsewhere in the country, is facing serious challenges to the sustainability of our ground and surface-water resources, both in terms of quantity and quality. Although Mississippi is blessed with an abundance of water resources, these resources are being adversely impacted in certain areas by sediment, nutrients, and other NPS pollutants. Thus, the beneficial uses of those waterbodies, such as good fish and wildlife habitat, swimming and other recreational benefits, have been impeded. These impediments can be caused by improper conservation and management practices carried out within the following major NPS pollution categories:

- Agriculture
- Forestry
- Urban Stormwater
- Construction
- Land Disposal
- Groundwater Protection
- Mining
- Wetlands & Hydrologic Modification

Since the inception of the NPS Program, Mississippi has been implementing a proactive approach that relies on collaborative efforts that focus on the development and implementation of strategies and tools to protect and restore our water resources. The strategies utilize existing and new statewide programs and activities for addressing NPS pollution that include education and outreach, assessment and monitoring, development and implementation of watershed based protection and restoration plans, BMP compliance, technology transfer, consensus building, and partnering. The implementation of program activities for land-use categories that are not regulated will rely primarily on the voluntary cooperation of stakeholders and will be supported financially through federal assistance programs such as §319 and other resources. The NPS Management Program also implements a strategy that targets priority watersheds. Prioritization of these watersheds is done by multi-agency teams in the *Basin Management Approach* (BMA). Within priority watersheds, activities will be implemented to address parameters of concern that appear on the State's *§303(d)* list of impaired waterbodies. MDEQ is currently working on developing a comprehensive *Statewide Watershed Prioritization Framework* document that will enhance existing capabilities currently being used by the *Mississippi Watershed Characterization and Ranking Tool* (MWCRT). Major enhancements will include the recovery potential index of impaired water bodies and other targeting criteria, e.g., sustainability of mitigation actions taken to relieve impairment, stakeholder interest and potential involvement, and socioeconomic factors.

Additionally, The State's NPS Program incorporates the *Coastal NPS Program Strategy*, *Mississippi Nutrient Reduction Strategy*, *Basinwide Approach Strategy*, and the *State's Strategy for the Development and Implementation of NPS Total Maximum Daily Loads* (TMDLs), *Conjunctive Water Management, Water Quality Standards Development, assessment and monitoring, and data management and technical support strategies*

The NPS Management Program will continue to be implemented in cooperation with numerous agencies, organizations and groups at all levels of government, and in the private sector. As an example of this cooperation, MDEQ will continue to partner with the USDA Natural Resources Conservation Service (NRCS), the Mississippi Soil and Water Conservation Commission (MSWCC), and other local agricultural entities to direct all eligible programs under the *2014 Farm Bill* toward developing and implementing watershed-based protection and restoration plans that target priority areas around the State. Another example of cooperation and leveraging of resources is demonstrated by the *Mississippi Nutrient Technical Advisory Group (TAG)*. The mission of the TAG is to provide technical expertise and regional knowledge to MDEQ for the development of scientifically defensible numeric nutrient criteria. The TAG consists of over 30 members representing a broad range of scientific and engineering technical expertise from multiple state and federal agencies and four of Mississippi's universities. MDEQ is also a major partner in two important tasks forces that focus on reducing the influx of nutrients and their associated enrichments to major waterbodies such as the Mississippi River and The Gulf of Mexico. The first of these, which is led by MDEQ, is The *Delta Sustainable Water Resources Task Force* which is comprised of a combination of eight (8) federal, state, and Non-Government Organizations (NGOs) devoted to protecting and restoring water resources in the Mississippi Delta by managing every drop of water effectively and efficiently. The second of these is *The Mississippi River/Gulf of Mexico Watershed Nutrient (Hypoxia) Task Force* whose mission is to reduce nutrients in the Mississippi/ Atchafalaya River Basin. The above examples and others illustrate that MDEQ will continue to focus on activities that

promote consensus building and partnering to increase the overall effectiveness of the State's NPS Program.

The Mississippi NPS Management Plan Update starts in Chapter 1 by defining the purpose of the document and providing some introductory information elucidating the history of NPS pollution, requirements of § 319 of the CWA, etc. Chapter 2 characterizes and assesses Mississippi's water resources in terms of the climate, geography, land ownership, and land uses and their impacts to water quality. Chapter 3 provides an overall description of Mississippi's NPS Management Program. Chapter 4 presents Mississippi's NPS management strategy for addressing priority NPS issues for the next five years. Chapter 5 relates how other federal and state programs support the NPS management strategy. Chapter 6 focuses on NPS enforceable mechanisms and policies, such as existing regulations regarding stormwater, mining, wetlands, animal feeding operations, etc. Chapter 7 identifies Mississippi's NPS pollution control program goals, objectives, and supporting 5-year Action Plans covering federal fiscal years 2014-2018. Using narrative language as well as comprehensive tables, this chapter specifically details: 1) how MDEQ will collaborate with its partners and stakeholders to leverage resources to focus on priority water resource issues; 2) identification of priority watersheds and projects; 3) coordination of technical and financial assistance for implementation of Best Management Practices (BMP); 4) implementation of statewide education and technology transfer programs, and; 5) support of regulatory and enforcement mechanisms. The Mississippi NPS Management Plan Update builds upon the lessons learned in the past 10 years and develops a plan that can be used by a broad audience to decrease NPS pollution in the state. Finally, the updated plan contains several appendices that provide more detail on certain subjects. For instance, Appendix H, quantifies Mississippi's potential measures of progress and success as required in USEPAs Key Component Number one (1) of the 2014 revised guidelines for implementation of state NPS management programs.

This update fulfills the requirements of both § 319 of the Clean Water Act Amendments of 1987, and §6217 of the Coastal Zone Act Reauthorization Amendments. It comprehensively describes a framework for agency coordination and cooperation and serves to implement a strategy for employing effective management measures and programs to control NPS pollution statewide for the next five years. The plan is dynamic in nature and will be updated as new data becomes available.

Chapter 1: Introduction

1.1 Purpose Statement

The purpose of this Management Plan, in accordance with the U.S. Environmental Protection Agency (EPA) guidance, *Nonpoint Source Program and Grant Guidelines for States and Territories*, dated April 12, 2013, is to establish a consistent, strategic statewide framework for implementation of an effective NPS Management Program over the next five years. The Mississippi Department of Environmental Quality (MDEQ) realizes that an updated, comprehensive program is critical to the State and the EPA. It will allow EPA and the states to ensure that §319 funding, technical support, and other resources are directed in an effective and efficient manner to support state efforts to address water-quality issues on a watershed basis. The reader is directed to Chapter 7 of this document for *Mississippi's Five-Year Action Plan*, which includes the State's goals, objectives, actions, and tracking measures to address the water-quality issues confronting the State. Chapter 7 is somewhat of a "stand-alone document."

The State's strategy for the management and abatement of NPS pollution relies on statewide and targeted watershed approaches. These approaches are implemented through both regulatory and non-regulatory programs on the federal, state, and local levels. The implementation of program activities or categories that are not regulated will rely primarily on the voluntary cooperation of stakeholders. The strategy for addressing NPS pollution on a statewide level includes education/outreach, assessment and monitoring, Total Maximum Daily Load (TMDL) development, Best Management Practice (BMPs) projects and demonstrations, BMP compliance, technical transfer, consensus building, and partnering. This management plan will inform the public about causes and effects of NPS pollution on water quality, set priorities, identify long-term strategies for restoration and protection, and will describe a set of focused, short-term actions for attaining NPS pollution-control goals.

This plan is designed to make the implementation of this State's NPS program strategic, measurable, attainable, publicly accessible, transparent, and user-friendly. Specifically, this document provides a five-year action plan to abate the impacts of NPS pollution and to protect unimpaired waters (See Chapter 7). This plan will achieve greater accountability by answering the following questions:

- What water-quality problem(s) or issues will be addressed?
- What water-quality goals will be established to address the problem(s)?
- What programmatic technologies or methods will be used to address the problem(s)?
- What are the future objectives or milestones to reach those goals with a timeline?
- Who are the stakeholders and/or partners with whom MDEQ will work to achieve those goals?

The plan also provides the following: 1) highlights website links, references, and contacts; 2) condenses information into lists, tables, or figures whenever feasible; 3) is publically available on the internet to enhance distribution and accessibility; and 4) includes planning and implementation targets and measures. This plan is meant to be a dynamic document designed to serve as a tool to evaluate the effectiveness and efficiency of program activities so that adjustments can be made, as necessary, to maximize program success.

1.2 Definition of Nonpoint Source (NPS) Pollution

The 1987 United States Environmental Protection Agency's (EPA) Nonpoint Source Guidance gives the following definition, for the purpose of implementing the nonpoint source provisions of the Clean Water Act:

> *Nonpoint Source (NPS) Pollution is defined in general as pollution by diffuse sources that are not regulated as point sources and normally are associated with agriculture, forestry, and urban runoff, runoff from construction activities, etc. Such pollution results in the human induced alteration of the chemical, physical, biological, and radiological integrity of water. In practical terms, nonpoint source pollution does not result from a discharge at a specific, single location (such as a single pipe) but generally results from land runoff, precipitation, atmospheric deposition, or percolation. It must be kept in mind that this definition is necessarily general. Legal and regulatory decisions have sometimes resulted in certain sources being assigned to either the point or nonpoint source categories because of considerations other than their manner of discharge. For example, irrigation return flows are designated as 'nonpoint sources' by section 402(1) of the Clean Water Act, even though the discharge is through discrete conveyance.*

According to the "Hand Book of NPS Pollution" by Novotny and Chesters, the general characteristics that describe NPS pollution are:

- Nonpoint source discharges enter surface waters in a diffuse manner and at intermittent intervals that are related mostly to the occurrence of meteorological events.
- Pollution arises over an extensive area of the land and is in transit over land before it reaches surface waters.
- Nonpoint sources generally cannot be monitored at their point of origin, and their exact source is difficult or impossible to trace.
- Elimination or control of pollutants must be directed at specific sites.
- In general, the most effective and economical controls are land-management techniques and conservation practices in rural zones and architectural control in urban zones.
- Nonpoint-source pollutants cannot be measured in terms of effluent limitations.
- The extent of NPS pollution is related, at least in part, to certain uncontrollable climatic events, as well as geographic and geologic conditions, and may differ greatly from place to place and year to year.
- Nonpoint sources are derived from consecutive operations on extensive units of land, in contrast to industrial activities that typically are repetitive operations on intensive, small units of land.

The EPA has further segregated NPS pollution into seven main categories for the purpose of describing the sources of various contaminants. These categories are listed in Table 1 below.

Table 1 Major Nonpoint Source Pollutant Categories and Subcategories

Agriculture Non-irrigated Crop Production Irrigated Crop Production Specialty Crop Production Pastureland Rangeland Feedlots (Confined Animal Feeding Operations) Aquaculture Animal Holding/Management Area Manure Lagoons	**Land disposal** Sludge Wastewater Landfills Industrial Land Treatment Onsite Wastewater Systems (Septic Tanks) Hazardous Waste Sewage Disposal
Forestry Harvest, Restoration, Residue Management Forest Management Logging Roads Construction Maintenance **Construction** Highway/Road/Bridge Construction Land Development	**Hydro-modification/Habitat Modification** Channelization Dredging Dam Construction Flow Regulations/Modifications Bridge Construction Removal of Riparian Vegetation Streambank Modification/Destabilization Drainage/Filling of Wetlands
Urban Runoff Nonindustrial Permitted Industrial Permitted Other Urban Runoff	**Other** Atmospheric Deposition Waste Storage/Storage Tank Leaks Highway Maintenance and Runoff Spills Contaminated Sediments Natural Recreation Activities Upstream Impoundments Salt Storage Sites Groundwater Loadings Groundwater Withdraw
Mining Surface Mining Subsurface Mining Placer Mining Dredge Mining Petroleum Mining Mill Tailings Acid Mine Drainage	

Source: MDEQ NPS Management Branch

According to the U.S. Environmental Protection Agency (EPA) Guidance *Nonpoint Source Program and Grant Guidelines for States and Territories*, dated April 12, 2013, an effective State Nonpoint Source Management Plan must contain eight key components (Appendix A):

1. The state program contains explicit short- and long-term goals, objectives and strategies to restore and protect surface water and ground water, as appropriate.

2. The state strengthens its working partnerships and linkages to appropriate state, interstate, tribal, regional, and local entities (including conservation districts), private sector groups, citizens groups, and federal agencies.

3. The state uses a combination of statewide programs and on-the-ground projects to achieve water quality benefits; efforts are well-integrated with other relevant state and federal programs.

4. The state program describes how resources will be allocated between (a) abating known water-quality impairments from NPS pollution and (b) protecting threatened and high quality waters from significant threats caused by present and future NPS impacts.

5. The state program identifies waters and watersheds impaired by NPS pollution as well as priority unimpaired waters for protection. The state establishes a process to assign priority and to progressively address identified watersheds by conducting more detailed watershed assessments, developing watershed-based plans (WBPs) and implementing the plans.

6. The state implements all program components required by section 319(b) of the Clean Water Act, and establishes strategic approaches and adaptive management to achieve and maintain water-quality standards as expeditiously as practicable. The state reviews and upgrades program components as appropriate. The state program includes a mix of regulatory, nonregulatory, financial, and technical assistance, as needed.

7. The state manages and implements its NPS management program efficiently and effectively, including necessary financial management.

8. The state reviews and evaluates its NPS management program using environmental and functional measures of success, and revises its NPS management program at least every five years.

The Mississippi (MS) NPS Management Program agrees with EPA that an updated, comprehensive program is critical to the states and EPA in order to ensure that Section (§) 319 funding, technical support, and other resources are directed in an effective and efficient manner to support state efforts to address water-quality issues on a watershed basis and has incorporated each of these elements into its updated Management Plan.

1.3 Requirements of Clean Water Act Section 319

The Clean Water Act of 1987 established a national policy that programs be developed and implemented to control nonpoint sources (NPS) of pollution. To facilitate development of NPS programs, Section (§)319 of the Act (CWA 1987) requires each state to prepare two major documents: a *State Assessment Report* describing the State's NPS problems and a *State Management Program* that's updated every five years explaining what the State plans to do in those five years to address their NPS problems. This *State Management Program Update* is written to meet the specific requirements of Section 319 and the latest EPA guidance documents.

This document is an update of *Mississippi's State Management Program of 2000*. EPA specifies that these documents be updated when one or more of the following events occurs: 1) a change in state legislation affects the lead organization's responsibility; 2) the program milestones have expired; 3) technical information indicates the Management Program and Best Management Practices (BMPs) have changed; or 4) the State NPS program has matured and the implementation program has changed. Because one or more of the above events occurred since the publication of the *State's 2000 Management Plan*, this document represents a complete revision of the entire 2000 document. In the future, specific sections may be updated according to the EPA revision process.

On April 12, 2013, EPA issued new guidelines to states, territories, and the District of Columbia (hereafter called States) for the award of §319 grants under the Clean Water Act for the implementation of NPS management programs (Current Section 319 Grant Guidance). These guidelines are requirements that apply to recipients of grants made with funds appropriated by Congress under §319 of the Clean Water Act. States and EPA regions will implement these guidelines in fiscal year (FY) 2014 and in subsequent years. EPA's new guidelines, on which this document is based, replace the *Nonpoint Source Program and Grants Guidelines for States and Territories* that have been in effect since the FY 2004 grant cycle (hereafter referred to as the "*2004 Guidelines*").

Major requirements pursuant to EPA's 2014 Guidelines are summarized below. EPA's new guidelines recognize annual variability in appropriations for the §319 program, and require a revised set aside of at least 50 percent of a state's allocation for watershed projects to provide an appropriate balance between implementation of Watershed Based Plans (WBPs) and other important planning, assessment, management, and statewide NPS programs and projects. This 50 percent set aside is referred to as Watershed Project Funds. The remaining funds are referred to as NPS Program Funds.

In addition to the revised watershed project set aside, other significant changes in these revised guidelines on which this document is based include:

- The 2004 guidelines allowed states to use a portion (up to 20%) of their "incremental" funds for the purposes of developing WBPs and total maximum daily loads (TMDLs). In an effort to increase the focus of §319 funding on Watershed Project(s) implementation, these revised guidelines remove this allowance and require planning activities to be funded with NPS Program Funds.
- The guidelines continue to place a strong emphasis on taking a watershed-based approach to restore NPS-impaired waters. States will focus watershed project funds primarily on these efforts. Following consultation with EPA, a limited amount of watershed project funds may also be used for projects to protect unimpaired/high quality waters when protection is cited as a priority in the state's updated NPS management program. Procedural requirements from the 2004 guidelines for protection projects have been removed.
- The guidelines include a renewed focus on updating state NPS management programs on a five-year basis, with the expectation that 50% of NPS management programs will be updated by September 2013, and all management programs will be up-to-date by September 2014.

- To facilitate program efficiency and watershed implementation, the guidelines include specific requirements for supplemental information to be submitted with TMDLs developed using §319 funds.
- The guidelines provide an increased emphasis on coordination with *USDA Farm Bill Programs* as a way to leverage water-quality investments.
- The 20% "base" funds cap on the use of §319 funds for statewide NPS monitoring and assessment from the 2004 guidelines has been removed in recognition of the importance of these activities for measuring success and in targeting watershed restoration and protection efforts.
- For states that go well beyond an expected level of non-federal funds leveraging, the revised guidelines provide an incentive to use the *Clean Water State Revolving Fund* (CWSRF) and other state or local funding for NPS watershed projects by providing additional flexibility with §319 funds when states provide funding for watershed projects equal to their total §319 allocation.

1.4 History of NPS Pollution

In 1948, Congress passed the first *Water Pollution Control Act* which provided limited provisions for legal action against polluters of national waters. In 1956, these provisions were expanded and subsidies were provided for construction of municipal, wastewater-treatment plants. The *Water Quality Act of 1965* required states to set water -quality standards and plans indicating how those standards would be met.

In 1972, Congress amended the *Federal Water Pollution Control Act* and introduced national water-quality standards and a national discharge permit system. This and the *Clean Water Act of 1977* [hereafter called the *Clean Water Act* (CWA)] formed the basis for permits issued under the *National Pollutant Discharge Elimination System* (NPDES). Thus, pollutant loads from point-source discharges were greatly reduced and considerable progress was made in restoring and maintaining water quality. With the cleanup and regulation of point-source discharges, EPA and the states realized that many waters throughout the Nation were still impaired as a result of nonpoint-source pollution. Nonpoint-source pollution is defined in general as pollution caused by diffuse sources that are not regulated as point-source discharges and normally is associated with agriculture, silviculture, urban runoff, and runoff from construction activities. Nonpoint-source pollution can impact groundwater as well as surface water.

The 1987 Amendments to the CWA established a national policy that programs be developed to control nonpoint sources of pollution. Congress inserted §319 in order to establish a national program to address NPS. It authorized the EPA to issue grants to states and, in order for the states to receive these grants, required the states to assess NPS pollution problems and causes within the State, and to implement a management program to control NPS pollution. Every few years, the states must document their efforts and results in assessing pollution problems and implementing their management programs. A NPS assessment document and a management plan was developed and approved by the EPA and Mississippi's NPS Management Program began in August 1989.

In 1990, Congress enacted the *Coastal Zone Act Reauthorization Amendments* (CZARA). These Amendments were intended to address several concerns, a major one of which is the impact of NPS pollution on coastal waters. Congress included *Section 6217, Protecting Coastal Waters*, which was intended to specifically address the impacts of NPS pollution on coastal waters. This section required

each state with an approved coastal zone management program to submit a *Coastal Nonpoint Source Pollution Control Program* (CNPCP). This document had to be submitted to both EPA and the National Oceanic and Atmospheric Administration (NOAA) for their approval.

On October 18, 1997, Vice President Gore called for a "renewed effort to restore and protect water quality." The Vice President asked that the Secretary of Agriculture and the Administrator of the Environmental Protection Agency (EPA), working with other affected agencies, develop a *Clean Water Action Plan* (CWAP) that builds on clean water successes and addresses three major goals:

1) Enhanced protection from public health threats posed by water pollution;
2) More effective control of polluted runoff;
3) Promotion of water-quality protection on a watershed basis.

In the development of this CWAP, there was a growing recognition of the need to better coordinate and tailor the implementation of national programs in specific geographic areas, such as watersheds, where water quality is impaired or needs to be protected. A *watershed approach* fosters the coordinated and more efficient implementation of programs to control point-source discharges; reduce polluted runoff; enhance sensitive, natural resources such as wetlands and coastal waters; and protect drinking-water supplies. State, tribal, and federal agencies currently use multiple processes to assess water quality and other natural-resource conditions.

The *Mississippi Nonpoint Source Management Program 2000 Update* (hereafter called the *2000 Update*) identified Mississippi's NPS pollution-control goals and strategies for federal fiscal years 2000 – 2005. It described how Mississippi anticipated assessing NPS pollution impacts and threats, identifying priority watersheds and projects, coordinating technical and financial assistance for BMP implementation, implementing statewide education and technology transfer programs, and implementing regulatory and enforcement mechanisms.

During the years 2004 to present, Mississippi started using a *Basin Management Approach* (BMA). The BMA, as further explained in Section 3.3.1 below, is a watershed-based process that promotes coordination and collaboration among state and federal agencies and local stakeholders to restore and protect the quality of the State's water resources. Through the BMA, the NPS Management Program shifted its emphasis from the funding of individual demonstration projects to the support of collaborative watershed restoration and protection efforts that target priority watersheds.

The *Mississippi Nonpoint Source Management Program 2014 Update*, still emphasizes the BMA, builds upon the lessons learned since the *2000 Update*, and presents management strategies that can be used by a broad audience to decrease NPS pollution in the State.

1.5 Legal Authority

This Nonpoint Source Management Plan has been prepared to meet federal regulations. Section 319(b) of the Clean Water Act (CWA) provides the legal basis for the implementation of state nonpoint source management programs and identifies the requirements states must meet to qualify for financial assistance under the Act.

Section 319(b) stresses two items which must be completed by a state prior to receiving grant funds to address nonpoint source pollution—the State Assessment Report and the State Nonpoint Source Management Program. The State of Mississippi Water Quality Assessment Section 305 (b) Report provides a statewide analysis of water quality impairments caused by nonpoint source pollution. The State's NPS Management Program provides a a 5-year action plan for addressing these water quality concerns in accordance with Section 319(b) of the CWA. This Management Plan has been prepared in accordance with state regulation and policy.

MDEQ's Office of Pollution Control (OPC) serves as the lead agency in Mississippi for water quality management. The Office is responsible for numerous programs related to water resources.
Section 49-2-9 of Mississippi code gives the Commission on Environmental Quality power to formulate the policy of the Department regulating natural resources within the jurisdiction of the Department. Also, Section 49-2-9, Subparagraph E, gives the Commission the authority to enter into and to authorize the Executive Director to execute, with the approval of the Commission, contracts, grants and cooperative agreements, with any federal or state agency in carrying out provisions in said Chapter.

Section 319(b)(2)(d) requires the certification from the State Attorney General stating that the laws of the state provide adequate authority to implement this Management Program. This certification is provided in Appendix C.

MDEQ does handle all investigation of, and enforcement against those who negatively impact state waters and degrade water quality because of their operations. This is done using State law *Section 49-17-29 (2) (a)* which states:

> *It shall be unlawful for any person (i) to cause pollution of any waters of the state or to place or cause to be placed any wastes in a location where they are likely to cause pollution of any waters of the state; (ii) to discharge any wastes into any waters of the state which reduce the quality of such waters below the water quality standards established therefor by the commission; or (iii) to violate any applicable pretreatment standards or limitations, technology-based effluent limitations, toxic standards or any other limitations established by the commission. Any such action is hereby declared to be a public nuisance.*

Additionally, under the Coastal Zone Reauthorization Act (CZARA) a separate Legal Authority is in effect for the Coastal Zone of MS. See Appendix C.

The responsibility for NPS management is included in the programs of many Federal, State, and local units of government. In addition, owners and users of lands are responsible for NPS management. While

MDEQ is the lead agency for program development and implementation, various portions of the program are delegated to other agencies based on their legal authority and/or expertise.

This plan has been prepared by the SWD with input from additional MDEQ staff and cooperating partners in accordance with state and federal regulations.

Chapter 2: Mississippi's Water Resources

Mississippi is blessed with a plethora of water resources that provide a broad array of beneficial uses, e.g. drinking water, fish and wildlife habitat, swimming and other recreational uses. These benefits can be attributed to miles of streams and rivers and thousands of acres of ponds, lakes, estuaries, and bays, not to mention 84 miles of coastline along the Gulf Coast. These attributes will be further detailed below. Despite these attributes, the State has water-quality issues that need to be addressed; therefore, the State is charged with the development of a *Five-Year Action Plan* (presented in Chapter 7) that addresses water-quality issues along with goals, objectives, and actions to focus on these issues.

2.1 Mississippi Department of Environmental Quality Mission Statement

The Mission of the Mississippi Department of Environmental Quality (MDEQ) is to safeguard the health, safety and welfare of present and future generations of Mississippians by conserving and improving our environment and fostering wise economic growth through focused research and responsible regulation.

The overall objectives of Mississippi's Nonpoint Source Program are to conserve and improve State waters for man's use and the sustainment and propagation of wildlife and aquatic life, through focused research, responsible regulation, widespread education, and cooperation with other agencies and the public.

2.2 Characterization of Mississippi's Water Resources

2.2.1 Climate and Topography

Climate includes rainfall, temperature, and wind. The frequency, intensity and duration of rainfall, are the principal aspects of rainfall influencing the volume of runoff, erosion, and sediment from a given area. It is the sediment and its associated particles (possibly carrying pollutants) that can adversely influence Mississippi's waters. As such, §319 of the *Clean Water Act* requires that erosion and runoff be addressed. As the volume and intensity of rainfall increase, the ability of water to detach and transport soil particles increases. When storms are frequent, intense, and of long duration, the potential for erosion of bare soils is high. Because of the frequent and intense storms in the State, stormwater runoff that carries sediment-carrying pollutants and nutrients is a big issue in Mississippi and is addressed both as a statewide issue and an issue in individual watersheds. This issue is addressed within this document as a five-year action plan (See Chapter 7:) with goals, objectives, action items, and tracking measures.

A humid, subtropical climate is found in Mississippi. The State is known for long, hot, humid summers and short, temperate winters. There is plentiful rainfall and even a chance of snow in the winter. The average rainfall in Mississippi ranges between 50 and 65 inches per year. More rainfall typically falls near the Coast than in the northern part of the State. Violent and destructive thunderstorms occur in the summer (http://www.msema.org). Snow or sleet may fall in the winter. Rainfall is usually distributed throughout the year, but it is the violent and destructive thunderstorms that cause the aforementioned erosion with sediment and it must be addressed by using Best Management Practices (BMPs) across both the urban and rural landscape.

Temperature has a major influence on soil erosion. Frozen soils are relatively erosion resistant. However, bare soils with high moisture content are subject to uplift or "spew" by freezing action and are usually easily eroded upon thawing. Wind contributes to the drying of soil and increases the need for irrigation for new plantings and for applying wind-erosion control practices during periods of bare soils. Mississippi temperatures average from 34 ° F to 92 ° F, so frozen soils are occasional in Mississippi and not very problematic. The majority of frozen soils occur in northern Mississippi during the winter months. Hot and dry soils, particularly if they contain a majority of silts, such as those in the Loess Bluffs of Mississippi can be subject to wind-driven erosion. See Mississippi geological map below (Figure 1).

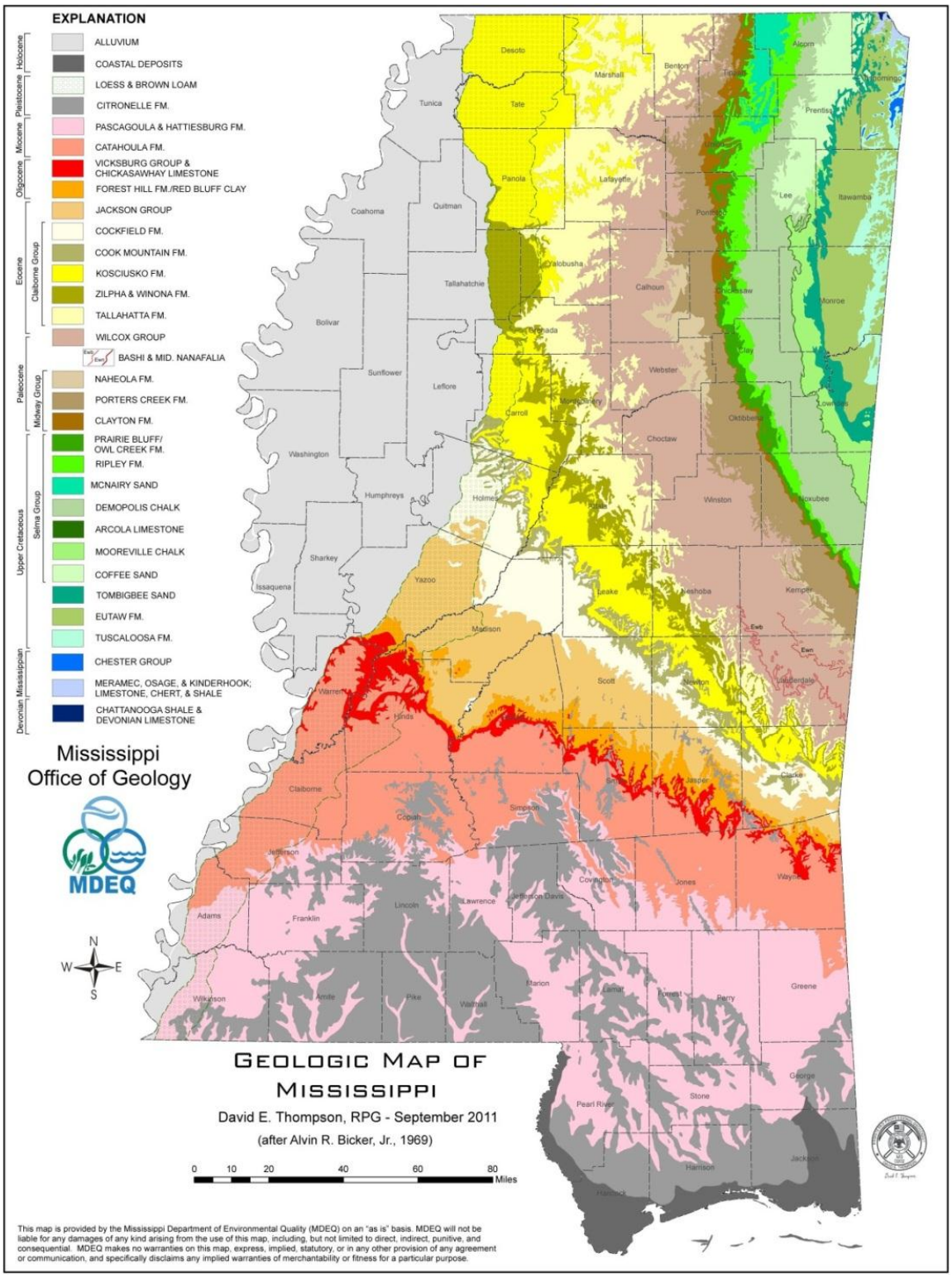


Figure 1 Geologic Map of Mississippi
Source: [MDEQ Office of Geology, 2011]

Topography includes the shape and slope characteristics of an area or watershed and influences the amount and duration of runoff. The greater the slope length and slope gradient, the greater the potential for runoff leading to subsequent erosion and sediment delivery. The map below (Figure 2) depicts the general relief of Mississippi. Abrupt relief, drastic differences in elevation, promote more potential for soil erosion, particularly if soils are left bare and disturbed, such as those around construction sites. Problematic relief in Mississippi occurs in the Northeastern Hills and in the Loess Bluffs from Horn Lake to Vicksburg (see Figure 1 and Figure 2)

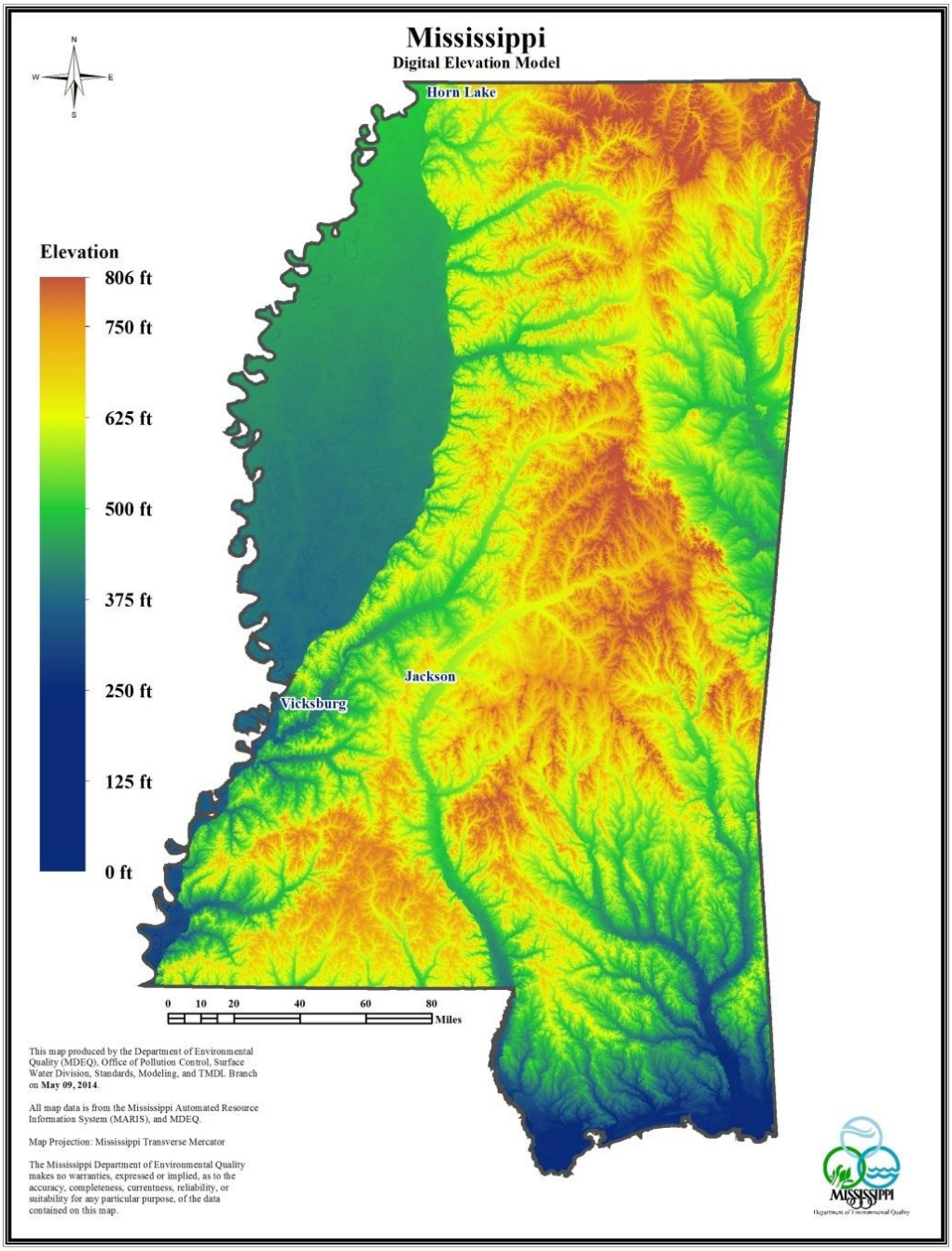


Figure 2 General Topographic Map of Mississippi
Source: MARIS and MDEQ, 2014

2.2.2 **Surface Waters**

Mississippi has a population in excess of 2.9 Million (US Census Bureau 2010) and covers a surface area of 47,689 square miles. The State is divided into ten (10) major river basins with a total length of streams in excess of 82,000 miles. Of these miles, 32% are perennial and characterized by flowing water throughout the year. Intermittent streams which flow during rainy seasons but are dry during summer months represent 65% of Mississippi's total stream mileage. There are over 2,400 miles of man-made ditches and canals in the State. The Mississippi River (approximately 400 miles) and the Pearl River (approximately 80 miles) form Mississippi's border with Arkansas and Louisiana on the west side of the State. The State is covered with hundreds of publicly owned lakes, reservoirs, and ponds covering a combined area of approximately 260,000 acres. According to land-use information, wetlands cover an estimated 2,728,000 acres with tidal marsh comprising approximately 53,000 acres of this total. The southern edge of Mississippi's contiguous land mass borders the Mississippi Sound with the coastline along the Mississippi Sound totaling approximately 84 miles. The total area of estuarine waters is approximately 758 square miles. This area includes St. Louis Bay, Back Bay of Biloxi, Pascagoula Bay, Mississippi Sound, and the portion of the Gulf of Mexico that extends three miles south of the Barrier Islands. A tabular summary of the information given above can be found in Table 2.

Table 2 Mississippi Atlas

State population	2,938,618
State surface area (square miles)	47,689
Number of river basins	10
Total number of river and stream miles*	82,154
• Number of perennial river miles (subset of above)*	26,379
• Number of intermittent stream miles (subset of above)*	53,351
• Number of ditch and canal miles (subset of above)	2,424
• Number of lakes/reservoirs/ponds (>25 acres)	1,251
Acres of lakes/reservoirs/ponds (>25 acres)	259,533
Square miles of estuaries/harbors/bays	755
Number of coastal miles	84
• Number of Public Recreational Beach Miles	42
Acres of freshwater wetlands	2,728,072
Acres of tidal wetlands	52,875

* From USEPA NHD estimates

Source: Mississippi §305b Narrative Report, 2014

All waters of the State are classified for uses consistent with the goals of the Clean Water Act. Waters are classified according to one or more of the following classifications: Public Water Supply; Shellfish Harvesting; Recreation; Fish and Wildlife; and Ephemeral Stream. These classifications are explained fully in the State's water-quality standards available on MDEQ's web site (State of Mississippi Water Quality Criteria for Intrastate, Interstate, and Coastal Waters). A summary of classified uses of State waters is provided in Table 3.

Table 3 Total Sizes of Waters According to Use Classification

Classified Use	Total Size According to Classification			
	Rivers (miles)	Lakes (acres)	Estuaries (sq. miles)	Coastal Shoreline (miles)
Fish & Wildlife[a]	82,154	140,627		
Public Water Supply[ab]	87	13,597		
Recreation[b]	1,043	93,159	728	84
P. Water Supply & Rec.[ab]		22,577		
Shellfish Harvesting[bc]			6	
Recreation/Shellfish[b]			32	
Ephemeral	113			

[a]Also suitable for Secondary Contact Recreation
[b]Also suitable for Fish and Wildlife
[c]Also suitable for Recreation
Source: Mississippi §305b Narrative Report, 2014

2.2.3 Wetland Resources

Wetlands are beneficial ecologically, economically, and recreationally. Most notably, wetlands offer habitat and cover for fish which is important for fishing, but wetlands are also home to diverse collection of plant life seen only in wetland areas. Wetlands can be nurseries for saltwater fish, freshwater fish, and shellfish. In terms of NPS pollution, wetlands are important landscape features, because they retain and recycle nutrients as well hold water to alleviate flooding potential in flood-prone areas.

This section provides an inventory of readily available wetland data for the state of Mississippi. Data were compiled from the USFWS National Wetlands Inventory (NWI, http://www.fws.gov/wetlands) and summarized to document known wetland types with calculated acreages (Table 4).

Table 4 Summary of Wetlands by Type

Wetland Type	Acres
Freshwater Forested/Shrub Wetland	3,499,935
Estuarine and Marine Deepwater Wetland	524,205
Lake	278,393
Riverine	177,802
Freshwater Pond	171,326
Freshwater Emergent Wetland	134,981
Estuarine and Marine Wetland	59,179
Other	456
Sum	**4,846,277**

Source: USFWS National Wetlands Inventory, 2014

2.2.4 Ground Water

Groundwater resources provide over 90% of Mississippi's drinking water supply. The 1,200 public-water systems operating in the State use 3,500 wells and four surface-water intakes, as well as over 23,000 withdrawal permits. Because of this reliance on groundwater, the State has a vested interest in its protection.

Over the years, EPA has made various revisions to the reporting requirements associated with the groundwater section of the *§305(b) Report*. These changes signaled an attempt by EPA to not only address relevant groundwater issues of concern or interest, but also to obtain aquifer-specific data that can be used for comparisons. There are 13 major delineated aquifers and numerous minor aquifers distributed throughout Mississippi. These aquifers are delineated geologically and depicted in Figure 3 from newest to oldest in geologic time.

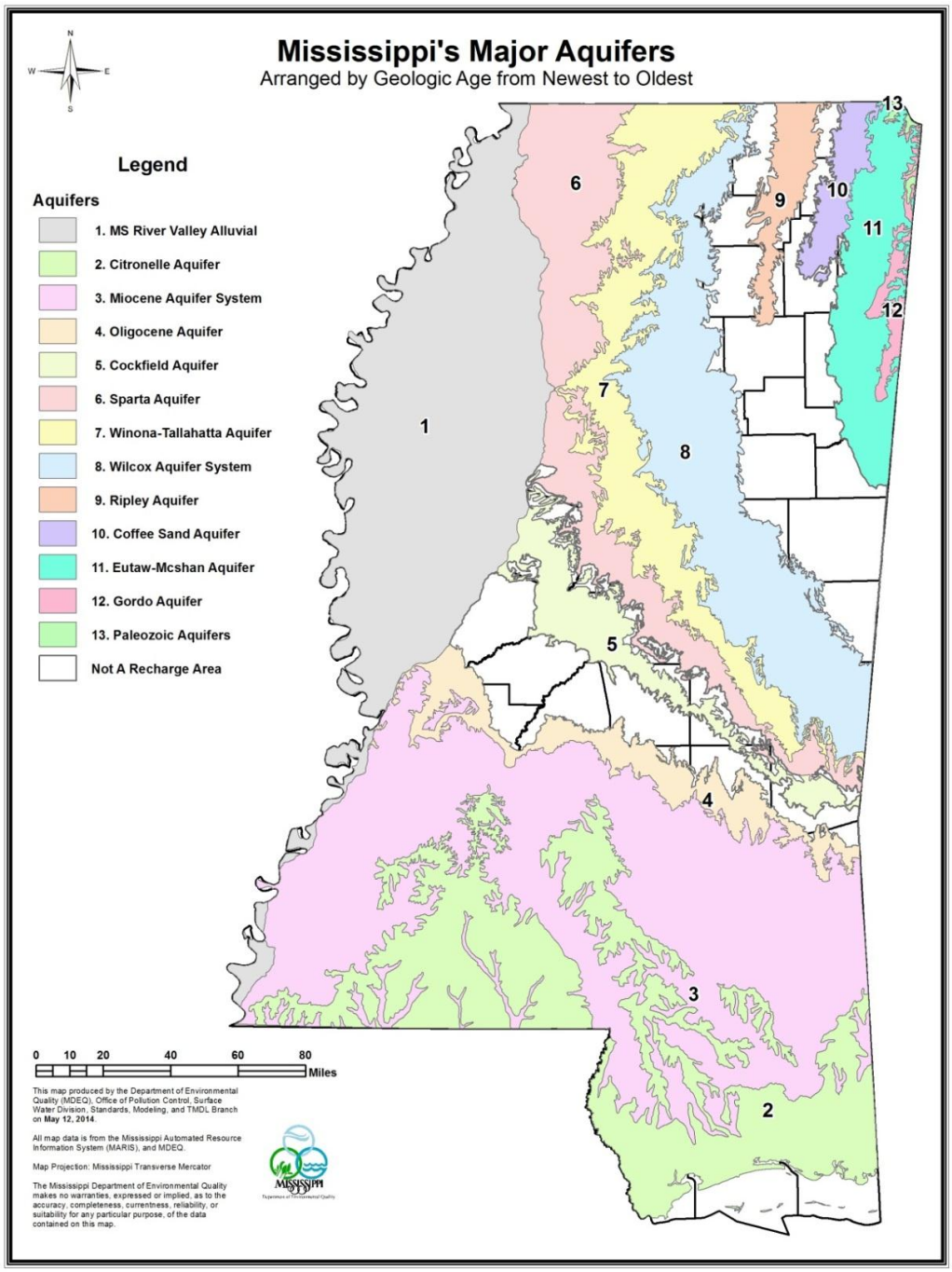


Figure 3 Mississippi's Major Aquifers
Source: [MDEQ Office of Land and Water Resources, 2014]

2.2.5 **Major River Basins**

The waters of the State are divided into 10 major river basins. These basins are grouped into four major *Basin Management Units or Groups*: 1) Tombigbee River, Tennessee River, North Independent Streams; 2) Yazoo River; 3) Pearl River, Big Black River, South Independent Streams Basins; and 4) Pascagoula River, Coastal Streams, and Lower Pearl River Basins. Figure 4 provides a graphical representation of these four groups and Table 5 summarizes relevant information.

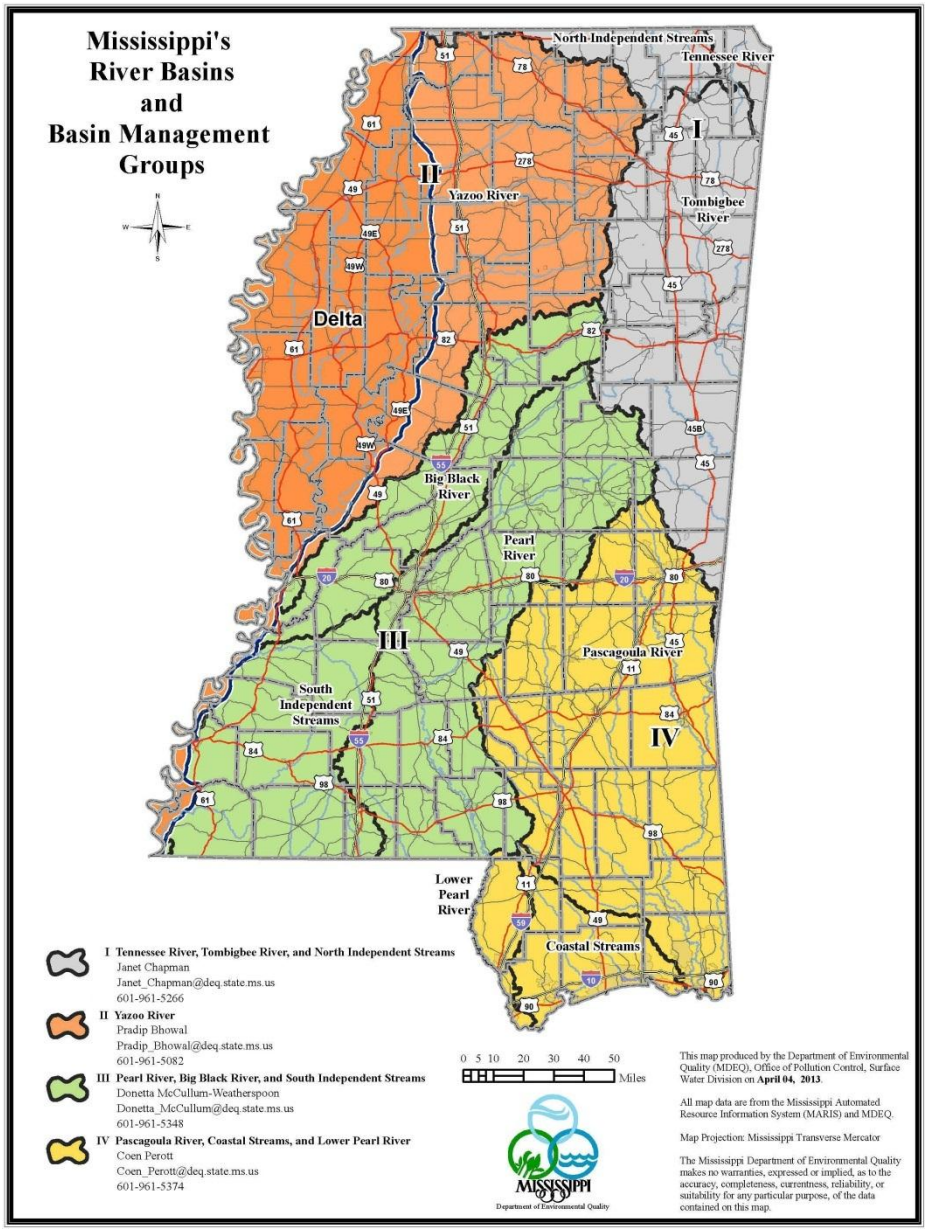


Figure 4 Mississippi's Major River Basin and Basin Groups
Note: that the legend defining each basin or group also gives the current MDEQ Basin Management Coordinator with contact information.
Source: MARIS and MDEQ, 2014

Table 5 Summary of River Basin Information 1:100,000 NHD for Streams and Lakes (>5 Acres)

No.	River Basin	Basin Group	Acres	HUC 10 Count	HUC 12 Count	Stream Miles	Lake (Count/Acres)
1	Big Black River	III	2,165,820	20	96	6,607	540/7434
2	Coastal Streams	IV	1,060,712	12	64	2,435	245/5,971
3	North Independent Streams	I	704,100	19	59	1,917	133/ 3975
4	Pascagoula River	IV	5,599,323	58	260	15,069	1,027/26,077
5	Pearl River	III	4,980,762	47	233	13,121	951/43,417
6	Lower Pearl River*	IV	405,582**	5**	26**	1,078	154/2,305
7	South Independent Streams	III	3,043,255	41	158	7,356	374/14,927
8	Tennessee River	I	3,886,817	6	24	663	22/6,040
9	Tombigbee River	I	272,324	63	217	11,474	903/27,082
10	Yazoo River	II	9,377,089	88	237	22,105	1923/14,6800

* The Lower Pearl River is separated from the Pearl River Basin for ease of classification and management

** Numbers are included in Pearl River Basin totals

Source: MDEQ Office of Pollution Control, Basin Management Branch, 2013

2.3 Land Ownership

Of the approximate 31 million acres of land in Mississippi, only a small portion, approximately 10.4%, is public land managed by a federal, state, or local government agency, while private lands comprise approximately 90% of the State (Protected Areas Database of the United States (PAD-US)), and Mississippi Automated Resource Information System. Data were compiled for the USGS Gap Analysis Program (GAP). Certain public lands were not included (city and county held lands), due to lack of available data. From this information, the US Forest Service (USFS) is the largest manager of public lands in the State (46.1%), followed by the MS Land Trust (20.1%), the Department of Defense (12.5%), and the National Park Service (6.5%). One Native American tribe, the Choctaw, currently holds 23,250 acres in Mississippi. A complete listing of available data can be found in Table 6.

Table 6 Summary of Public Lands in Mississippi

ID	Owner Name	Count	Acres	% of Total MS Lands	Total % Public Lands
1	Forest Service (USFS)	547	1,488,457	4.8	46.1
2	Mississippi Land Trust (Section 16)	1,098	647,542	2.1	20.1
3	Department of Defense (DoD)	63	404,899	1.3	12.5
4	State Fish and Wildlife (MWFP)	123	210,077	0.7	6.5
5	Fish and Wildlife Service (USFWS)	160	209,260	0.7	6.5
6	National Park Service (NPS)	110	90,994	0.3	2.8
7	State Coastal Reserve	30	48,001	0.2	1.5
8	State Land Board	18	28,655	0.1	0.9
9	Native American Land	49	23,250	0.1	0.7
10	State Park & Recreation	43	19,666	0.1	0.6
11	Other Federal Land	2	15,748	0.1	0.5

ID	Owner Name	Count	Acres	% of Total MS Lands	Total % Public Lands
12	State Department of Natural Resources (DNR)	12	14,839	0.0	0.5
13	Other State Land	6	13,203	0.0	0.4
14	State University	6	10,902	0.0	0.3
15	Tennessee Valley Authority (TVA)	4	3,089	0.0	0.1
	Sum Total	**2,271**	**3,228,580**	**10.4**	**100.0**

Source: USGS Gap Analysis Program (GAP), 2014

2.4 Land Uses and Impacts to Water Quality

The citizens of Mississippi use its lands for many purposes, which can have potentially negative effects on water quality. The following section presents major land uses within Mississippi and summarizes the quantities of each land use.

2.4.1 NASS Cropland Data Layer (CDL) 2013

The USDA, National Agricultural Statistics Service (NASS) CDL is a raster, geo-referenced, crop-specific land cover data layer. The 2013 CDL has a ground resolution of 30 meters. The CDL is derived using the latest USGS Landsat 7 and 8 imagery and National Land Cover Data (NLCD, 2006). All data are collected during the current growing season. Table 7 lists landuse categories with acreages greater than 1,000 acres and designates them as Agricultural or Non-Agricultural land.

Table 7 Summary of Landuse by Category

Category	Acreage	Type
Grassland/Pasture	3,997,294	Agricultural
Soybeans	1,835,645	Agricultural
Corn	900,278	Agricultural
Cotton	323,173	Agricultural
Fallow/Idle Cropland	315,387	Agricultural
Other Hay/Non Alfalfa	311,969	Agricultural
Double Cropped Winter Wheat/Soybeans	302,865	Agricultural
Winter Wheat	137,198	Agricultural
Rice	130,088	Agricultural
Sorghum	46,096	Agricultural
Peanuts	26,412	Agricultural
Sweet Potatoes	19,784	Agricultural
Pecans	13,189	Agricultural
Sod/Grass Seed	6,025	Agricultural
Double Cropped Corn/Soybeans	4,0665	Agricultural
Double Cropped Winter Wheat /Sorghum	2,956	Agricultural
Double Cropped Winter Wheat /Cotton	2,611	Agricultural
Forest	5,450,932	Non-Agricultural
Wetlands	4,034,165	Non-Agricultural
Shrubland	3,391,997	Non-Agricultural
Developed	1,834,384	Non-Agricultural
Water	692,381	Non-Agricultural

Category	Acreage	Type
Barren	30,238	Non-Agricultural

Source: National Agriculture Statistics Service (N.A.S.S.) Cropland Data Layer (CDL), 2013

2.4.2 **Agriculture**

In Mississippi, approximately 11.2 Million acres of land is used for farming crops or livestock production. According to December 2013 estimates provided by the Mississippi State University, Division of Agriculture, Forestry and Veterinary Medicine and the Mississippi Farm Bureau Federation, farming brings nearly 7.4 billion dollars into the economy and directly or indirectly impacts 29% of the state's workforce making farming the number one industry in Mississippi. The top 15 agricultural crops in terms of economic impact are listed in Table 8 along with estimated count or quantity produced.

Table 8 Mississippi Agriculture Overview, 2013

Category	Economic Impact	Count or Quantity
POULTRY / EGGS	$2.71 BILLION	1,478 Farms
FORESTRY	$1.17 BILLION	125,000 Landowners 19,700,000 Acres
SOYBEANS	$993 MILLION	85,140,000 Bushels 2,695 Farms
CORN	$631 MILLION	146,700,000 Bushels 2,113 Farms
COTTON	$331 MILLION	730,000 Bales 760 Farms
CATTLE/CALVES	$289 MILLION	910,000 Head 17,752 Farms
CATFISH	$178 MILLION	125 Operations 48,600 Acres of Production
HAY	$157 MILLION	720,000 Acres 2.16 Million Tons
HOGS	$144 MILLION	415,000 Head (Hogs and Pigs) 439 Farms
RICE	$141 MILLION	96.75 Million Pounds 341 Farms
WHEAT	$126 MILLION	22.3 Million Bushels 1,006 Farms
HORTICULTURE CROPS	$115 MILLION	Horticulture crops include vegetables, melons, potatoes, fruits, tree nuts, berries, nursery, greenhouses, floriculture, sod, and Christmas trees
SWEET POTATOES	$69 MILLION	20,000 Acres 364 Million Pounds
MILK	$40 MILLION	100 Grade A Dairy Herds 13,000 Head

Category	Economic Impact	Count or Quantity
PEANUTS	$23 MILLION	33,000 Acres 105.6 Million Pounds

Source: Mississippi State University, Division of Agriculture, Forestry and Veterinary Medicine **and** the Mississippi Farm Bureau Federation, 2013

2.4.3 **Timber Harvesting**

Mississippi is a state blessed with the soils and climate that provide for good forest growth. Mississippi's total land area is approximately 30 million acres. Of that, 18.6 million (62%) acres are forested. Timber is second only to poultry production in terms of agricultural income in Mississippi. Forests also provide environmental, aesthetic, social, and health benefits. Nearly 2 million acres (10%) of Mississippi forests are publicly owned. Of the remainder, 11 million acres are owned by individuals and 4 million acres are owned by corporations.

Timber harvesting from public and private forested lands, while being a smaller component of the agricultural or mineral development sectors in the State, have nevertheless contributed substantially to Mississippi's economy. In 2012, Mississippi's timber industry generated over a billion dollars of forest products to mills and other processors. The harvest value represents a 6.4% increase over 2011's totals. Forestry activities are not a major contributor of polluted run-off in the State, but poorly managed sites do create severe, localized, impacts on receiving waters, but with increased harvesting of timber, it is important that our forests are well managed and that forestry operations are conducted using Best Management Practices (BMPs).

Although the use of forestry BMPs is voluntary in Mississippi, MDEQ does handle all investigation of and enforcement against loggers who negatively impact state waters and degrade water quality because of their operations. The Mississippi Forestry Commission (MFC), in cooperation with the Mississippi Forestry Association (MFA) and Mississippi State University (MSU), has taken a leadership role in the development and promotion of the forestry industry Best Management Practices (BMPs) in Mississippi.

2.4.4 **Hydrologic Modification**

Hydrologic modifications are any activities that alter the physical structure, form, or flow patterns of surface or groundwater. Landscape alteration associated with construction can have negative impacts on sensitive areas along rivers and streams. One common problem due to hydro-modification is stream bank erosion. Some stream bank erosion is natural, but bare banks, undercut banks, or areas of sloughing are indicators of serious erosion problems. Another common problem of hydro-modification is drier stream channels due to water table drop.

The primary federal entity responsible for regulating hydro-modification over all navigable water in the United States is the U.S. Army Corps of Engineers (USACE). MDEQ is notified by the USACE of all 404 permit actions for hydrologic modification, and ensures that proper BMPs are incorporated as conditions within each permit (Section 401 certifications, see Section 6.5).

2.5 Assessment of Mississippi's Water Resources

2.5.1 Assessment of Surface Waters

Surface water-quality assessments are technical reviews of physical, chemical, bacteriological, biological, and/or toxicological monitoring data, as well as other information, to determine the quality of surface-water resources. A primary goal of surface, water quality assessments, as required by §305(b), is to determine if the State's surface waters are meeting the fishable and swimmable goals of the CWA. A secondary goal of the §305(b) assessment process is to provide the necessary information on water-body impairment for use in the development of the State's §303(d) list.

Surface water quality assessments are general characterizations of water-body health and involve comparing data to the State's Water Quality Standards (WQS). Mississippi's WQS specify the appropriate levels for which various water-quality parameters or indicators support a water body's designated use(s). Each use assessed for a water body is determined to be either "Attaining" or "Not Attaining" in accordance with the applicable water-quality standards and USEPA guidelines for assessments pursuant to *§305(b).* Based on current and reliable site-specific data of sufficient quantity, quality, and frequency of collection, a water body is said to be impaired when it is not attaining its designated use(s). Where data and information of appropriate quality and quantity indicate non-attainment of a designated use or uses for an assessed water body, the water body will be placed on the Mississippi 2014 *§303(d) List of Impaired Water Bodies (MDEQ 2014)* and be subject to further monitoring and/or Total Maximum Daily Load (TMDL) development. Assessments are necessary to answer basic questions like:

- Does this water body support a healthy and diverse aquatic life for fish and other aquatic organisms?
- Is this water body safe for swimming?
- Are fish caught in this water body safe to eat?

2.5.1.1 Water Quality Standards

Surface waters in Mississippi are used for a number of purposes. Waters are used for drinking and food processing, shellfishing, recreation, fishing, and aquatic-life support. Water bodies are classified and assigned various use classifications by MDEQ in the *State's Water Quality Standards* based on the use of the water body identified by the public and other entities. The use classifications and associated USEPA designated uses for water-quality assessment purposes recognized by the State of Mississippi are listed in Table below.

Use Classification	USEPA Associated Designated Use
Public Water Supply	Drinking Water Supply
Recreation	Drinking Water Supply Contact Recreation
Fish and Wildlife	Aquatic Life Use, Fish Consumption, Secondary Contact Recreation
Shellfish Harvesting	Shellfish Consumption

Source: Mississippi §305b Narrative Report, 2014

Most of Mississippi's waters are classified as Fish and Wildlife. For each of the use classifications listed above, there are various water-quality criteria or standards that apply to those water-body uses. These criteria are used in the assessment process. A water body (part or all of a stream, river, lake, estuary or coastline) should support one or more of these uses. A complete description of Mississippi's water-body use classifications and water-quality standards can be found in the state's WQS (Water Quality Standards Webpage).

2.5.1.2 Mississippi 2012 §305(b) Assessment Methodology

Water quality data and information can take many different forms, from simple observations to routine fixed network monitoring and intensive surveys with extensive water chemistry, biology, and physical data sampling. For §305(b) Water Quality Assessment Reports, MDEQ assesses the state's streams, rivers, lakes, and estuaries by considering all existing and readily available information. This process is not limited to data collected by MDEQ. MDEQ solicits available water quality data and information from various state, federal, public, and private sources. Data solicitation is facilitated through Mississippi's Basin Management Approach. The public may also submit water quality data for consideration at any time. This broad spectrum of available data is considered when making water quality assessments.

2.5.1.3 Water Body Use Support Determination

Use support decisions are made based on a cumulative evaluation of all the monitoring data coupled with any other existing and readily available information for an individual water body. A detailed description of the assessment methodology used by MDEQ for the 2012 §305(b) Assessment and §303(d) Listing process will be provided upon request. The Mississippi Consolidated Assessment and Listing Methodologies (CALM) describes the minimum data quantity and quality needed to meet data sufficiency requirements for assessment. Decision-making criteria for attainment and non-attainment of each designated use are also presented in that document. These guidelines apply, as appropriate, to rivers, streams, lakes, estuaries, and coastal waters.

2.5.1.4 Designated Use Support-Rivers and Streams

For the 2014 §305(b) Water Quality Assessment Report, MDEQ assessed approximately 15% (3,867 miles) of Mississippi's total 26,379 miles of perennial streams and rivers for one or more uses. The status of water quality on the remaining 85% (22,518 miles) of the state's perennial rivers and streams is unknown. MDEQ collected monitoring data at more than 698 sites in the state (Figure 5).

The low percentage of assessed waters relative to the total stream and river mileage in the state is not an indication of MDEQ's lack of monitoring efforts. The mathematical calculation of miles monitored/assessed is surprisingly low when compared to the total miles of water resources in the state. The resulting assessed mileage is not an accurate depiction of the amount of importance MDEQ places on monitoring the state's surface water resources. It is more a factor of the amount of water resources in the state, available resources, and limitations recommended by USEPA §305(b) guidance on assigning assessed mileage to a monitoring station. As Mississippi's situation

attests, it is not practical for a state to monitor all waters for a comprehensive assessment when the state has 82,154 miles of streams and rivers. MDEQ recognizes the need for a combination of monitoring and assessment approaches to address this situation in future assessments. One such tool is probability-based monitoring surveys. This is a more cost-effective and efficient way to produce a statistical estimate, of known confidence, describing the condition of a resource based on a random sampling design. Recommended by USEPA for §305(b) assessments, a state can assess 100% of its waters utilizing a probabilistic approach. MDEQ is currently using this methodology as part of the Mississippi Coastal Assessment Program and is planning to expand the probabilistic approach to the state's freshwater resources as funding allows.

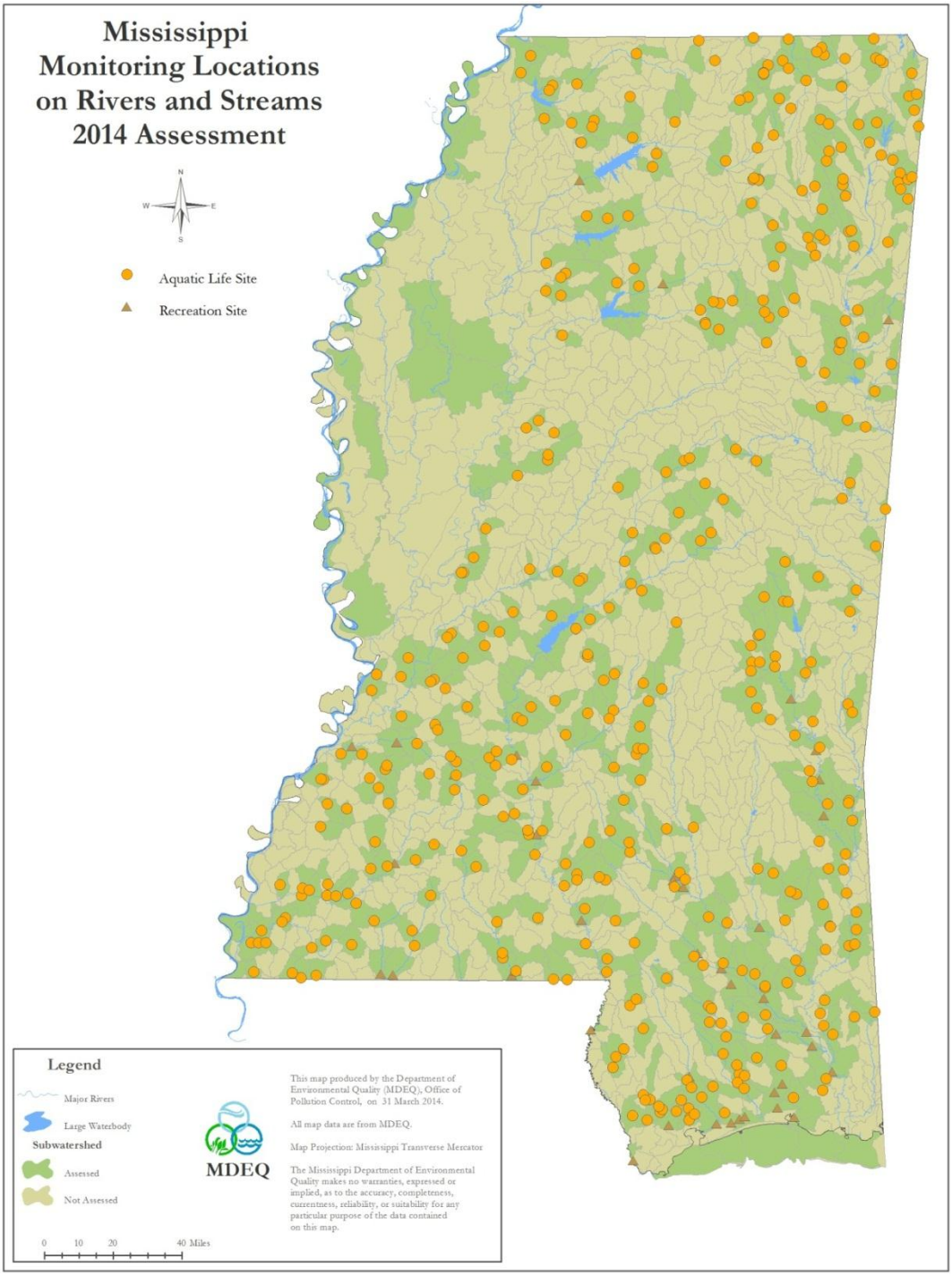


Figure 5 Monitoring Locations in Mississippi
Source: [Mississippi §305b Narrative Report, 2014]

For water bodies with multiple uses assessed, Mississippi has an Assessment Database (ADB) derived from the USEPA's version. The ADB automatically assigns the water-body mileages according to the *Integrated Reporting Category System*. This categorization system assigns a water-body use into one of five categories:

- Category 1: Attaining all uses
- Category 2: Attaining some uses but insufficient information for assessment of other uses
- Category 3: Insufficient information to assess any use
- Category 4: Not attaining a use but a TMDL is not necessary
- Category 5: Not attaining a use and a TMDL is needed

USEPA defines a Category 1 water as having sufficient data to prove there is no impairment for any potential designated use of that water body. Mississippi currently has no water bodies assigned to Category 1 due to USEPA requirements that all uses be assessed. Mississippi's assessments are placed in categories 2-5.

Of Mississippi's 26,379 total perennial stream and river miles, approximately 15% (3,917 miles) were assessed (Figure 6).

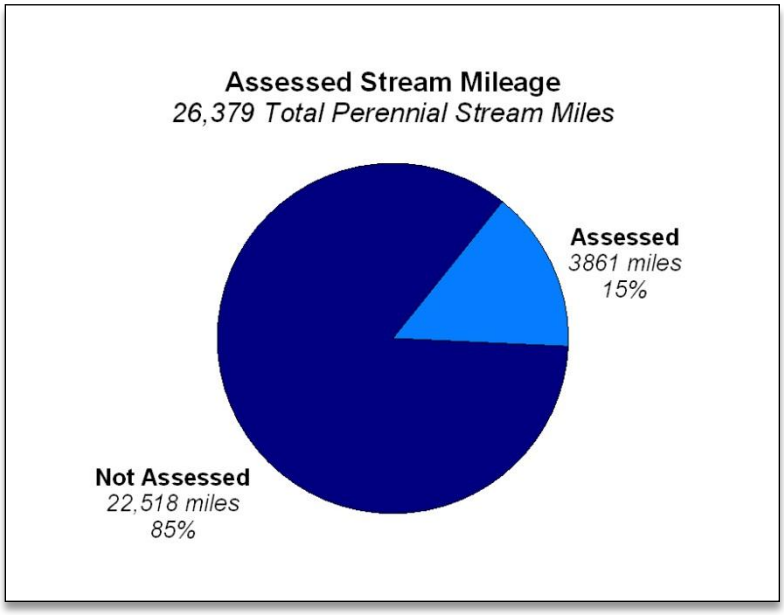


Figure 6 Assessed Stream Mileage Perennial Rivers and Streams
Source: Mississippi §305b Narrative Report, 2014

2.5.1.5 Causes and Sources of Impairment of Designated Uses-Rivers and Streams

Causes and sources of impairment were assigned for streams and rivers having one or more uses impaired. Total assessed sizes of streams and rivers affected by various cause categories are given in Table 9 and depicted in Figure 7. The largest percentage (45%) of miles of assessed water bodies not meeting their designated uses are categorized as biologically impaired. For the biologically impaired waters, the next step in the water quality management process is to conduct stressor identification analyses to identify the stressor(s) causing the impairment. Once the stressor(s) are identified, the TMDL process, where applicable, can proceed. For stressors identified that are attributed to pollution (i.e., a dam or levee) where TMDLs cannot be generated, other water quality management actions will be considered through the Basin Management Approach. Seventeen percent of impairments are caused by sediment. Most of these impairments were determined during the stressor identification process. Pathogens are indicated as the cause of impairment in 14% of the non-attaining water bodies. Other impairments were attributed to pH, nutrients, organic enrichment/low dissolved oxygen, conductivity, PCBs and pesticides. All of the stream miles determined to be impaired by mercury and PCBs are the result of fish consumption advisories.

Table 9 Summary of Use Support Impairment Causes for Rivers and Streams

Cause Categories	Total Size Miles
Other	56
pH	142
Organic Enrichment/Low DO	280
Sedimentation/Siltation	448
Nutrients	424
Biological Impairment**	1,011
Pathogens	360
Total***	2,721

**Definitive cause identification is not possible at the time of assessment. Designation used to report on waters where biological indicators (macroinvertebrates) were used and impairment was indicated but further investigation needed to identify the cause of the impairment.

***Total exceeds number of actual impaired miles due to presence of multiple impairment cause(s) per assessed water body

Source: Mississippi §305b Narrative Report, 2014

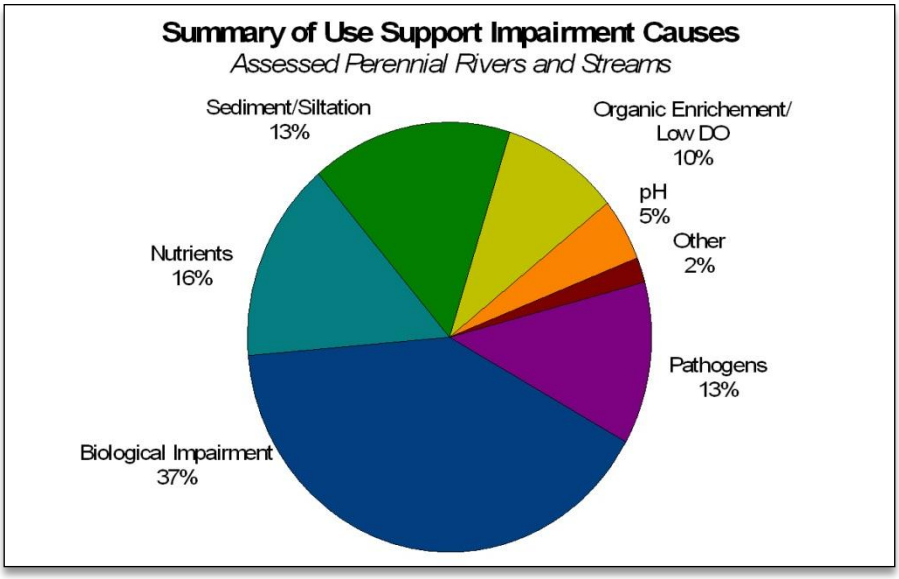


Figure 7 Summary of Use Support Impairment Causes: Rivers and Streams
Source: Mississippi §305b Narrative Report, 2014

The largest percentage of impairment is identified as biological, and the specific sources of the impairment are yet to be determined. As a result, unknown sources contribute to the majority of river miles assessed as not attaining one or more uses. To a lesser extent, pollutants are contributed by contaminated sediments, unspecified nonpoint source activities (i.e., urban, agricultural, silvicultural, and/or industrial runoff), and other smaller sources. As stated above, stressor

identification analyses will be conducted for biologically impaired waters to identify sources of pollution contributing to impairment.

2.5.1.6 Assessment Summary for Aquatic Life Use Support and Recreation

Assessments for miles of perennial rivers and streams are cataloged by use. A water body may have several different uses assessed. Therefore, numbers represented in Table 10 and Table 11 are different from the mileages presented earlier in this chapter. The following tables and figures provide the assessment summaries for Aquatic Life Use Support and Recreation Use Support. Fish Consumption use has also been assessed and can be found in Part III of this report. These mileages represent the attainment status assessed for a specific use. Figure 8 and Figure 9 give a summary of use support according to the individual uses assessed.

Table 10 Aquatic Life Use Support Summary for Perennial Rivers and Streams

Status	Miles
Attaining	1,764
Unknown	22,913
Total Not Attaining	1,702
TMDL not needed	516
TMDL needed	1,141
Total Perennial Miles	26,379

Table 11 Recreational Use Support Summary for Perennial Rivers and Streams

Status	Miles
Attaining	91
Unknown	25,289
Total Not Attaining	360
TMDL not needed	360
Total Perennial Miles	26,379

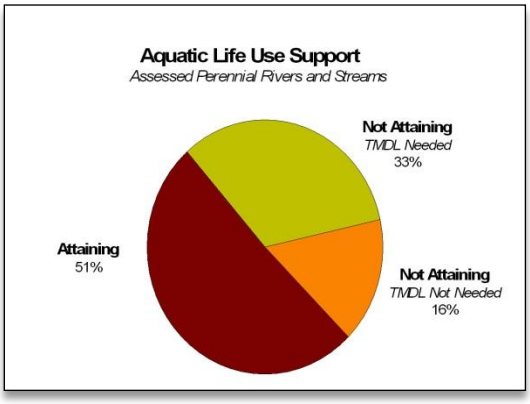


Figure 8 Aquatic Life Use Support Summary
Source: Mississippi §305b Narrative Report, 2014

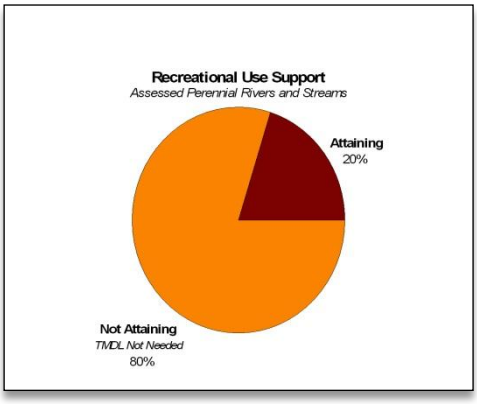


Figure 9 Recreation Use Support Summary
Source: Mississippi §305b Narrative Report, 2014

2.5.1.7 Designated Use Support – Estuaries and Coastal Waters

Mississippi has approximately 84 miles of coastal shoreline between the Alabama/Louisiana state boundaries and 758 square miles of coastal waters including large estuaries, smaller bays and tidal rivers, creeks, and bayous. Inland or bay type estuaries include St. Louis Bay, Back Bay of Biloxi, and Pascagoula Bay. The state's largest estuary (550 square miles) is the Mississippi Sound which extends from the southern edge of the state's contiguous land mass to the Gulf of Mexico and a chain of barrier islands (Cat, Ship, Horn, and Petit Bois Islands) located approximately 11 miles offshore. The state also classifies the Gulf of Mexico as an estuary within Mississippi waters to the state boundary located three miles south of the barrier islands.

For the 2014 §305(b) report, MDEQ was unable to assess estuaries for aquatic life use due to on-going determination of impacts associated with the 2010 MC 252 Deepwater Horizon oil spill in the Gulf of Mexico. Shellfish consumption use was not assessed for the shellfish harvesting reefs due current efforts to replenish shellfish beds damaged by Hurricane Katrina, and bed closures in response to the MC 252 Deepwater Horizon oil spill event in 2010.

Through the establishment of the Mississippi Coastal Assessment Program (MCA), MDEQ has continued to coordinate the sampling effort that was initiated as part of USEPA's National Coastal Assessment (NCA) monitoring. This monitoring builds upon the data generated through NCA by using the same probabilistic station selection process and collecting data at 25 sites annually. MDEQ's MCA program monitors the core ecological indicators established by the NCA program. Each year, a new set of 25 randomly selected sites are sampled from July – September by MDEQ in cooperation with the University of Southern Mississippi Gulf Coast Research Laboratory (GCRL) in the state's estuaries representing two different strata: large estuaries and small estuaries. Probabilistic site selection is provided by USEPA-Gulf Breeze. Due to the inability to determine the extent of impact caused by the 2010 MC 252 Deepwater Horizon Incident, MDEQ did not perform an assessment on the estuaries. The National Resources Damage Assessment is ongoing. The data collected in response to the oil spill will be available for assessment in a future report.

2.5.1.8 Recreation Use Support Assessment

For the 2014 §305(b) assessment, data from the MDEQ Coastal Beach Monitoring Program were used to assess recreation use support in Mississippi estuarine and coastal shoreline waters. MDEQ, in conjunction with the GCRL, conducts routine bacteria and water chemistry sampling activities at 22 beach stations located along Mississippi's Gulf Coast. The bacterial indicator used for recreation use support assessment purposes in marine and estuarine waters is enterococci. Further information on this monitoring program can be found in Part IV: Coastal Beach Monitoring Network.

Of the 42 miles of Mississippi's public beaches, 24.94 miles were assessed using the MDEQ Beach Monitoring Program data. Based on these data, 24.94 miles or 59% of the beaches in Mississippi were attaining primary contact recreation. It should be noted that this assessment represents a five-year reporting period. Beaches are routinely monitored and are safe for swimming unless a beach

advisory is in effect. To learn more about Mississippi's beach advisories, see the Beach Monitoring Website (http://www.usm.edu/gcrl/msbeach/index.cgi).

2.5.1.9 Lake Water Quality

As mentioned above in Section 2.2.2, Mississippi is covered with hundreds of publicly owned lakes, reservoirs, and ponds totaling approximately 260,000 acres. The largest lakes in Mississippi are man-made reservoirs. Grenada Reservoir, Enid Reservoir, Sardis Reservoir, and Arkabutla Reservoir in the Yazoo River Basin are used for flood control. The Ross Barnett Reservoir located in the Pearl River Basin is used as a source of drinking water for the City of Jackson. All of these large reservoirs support numerous other recreational activities. Pickwick Lake, in the State's northeast corner, is an impoundment of the Tennessee River and is shared with Alabama and Tennessee.

2.5.1.10 Use Support Determinations

For the 2014 *§305(b) Water Quality Assessment Report*, MDEQ assessed approximately 55% of Mississippi's total 259,533 lake acres for trophic status (see *§ 305b* report for details). No lakes' data were available for recreational-use support assessment. All the lakes were selected based on recommendations made by the *Lakes Subcommittee* of the MDEQ *Nutrient Criteria Task Force*.

In 2009, MDEQ re-established the Ambient Lakes Monitoring Program as part of the Statewide *Ambient Network*. As part of the lakes monitoring, MDEQ will initially focus on monitoring public lakes and reservoirs. MDEQ will collect samples from approximately 20 public lakes (greater than 100 acres in size) annually. Lakes will be monitored for traditional physical, chemical, and biological water-quality parameters using the protocol that was developed for nutrient criteria development.

2.5.1.11 Lake Pollution Control Methods

Sources polluting lakes in Mississippi are controlled through several state and local programs. Point sources are regulated by MDEQ through issuance and enforcement of NPDES permits ensuring that lake-water quality complies with Mississippi's water-quality standards. If an existing or proposed point-source discharge is found to be detrimental to a lake's water quality, alternative discharge sites are investigated.

Nonpoint-source pollution is by far the major source of pollution to Mississippi's lakes. Several lakes have been targeted for demonstration projects in the NPS Program. Mississippi's NPS Program has identified control measures to address NPS problems and is working with the agencies and groups which will implement the measures.

Local units of government can play an important role in protecting lakes. Counties or municipalities may adopt land-use ordinances or regulations that can be more effective than statewide programs in protecting lakes.

MDEQ's Wetlands Program also plays a role in protecting lakes. Wetlands serve as valuable fish and wildlife habitat, and as effective natural filters of pollutants entering streams and lakes. MDEQ strives to minimize wetland losses around lakes. In addition, the creation or restoration of wetland acres is a measure to control NPS pollution entering lakes.

2.5.2 **Assessment of MS Ground Waters**

EPA guidelines for the *§305(b)* Report encourage the use of the best available data in reflecting the quality of the groundwater resources. To provide as accurate and representative assessment of the groundwater quality in Mississippi as possible, the information in this section contains data compiled from MDEQ, the Mississippi State Department of Health (MSDH), and the U.S. Geological Survey (USGS).

2.5.2.1 Groundwater Quality Standards

In November 1991, MDEQ adopted groundwater-quality standards equivalent to the EPA established drinking water standards or Maximum Contaminant Levels (MCLs). These standards apply to all of the groundwater in Mississippi that meets the EPA's definition of underground sources of drinking water (USDW), which is defined as water that "contains fewer than 10,000 mg/l total dissolved solids." However, the State standard did allow for an exemption of certain water-bearing geologic units capable of yielding only extremely low volumes of water.

The standards also establish a procedure to calculate groundwater-quality standards for types of constituents that may not be included on the EPA list of MCLs.

2.5.2.2 Mississippi Agricultural Chemical Groundwater Monitoring Program

The *Mississippi Agricultural Chemical Groundwater Monitoring (AgChem) Program* was initiated in March 1989 for the purpose of determining if the use of agricultural chemicals is impacting groundwater quality in Mississippi. Thus far, the sampling of over 1,800 wells throughout the State does not indicate any significant impacts directly attributable to agricultural practices.

2.5.2.3 U. S. Geological Survey

The USGS has sampled water wells in Mississippi since the early 1900's. Most of the USGS sampling has involved analysis of inorganic parameters to characterize the basic types of groundwater found in the various aquifers across the State. These sampling efforts helped establish that most of the groundwater in Mississippi can be characterized as a soft sodium or calcium-bicarbonate type. Although the USGS has been involved in previous surface-water investigations to identify pesticides in surface-water bodies in the State, the agency has not actively pursued similar groundwater studies until fairly recently.

National Water Quality Assessment (NAWQA) Program – Congressional funding in the late 1980s enabled the USGS to initiate the NAWQA Program designed to investigate the status and trends of the water quality in the streams, rivers, and groundwater supplies found throughout the Nation. After dividing the country into 60 study areas or units, the USGS began phasing in this project in 1991. Initially, 15 NAWQA study units across the Nation were designated for investigation by the

USGS, including one that encompassed parts of six states in the Mississippi Embayment. A significant area of northern Mississippi was contained in this investigation, including the Mississippi Delta region, the pre-eminent agricultural area in the State. The study involved the sampling of 14 wells pumping from the shallow Mississippi River Alluvium Aquifer, widely used for irrigation and fish culture in the Delta, or various deeper Tertiary aquifers that provide drinking-water supplies throughout northern Mississippi. The results reported by the USGS indicate no exceedances of MCLs on any samples obtained from the Tertiary aquifers in the State. The study also concluded that even the shallow alluvial aquifer underlying the Mississippi Delta had not been adversely impacted by the application of significant amounts of pesticides in the region. The reported results from the Mississippi Embayment study closely mimic those reported for MDEQ's AgChem Program. Cycle II of the NAWQA program began in 2001 and focuses on regional assessments of water-quality conditions and trends.

2.5.2.4 Mississippi State Department of Health

The Safe Drinking Water Act (SDWA) allows states to seek EPA approval or primacy to administer their own *Public Water System Supervision* (PWSS) Programs, often referred to as the *Drinking Water Program.* To receive program primacy, the EPA must determine that a state meets certain requirements laid out in the SDWA and complementary regulations. Some of these requirements include the adoption of state drinking water regulations that are at least as stringent as the federal regulations and a demonstration that a state can enforce the program requirements. Mississippi assumed administration of its PWSS Program in 1974 when the MSDH's Bureau of Public Water Supply became the primacy agency. This agency is responsible for ensuring that safe drinking water is provided to the 96% of the State's population who rely on the 1,200 public water systems (PWSs) and their corresponding 3,500 wells operating in Mississippi.

The EPA also regulates the frequency with which PWSs monitor their water supply for contaminants and report the corresponding analytical results. PWSs are required to monitor and verify that the levels of contaminants present in their drinking water supply do not exceed established MCLs. In Mississippi, most PWSs submit all of their samples to the MSDH for analysis at the State laboratory. The laboratory annually processes and analyzes over 50,000 water samples submitted for microbiological analyses as well as hundreds of samples for lead and copper, nitrate/nitrite, various inorganic constituents, volatile organic compounds (VOCs), total trihalomethanes (TTHMs), haloacetic acids, and bromates. The overall compliance rate of PWSs in Mississippi are generally very numerous in the State because of the predominant use of confined aquifers for drinking-water supplies. Most of the PWSs have been granted a waiver from monitoring for the synthetic organic compounds (pesticides) based on previous studies, vulnerability assessments, and chemical-use data.

Primacy states are required to submit data quarterly to the EPA via the *Safe Drinking Water Information System* (SDWIS), an automated database maintained by the federal agency. Some of the data submitted include PWS inventory information, monitoring/compliance information, and enforcement activity related to any system violations. The SDWA also requires states to provide the EPA with an annual report detailing violations of established MCLs by operating PWSs.

The *1996 Amendments to the SDWA* require that every community water system provide its customers with a brief and annual water-quality report. A system's *Consumer Confidence Report* (CCR) should explain the nature of any violation, its potential health effects, and the steps being taken to correct the violation. The CCRs often include educational material and also provide information related to the *Source Water Assessment Program*.

2.5.2.5 Mississippi Department of Environmental Quality

The reporting period for the MDEQ data is 1990 through 2012. A total of 1,636 wells were sampled among Mississippi's major aquifers for Nitrate (NO_3), Soluble Organic Compounds (SOCs), and Volatile Organic Compounds (VOCs). The reported parameters include those specifically requested by the EPA for the 305(b) Report and the only MCL violation for a public-water system was for fluoride (currently monitored quarterly).

2.5.2.6 Potential Sources of Contamination

The primary sources of groundwater contamination in Mississippi typically can be traced to leaking underground storage tanks (USTs) holding petroleum-based products and faulty septic systems. Another problem of note in areas of the State where petroleum exploration and production have been prevalent is localized brine (saltwater) contamination of shallow aquifers. Many of the past problems associated with the oil and gas industry have been corrected with the adoption of more stringent state regulations. Groundwater contamination involving hazardous waste has been detected at various commercial and industrial facilities across the State as well. These facilities often cover such relatively large tracts of land that the associated contamination plumes are contained within their property boundaries.

Chapter 3: Mississippi's NPS Management Program

3.1 Administration

The MDEQ, Office of Pollution Control (OPC) serves as the lead agency in Mississippi for water-quality management. Therefore, OPC through its respective Surface Water Division (SWD) and its NPS Management Branch, is responsible for the development and implementation of the State's NPS Management Program. To do this, OPC performs several key administrative functions to ensure statewide implementation of NPS initiatives. These functions include:

A.) Budget and Contract Administration: This is a key activity as many implementation activities are handled through sub-grants with other agencies. This task includes overseeing 1) sub-grant preparation, 2) sub-grant negotiation and signing, and 3) budget oversight. Tracking of specific outputs required in these sub-grants and their budgets as well as budgets of MDEQ entities that play a part in the NPS *§319* Program is a major function of the Program Administration. As such, the Chief of the NPS Management Branch ensures coordination with the OPC Grants Coordinator and Accounting Personnel.

B.) Overall Program Oversight: Oversight is provided by the SWD Chief within OPC to ensure that the targeted activities and milestones outlined in the NPS Management Program are achieved. This is accomplished by 1) tracking all MDEQ activities related to the NPS *§319* Program as well as those identified for other state and federal agencies and organizations; and 2) by providing direction and ensuring coordination among the NPS Management Branch, the Basin Management Branch, and the Standards, Modeling, and TMDL Branch.

C.) Program Support: The SWD provides administrative and secretarial support to the NPS Management Branch.

D.) Computer, Data Processing and Integration Support: The MDEQ Data Integration Division (DID), a part of OPC, supports the NPS *§319* Program by ensuring that the necessary computer equipment, software, and technical support is provided to the NPS Management Branch.

The SWD Chief is responsible for managing five branches: 1) the NPS Management Branch; 2) Basin Management Branch (the latter includes the Basin Teams that, in turn, include the Basin Coordinators); 3) the Modeling, and TMDL Branch; 4) The Water Quality Standards Branch; and 5) the Construction Branch (SRF Loan Program). The SWD Chief provides administrative management support to all SWD branches and key programs. Involvement at the administrative level in these key programs facilitates coordination and encourages the successful integration and implementation of the NPS Management Program initiatives into water-quality improvement efforts within the State. The SWD Chief also serves on various ad-hoc committees within other water-quality related programs. This role on these committees ensures input from the State regarding specific NPS problems affecting all of its water bodies. The SWD Chief coordinates closely with the Mississippi Department of Wildlife, Fisheries, and Parks, the Mississippi Department of Marine Resources, and the US National Oceanic and Oceanographic

Administration (NOAA) on the development and execution of the Coastal Zone Amendments Reauthorization Act (CZARA)-Coastal Nonpoint Source Pollution Control Program.

3.2 Overview of Mississippi Efforts to Control NPS Pollution

MDEQ initiated its first watershed planning activities (then called basin plans) in compliance with the requirements of *Section 303 (e) of the Federal Clean Water Act* (CWA) in the early 1970s. The next major planning activity was through *Section 208* of the CWA. *Section 208* required that the State prepare planning documents on an area wide basis. These planning documents were produced in the early 1980s.

With the passage of the *CWA of 1987*, the State had to comply with NPS provisions as stated in §*319*. A state-wide NPS assessment document and a management plan was developed and approved by the Environmental Protection Agency. The State's NPS Management program was approved in August, 1989, and funding for implementation in April, 1990. To date, the MDEQ has been successful in securing 23 annual grants from the EPA to run its NPS program. The funds of these grants were utilized to implement a variety of NPS projects that included: 1) watershed protection and restoration, 2) monitoring and assessment, 3) best management practice demonstrations and 4) several educational and public outreach activities.

The State's NPS Management Plan incorporates a strategy for the management and abatement of NPS pollution and relies on statewide- and targeted-watershed approaches. These approaches are implemented to address serious challenges that impact agriculture, industry, recreation, and public water supplies. The challenges include issues related to: 1) conservation and management of water resources that affect both water quantity and quality; 2) nutrient enrichment of water bodies by phosphorus and nitrogen that deplete oxygen thus endangering fish and other aquatic organisms; 3) excess sediment entering water bodies and 4) public awareness and understanding of NPS pollution and means for its control. These issues must be addressed by multiple federal, state, and local agencies and other stakeholders. The issues also must be addressed by what the USEPA has defined as the *Eight Key Components of a Management Plan*.

The NPS Program continues to be implemented in cooperation with several agencies, organizations, and groups at all levels of government and in the private sector. A great focus is given to activities that promote consensus building and partnering to increase the overall effectiveness of the State's NPS Program.

The State's NPS Program Strategy described in Chapter 4 will be implemented to meet the long-term goals of the program and fulfill EPA's *Eight Key Components of a Management Plan.*

3.3 Eight Key Components of a Management Plan

In 2012, EPA amended the §319 program guidance outlining nine key elements contained in EPA's *1997 Guidance for Section 319(h) Grants*. The EPA-state workgroup that developed these latest components condensed them from nine to eight key components. Outlined below are the eight key elements. Appendix A provides a complete reference of the Eight Key Components, which include:

1. The state program contains explicit short- and long-term goals, objectives and strategies to restore and protect surface water and ground water, as appropriate.

2. The state strengthens its working partnerships and linkages to appropriate state, interstate, tribal, regional, and local entities (including conservation districts), private sector groups, citizens groups, and federal agencies.

3. The state uses a combination of statewide programs and on-the-ground projects to achieve water quality benefits; efforts are well-integrated with other relevant state and federal programs.

4. The state program describes how resources will be allocated between (a) abating known water quality impairments from NPS pollution and (b) protecting threatened and high quality waters from significant threats caused by present and future NPS impacts.

5. The state program identifies waters and watersheds impaired by NPS pollution as well as priority unimpaired waters for protection. The state establishes a process to assign priority and to progressively address identified watersheds by conducting more detailed watershed assessments, developing watershed based plans and implementing the plans.

6. The state implements all program components required by section 319(b) of the Clean Water Act, and establishes strategic approaches and adaptive management to achieve and maintain water quality standards as expeditiously as practicable. The state reviews and upgrades program components as appropriate. The state program includes a mix of regulatory, nonregulatory, financial and technical assistance, as needed. In addition, the state incorporates existing baseline requirements established by other applicable federal or state laws to the extent that they are relevant. For example, those programs required by § 6217 of the Coastal Zone Act Reauthorization Amendments (CZARA) of 1990 will be integrated into, and be consistent with the state's §319 program.

7. The state manages and implements its NPS management program efficiently and effectively, including necessary financial management.

8. The state reviews and evaluates its NPS management program using environmental and functional measures of success, and revises its NPS management program at least every five years.

3.4 Program Integration, Consensus Building, and Partnering

The NPS Program continues to be implemented in cooperation with several agencies, organizations, and groups at all levels of government and in the private sector. A great focus is given to activities that promote consensus building and partnering to increase the overall effectiveness of the State's NPS Program. One key partnership to increase this overall effectiveness is with the USDA Natural Resources Conservation Service (NRCS). MDEQ and NRCS have recently signed a three-year $600K per year memorandum of agreement (MOA). This is just one example of a partnership with another agency. Over the years, MDEQ has entered into Memoranda of Agreement with eight of our Federal and State Partners. Each partnership is described below. The NPS Management Program also implements a strategy that

targets priority watersheds. Prioritization of these watersheds is done by multi-agency teams in the Basin Management Approach (BMA). This BMA strategy is described below.

3.4.1 Basin Management Approach to Water Quality Management

The *NPS Management Program* implements a strategy that targets priority watersheds. Prioritization of these watersheds is done by multi-agency teams in the *Basin Management Approach* (BMA). The mission of the BMA is to foster stewardship of Mississippi's water resources through collaborative watershed planning, education, protection, and restoration initiatives. To accomplish this, ten (10) of Mississippi's major river basins have been organized into four basin groups. Each basin group uses multiple forums to effectively implement the BMA. Typically, these include *Basin Teams* and *Watershed Implementation Teams*:

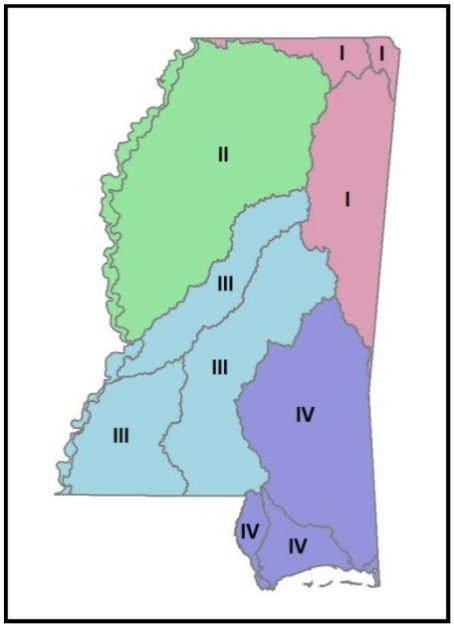


Figure 10 Map of Basin Groups

- *Basin Teams* – A basin team provides a forum for state/federal agencies, and national/statewide/regional conservation organizations to work together to identify/discuss their water resource priorities; identify collaboration opportunities; and discuss ways to leverage available resources to address their mutual concerns. Each Basin Team is led by a MDEQ Basin Coordinator.

- *Watershed Implementation Teams* – A local watershed implementation team works on the local level to provide public access, input, and participation into the BMA process. Local watershed teams build capacity by involving local governmental organizations, non-governmental organizations, and local citizens in their efforts. Each local watershed team is led by a designated member of the team. MDEQ staff from the Basin Management and Nonpoint Source Branches support the activities of local watershed teams and serve as liaisons between local watershed teams and basin teams.

One of the greatest benefits of using a BMA is that MDEQ program managers are able to coordinate efforts among themselves and with stakeholders and personnel in other agencies. Significant effort is exerted by program managers and staff to ensure that management efforts maximize efficiency and effectiveness while providing for regulatory consistency and equitability. The coordinating features of the BMA provide the means for all MDEQ and other agencies and programs to join in joint management efforts where needed. The forums established under this approach are designed to ensure broad involvement from federal, state, and local agencies and private organizations, citizen groups, associations, etc. This promotes the proper identification and prioritization of water-quality issues and consensus building on a statewide and watershed level.

Limited resources require the targeting of work efforts in order to obtain maximum benefit. Planning on a basinwide scale is consistent with basic ecological principles of watershed management. It allows the coordination of implementation activities so that all actual and potential impacts on water quality can be evaluated. Both nonpoint and point source impacts can be evaluated when making water-quality protection decisions. Problem areas located in a particular drainage area can be identified and existing and potential contributors can be examined. In addition, identifying sensitive resource areas should help prevent future ecological impacts and promote sound economic planning. Watershed-based Plans (WBPs) identify water resource issues/concerns and potential solutions to reduce and/or prevent NPS pollution and restore designated uses in a watershed. Watershed projects funded under §319 directly implement a WBP addressing the *"9 Key Elements" for Watershed-Based Plans*. The State of Mississippi has developed many WBPs (formerly called Watershed Implementation Plans or WIPs) for implementation by local Watershed Implementation Teams (WIT) to reduce NPS pollution and to improve water quality/quantity. Many of these WIPs are listed below:

Basin Group I (Tennessee River, Tombigbee River, and North Independent Streams)

- NI Muddy Creek WIP (12-5-2012)
- NI Tarebreeches Creek WIP (12-5-2012)
- TB Buttahatchee River WIP (4-6-2004)
- TB Luxapallila River WIP (4-6-2004)
- TN Pickwick Lake WIP (5-12-2010)

Basin Group II (Yazoo River)

- Bear Creek WIP (8-10-2007)
- Bee Lake WIP (6-30-2006)
- Coldwater River WIP (4-10-2013)
- Deer Creek WIP (3-20-2008)
- Harris Bayou WIP (2-8-2011)
- Hickahala Creek WIP (8-10-2009)
- Lake Washington WIP (4-8-2009)
- Porter Bayou WIP (2-8-2011)
- Steele Bayou WIP (7-24-2009)
- Wolf/Broad Lake WIP (7-22-2009)

Basin Group III (Pearl River, Big Black River, and South Independent Streams)

- BB Bogue Chitto Creek WIP (4-7-2004)
- BB Fourteen Mile –Bakers Creek WIP (3-18-2009)
- PL Fannegusha Creek WIP (2-5-2009)
- PL Magees Creek WIP (4-9-2007)
- PL Mill Creek Watershed Remediation Plan (10-11-2005)
- PL Ross Barnett Reservoir Initiative Protection and Restoration Plan (10-31-2011)

Basin Group IV (Pascagoula River, Coastal Streams, and Lower Pearl River)

- CS Old Fort Bayou Watershed Action Plan (2007)
- CS Red Creek Action Plan (2007)
- CS Tchoutacabouffa River Action Plan (2007)
- CS Turkey Creek WIP (2-2-2010)
- CS Upper Bayou of St. Louis Action Plan (2007)
- CS West Boley Creek Action Plan (2007)
- CS Wolf River WIP (2-26-2010)
- PA Chunky River-Okatibbee Lake WIP (1-30-2009)

Another coordination tool developed through the BMA is the Citizen's Guides to Water Quality for various river basins. Citizen's Guides to Water Quality provide information on: Mississippi's abundant water resources; natural features, human activities, and water quality in a particular river basin; the importance of a healthy environment to a strong economy; watersheds targeted for water quality restoration and protection activities; how to participate in protecting or restoring water quality; and who to contact for additional information. Listed below are links to the following Citizen's Guide:

- Citizen's Guide to Water Quality in the Coastal Streams Basin
- Citizen's Guide to Water Quality in the Pascagoula River Basin
- Citizen's Guide to Water Quality in the Pearl River Basin
- Citizen's Guide to Water Quality in the Tombigbee and Tennessee River Basins
- Citizen's Guide to Water Quality in the Yazoo River Basin

3.4.2 **Memoranda of Agreements**

The NPS Program is strengthening its working partnerships and linkages to appropriate state, interstate, tribal, regional, and local entities including conservation districts, private sector groups, citizen groups, and federal agencies. In addition to utilizing the existing forums in the BMA, the State is using and establishing a variety of formal and less formal partnerships on both a watershed and a statewide basis. Over the years, MDEQ has entered into memoranda of agreements with eight of our Federal and State Partners. There are several other less formal working partnerships, committees, and task forces described later in this chapter. Each formal partnership is described below and the Memoranda of Agreements may be viewed in Appendix D.

United States Forest Service
A memorandum of agreement between the National Forests in Mississippi and MDEQ was entered into in February, 1990 and addresses nonpoint source management on National Forest Lands in the State.

Natural Resources Conservation Service (NRCS)
A memorandum of agreement between the USDA NRCS and MDEQ was entered into in April, 2012. The purpose of this MOA is to leverage available resources to conserve, restore, and enhance the environment for healthy and resilient Mississippi waters and coastal Gulf of Mexico water. Currently, MDEQ and NRCS, along with other partners, are leveraging opportunities through the *Mississippi River Basin Healthy Watersheds Initiative* (MRBI), the *Gulf of Mexico Initiative* (GOMI) and several §319 projects. This partnership effort has helped establish the regional and national leadership role that the State is taking in solving the water-quality problem from excess nutrient loadings to State waters and the Gulf.

Center of Excellence for Watershed Management
A memorandum of agreement between US EPA Region 4 and MDEQ and Mississippi State University {as the managing entity of the MS Water Resources Research Institute (MWRRI)} was entered into in April of 2013. With this Memorandum of Agreement, MWRRI is designated a *Center of Excellence for Watershed Management*. The terms of the agreement apply to training and technical assistance to build the capacity of local stakeholders committed to improving and maintaining the natural and economic resources of their watersheds.

United States Geological Survey (USGS)
A memorandum of agreement between the USGS and MDEQ was executed in October 2012. With this agreement, both parties agreed, subject to availability of appropriations and in accordance with their respective authorities, the following cooperative activities: 1) the development of monitoring plans; 2) the maintenance of quality-assurance project plans; 3) the execution of monitoring efforts pursuant to the monitoring plans; 4) the analysis of available data to determine the effectiveness of water-quality improvement practices in individual basins; and 5) nutrient sampling and flow monitoring in those watersheds where nutrient-reduction efforts are being planned and implemented.

State, Federal, and Non-government Organizations (NGOs) Mississippi Nutrient Reduction MOA
A memorandum of agreement between certain State and Federal Agencies and NGOs in the State was entered into in October, 2010. Signatories agreed to continue to work together to collaboratively support the development and implementation of nutrient-reduction strategies to benefit the quality of In-State waters and the Gulf of Mexico. Additionally, the parties agreed to work to identify and pursue opportunities to leverage available resources to implement those strategies, where possible.

Mississippi Soil and Water Conservation Commission (MSWCC)
A memorandum of agreement between the MSWCC and MDEQ was entered into in March of 1997. Under this agreement, MDEQ and MSWCC will communicate and coordinate directly with each other on matters related to the planning and implementation of agricultural nonpoint-source activities/projects in the State.

Yazoo-Mississippi Delta Joint Water Management District (YMD)

A memorandum of agreement between the YMD Joint Water Management District and MDEQ was entered into in June, 2000. The YMD was established to provide leadership in responding to water-resource needs and management programs in the Delta. With this agreement, both MDEQ and YMD will support and participate in water-resource program activities. As such, both agencies will do all things necessary within the scope of these activities, to avoid duplication of services, benefits, programs, projects, plans, and functions with the State or Federal government.

Mississippi Department of Health (DOH)
A memorandum of agreement between the Mississippi DOH and MDEQ was entered into in November, 1997. By this agreement, DOH and MDEQ are in compliance with a State legislative mandate to enter into a memorandum of agreement which clearly defines the jurisdiction of each department with regard to wastewater disposal and the procedures for interdepartmental interaction and cooperation.

3.4.3 **NPS-related Committees, Task Forces and Work Groups**

One valuable aspect to the success of program integration, consensus building, and partnering within Mississippi's NPS Management Program includes participation by many of our staff on external committees, task forces, and work groups listed below:

3.4.3.1 National Level

Association of Clean Water Administrators (ACWA)
Founded in 1961, originally known as the Association of State and Interstate Water Pollution Control Administrators, ACWA is a national, nonpartisan professional organization. Association members are the State, Interstate and Territorial officials who are responsible for the implementation of surface-water protection programs throughout the Nation.

In addition to serving as a liaison among these officials, the Association facilitates their communication with the Federal government and promotes public education.

Representatives from MDEQ serve as the State's Point of Contact and serve on the Total Maximum Daily Load (TMDL) subcommittee, and on the §319 NPS Advisory Committee

American Council of Engineering Companies (ACEC)
The ACEC is the voice of America's engineering industry. Council members – numbering more than 5,000 firms representing more than 500,000 employees throughout the country – are engaged in a wide range of engineering works that propel the Nation's economy, and enhance and safeguard America's quality of life. These engineering works allow Americans to drink clean water, enjoy a healthy life, take advantage of new technologies, and travel safely and efficiently. The Council's mission is to contribute to America's prosperity and welfare by advancing the business interests of member firms. Representatives from MDEQ participate on the council and serve as Judges of Annual Engineering Awards.

Environmental Law Institute (ELI)
The ELI makes law work for people, places, and the planet. ELI's Vision calls for "a healthy environment, prosperous economies, and vibrant communities founded on the rule of law." What ELI does to help guide society toward that vision is described in its mission statement: ELI fosters

innovative, just, and practical law and policy solutions to enable leaders across borders and sectors to make environmental, economic, and social progress.

As part of its Water Quality Program, ELI examines use of the TMDL program to address numerous pollutants. A representative from MDEQ participates in the TMDL workgroup.

American Water Works Association (AWWA)

Established in 1881, the AWWA is the largest nonprofit, scientific and educational association dedicated to managing and treating water, the world's most important resource. With approximately 50,000 members, AWWA provides solutions to improve public health, protect the environment, strengthen the economy, and enhance our quality of life. MDEQ has a representative within the AWWA to serve as the State's point of contact.

Coastal States Organization (CSO)

The CSO was established in 1970 to represent the Governors of the Nation's 35 coastal states, commonwealths, and territories on legislative and policy issues relating to the sound management of coastal, Great Lakes and ocean resources. Economically, socially, and geographically, the states are as diverse as their individual coastlines, yet their commitment to common objectives in coastal and ocean management is what shapes CSO's unique character. By speaking with "one voice" through the CSO, states are more influential than by acting individually. A representative from MDEQ serves as a CSO Point of Contact.

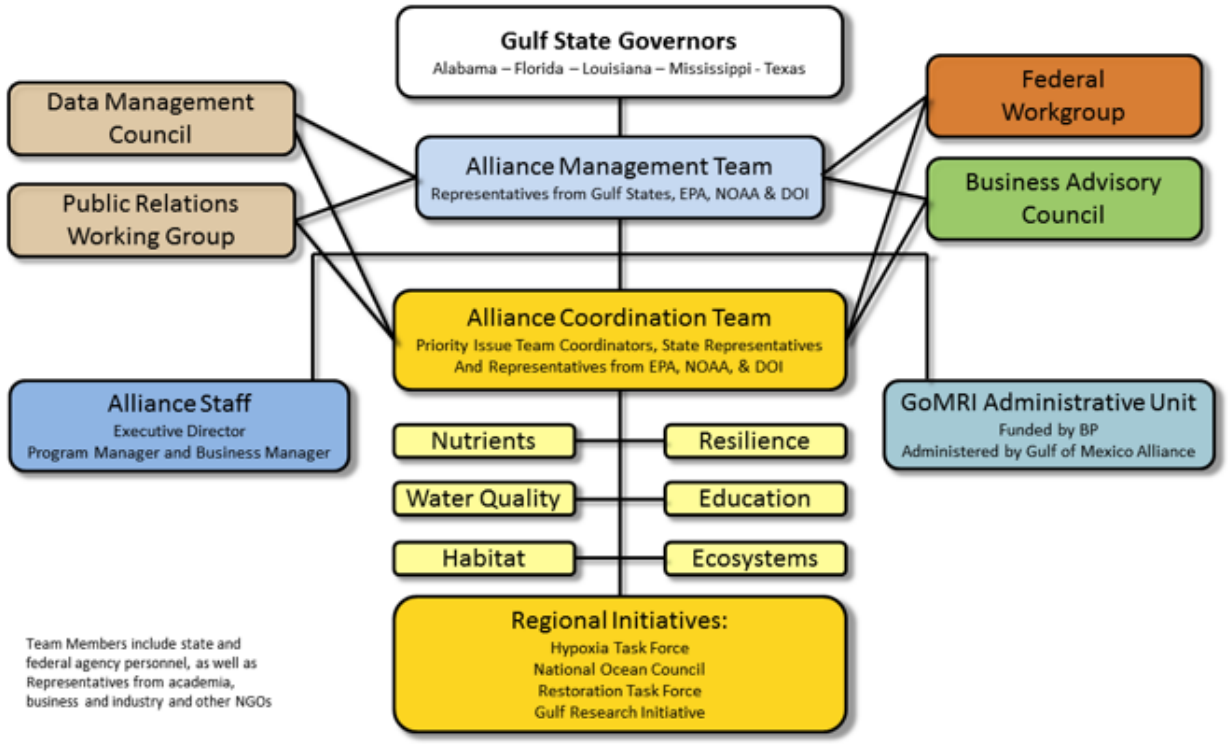
3.4.3.2 Regional Level

Mississippi River/Gulf of Mexico Watershed Nutrient (Hypoxia) Task Force

The Mississippi River/Gulf of Mexico Watershed Nutrient (Hypoxia) Task Force (hereafter called Task Force) consists of five federal agencies, 12 states, and the tribes within the Mississippi/Atchafalaya River Basin (MARB). The Task Force was established in 1997 to reduce and control hypoxia in the Gulf of Mexico. Since then, the Task Force has undertaken a variety of efforts to achieve these goals. The *2008 Action Plan* and *2009 Annual Operating Plan* were released on June 16, 2008 as a national strategy and a roadmap to reduce hypoxia in the Gulf of Mexico and improve water quality in the MARB. Member agencies of the Task Force have made progress toward reducing nutrients in the MARB and will continue to do so, implementing actions in the 2008 *Action Plan* and the *Annual Operating Plans*. Representatives from MDEQ serve on the Hypoxia Task Force Coordinating Committee and Goals Committee.

Gulf of Mexico Alliance (GOMA)

The GOMA is a partnership of the five Gulf States, federal agencies, academic organizations, businesses, and other non-profit organizations (NGOs) in the region. Their goal is to significantly increase regional collaboration to enhance the environmental and economic health of the Gulf of Mexico. The Governors of the five Gulf States identified six ***priority issues*** (see this hyperlink) that benefit from regional collaboration. With support from state and federal agencies, academic organizations, NGOs, and businesses in the region, GOMA ***Partners*** (see this hyperlink) work collaboratively on teams to address the region's priorities in ways that a single entity cannot. Staff members of MDEQ serve in on various teams within the GOMA including: Alliance Management, Alliance Coordination, and each of the Priority Issue Teams.



Gulf of Mexico Program (GMP)

The GMP was initiated in 1988 by the U.S. Environmental Protection Agency (EPA) as a non-regulatory program. Founded on the threefold principles of partnership, science-based information, and citizen involvement, the GMP joined the Great Lakes and Chesapeake Bay Programs as flagships of the Nation's efforts to apply an adaptive management approach to large coastal freshwater and marine ecosystems. The mission of the program is to facilitate collaborative actions to protect, maintain, and restore the health and productivity of the Gulf of Mexico in ways consistent with the economic well-being of the region. A representative from MDEQ serves on the GMP Modeling Subcommittee. The purpose of the subcommittee is to coordinate efforts, e.g., sharing information; making recommendations and; providing assistance on monitoring, modeling, and research issues in the Gulf of Mexico ecosystem.

Natural Resource Damage Assessment (NRDA)

The Oil Pollution Act authorizes certain federal agencies, states, and Indian tribes—collectively known as natural resource trustees—to evaluate the impacts of oil spills, ship groundings, and hazardous substance releases on natural resources. These trustees are responsible for studying the effects of the spill through a process known as NRDA. As part of this process, scientists work together with the responsible party to identify potential injuries to natural resources and public uses that are lost because of the spill. Representatives from MDEQ serve on the *Shoreline Technical Workgroup (State Lead)* and on the *Restoration Monitoring Subgroup*.

Gulf Coast Ecosystem Restoration Council

The *RESTORE Act* established a Gulf Coast Ecosystem Restoration Council (hereafter called the Council), which is comprised of governors from the five affected Gulf States, the Secretaries from

the U.S. Departments of the Interior, Commerce, Agriculture, and Homeland Security as well as the Secretary of the Army and the Administrator of the U.S. Environmental Protection Agency. The Gulf States recommended and President Obama appointed the Secretary of Commerce as the Council's Chair. The MDEQ Executive Director serves on the Council.

3.4.3.3 State Level

Mississippi Water Resources Research Institute (WRRI)

The Mississippi WRRI provides a statewide center of expertise in water and associated land-use and serves as a repository of knowledge for use in education, research, planning, and community service. The WRRI goals are to: 1) serve public and private interests in the conservation, development, and use of water resources; 2) provide training opportunities in higher education whereby skilled professionals become available to serve government and private sector alike; 3) assist planning and regulatory bodies at the local, state, regional, and federal levels; 4) communicate research findings to potential users in a form that encourages quick comprehension and direct application to water related problems; 5) assist state agencies in the development and maintenance of a state water-management plan; and 6) facilitate and stimulate planning and management that:

- Deals with water policy issues
- Supports the State water agencies' mission with research on problems encountered and expected
- Provides water planning and management organizations with tools to increase efficiency and effectiveness of water planning and management

A representative from MDEQ serves on the Board of WRRI.

Mississippi's Nutrient Technical Advisory Group (TAG)

Mississippi's Nutrient TAG (hereafter called the TAG) is composed of representatives from various state and federal agencies as well as academic experts who provide expertise in the fields of freshwater and marine aquatic ecology, nutrient biogeochemistry, nutrient management, water-quality engineering and modeling, and water-quality standards and criteria development.

The mission of the TAG is to provide regional knowledge and technical guidance to MDEQ during the process of developing numeric nutrient criteria. Issues addressed by the TAG include items such as:

- Helping develop the analytical approach and process;
- Providing input on the scientific defensibility of proposed methods;
- Recommending additional methods or analyses;
- Providing input on available data and recommending additional potential sources;
- Providing input of the defensibility of the analyses and/or the conclusions drawn from the analyses; and
- Recommending additional analyses, corrections, or modifications to strengthen the scientific defensibility.

The MDEQ leads the Nutrient TAG.

Mississippi State University Biomass BMP Advisory Group
Woody biomass is defined as low-value tree material that cannot be sold for the production of either timber or pulp and is generally composed of small trees, logging residue, large limbs, and tops. The interest in woody biomass as a sustainable bioenergy source has led many states to develop BMP literature pertaining to the subject. The purpose of the *Biomass BMP Advisory Group* is to develop a biomass BMP section to supplement the State's *BMP Manual for Forestry*. The group is composed of representatives of both government and non-government organizations including: Mississippi Logging Association, Mississippi Forestry Association, Mississippi Forestry Commission, Mississippi Department of Environmental Quality, Sustainable Forestry Initiative, Mississippi Implementation Committee, Delta Council, Mississippi Farm Bureau Federation, Forest Guild, and the Nature Conservancy. Representatives from MDEQ serve on the BMP technical committee.

Natural Resources Conservation Service (NRCS) Technical Committee
Pursuant to *§1446 of the 1990 Farm Bill*, the NRCS within Mississippi established a *State Technical Committee* to provide advice for technical considerations and technical guidelines necessary to implement conservation provisions of *Farm Bill* legislation. The NRCS State Conservationist chairs the committee. Additionally, the *State Technical Committee* provides recommendations on a number of issues within a variety of NRCS conservation programs. Although the *State Technical Committee* has no implementation or enforcement authority, the USDA gives consideration to the Committee's recommendations. Mississippi's *State Technical Committee* is composed of individuals (including those from MDEQ) and groups who represent a diverse assembly with interests in a variety of natural resource sciences and occupations.

Mississippi Department of Health (MSDH) Drinking Water State Revolving Funds (SRF)
Pursuant to the *Safe Drinking Water Act (SDWA) Amendments of 1996*, State Revolving Funds for Drinking Water are authorized to assist public water systems to finance the costs of infrastructure needed to achieve or maintain compliance with SDWA requirements and to protect public-health objectives of the Act. In addition to authorizing the infrastructure fund, the *SDWA Amendments* also establish a strong new emphasis on preventing contamination problems through source water protection and management of enhanced water systems. That emphasis transforms the previous law from a largely "after-the-fact" regulatory-oriented program into a statute that can provide for the sustainable use of water. A representative from MDEQ serves on the *MSDH Drinking Water SRF Board*.

Mississippi Department of Health (MSDH) Onsite Wastewater Council
The goal of the *On-Site Wastewater Program* is to reduce the potential for the spread of disease through improper treatment and disposal of human waste. Potential contamination of ground and surface waters is both an environmental and public-health concern. Proper disposal of wastewater is critical as the population expands in rural areas of our State. The *Wastewater Advisory Board* was created in April 2011 for the purpose of advising the MSDH regarding Individual On-site Wastewater Disposal Systems. As of July 1, 2013, this board is referenced as the *Wastewater Advisory Council*. Representatives from MDEQ serve on this council.

Mississippi Resource Conservation and Development (RC&D) Councils

Mississippi has seven RC&D Councils in various regions of the State that are currently functioning as nonprofit organizations. The councils work with local citizens to improve communities by exploring opportunities for community growth, development, and seeking solutions to problems. The councils are able to administrate contracts, conduct workshops, and carry out activities that protect our precious natural resources and improve the quality of life for the citizens of Mississippi. A staff member from MDEQ serves on the advisory board of the Central Mississippi RC&D Council.

Mississippi Urban Forestry Council (MUFC)

The MUFC is a volunteer-based nonprofit organization formed in 1991 pursuant to the *US Farm Bill* to provide education and assistance in community and urban forestry. Their mission is to foster and promote proper management of urban and community forests for social, economic, and environmental benefits to citizens through innovative leadership, communication, and educational services. A representative from MDEQ serves on the MUFC Advisory Board.

Mississippi Environmental Education Alliance (MEEA)

The mission of the MEEA is to actively encourage and support the education, philosophy, and ethics of environmental awareness and literacy for the citizens of Mississippi. It promotes environmental education and supports the work of environmental educators in Mississippi. Further, MEEA encourages the adoption of earth-friendly lifestyles leading to the sustainability of natural and cultural resources. Representatives from MDEQ serve on the MEEA Advisory Board.

Mississippi Wildlife Federation (MWF)

The MWF is the largest network of conservationists in the State. They are a federation of individuals, businesses, and organizations committed to natural resource conservation, environmental quality, hunting, fishing, and other outdoor recreation in Mississippi. They are a citizen's organization, not a state or federal agency. Their mission is simple, "To conserve Mississippi's natural resources and protect the State's wildlife legacy." A representative from MDEQ serves as a board member of this organization.

Mississippi Adopt- A-Stream (AAS) Program

Adopt-A-Stream Mississippi is a cooperative effort between the MWF noted above and the MDEQ to involve citizens in stream stewardship and water-quality monitoring. The common theme of the AAS program is caring for and learning to conserve our water resources. *Adopt-A-Stream* promotes environmental stewardship through training workshops, outdoor field activities and by introducing participants to watershed-action projects.

Mississippi Envirothon High School Competition

The *Mississippi Envirothon High School Competition* (hereafter called *Envirothon*) is part of a national program for high school students designed to educate and challenge young people in the environmental fields of aquatic biology, wildlife biology, forestry, soil science, and a special topic each year. Such topics include: NPS pollution, estuaries, green infrastructure, and sustainable agriculture. Combining in-class curriculum with hands-on field experiences, *Envirothon* demonstrates the role in which citizens share in important environmental issues such as forestry,

wildlife management, water quality, and soil erosion. The MDEQ is the primary sponsor of *Envirothon*. MDEQ representatives play a major role in training *Envirothon*-team members and their sponsors by conducting training programs.

Mississippi Project Learning Tree (PLT)
Project Learning Tree® is a program of the *American Forest Foundation* whose mission is to advance and promote environmental literacy and stewardship through excellence in environmental education, professional development, and curriculum resources that use trees and forests as windows on the world. The program provides educators with resources that can be integrated into lesson plans relative to the above mission for all grades and subject areas. A representative from MDEQ serves on the Advisory Board of the *PLT*.

Mississippi Native Plant Society
The *Mississippi Native Plant Society* was formed in 1980 to provide a forum for learning about our State's ecosystems and the plants that exist within them. Their goal is to provide educational opportunities and to encourage the conservation and utilization of native plants. A representative from MDEQ is a member of and contributor to the *Mississippi Native Plant Society*.

3.4.3.4 Local Level

Mississippi Delta Sustainable Water Resources Task Force (Task Force)
The MDEQ started the *Delta Sustainable Water Resources Initiative* in November 2011 to address the water-resource challenges facing the Delta. The goal of this initiative is to restore/protect water resources in the Delta by managing every drop of water effectively and efficiently. The initiative includes innovative processes of storing water when it is plentiful and using the stored water when it is not. This goal is done, in part, by pursuing all alternative water sources.

As a result of the above initiative, *The Mississippi Delta Sustainable Task Force* (hereafter called Task Force) was created to: 1) develop short-term and long-term approaches; 2) support the economic viability of agriculture; and 3) assure the viability of wildlife and fisheries. The Task Force provides a forum for obtaining input from the Delta stakeholders. The Task Force includes representatives from a multitude of federal, state, and local agencies and stakeholders. The Task Force contains three working groups identified below:

- **Conjunctive Water Management Work Group** was established to develop the *Path Forward Concept* by using a comprehensive, collaborative, coordinated and integrated approach for effective water management and sustainable water resources in the Delta.
- **Metering Work Group** was established to promote the *Voluntary Metering Program* for agricultural wells in the alluvial aquifer to gather better information regarding crop use.
- **Education & Outreach Work Group** was established to formulate awareness, outreach, education, and training programs to reach landowners and producers in the Delta. Stakeholder engagement in conjunctive water management is absolutely essential for effective water management and sustainable water resources in the Delta.

Pascagoula River Basin Alliance

The mission of the *Pascagoula River Basin Alliance* is to promote the ecological, economic and cultural health and viability of the Pascagoula, Leaf, Chickasawhay, and Escatawpa Rivers and their watersheds by fostering research, communication, and action. The *Pascagoula River Basin Alliance* is a diverse group of stakeholders, including individuals, non-profit agencies, industry, and government agencies. This alliance will: 1) promote continued conservation of naturally functioning ecosystems; 2) foster scientific research for a greater understanding of natural processes; 3) encourage public enjoyment and understanding of natural resources and their values; and 4) work with communities to explore opportunities for sustainable economic growth. A representative from MDEQ serves on the *Pascagoula River Basin Alliance*.

East Mississippi Foothills Land Trust (EMFLT)

The mission of EMFLT is to conserve, promote, and protect the open spaces and green places with ecological, cultural, or scenic significance in eastern Mississippi. The EMFLT is taking steps to preserve our wonderful State's resources for future generations. The key to successful preservation is working with landowners to preserve the streamside habitat, diverse wildlife, and water quality of the water resources in eastern Mississippi. A representative from MDEQ works with the EMFLT.

Wolf River Conservation Society

The *Wolf River Conservation Society* is a local, grassroots organization dedicated to the preservation, conservation, management, and protection of the Wolf River and its watershed, from its headwaters in Lamar County to its mouth at the Bay of St. Louis, Mississippi. Considering this watershed's diverse wildlife habitat, its clean water and scenic beauty, members of the *Wolf River Conservation Society* want to protect this beautiful area for future generations to enjoy. Since 1998, the *Wolf River Conservation Society* has protected over 21 miles of the river. The Society has a memorandum of understanding with the *Land Trust for the Mississippi Coastal Plain* to protect natural and scenic areas of the Wolf River Watershed. A representative from MDEQ participates as a member of the *Wolf River Conservation Society*.

Keep the Reservoir Beautiful (KRB)

Keep the Reservoir Beautiful is a nonprofit organization whose focus is the Ross Barnett Reservoir. It is dedicated to litter cleanups, beautification, and recycling promotion. *Keep the Reservoir Beautiful* strives to reduce waste, prevent litter, and improve the Reservoir communities that lie adjacent to it. It is an affiliate of *Keep America Beautiful, Inc*. and *Keep Mississippi Beautiful*. A representative from MDEQ serves as a Board Member of KRB.

Barnett Reservoir Foundation

The *Barnett Reservoir Foundation* (hereafter called The Foundation) is a non-profit organization and was founded to assist the *Pearl River Valley Water Supply District* (PRVWSD) in promoting recreation and interest in the Ross Barnett Reservoir for businesses and families. The Foundation raises funds for projects to enhance and improve the quality of life for residents and provide recreational opportunities for visitors. A representative from MDEQ serves on the Foundation.

Bear Creek Watershed Initiative (BCWI)
The *BCWI* is a collaboration of federal, state, and nonprofit organizations committed to maintain and improve water resources in the Bear Creek Watershed. The *BCWI* provides a forum for communication, collaboration, and thoughtful planning among a broad partnership to improve water resources in the Bear Creek Watershed. A representative from MDEQ serves on the *BCWI* work group.

3.4.4 Public Input into the NPS Management Program

The NPS Program seeks public involvement from local, regional, state, interstate, tribal and federal agencies, and public interest groups, industries, academic institutions, private landowners and producers, concerned citizens and others, as appropriate. The NPS Management Program continues to build partnerships with these groups for purposes such as soliciting input into watershed planning, sponsoring and implementing projects, building relationships with local landowners, providing input on programmatic decisions, providing input on NPS documents, participating in TMDL development, disseminating informational and education materials. Stakeholder input is ensured by: 1) working with all basin team coordinators to incorporate relevant NPS agenda items during planned meetings of the basin teams and watershed groups; 2) participating in agency-sponsored advisory groups; and 3) working with interagency task forces.

Reliance on public input from various agencies and stakeholders is paramount to carrying out Mississippi's NPS Management Program. A key area for garnering public input into Mississippi's NPS Program is the *Basin Management Approach* (BMA) described in Section 3.4.1 above. This approach seeks to gather advice and input from numerous organizations and stakeholders to address the development and execution of Watershed Based Plans (WBPs) within ten of Mississippi's major river basins (Figure 14). This program is further described in Section 4.2 below. Another key area is nutrient criteria development. Nutrient criteria development has been emphasized particularly in the last few years and this program demonstrates the advantages of incorporating public involvement in the planning and execution of this program. This program is further described below in Section 4.2.5.

To summarize gaining public input into the NPS Program, it is MDEQ's desire to bring together a partnership composed of many and varied relevant entities and resources working together to:

1. Increase efficiency in meeting state water-quality standards and water-use benefits;
2. Prioritize and align NPS management processes, emphasizing a watershed-based management approach where sensible, practical methods are used to restore and protect the State's water-quality resources;
3. Resolve difficult and complex issues through voluntary and regulatory approaches;
4. Integrate resources and expertise to meet NPS programmatic goals, objectives, and milestones;
5. Achieve load reductions, e.g. Nitrogen, Phosphorous, and sediment, within priority watersheds of the State.

3.4.5 **Federal Consistency**

The Federal Consistency provisions in *§319* of the *CWA* authorize each state to review federal activities for consistency with that state's NPS management program. If the state determines that an application or project is not consistent with the goals and objectives of its NPS management program and makes its concerns known to the responsible federal agency, the federal agency must make efforts to accommodate that state's concerns or explain its decision to decline in accordance with *Executive Order (EO) 12372*.

Section 319 directs each state, as part of its NPS management program, to develop a list of the federal assistance programs and development projects, which it will review for consistency with that state's program. MDEQ will be responsible for conducting *§319* consistency reviews and will do so in accordance with the intergovernmental review process established by *EO 12372*. MDEQ will provide its list of the federal programs and projects which it will review to the State Clearinghouse. The State Clearinghouse will then route appropriate federal-project information to MDEQ for review.

Authority for MDEQ's *§319* consistency review of federal programs is found in the following provisions in *§319* of the CWA. *Section 319(b)(2)(F)* directs states to list federal assistance applications and development projects which they would like to review for consistency in their state management program. *Section 319(k)* directs federal agencies to "accommodate" the concerns of the state according to *EO 12372*. *EO 12372* specifies:

- In Section 1, that federal agencies must provide opportunities for state and local consultation on proposed federal financial assistance and development.

- In Section 2, that federal agencies communicate with the states according to their state processes and to do so as early as is "reasonably feasible."

- In Section 2(c), that states may develop their own processes to review and coordinate proposed federal financial assistance and development.

The federal agencies are then required to:

"Make efforts to accommodate state and local elected officials' concerns with proposed federal financial assistance and direct federal development that are communicated through the designated state process. For those cases where the concerns cannot be accommodated, federal officials shall explain the bases for their decision in a timely manner."

MDEQ has noted that in addition to *USDA Farm Bill* programs, EPA's *§303(d*) program and *State Revolving Fund* (SRF) programs, many other federal and state programs have goals in common with the *§319* program. Mississippi's activities to expand and update its State NPS management program in recent years have strengthened links with various federal and state programs. The wide array of ways in which *§319* funds may be used to support NPS management activities makes them well-suited to integration and coordination with other program funds, especially those limited to a specific set of activities such as BMP implementation. MDEQ will assure that its program integration can achieve the coordinated design and implementation of water-quality focused programs and projects that employ the resources, authorities, and expertise of all relevant programs.

To maximize effectiveness, the State will assure that a wide variety of programs continue to be well-integrated and support the implementation of its NPS management program to control NPS pollution. These include, but are not limited to:

- National Pollutant Discharge Elimination System (NPDES) point source program, particularly with respect to urban runoff, construction and development, and concentrated animal feeding operations (CAFO).
- Coastal nonpoint pollution control program developed under *§ 6217 of the Coastal Zone Act* Reauthorization Amendments of 1990 (CZARA); MDEQ is required by CZARA to implement this through its NPS management program.
- EPA's National Estuary Program (NEP), authorized under *§ 320 of the Clean Water Act*, that supports partnership efforts that develop and implement long-term EPA- approved Comprehensive Conservation and Management Plans and annual work plans to address NPS problems and other estuarine watershed challenges.
- Wetlands protection and restoration programs implemented under *§ 404 of the Clean Water Act* as well as pursuant to a variety of other federal authorities and programs;
- Source-water protection (including ground water) programs and Underground Injection Control Class V Well programs under *§§ 1421, 1428 and 1453 of the Safe Drinking Water Act*;
- Clean Lakes Program *(§ 314) of the Clean Water Act*.
- Mississippi/Gulf of Mexico Watershed Nutrient Task Force's Action Plan.
- Water Quality Management Planning grants funds under *Clean Water Act § 604(b)* and basin planning under *§ 303(e) of the Clean Water Act*.
- Efforts supported by *Clean Water Act §106* funds to conduct ambient monitoring in watersheds where significant NPS implementation is occurring.
- Mississippi's Water-quality Standards Programs which include numeric criteria, narrative criteria, waterbody uses, and antidegradation requirements.

In addition to coordinating with the aforementioned water-quality programs, Mississippi will coordinate with tribal water-quality programs and with programs administered by the federal land-management agencies such as the U.S. Forest Service and the National Park Service. Other agencies where coordination will occur are water management agencies such as the United States Army Corps of Engineers and the Tennessee Valley Authority.

Finally, three other federal agencies whose policies and practices can greatly influence and/or protect riparian areas, wetlands, and other sensitive areas and corridors are the U.S. Fish & Wildlife Service (USFWS), Department of Transportation (DOT), and the Federal Emergency Management Agency (FEMA). All of these agencies have programs that can help protect or mitigate potential impairment to water quality within their jurisdiction and the last two, particularly, have funding programs that can be used to benefit water quality within Mississippi. Thus, MDEQ will coordinate with these agencies as well.

Chapter 4: Mississippi's NPS Management Strategy

4.1 Overview

The State's NPS Management Program Strategy relies on the implementation of numerous strategies for the management and abatement of NPS pollution and utilizes statewide and targeted watershed approaches. These strategies were developed collaboratively with resource agency partners on the federal, state, and local level to address key challenges related to nutrient enrichment and the sustainability of our water resources.

The strategies utilize existing and new statewide programs and activities for addressing NPS pollution that include education and outreach, assessment and monitoring, development and implementation of watershed based protection and restoration plans, BMP compliance, technology transfer, consensus building, and partnering. The implementation of program activities for land-use categories that are not regulated will rely primarily on the voluntary cooperation of stakeholders and will be supported financially through federal assistance programs such as §319 and other resources. The NPS Management Program also implements a strategy that targets priority watersheds. Prioritization of these watersheds is done by multi-agency teams in the *Basin Management Approach* (BMA). Within priority watersheds, activities will be implemented to address parameters of concern that appear on the State's *§303(d)* list of impaired waterbodies.

Additionally, The State's NPS Program incorporates the *Coastal NPS Program Strategy*, *Mississippi Nutrient Reduction Strategy*, *Basinwide Approach Strategy*, and the *State's Strategy for the Development and Implementation of NPS Total Maximum Daily Loads* (TMDLs), *Conjunctive Water Management, Water Quality Standards Development, assessment and monitoring, and data management and technical support strategies.*

The NPS Program continues to be implemented in cooperation with several agencies, organizations, and groups at all levels of government and in the private sector. A great focus is given to activities that promote consensus building and partnering to increase the overall effectiveness of the State's NPS Management Program. MDEQ's program strategy will be implemented to meet the long-term goals of the program. The long-term goals will, in turn, be achieved by implementing five year action plans. These plans will be modified as more data and new issues are identified under the BMA. The reader is referred to Chapter 7, Mississippi's *Five-Year Action Plan* that addresses long-term goals, objectives, and actions with tracking measures to achieve those goals and objectives.

The following sections describe the primary strategies that will be utilized to implement the five year action plan.

4.2 Watershed Based Management

The NPS Management Program also implements a strategy that targets priority watersheds. Prioritization of these watersheds is done by multi-agency teams in the Basin Management Approach (BMA). Within priority watersheds, activities are implemented to address parameters of concern that appear on the State's *§303(d)* list. The State's NPS Program also incorporates the *Coastal NPS Program Strategy*, the recently developed *Mississippi Delta Nutrient Reduction Strategy, Basinwide Approach Strategy*, and the State's

Strategy for the Development and Implementation of NPS Total Maximum Daily Loads (TMDLs). The mission of the BMA is to foster stewardship of Mississippi's water resources through collaborative watershed planning, education, protection, and restoration initiatives. To accomplish this, ten of Mississippi's major river basins have been organized into four basin groups. Each basin group has a basin team comprised of state and federal agencies and local organizations. This team provides the opportunity for multiple levels of government and local stakeholders to coordinate their efforts. Together, basin team members help assess water quality, determine causes and sources of problems, and prioritize watersheds for water-quality restoration and protection activities.

The BMA also encourages and provides the opportunity for basin-team members to pool both technical and financial resources to address priority watersheds. Once a watershed has been determined a priority watershed, a Watershed Implementation Team (WIT) is developed in order to formulate the Watershed Based Plan (WBP). Although many different elements may be included in a watershed plan, EPA has identified nine minimum elements that are critical for achieving improvements in water quality. In general, EPA requires that nine-element watershed-based plans (WBPs) be developed prior to implementing project(s) funded with § 319. The MDEQ NPS Branch requires all contractors to adhere to these nine key elements in the development and administration of their watershed based plans. To assist in this effort, the MDEQ developed a guidance document entitled *Mississippi Watershed Implementation Plan Guidance Compatible with Section 319 Grant Requirements* (See Appendix G). The nine elements, as well as short explanations of how each element fits in the context of the broader WBP, are provided below. Although they are listed as *a* through *i*, they do not necessarily take place sequentially. For example, element *d* asks for a description of the technical and financial assistance that will be needed to implement the WBP, but this can be done only after you have addressed elements *e* and *i*.

a. An identification of the causes and sources or groups of similar sources that will need to be controlled to achieve the load reductions estimated in this watershed-based plan (and to achieve any other watershed goals identified in the watershed-based plan), as discussed in item (b) immediately below. Sources that need to be controlled should be identified at the significant subcategory level with estimates of the extent to which they are present in the watershed (e.g., X numbers of dairy cattle feedlots needing upgrading, including a rough estimate of the number of cattle per facility; Y acres of row crops needing improved nutrient management or sediment control; or Z linear miles of eroded streambank needing remediation).
b. An estimate of the load reductions expected for the management measures described under paragraph (c) below (recognizing the natural variability and the difficulty in precisely predicting the performance of management measures over time). Estimates should be provided at the same level as in item (a) above (e.g., the total load reduction expected for dairy cattle feedlots; row crops; or eroded streambanks).
c. A description of the NPS management measures that will need to be implemented to achieve the load reductions estimated under paragraph (b) above (as well as to achieve other watershed goals identified in this watershed-based plan), and an identification (using a map or a description) of the critical areas in which those measures will be needed to implement this plan.
d. An estimate of the amounts of technical and financial assistance needed, associated costs, and/or the sources and authorities that will be relied upon, to implement this plan. As sources of funding, States should consider the use of their Section 319 programs, State Revolving Funds,

USDA's Environmental Quality Incentives Program and Conservation Reserve Program, and other relevant Federal, State, local and private funds that may be available to assist in implementing this plan.

e. An information/education component that will be used to enhance public understanding of the project and encourage their early and continued participation in selecting, designing, and implementing the NPS management measures that will be implemented.

f. A schedule for implementing the NPS management measures identified in this plan that is reasonably expeditious.

g. A description of interim, measurable milestones for determining whether NPS management measures or other control actions are being implemented.

h. A set of criteria that can be used to determine whether loading reductions are being achieved over time and substantial progress is being made towards attaining water quality standards and, if not, the criteria for determining whether this watershed-based plan needs to be revised or, if a NPS TMDL has been established, whether the NPS TMDL needs to be revised.

i. A set of criteria that can be used to determine whether loading reductions are being achieved over time and substantial progress is being made towards attaining water quality standards and, if not, the criteria for determining whether this watershed-based plan needs to be revised or, if a NPS TMDL has been established, whether the NPS TMDL needs to be revised.

Figure 11 below is a flow chart illustrating both the planning and implementation of a WBP accomplished through the Watershed Based Management approach. Each step is required in order to characterize, quantify, prioritize, and target each priority watershed. [See Figure 12 for a map of the four basin groups and a complete list of watersheds within the State with developed Watershed Based Plans (WBPs).]

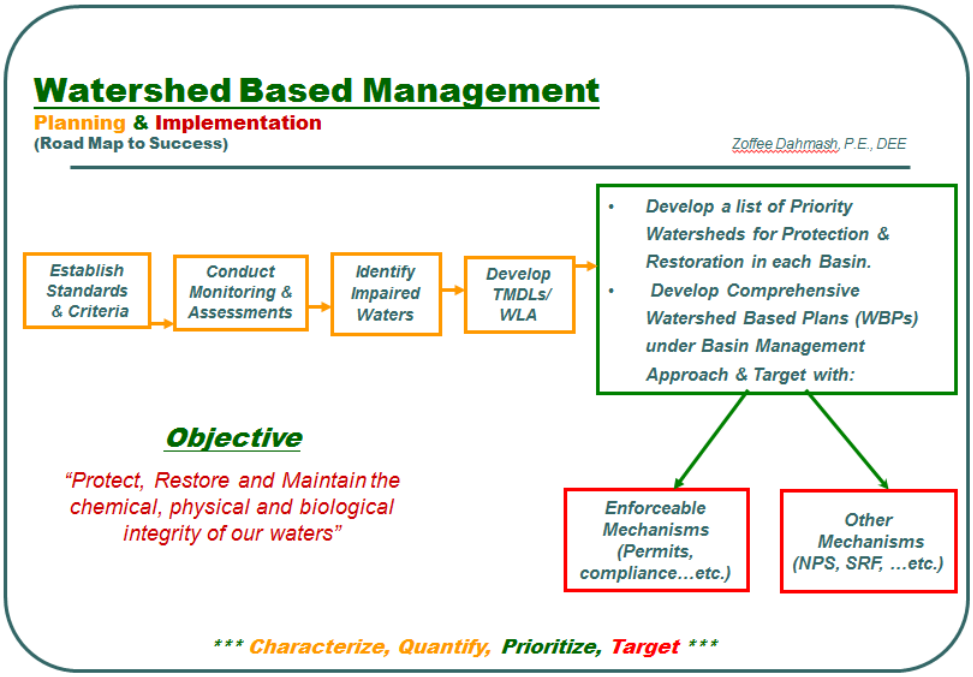
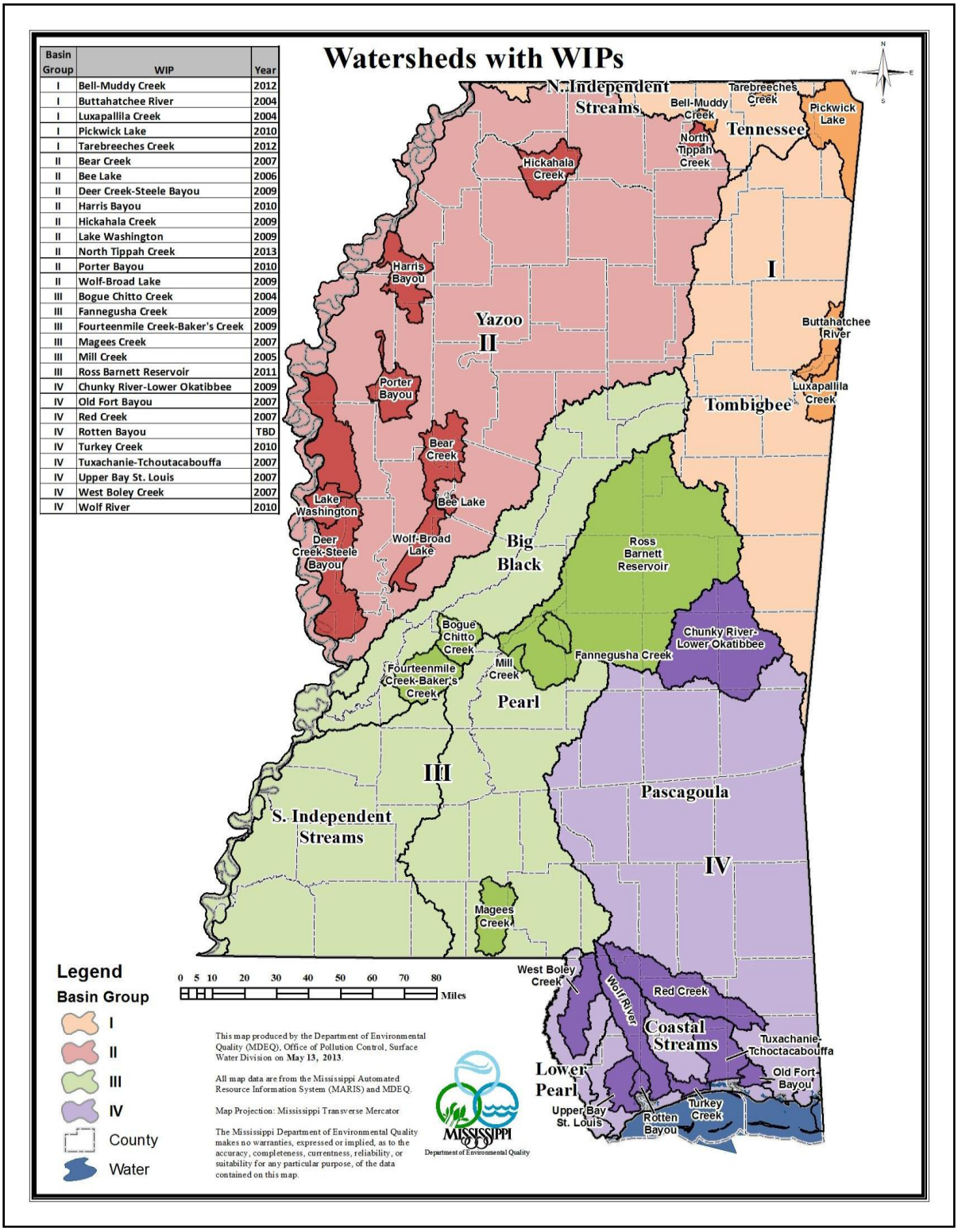


Figure 11 Watershed Based Management flow chart illustrating the steps to planning and implementing a Watershed Based Plan.



Basin Group	WIP	Year
I	Bell-Muddy Creek	2012
I	Buttahatchee River	2004
I	Luxapallila Creek	2004
I	Pickwick Lake	2010
I	Tarebreeches Creek	2012
II	Bear Creek	2007
II	Bee Lake	2006
II	Deer Creek-Steele Bayou	2009
II	Harris Bayou	2010
II	Hickahala Creek	2009
II	Lake Washington	2009
II	North Tippah Creek	2013
II	Porter Bayou	2010
II	Wolf-Broad Lake	2009
III	Bogue Chitto Creek	2004
III	Fannegusha Creek	2009
III	Fourteenmile Creek-Baker's Creek	2009
III	Magees Creek	2007
III	Mill Creek	2005
III	Ross Barnett Reservoir	2011
IV	Chunky River-Lower Okatibbee	2009
IV	Old Fort Bayou	2007
IV	Red Creek	2007
IV	Rotten Bayou	TBD
IV	Turkey Creek	2010
IV	Tuxachanie-Tchoutacabouffa	2007
IV	Upper Bay St. Louis	2007
IV	West Boley Creek	2007
IV	Wolf River	2010

Figure 12 Map of Watersheds with Developed WBPs.

4.2.1 **Key Components of an Effective State NPS Program**

In 2012, EPA updated the nine key elements guidance contained in the U.S. Environmental Protection Agency's (EPA's) 1997 Guidance for *Section 319(h)* Grants. The updated guidance contained specific requirements and instructions for updating state NPS Programs. State programs must incorporate these components into management-plan updates, and then be approved by EPA in order to remain eligible for continuing *§319* funding. These key components allow states to be "forward looking" in their efforts to control and prevent NPS pollution. States are required to establish long-term and short-term goals and action strategies to identify and address waters impaired by NPS pollution on both a statewide and watershed-specific basis. Outlined below are the eight key components and a brief synopsis of how Mississippi's NPS Management Program will address each one. The crosswalk in Appendix B will illustrate throughout the document how each component is to be met.

1. **The State program contains explicit short-term and long-term goals, objectives and strategies to protect surface and ground water, as appropriate.**

   Mississippi has established long-term goals and short-term goals and objectives designed to protect State waters from NPS pollution. This five-year management plan has been developed for every category of NPS. This plan outlines specific steps that will be taken during the next five years to help achieve the State's goals. Mississippi will continue to rely on assessment and monitoring efforts to evaluate the progress made towards implementing this plan and achieving these goals. Annual milestones of these goals in the NPS program are accomplished through the delivering of WQ-10 success stories in high-priority and impaired watersheds. Please see Chapter 7 for the State's *Five-Year Action Plan* that includes the aforementioned goals and objectives with action items and tracking measures for achieving those.

2. **The State strengthens its working partnerships and linkages to appropriate State, interstate, tribal, regional, and local entities (including conservation districts), private sector groups, citizens groups, and federal agencies.**

   The State uses and establishes a variety of formal and informal mechanisms in order to form and sustain partnerships on both a watershed- and state-wide basis. MDEQ has Memoranda of Agreements (MOAs) with the Mississippi Soil and Water Conservation Commission (MSWCC), Natural Resources Conservation Service (NRCS), the Center of Excellence for Watershed Management, the United States Geological Survey (USGS), the Yazoo-Mississippi Delta Joint Water Management District (YMD), the Mississippi Department of Health (DOH) and the U S Forest Service (USFS). To ensure coordination of efforts to control NPS pollution, the NPS Coordinator (Chief, NPS Management Branch) has and continues to make visits at least annually to all State and federal agencies (partners) in Mississippi that deal with NPS pollution. These visits are designed to share information and coordinate activities.

   The MDEQ has also developed basin teams under its *Basinwide Management Approach* that are devoted to water-quality management. These teams ensure stakeholder input on a statewide and a watershed level. Partnership groups have and will include all State and federal agencies, as well as private groups and individuals that are involved with water-quality issues. These groups have and will be utilized to ensure that widespread cooperation and coordination take place in dealing with NPS problems and solutions.

MDEQ works closely with the Mississippi Department of Marine Resources (DMR) on jointly implementing *Section 6217* of the *Coastal Zone Act Reauthorization Amendments* (CZARA) measures on the Mississippi Gulf Coast.

3. **The State uses a combination of statewide programs and on-the-ground projects to achieve water quality benefits; efforts are well-integrated with other relevant state and federal programs.**

   As shown in this management plan, Mississippi's NPS program includes action strategies for each category of NPS pollution. These strategies rely on balanced, statewide- and watershed-based implementation approaches that promote stakeholder involvement at all levels. This plan outlines the activities and goals for controlling and abating NPS pollution on a statewide basis. Also described are several educational programs that cover the State and address different categories of NPS pollution. The NPS program has been well integrated with other programs such as the *TMDL Program* and *Standards and Criteria Program*. Also, MDEQ coordinates closely with other agencies' programs such as those within the USDA NRCS, Mississippi Soil and Water Conservation Commission, US Forest Service, and many others detailed in this management plan.

   There are numerous federal programs that offer financial assistance which are beneficial to Mississippi's NPS Management Program. There are also various federal- assistance programs and development projects that may hinder implementation of the program. As provided by *Executive Order 12372*, the State is allowed to review any federal program or project for consistency with its NPS management program. If the State determines that a program or project is inconsistent with the goals and objectives of its NPS management program and makes its concerns known to the responsible federal agency, that agency must (as required by *EO 12372*) make efforts to accommodate the State's concerns or explain its negative decision. In the event that accommodation cannot be reached, the State can ask EPA for assistance in resolving conflicts.

4. **The State program describes how resources will be allocated between (a) abating known water quality impairments from NPS pollution and (b) protecting threatened and high quality waters from significant threats caused by present and future NPS impacts.**

   The main focus of the NPS Program is directed at abatement of known water-quality problems. Several statewide- and watershed-based activities are currently in place and more are currently being developed to address significant threats from existing nonpoint sources of pollution. The program will be continually reviewed and updated as MDEQ continues to implement the *Basinwide Management Approach* to water quality management.

5. **The state program identifies waters and watersheds impaired by NPS pollution as well as priority unimpaired waters for protection. The state establishes a process to assign priority and to progressively address identified watersheds by conducting more detailed watershed assessments, developing watershed-based plans, and implementing the plans.**

   Mississippi's §*305(b) Water Quality Assessment* and §*303(d) List* delineate waters in the State not supporting all designated uses and identifies the most likely pollution- source category for the impairment. Total maximum daily loads (TMDLs) are being developed for those impaired

waters and action strategies will be developed to mitigate all NPS impacts and restore these watersheds.

In addition, the *Basinwide Management Approach* is used statewide to update and enhance the quality of assessments made under S*ections 303 (d), 305 (b), 314, 319 (a),* and others. This approach aids MDEQ in better targeting threatened or impaired waters for protection and remediation work. The basin teams solicit public participation during the planning and data-gathering phases in order to obtain local knowledge and concerns about water quality in the basin.

6. The state implements all program components required by section 319(b) of the Clean Water Act, and establishes strategic approaches and adaptive management to achieve and maintain water quality standards as expeditiously as practicable. The state reviews and upgrades program components as appropriate. The state program includes a mix of regulatory, nonregulatory, financial and technical assistance, as needed.

The main approach that the State uses for water-quality management is the *Basinwide Management Approach*. The basin-team coordinator is responsible for including all the necessary parties required to assess water quality in a given basin, working with the TMDL group to develop TMDLs in the basin, and working with the NPS Coordinator to make him aware of the water-quality issues in a given basin. The NPS Coordinator uses that information to apply and coordinate resources in the basin to abate NPS pollution.

The State's NPS Program includes a mix of water quality and technology-based programs designed to achieve and maintain beneficial uses of water along with a mix of regulatory, non-regulatory, financial and technical assistance needed to achieve and maintain beneficial uses of water as expeditiously as possible.

Regulatory, voluntary, financial and technical assistance, information/education and public awareness programs are identified for each category of NPS pollution in Chapter 7.

7. The state manages and implements its NPS management program efficiently and effectively, including necessary financial management.

The State recognizes that focus on critical areas and sources that are contributing to NPS pollution and ensuring that plans are effectively implemented requires widespread support and prioritization. The *Basinwide Management Approach* incorporates these concepts. The basin teams will work with the NPS Coordinator as well as private industrial, commercial, environmental groups, and the general public in order to involve everyone in identifying NPS problems and focusing resources on those problems.

Mississippi utilizes the *Grants Reporting and Tracking System* (GRTS) effectively in order to track the grant / project period. The State also provides clear, written guidance and reporting instructions to cooperators on grant applications and management of those cooperators' subgrants or contracts.

8. The state reviews and evaluates its NPS management program using environmental and functional measures of success, and revises its NPS management program at least every five years.

The State reviews, evaluates, and revises its NPS management program on a five-year schedule. After the plan has reached its 4th year, the program will begin by reviewing and evaluating the successful implementation of the previous cycle's plans, using both environmental and functional measures. This information will be shared with all of MDEQ's partners. Then, the contributing agencies' resources and strategies will be brought to bear in dealing with NPS pollution in the State. Also, the NPS Annual Report will be utilized as a feed- back loop to assess the status of meeting program goals.

4.2.2 **Watershed Based Prioritization**

The *Mississippi Watershed Characterization and Ranking Tool (MWCRT)* is a spatially-based tool used to ch**a**racterize and rank all 10- and 12-Digit HUCs, watersheds, and sub-watersheds, respectively, for all major river basins in Mississippi. The data within the MWCRT are summarized and assessed to characterize each of those watersheds and sub-watersheds. For the characterization(s), data layers are placed into two major categories based on whether the layer is deemed to have resource value (environmental or human welfare, respectively), or whether it places potential stress on a sub-watershed. Next, data are calculated as observations (counts), linear miles, and acres on the sub-watershed level and normalized using a linear-transform equation. The normalized data are weighted by relative importance to create the ranking system. Each data layer can then be assessed individually or combined to drive the output from the MWCRT.

The MWCRT provides a scientific method to allow managers to identify watersheds of interest, make meaningful decisions, and prioritize watersheds for restoration and protection activities. The end result has been that the tool has shortened evaluation times for identifying priority watersheds.

The MWCRT is used in conjunction with data provided by the MDEQ Office of Land and Water Resources (OLWR), MDEQ *§305(b)* Assessment Section, and MDEQ *§303(d)* TMDL Section to identify potential target watersheds under the *Conjunctive Water Management Initiative*. The *Conjunctive Water Management Initiative* focuses on water quality and quantity (Figure 13-Figure 16).

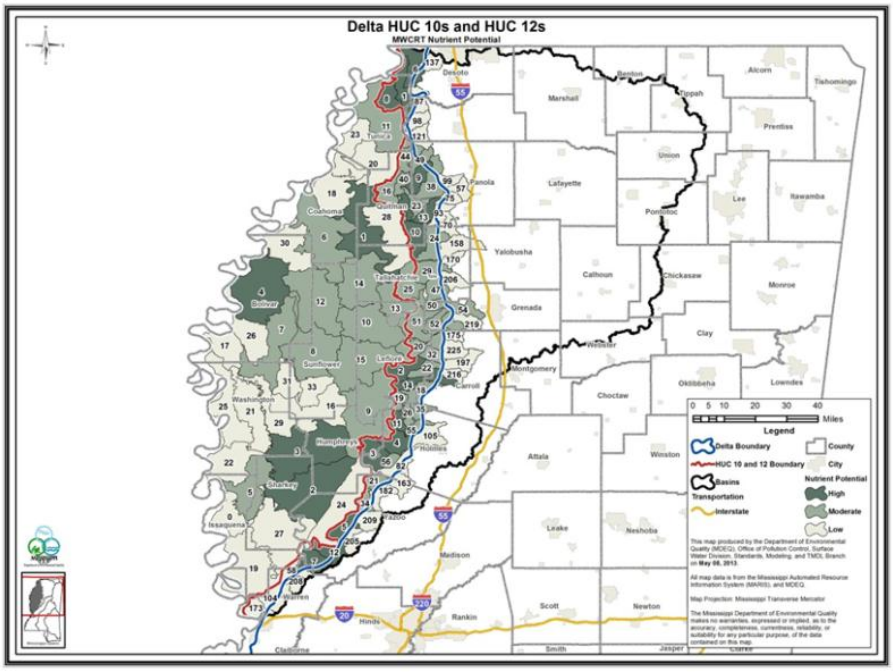


Figure 13 Map of MWCRT Nutrient Potential for Yazoo Delta HUC 10s and 12s.

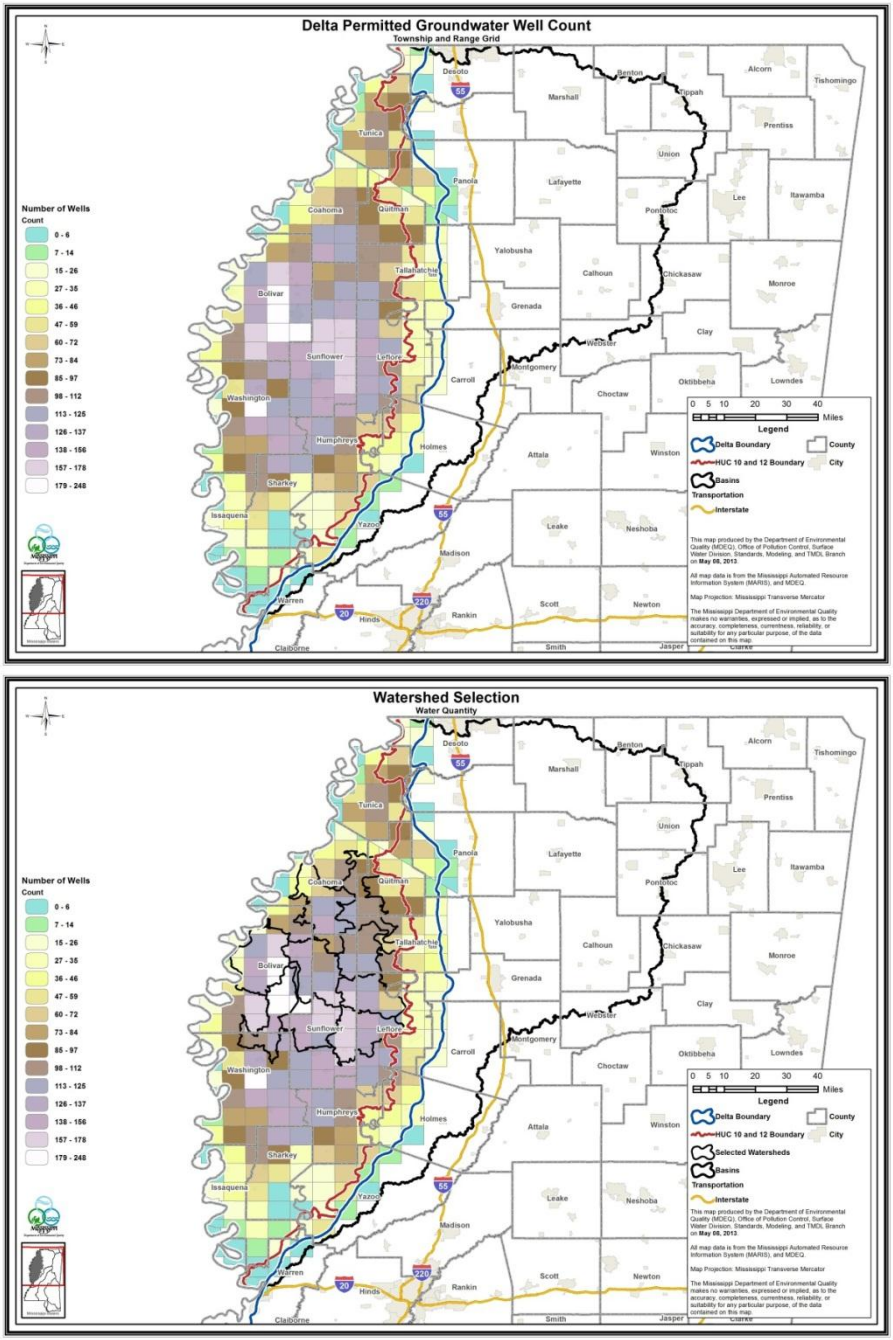


Figure 14 Maps of Water Quantity for Yazoo Delta HUC 10s and 12s.

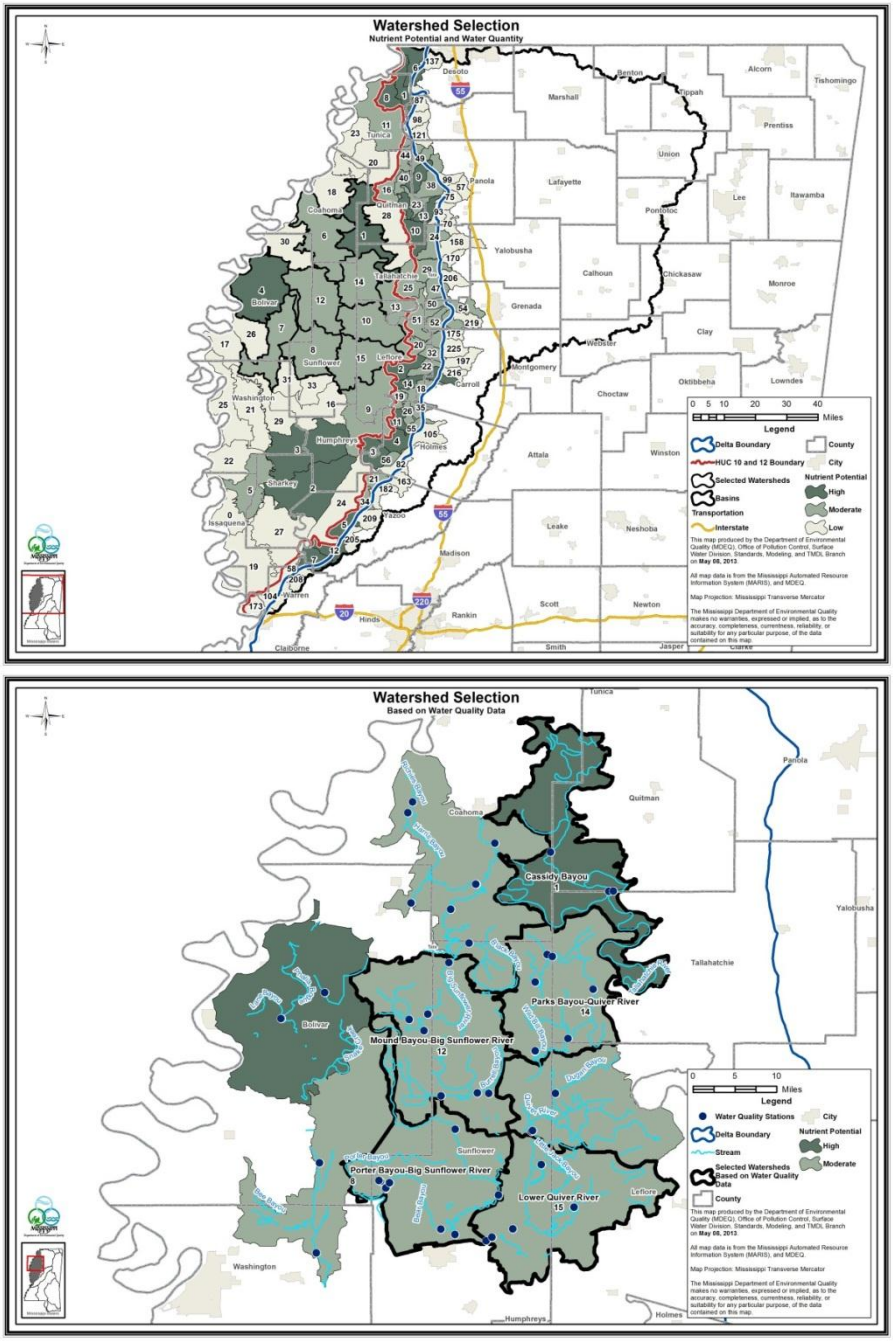


Figure 15 Maps of Water Quantity, Nutrient Potential, and Water Quality data.

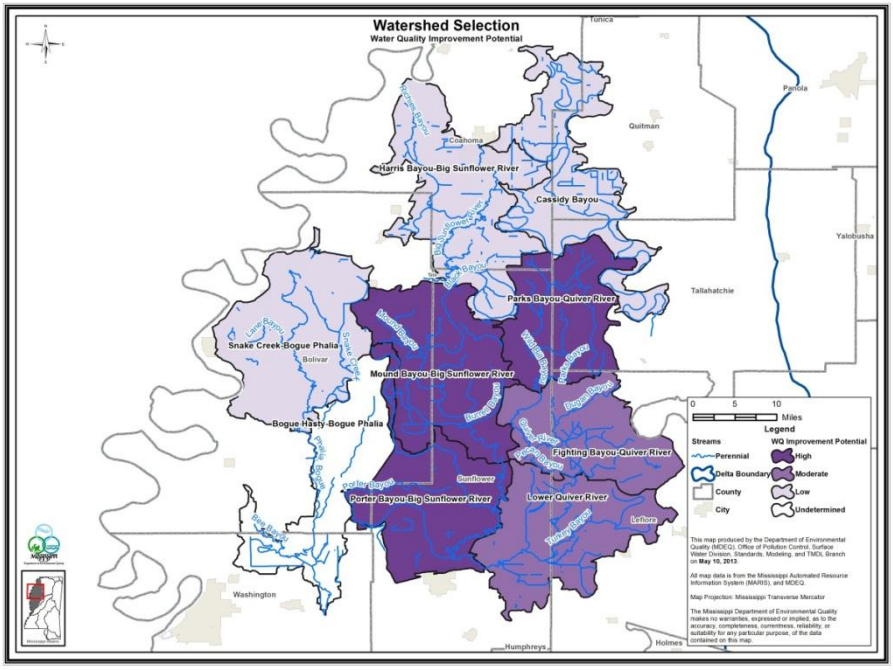


Figure 16 Maps of Water Quality Improvement Potential.

4.2.3 **Balancing Restoration and Protection**

To implement the nutrient/pollutant reduction strategy, *§319* NPS funding is being used to support both restoration and protection projects in all regions of the State. The projects will focus on watersheds with recently-developed and approved WBPs so that achievable load reductions can be quantified through pre- and post-implementation water-quality monitoring. Implementation of the strategies in these watershed projects will provide additional cost-effective information related to achievable results and costs. The use of CZARA set-aside funds will be used in a coastal project(s). Results of the projects will be assessed from an environmental and socio-economic standpoint. This assessment will use the concept of ecosystems services that will relate actual water-quality improvements with implementation costs and socio-economic values. The derived information will be used to adaptively manage and improve the nutrient- and pollutant-reduction strategies and future TMDLs. MDEQ plans to prioritize implementation of the water-quality restoration projects based upon information and data gathered during the TMDL development process. Additionally, input from local stakeholders and the Basin Teams previously assembled for each basin group in the State also will be used for this prioritization process. The State also identifies important unimpaired waters that are threatened or otherwise at risk from nonpoint source pollution to implement nutrient/pollutant reduction strategies to support protection projects.

Mississippi, along with EPA, recognize that while restoration of NPS-impaired waters remains the primary goal of the *§319* Program, there are important water-quality benefits and potential cost savings from protecting high-quality waters and preventing impairments in waters that currently meet water-quality standards but whose condition is declining. Mississippi will produce WBPs to focus not only on the impaired segments within the watershed, but when possible, to identify currently unimpaired waters where protection and load reduction actions are necessary to ensure that high-quality waters do

not become impaired. Also, WPBs will address conditions that may contribute to impairments downstream. In some cases, Mississippi may use a mix of actions to restore waters and protect unimpaired waters to comprehensively implement WBPs and successfully address NPS pollution.

Mississippi has limited resources to address the protection of the State's unimpaired waters; therefore, Mississippi will carefully identify and prioritize the State's NPS control activities to achieve the goals and milestones concerning protection as noted in Appendix F. Mississippi will consider the following scenarios for prioritizing its protection of unimpaired/high-quality waters.

- *Watersheds or portions of watersheds with unique, valuable, or threatened species or critical aquatic habitats of these species;*
- *Waters and watershed areas (including ground waters where appropriate) that serve as source water for a public-drinking water supply;*
- *Protection of high-quality waters in watersheds that contain some impairments;*
- *Waters near geographic areas where rapid land-use development is occurring;*
- *Waters where data trends indicate water-quality degradation is occurring;*
- *Restored waters requiring continued water-quality assessment and maintenance of BMPs to assure unimpaired status;*
- *Outstanding Natural Resource Waters or other state-defined categories of high-quality waters;*
- *Watersheds contributing high nutrient loads to downstream waters.*

4.2.4 **Nutrient Reduction Strategies**

The State's NPS Program incorporates the *Mississippi Coastal Nutrient Reduction Strategy*, *Mississippi Delta Nutrient Reduction Strategy*, the *Mississippi Uplands Nutrient Reduction Strategy*, and the recently developed *Mississippi's Strategies to Reduce Nutrients and Associated Pollutants for the Development and Implementation of NPS Projects*. The integration of these three regional strategies into the combined statewide strategy permits consistent, compatible, and coordinated watershed-management plans to be developed and implemented across the State while addressing the distinct regional differences that exist for nutrient sources across Mississippi.

4.2.5 **Assessment and Monitoring Strategies**

MDEQ's monitoring and assessment strategies supporting NPS goals and initiatives are making significant progress in improving water quality in the State's water bodies. Specific monitoring plans are developed to meet individual watershed needs as part of the Watershed Implementation Plans that are developed for each project. The agency will continue to conduct monitoring to support the development of numeric nutrient criteria and the implementation of nutrient/pollutant reduction projects in the initiation of activities planned in all river basins. MDEQ will coordinate program activities to address the agency priorities of supporting the *Gulf Hypoxia Action Plan* and the *Gulf of Mexico Alliance Governors' Action Plan*. In addition to monitoring, NPS funding is being used to support the recalibration of the *Mississippi Benthic Index of Stream Quality* (M-BISQ) and other biological assessment methods allowing for the development and maintenance of improved water-quality assessment tools in the State.

All MDEQ monitoring funded by EPA grants is carried out under Quality Assurance Protection Plans (QAPPs) prepared under the EPA *QAPP Guidelines*. Monitoring activities conducted by MDEQ for parameters that are under the *Mississippi Water Quality Standards* are conducted in accordance with the Mississippi *Consolidated Assessment and Listing Methodologies* (CALM) when possible. Laboratory procedures and data management are covered under approved MDEQ Standard Operating Procedures (SOPs).

MDEQ has a proven record of successfully managing and implementing water-quality monitoring and assessment projects. The MDEQ works to ensure that work is carried out as outlined in project work plans. The agency carefully manages grant funds to make certain that cost-effective measures are implemented. The reader is referred to Chapter 7, Section 7.3.2 for a 5-year Action Plan that includes goals, objectives, actions, and tracking measures related to *Assessment and Monitoring*.

4.2.6 **Nutrient Criteria Development**

Excessive nutrient (phosphorus and nitrogen) loss from watersheds is frequently associated with degraded water quality in streams. To reduce this loss, NPS sources, such as cropland farming and other watershed activities, are being evaluated for implementation of control measures. Due to concerns about eutrophication in the Nation's water bodies, EPA directed the states to develop and adopt nutrient criteria for surface waters. Since it is thought that much of the Nation's and Mississippi's nutrient impairments are a result of NPS runoff, monitoring and assessment efforts are needed to confirm this thought and to develop scientifically defensible and environmentally protective, numeric-nutrient criteria for the State.

This project supports MDEQ's monitoring to provide water-quality data to aid in the development of numeric-nutrient criteria as required by the EPA. The MDEQ works to gather data needed to develop scientifically defensible nutrient criteria for the State's water bodies. A need continues to exist for additional data collection to fill data gaps and characterize the causal and response relationships required to develop and implement protective, appropriate, and attainable numeric-nutrient criteria. The nutrient monitoring supported by EPA grants will be consistent with the EPA-approved *Mississippi Plan for Nutrient Criteria Development*. MDEQ plans to coordinate nutrient criteria established for each water-body type using an ecosystem approach to ensure consistency throughout the systems. Additional assessment is needed to meet MDEQ'S goal for completing and adopting nutrient criteria for lakes and reservoirs, rivers and streams, and coastal- and estuarine-water bodies.

MDEQ continues in the development of numeric nutrient criteria for Mississippi's various water-body types. Its mission is to develop scientifically defensible criteria that are appropriate and protective of Mississippi's waters. The criteria for each water-body type will be coordinated with other water-body types to ensure consistency across the State and protection from downstream impacts.

The *Mississippi Nutrient Technical Advisory Group's* (TAG) mission is to provide technical expertise and regional knowledge to MDEQ for the development of scientifically defensible numeric nutrient criteria. The TAG consists of over 30 members representing a broad range of scientific- and engineering-technical expertise from multiple state and federal agencies and four of Mississippi's universities. The TAG meetings focus on providing continued technical input on developing nutrient

criteria for Mississippi's wadeable and non-wadeable streams, lakes and reservoirs, coastal and estuarine waters, and Mississippi Delta waters. MDEQ continues data analyses efforts based on recommendations from the TAG. The TAG will continue to meet regularly throughout the criteria development process.

MDEQ also continues to hold *Nutrient Criteria Update Sessions* for Mississippi stakeholders. The objectives of the update sessions are to *both* provide stakeholders with an update regarding the development of the criteria as well as promote open communication among MDEQ staff and stakeholders. MDEQ plans to hold update sessions regularly with this group throughout the derivation process of numeric nutrient criteria development. The MDEQ's goal is to promote transparency of the process and provide stakeholders an opportunity to ask questions and provide feedback to MDEQ and the TAG.

Nutrient Criteria Development will continue to support data analyses for the State's rivers and streams, lakes and reservoirs, and coastal water-bodies and estuaries. MDEQ will continue monitoring and performing data analyses in the Coastal Streams and Yazoo River Basin water-bodies in accordance with activities to address the agency priorities of supporting the *Gulf Hypoxia Action Plan* and the *Gulf of Mexico Alliance Governors' Action Plan*. The monitoring and assessment activities related to the collected data are being conducted by MDEQ. The reader is referred to Chapter 7, Section 7.3.3 for a 5-year Action Plan including goals, objectives, actions, and tracking measures related to *Nutrient Criteria and Standards*.

4.2.7 **Index of Biotic Integrity**

Mississippi has focused monitoring resources on developing tools to support designated use attainment decisions. Using an *Index of Biotic Integrity* (IBI) as an integrator of long-term water-quality condition, the State has made significant progress in accurately categorizing and characterizing water quality in waterbodies where the IBIs are complete. The State has fully developed an IBI for wadeable streams excluding the Mississippi Alluvial Plain, known as the *Mississippi Benthic Index of Stream Quality* (M-BISQ). An IBI for wadeable streams in the Alluvial Plain, known as the *Delta Benthic Index of Stream Quality* (D-BISQ), along with a *Coastal IBI* are currently in development.

The *Mississippi Benthic Index of Stream Quality* (M-BISQ) was developed using data collected in wadeable streams for all areas of the State except the Mississippi Alluvial Plain. As part of routine maintenance and to ensure that indices are still sensitive and responsive, IBIs are recalibrated periodically; generally every 5 years. The MBISQ is presently undergoing its second recalibration process. . Recalibration allows for the addition of data collected into the process to further refine the index, including but not limited to, providing reference-conditions for determination of biological impairment. As part of the recalibration process, any existing data gaps are identified and resources are dedicated to fill these gaps with future monitoring efforts. As a result of the first recalibration process, it was identified that additional data were needed in blackwater systems. Since 2008, MDEQ has focused resources to collect additional data and information in these streams and is working to identify specific threshold values for these streams as part of the current recalibration process. If a separate site class within the MBISQ can be identified for blackwater streams, it will strengthen MDEQ's ability to accurately determine the health of these systems. A well maintained and sensitive

index allows MDEQ to make impairment decisions with confidence, as well as track potential success from implementation projects.

The State continues to work in the Mississippi Alluvial Plain to develop an IBI for the wadeable streams found there. This area of the State is highly modified for flood control and irrigation; Developing a calibrated index there has proven challenging. Data have been collected throughout the Alluvial Plain on an annual basis, and refinement of the D-BISQ is still underway. This index will allow MDEQ to make impairment decisions with confidence, and provide an assessment tool to track success from restoration implementation projects.

MDEQ also continues to work on an IBI for coastal waters. Using data collected annually in Mississippi's estuarine waters, MDEQ has to refine the *Gulf of Mexico IBI* specifically for Mississippi waters and identified additional data needs to further refine the index.

MDEQ plans to continue biological monitoring efforts as part of the M-BISQ, DBISQ, and Coastal IBI. Annually, the agency plans to monitor 100 locations as part of the MBISQ Program, 30 locations as part of the DBISQ Program, and 25 locations as part of the Coastal IBI Program. As part of the annual monitoring efforts, sites in both the MBISQ and DBISQ are targeted to continue refinement of the index as well as to support MDEQ water programs. As such, monitoring will be completed in Priority Watershed areas where there are planned and/or ongoing projects in order to determine successes. As part of the Coastal IBI, monitoring locations are selected probabilistically. This allows MDEQ to make a statement about Mississippi's estuarine resource as a whole. The reader is referred to Chapter 7, Section 7.3.2 for goals, objectives, actions, and tracking measures related to IBI.

4.2.8 **Stressor Identification for NPS TMDLs**

MDEQ has a strong team of engineers and scientists focused on evaluating water-quality data and identifying stressors in water bodies that have been listed as biologically impaired. If biological monitoring data indicate that a water-body segment is impaired, an investigative, stressor-identification analysis using a strength-of-evidence approach is conducted to determine the probable primary cause(s) of the impairment. Such causes may range from specific chemical pollutants to 'pollution' such as habitat loss. In many cases, the sources of these causes are nonpoint in nature. MDEQ relies upon all available monitoring and assessment data and conducts additional monitoring to gather the necessary data and information to help determine both the causes and sources of impaired waters. The US Environmental Protection Agency (EPA) Stressor Identification process, *Stressor Identification Guidance Document* (USEPA, 2000), is used to identify most probable stressors causing biological impairment in order to provide the information necessary to develop required TMDLs and/or implement best management practices that will support restoration of the water bodies.

The State will continue to perform stressor identification on biologically impaired waters to support TMDL development and restoration activities. Eight-seven percent (87%) of MDEQ's *§303(d)* list is biological impairments that will need identification. Stressor identification (SI) studies are needed to continue to prepare TMDLs for impaired state waters. MDEQ will conduct SI analyses annually utilizing a rotating basin approach or a prioritized basis on biologically-impaired waters identified

through the biennial *§305(b)* assessment and *§303(d)* listing process. In addition to biological- and chemical-monitoring data analyses, this effort includes the following:

1. An inventory of NPS activities in the watersheds of impaired waters;
2. Land use/land cover analyses;
3. Use of the Mississippi Watershed Characterization and Ranking Tool;
4. Extensive GIS work.

MDEQ will also be working to further strengthen the SI approach in determining stressors and their corresponding sources. Additional monitoring to supplement existing and historical data used in SI analyses will be incorporated. This monitoring will include critical-period measurements and seasonal water-sample collection to try and better distinguish individual stressors within paired-stressor groups such as sediment/habitat or dissolved oxygen/nutrients used in the SI strength-of- evidence process.

The outcome of this process allows MDEQ to make decisions on the types of restoration activities that should be implemented in a watershed so that MDEQ can achieve restoration goals and measure the success of restoration activities. The reader is referred to Chapter 7, Section 7.3.4 for a 5-year Action Plan with goals, objectives, actions, and tracking measures related to *TMDL Development*.

4.2.9 **Conjunctive Water Management**

In Mississippi, by statute *§51-3-1 of the MISSISSIPPI CODE of 1972*, surface and ground water "belong to the people of this State," and MDEQ is responsible for "conserving, managing, developing, and protecting" these shared resources. This concept of shared resources is an important consideration when addressing the myriad issues related to the statutory requirement "that the water resources of the State be put to beneficial use to the fullest extent of which they are capable" while also ensuring sustainable water resources for current and future generations.

The Mississippi Delta (hereafter called Delta) has been experiencing significant water-resource challenges for numerous years. These include: 1) continuing declines in the water level of the Mississippi River Valley Alluvial Aquifer (MRVA) and regional expansion of its cone of depression; 2) continuing overbalances of groundwater withdrawals versus aquifer recharge; 3) increasing water-withdrawal permit applications for agricultural irrigation; 4) continued lowering of dry-season stream flows; and 5) more incidents of drought. These challenges complicate the well-documented water-quality challenges experienced in the region, such as excessive levels of nutrients and sediment.

In November 2011, MDEQ started the *Delta Sustainable Water Resources Initiative* in order to fulfill its responsibilities of addressing the water-resource challenges facing the Delta. The goal of this initiative is to restore/protect water resources in the Delta by managing every drop of water effectively and efficiently. The initiative is a collaborative one using the expertise and skills of various agencies. The initiative focuses on processes of storing water when it is plentiful and then using the stored water when water is not plentiful. It also pursues all alternative water sources.

Consequently, an executive-level task force was created to: 1) develop short-term and long-term approaches; 2) support the economic viability of agriculture; and 3) assure the viability of wildlife and

fisheries. The *Delta Sustainable Water Resources Task Force* (hereafter called Task Force) provides a forum for obtaining input from the Delta stakeholders. The Task Force includes representatives from MDEQ, Yazoo Management District (YMD), United States Army Corp of Engineers (USACE), National Resources Conservation Services (NRCS), Mississippi Soil and Water Conservation Commission (MSWCC), Mississippi Farm Bureau Federation (MFBF), Delta Council, and Delta Farmers Advocating Resource Management (Delta F.A.R.M.). The Task Force subsequently established a *Conjunctive Water Management Work Group*, *Metering Work Group*, and *Education & Outreach Work Group*, for moving toward sustainable Delta water resources. The *Conjunctive Water Management Work Group* was established to develop the *Path Forward Concept* by using a comprehensive, collaborative, coordinated and integrated approach for effective water management and sustainable water resources in the Delta.

The *Metering Work Group* was established to promote the *Voluntary Metering Program* for agricultural wells in the alluvial aquifer to gather better information regarding crop use. The *Education & Outreach Work Group* was established to formulate awareness, outreach, education, and training programs to reach landowners and producers in the Delta. Stakeholder engagement in conjunctive water management is absolutely essential for effective water management and sustainable water resources in the Delta.

Conjunctive water management is the management of both groundwater and surface water resources, which offers a great benefit from independent management of each water resource. While the definition of conjunctive water management is relatively straightforward, moving toward sustainable water resources in the Delta requires a comprehensive, collaborative, coordinated and integrated approach. Subsequently, the *Integrated Conjunctive Water Management Strategies for the Mississippi Delta* was finalized in 2013. This strategy identifies the following ten overarching elements for achieving conjunctive water management in the Delta: 1) stakeholder awareness, outreach, education and training; 2) alternative water supplies, irrigation efficiency and conservation, and recharge and recovery; 3) historical trends, current status, water use, and water budgets; 4) hydrologic characterization, instream flow data, minimum lake level data and use classifications; 5) modeling and future scenarios; 6) policy, law, and regulation; 7) economic incentives and funding; 8) monitoring and assessment; 9) information management; and 10) administrative structure and process. The reader is referred to Chapter 7, Section 7.3.6 for a 5-Year Action Plan with objectives, actions, and tracking measures related to *Conjunctive Water Management*.

4.3 Data Management and Technical Support

Data management and geo-spatial analysis are important to the *§319* Program because they facilitate analysis of water-quality trends, track the progress of program activities, and provide information about NPS-related actions and issues to both internal and external users. Data management and geo-spatial analysis both support *§319* activities. Section 319 activities cover a broad spectrum as just noted and this broad spectrum of activities can result in a huge issue of carrying out an effective §319 Program unless data are properly stored, handled, and reported. These two areas, data management and geo-spatial analysis, both help to ensure that *§319* activities receive adequate staff support; equipment, materials, and supplies. Data management also tracks workshops and training dates and attendance.

Several database systems are in use by the MDEQ to electronically manage its NPS Program and they facilitate reporting requirements to EPA. Fulfillment of most of the requirements in *The EPA Nationally Consistent Programmatic §319 Grant Conditions* (See Nonpoint Source Program and Grants Guidelines for States and Territories, is supported through use of these database systems. The pertinent requirements are listed below with brief descriptions of how they bear on NPS Program reporting and data management. The reader is referred to Chapter 7, MDEQ's Five-Year Action Plan, for specific objectives, actions, and tracking measures related to data management.

1. Reporting Requirements – The Mississippi NPS Program, as recipient of *§319* funding, agrees to comply with all reporting requirements in *EPA regulation (40 CFR parts 31 and 35)*, *§319(h)(10)* and *(11)* of the *Clean Water Act*, and by the *Nonpoint Source Program and Grants Guidelines for States and Territories (2013)*.

2. Project Reports – a report for each *§319* funded project comparing actual accomplishments to expected outcomes. Final project reports will be provided electronically as attachments in GRTS, and submitted in the *Grant Year Close-out Report*. Hard and electronic copies are normally furnished in the latter report.

3. Annual Nonpoint Source (NPS) Program Report – summarizing and providing rationale/evidence of the progress of the State's program in meeting its milestones, in reducing NPS pollutant loads, and in improving water quality.

4. Grants Reporting and Tracking System (GRTS) – enter all mandated data elements into the GRTS for *§319*-funded NPS projects, including BMP and load-reduction data.

5. Quality Assurance – adherence to an EPA-approved Quality Management Pan (QMP), and an approved stand-alone site specific QAPP for those projects/activities not included under the approved QMP that result in the collection and/or generation of environmental data. A copy of the approved QAPPs must be retained by the State.

6. STORET Data Reporting – submittal of water-quality monitoring data for data collected in a waterbody pursuant to the implementation of a *§319* project into EPA's "storage and retrieval" (STORET) data system. All water-quality data generated with *§319* funding, either directly or by sub-award, are required to be transmitted into the STORET-data warehouse using either the Water Quality Exchange (WQX) or WQX web.

7. Workplan - EPA will measure sufficient progress by examining work-plan requirements and milestones while comparing time remaining in the project period with the rate of expenditure of funds (unliquidated obligations), among other things. (See EPA's *Guidance and Checklist for Determining Progress of State NPS Management Programs and Performance of CWA Section 319 Grants*.)

8. Watershed-Based Plans - Under the *§319* guidelines, use of *§319* "watershed project" funds requires that a watershed-based plan, or an acceptable alternative plan be completed prior to implementation of on-the-ground projects.

9. Best Management Practice Operation and Maintenance - Sub-agreements issued through the NPS Program require, where applicable, the continued proper operation and maintenance of all NPS management practices implemented using *§319* funds for the expected lifespan of the specific practice and in accordance with commonly accepted standards.

10. Federal Financial Report (FFR) - State expenditures for NPS implementation activities must meet the maintenance of effort (MOE) level required under *§319(h)(9)* of the *Clean Water Act*. A 40% non-federal program match is also required. The Mississippi NPS Program tracks day-to-day satisfaction of the MOE and match requirements using spreadsheets and its *Watershed Resource Management System* (WRMS) database application (described below), and submits and reconciles these data to the *BP2K Database* of the Office of Administrative Services (OAS) Budgeting Division, which provides budgeting and grants accounting for the MDEQ. The OAS reports on this to the EPA in a final FFR at the end of the budget period.

11. Limitation on Administrative Costs – The Mississippi NPS Program uses the WRMS application and Excel© spreadsheet tools to manage its budget. This enables it, among other things, to track administrative costs, which are generally limited to 10% of the amount of each grant.

12. Obligation and Outlay of Funds – The Mississippi NPS Program uses the WRMS application and spreadsheet tools to manage and track its commitments to expend grant funds and to complete the funded projects in accordance with its EPA-approved work plan.

13. Food and Refreshments – Expenditures allocated to official receptions, banquets, and other activities described in the NPS Grant Work Plan will be tracked in WRMS and spreadsheets.

14. Permits –All necessary permits (such as *Clean Water Act §404*) are obtained prior to implementation of any grant-funded activity that may fall under applicable federal, state, or local laws. The subgrantee's project-implementation plan must identify permits that may be needed to complete work-plan activities. The recipient must keep documentation regarding necessary permits in the project file.

15. Participation in Regional and National Meetings – The costs of attendance at meetings of annual NPS Managers and GRTS users is part of the NPS budget tracked by WRMS and spreadsheet tools and are reported by OAS.

16. NPS Success Stories – Data supporting the development and writing of potential "NPS Program Success Stories" may be found in the NPS Program data-management systems.

17. Substantial Involvement Condition – WRMS, spreadsheets, and textual documents would be used to record the NPS Management Branch's monitoring of the following -- when a cooperative

agreement exists and *Substantial Federal Involvement* with the recipient is anticipated during its performance. This Federal involvement may include:

1. Monitoring by EPA of the recipient's performance.
2. Consultation and collaboration on technical matters.
3. EPA's prior review and approval of project phases if developed and the substantive terms of the proposed sub-awards in which the recipient enters to carry out specific elements of the scope of work.

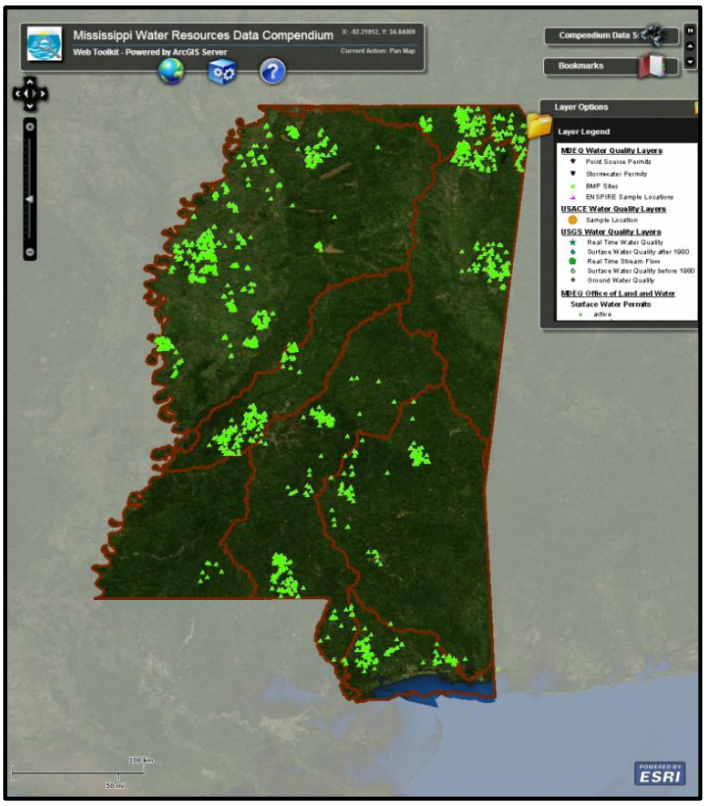
18. TMDL Reports – The NPS Program, in collaboration with the MDEQ Field Services Division (FSD) and the Data Integration Division (DID), will investigate which data-management systems to use for TMDL reports. Use of these systems will be predicated on the requirement by EPA to report supplemental information for TMDLs developed using *§319 funds*.

The NPS Management Program meets the above reporting and tracking requirements through use of its computer network, the internet, and standard business software as well as through the specialized tools and methods below.

4.3.1 **Mississippi Water Resources Data Compendium**

The *Mississippi Water Resources Data Compendium* (hereafter called *The Compendium*) was developed in an effort to coordinate a wide variety of data-collection activities and improve inter-agency communication and coordination concerning water-quality data collection among the U.S. Army Corps of Engineers (USACE), U.S. Geological Survey (USGS), and the Mississippi Department of Environmental Quality (MDEQ), but has added some water-quantity elements (ground- and surface-water permitted locations, respectively). *The Compendium* is a web-based GIS application that can be accessed from outside the MDEQ firewall and shows the location of data-collection sites or projects. It provides a description of the data including contact information to obtain necessary water-quality data. *The Compendium* includes information on the existing water-quality data in a simple, user-friendly interface.

The goal(s) of *The Compendium* are to:



- Foster increased access and use of the existing data;
- Identify gaps and/or overlaps in data collection;
- Promote collaboration and coordination of monitoring activities to improve data collection;
- Plan and maximize efficient use of available resources;
- Establish a sustainable process to routinely update the data compendium;
- Improve natural resource management;
- Provide a list of categorized and described data sets that can be geographically queried;
- Serve users.

The Compendium also provides the user with the ability to zoom to a specific area and filter out all the available water-quality data in the specified area. The user will also be able to generate reports and maps. In addition, *The Compendium* provides website links for additional information and brief descriptions of each project along with respective data layers. These are listed below:

Data Search Layers
MDEQ Data: Point Source Permits, Stormwater Permits, Section 319 BMP Sites, enSPIRE Sites, MDEQ Office of Land and Water - Surface Water and Groundwater Permits
USACE Data: Yazoo Basin Sites
USGS Data: Real-Time Water Quality Sites, Real-Time Stream Flow, Surface Water Quality after 1980, Surface Water Quality before 1980, Groundwater Quality Sites
Background Layers
§303(d) Impaired Waters, Drainage Areas, NLCD 2006 Landuse, Water Designated Uses
Click on the link below to access the data
Mississippi Water Resources Data Compendium

4.3.2 **Mississippi Watershed Characterization and Ranking Tool (MWCRT)**

The MWCRT is a spatially-based tool used to characterize and rank all 10- and 12-Digit HUCs, watersheds, and sub-watersheds, respectively, for all major river basins in Mississippi. The data within the MWCRT are summarized and assessed to characterize each of those watersheds and sub-watersheds. For the characterization(s), data layers are placed into two major categories based on

whether the layer is deemed to have resource value (environmental or human welfare, respectively), or whether it places potential stress on a sub-watershed. Next, data are calculated as observations (counts), linear miles, and acres on the sub-watershed level and normalized using a linear-transform equation. The normalized data are weighted by relative importance to create the ranking system. Each data layer can then be assessed individually or combined to drive the output from the MWCRT.

The MWCRT provides a scientific method that allows managers to identify watersheds of interest, make meaningful decisions, and prioritize watersheds for restoration and protection activities. The salient result of the tool's use is the shortened evaluation time involved for identifying priority watersheds.

4.3.3 **Grants Reporting and Tracking System (GRTS)**

The §319 Grants Reporting and Tracking System (GRTS) is the official reporting method used by EPA and states to describe those states' implementation of the National NPS Program pursuant to §319(h) of the Clean Water Act. In Mississippi, the MDEQ NPS Program uses GRTS to electronically report, as per GRTS guidance, the progress made in implementing the projects and activities funded with §319 funds. MDEQ strictly uses GRTS to report grant activities to EPA, as required, but also employs other management systems, e.g., its Water Resources Management System (WRMS, described briefly above and in more detail below in Section 4.4.5), for internal budgeting, tracking, or analysis.

The GRTS online database is used by various federal and state agencies, NGOs, and others. This illustrates transparency to those organizations as well as the public. It allows them to track §319 program activities and information, to enhance their understanding of NPS projects and programs, to review the funds being awarded and leveraged, and to see what success is being achieved.

Mississippi updates NPS pollutant-load reductions, i.e., nitrogen, phosphorus, and sediment, in the GRTS database by February 15th, annually. Other §319 grant project-specific data are entered as project implementation proceeds and upon project close-out. Through GRTS, EPA ensures that financial and other reporting requirements related to §319 grants are complete.

4.3.4 **Storage and Retrieval (STORET)**

The STORET (short for STOrage and RETrieval) Data Warehouse is EPA's national repository for water quality, biological, and physical data that is used by state environmental agencies, EPA and other federal agencies, universities, private citizens, and many others. Beginning in grant year 2014, EPA requires states to enter their water-quality monitoring data collected as part of NPS projects into the STORET data system (See *Nonpoint Source Program and Grants Guidelines for States and Territories*, issued April 12, 2013). Additionally, protocols pertaining to water-quality monitoring data collected for §319 projects in conjunction with the *National Water Quality Initiative* (NWQI) will be developed for submittal to STORET.

During the term of Mississippi's 2014 NPS Workplan, Mississippi's NPS Pollution Management Program will develop and implement protocols for submittal to STORET of monitoring data generated

with *§319* funding. This requirement is in accordance with EPA's National NPS Monitoring Program and gives consideration to monitoring performed in Mississippi under the National Water Quality Initiative (NWQI).

4.3.5 **Watershed Resource Management System (WRMS)**

Efficiently managing a statewide NPS pollution-control program based on sound environmental science requires the use of database and GIS-enabled tools. The WRMS is a customized and revised version of *Watershed-The-System*, a GIS-enabled database solution developed by Cengea Solutions, Inc. The NPS Management Branch has contracted Data Integration Division (DID) staff to configure this product to enter, manage, map, analyze, and report information about its own NPS Program. This is intended to incorporate information about its goals and objectives; partnering entities and subgrantees; budget; activities around the State, including action items and milestones; and results.

The WRMS organizes programmed activities into a budget premised upon the structure of each grant award and it tracks the progress of these activities as funds are expended. Beyond this, the WRMS can also express the hierarchy of programs, plans, and strategies, e.g., the *Statewide Education/Outreach Strategy*, the *Basinwide Management Strategy*, and WBPs, that are set up to manage watershed resources. Through its GIS module, the WRMS provides geo-spatial analysis of NPS pollution-related activities and strategies as they affect surface features in Mississippi in pursuit of the goals of the NPS Program.

4.3.6 **Financial Management**

The MDEQ currently has five active §319 grants, one of which is closed out every year, with a new one applied for every year. This gives the NPS Program an annual budget of between three and four million dollars of which 60 percent is federal §319 funding and 40 percent is State matching funds. In addition to this, the NPS program leverages the resources and authorities of other programs, actively coordinating and partnering with them to align planning, priority-setting and resources to make the best use of available assets to control NPS pollution.

Since the inception of the *§319* Nonpoint Source Program in 1990, various types of projects have been funded, including demonstrations of BMPs in watersheds; agricultural/chemical waste disposal; alternatives for converting dairy-cow wastes into electrical power and preventing possible stream pollution from those wastes; industrial-plant demonstrations that focused on preventing NPS pollution in industrialized watersheds; coastal streams ecosystem restoration; conservation easements that encouraged and assisted farmers to place lands into riparian-buffer strips; development and implementation of approaches that will restore and sustain surface and groundwater resources in perpetuity in the Mississippi Delta; and a variety of educational and outreach projects.

With the number and diversity of *§319* projects as illustrated above, it is important to have adequate and transparent tracking of finances. This ability is achieved both through coordination between the NPS Program and the MDEQ Office of Administrative Services (OAS), and through use of the WRMS budgeting modules (see Section 4.3.5 above) and spreadsheet tools. The OAS receives and disburses funding. The WRMS budgeting tool facilitates the following: 1) planning a detailed and

accurate budget; 2) tracking the encumbrance and spending of committed funds in close to real time; and 3) projecting future needs. This tool supports the Program in numerous ways: 1) developing and implementing a work-plan budget; 2) fulfilling its reporting requirement to EPA of MDEQ's commitment to expend the funds awarded it on time; and 3) to complete funded projects on schedule in accordance with its annual work plan.

4.3.7 **Mississippi NPS Pollution Management QAPP**

The MDEQ is strongly committed to sound science and quality assurance (QA) practices that will produce environmental data of appropriate quality to be used for decision -making. This commitment is consistent with the goal of *EPA Order 5360.1*. To achieve this goal, the MDEQ has established a *Quality Management Plan* (QMP) (MDEQ Quality Management Plan, 2009). It is the policy of MDEQ that there shall be sufficient QA activities conducted by the environmental programs to provide a reasonable assurance that all environmental data generated and processed will be scientifically valid, of adequate statistical quantity, of known precision and accuracy, of acceptable completeness, representativeness, and comparability and, where appropriate, legally defensible. Under MDEQ Quality Assurance (QA) policy, the QMP provides a framework to plan, implement, and assess the effectiveness of quality assurance and quality control operations applied to environmental programs. The product of this process is called the *Quality System*. The Quality System of MDEQ is intended for use by MDEQ managers and staff, as well as those organizations producing environmental data under a MDEQ external agreement, i.e., contract, grant, cooperative agreement, or interagency agreement. This system provides a connection between QA policy and its implementation in Mississippi. Upon approval by EPA, the QMP is updated as needed, but at least every five years. The approved plan is made available electronically to MDEQ staff via the intranet and to the public on the MDEQ website.

The QA policy of the MDEQ is achieved by ensuring that adequate QA procedures are used throughout the entire project-development process, i.e., from initial project planning through project assessment. *The Quality Assurance Manager* (QAM) and the *Quality Assurance Committee* (QAC) are key to implementing this policy. The QA staff of the MDEQ work with the QA Manager and staff of EPA's Region 4 headquarters and rely on them for ongoing comment and training.

The QAM and QAC members have access to all work areas and sufficient authority and organizational freedom to identify, initiate, recommend, and propose solutions to problems with data quality and to propose solutions to data problems. The QAM works with program-area managers to build consensus and if there are disagreements about recommendations from QA staff, disputes are resolved at the lowest administrative level possible using the existing management structure. Environmental data quality is the responsibility of all MDEQ staff who are directly or indirectly involved in the generation of internal data.

To ensure that NPS project results achieve the type and quality of environmental data and information needed for their specific purposes, MDEQ and subgrantees operate under the MDEQ QMP (MDEQ Quality Management Plan, 2009).

The following are the QA goals that serve to support the QA policy of MDEQ:

- The QA Management System will comply with *ANSI/ASQ E4-2004*, "Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs", 2004, with respect to planning, implementing, and assessing quality-assurance activities. Additionally, all environmental technology in use by MDEQ for pollution prevention, control or waste remediation will be designed, constructed, and operated according to pre-defined specifications.
- The data-quality objectives (DQO) process, or a similar systematic planning process, shall be used to plan project or study goals and objectives as they relate to programmatic or regulatory requirements and needed environmental-data quality prior to the initiation of data collection activities. DQOs, or similar outputs from a systematic planning process, shall be documented in a Quality Assurance Project Plan (QAPP), or equivalent project-level planning document.
- QAPPs or equivalent planning documents, however named, will be developed as planning documents and approved prior to collecting data to assure that data-quality issues are addressed. QAPPs will incorporate project-specific DQOs. QAPPs will be developed using a graded approach consistent with the complexity of the project and the intended use of the data.
- External organizations' quality assurance systems will be documented in approved Quality Management Plans.
- MDEQ managers and staff will receive QA training, as appropriate, for their responsibilities related to data collection or environmental technology.
- Communication on QA issues and activities will be maintained among the Quality Assurance Manager, program managers, and staff of MDEQ.
- Assessments will be performed to determine the effectiveness of MDEQ and external quality-management systems.
- QA processes will be designed in the most cost-effective manner without compromising data quality. Continuous improvement in the quality-management system will be emphasized.

Among its Quality System components, MDEQ relies on Quality Assurance Project Plans (QAPPs) coupled with detailed SOPs to define specific project QA/QC requirements. This approach identifies the critical measurements to be performed, and discusses the QA activities to be conducted during the sampling, analytical, and validation phases of the project. The document entitled *EPA Requirements for Quality Assurance Project Plans,[EPA QA/R-5, EPA/240/B-01/003 (March 2001)]* provides basic instructions for preparing QAPPs. The document entitled *EPA Guidance for Quality Assurance Project Plans [EPA QA/G-5, EPA/240/R-02/009, (December 2002)]* provides detailed information for developing a QAPP. The content of QAPPs used by MDEQ shall be consistent with the requirements of the most recent version of *EPA/QA/R-5*. All MDEQ monitoring projects must have an approved QAPP prior to data collection with the exception of those projects where immediate danger to human health or the environment is present or suspected. The MDEQ plans to develop a program specific QAPP that would cover all aspects of NPS related monitoring efforts.

Data Quality Objectives

The data quality objectives (DQOs) process is EPA's systematic planning process which uses a step-wise system of developing the technical, programmatic and quality-assurance requirements specific to a particular project or study. Detailed guidance for developing DQOs specific to a project or study is

provided in the following guides: [*Guidance on Systematic Planning Using the Data Quality Objectives Process, EPA QA/G-4, EPA/240/B-06/001 (February 2006)]; [Data Quality Assessment: A Reviewer's Guide, EPA QA/G-9R, EPA/240/B-06/002 (February 2006]; and [Data Quality Assessment: Statistical Tools for Practitioners, EPA QA/G-9S, EPA/240/B-06/003 (February 2006)]*. The DQO process is the preferred method of developing objectives for those projects requiring the collection of environmental data or the use of environmental technology. However, any systematic planning process may be used as long as it results in the development of a QAPP that meets EPA requirements.

Having identified the need for an environmental data-collection effort, the decision maker/data user, i.e., Division Director, Branch Chief, Program Manager, Project Manager, is responsible for initiating the process of DQO development. During the early planning phase of the effort, the data user must clearly establish the intended use of the data, time and resource constraints, and the quality of data needed. The Project Manager is responsible for development of DQOs that will facilitate the generation of sufficient data of the quality needed by the ultimate data user/decision maker. The DQO process requires meaningful interaction between the project manager, field and laboratory technical staff, QA staff, and data users as appropriate. The DQOs developed will be used for the detailed design of the investigation and preparation of the QAPP.

The QAM will be the focal point for providing guidance and review of DQO development. The QAM will consult with other MDEQ technical staff on DQO issues outside of his/her technical expertise. A rigorous treatment of the statistical hypotheses and decision-error portion of DQOs may require consultation with a statistician. Tracking DQO development and implementation will occur as a part of the QAPP review process. Note: Many data-collection activities mandated by EPA or MDEQ already have data-quality indicators , such as precision, accuracy and comparability, specified in the applicable regulations or in the methodology required by the regulations. In these instances, it may not be necessary to proceed through all phases of formal DQO development. MDEQ staff that have questions related to the development of DQOs should consult with the QAM.

All MDEQ monitoring funded by EPA grants is carried out under QAPPs prepared under the QAPP Guidelines of EPA. Monitoring activities conducted by MDEQ for parameters that are under the Mississippi Water Quality Standards are conducted in accordance with the *Mississippi Consolidated Assessment and Listing Methodology* (CALM) when possible. Laboratory procedures and data management are covered under approved MDEQ SOPs. This work is consistent with and supplements, but does not duplicate commitments in the *Section 106 Grant Work Plan for TMDL and Monitoring Program Elements*. Additionally, sponsored Section 319 projects that conduct water-quality monitoring will be required to provide a QAPP before monitoring activities begin. MDEQ continues to maintain a supplemental monitoring agreement with the U.S. Geological Survey (USGS). Under this agreement, the USGS provides a 50% cost-share arrangement with *§319* NPS funds to develop pre- and post-implementation monitoring plans for projects in priority watersheds to quantify water-quality improvements where *§319* NPS implementation funding is used. These plans are developed in collaboration with local watershed-implementation teams (WITs) and serve as the monitoring component of the WIT's watershed-based plan (WBP). Development of a QAPP for each monitoring plan is also required.

Chapter 5: Programs that Support the MS NPS Management Strategy

Mississippi's NPS Management Program would be incomplete without the support and input from a multitude of federal and state agencies, NGOs, and other regional and local entities. Detailed within this chapter are descriptions of these entities' names, missions, and relationships to Mississippi's NPS Management Strategy. The chapter is organized in a somewhat hierarchal manner beginning with federal entities and their programs and then proceeding to state entities and their associated programs.

5.1 Section 319 Grants and Eligibility

Approved state NPS management programs provide the framework for determining what activities are eligible for funding under *§ 319(h)*. Emphasis is placed upon the use of *§319* funds for the implementation of Watershed Based Plans (WBPs) to restore impaired waters and states are required to set aside at least 50% of the *§319* funds for watershed projects that implement WBPs. Mississippi's NPS Management Program implements a strategy that targets priority watersheds. Prioritization of these watersheds is done by multi-agency teams using the Basin Management Approach (BMA) as described in Section 3.3.1 above. Within priority watersheds, activities will be implemented to address parameters of concern that appear on the State's *§303(d)* list.

The State's NPS Management Program also incorporates the *Coastal NPS Program Strategy*, the recently developed *Mississippi Delta Nutrient Reduction Strategy, Basin wide Approach Strategy*, and the State's strategy for the development and implementation of NPS Total Maximum Daily Loads (TMDLs). States may use the remaining 50% of the *§319* funds, referred to as NPS program funds, for the full range of activities that support the goals of the State's NPS Management Program. NPS program funds may be used for non-regulatory or regulatory programs for enforcement, technical assistance, financial assistance, education, training, technology transfer, demonstration projects, and eligible NPS monitoring. In addition, states may use NPS program funds for planning activities such as revisions to the state NPS management program, development or implementation of WBPs (or acceptable alternatives), and the development of NPS and mixed-source TMDLs. States must demonstrate that a proper balance exists between WBP/TMDL development and implementation activities supported by *§319* funds. EPA encourages each state to use *§319* funds to restore and protect the priority water-body types for the State including all types of surface water (and ground water if applicable) as identified in the State's NPS Management Program. The reader is referred to Chapter 7, Mississippi's *Five-Year Action Plan*, that addresses long-term goals, objectives, and actions with tracking measures to achieve restoring and protecting the State's priority waterbodies.

5.2 United States Department of Agriculture (USDA) Farm Bill

The NPS Management Program realizes the significant benefits of working closely with the United States Department of Agriculture (USDA) to achieve common goals of restoring and protecting water quality. *The Agricultural Act of 2014* (a.k.a. *The Farm Bill*) is important legislation for conservation funding and for focusing on environmental issues. The conservation provisions assist farmers and ranchers in meeting environmental challenges on their land. This legislation simplifies existing programs and creates new programs to address high priority environmental and production goals. *The 2014Farm Bill* enhances the long-term quality of our environment and conservation of our natural resources. Under *The Farm Bill*, the *Environmental Quality Incentives Program* (EQIP), the *Conservation Reserve Program* (CRP), as

well as the *Conservation Stewardship Program* (CSP) which encourages higher levels of conservation and the adoption of new and emerging conservation technologies on farms, ranches, and forests will continue. The *Wildlife Habitat Incentive Program* (WHIP) has been renamed the *Voluntary Public Access and Habitat Incentive Program.* It enables landowners to realize a value-added benefit by creating wildlife habitats and opening their land up to hunting, fishing, and other kinds of public outdoor recreation. A new program called the *Agricultural Conservation Easement Program* (ACEP) streamlines three conservation easement authorities into a single program. The old *Wetlands Reserve Program* (WRP) is now one of those three easement authorities and is now called *Wetland Reserve Easements*. Another program that can affect NPS management strategies is the *Water, Waste Disposal and Wastewater Facility Grants and Loans Program*. This program provides grants, loans and loan guarantees to public agencies for projects that support the development, storage, treatment, purification, or distribution of water or the collection, treatment, or disposal of waste in rural areas. All of these programs support the implementation of agricultural conservation practices as well as a suite of conservation, restoration, and land retirement measures for wetlands, riparian areas, and other areas of critical importance to water quality. Mississippi will continue to build and expand partnerships with the agricultural community to support the implementation of WBPs.

In fiscal year 2014 and subsequent years, EPA, the USDA Natural Resources Conservation Service (NRCS), and states will continue to implement the *National Water Quality Initiative* (NWQI) to encourage and facilitate program coordination in selected watersheds nationwide. Currently, the USDA NRCS is partnering with 12 states within the Mississippi River Watershed basin to improve water quality within the watershed. Through the partnership, the NRCS has created the Mississippi River Basin Healthy Watershed Initiative (MRBI) which will promote the implementation of voluntary conservation practices by landowners, state agencies, and federal agencies. These landowners and agencies will focus on practices that reduce nutrient influxes rather than completely controlling them. The initiative will significantly decrease polluted runoff in order to improve water quality within the basin and to control nutrient loading which contributes to the hypoxic zone in the Gulf of Mexico. The watersheds within the Mississippi Delta that have been selected to implement various conservation practices are Deer Creek-Steele Bayou Watershed, Big Sunflower River Watershed, and Upper Yazoo Watersheds. These conservation practices include systems that avoid, control, and trap nutrient runoff to improve the wildlife habitat and help maintain the agricultural productivity within the State.

5.3 U.S. Army Corps of Engineers (USACE)

It is incumbent upon MDEQ to coordinate with the US Army Corps of Engineers (hereafter called the Corps) because of that agency's involvement and influence over wetland and hydrologic impacts to water quality within the State. The Corps administers parts of two major federal acts that can influence water quality. These acts and the Corps' responsibilities are given below.

5.3.1 Section 10 of the River and Harbors Act of 1899

This section, administered by the Corps, provides the basis for regulating dredge and fill activities in navigable waters of the United States, including wetlands. Originally, this Act was administered to protect navigation and the navigation capacity of the nation's waters. In 1968, due to growing environmental concerns, the review of permit applications changed to include factors other than

navigation including fish and wildlife conservation, pollution, aesthetics, ecology, and general public interest. Activities covered under the Act include such things as dredging and filling; the construction of piers, dams, dikes, marinas, bulkheads; bank stabilization; and others.

5.3.2 Section 404 of the Clean Water Act

The Corps administers a national regulatory program under *§404* of the *Clean Water Act* aimed at controlling the discharge of dredged or fill material into waters of the United States. Waters of the United States refers to navigable waters, their tributaries, and adjacent wetlands. Activities covered under *§404* include the construction of dams, dikes, marinas, bulkheads, utility and power transmission lines; and bank stabilization. Although the §404 program does not fully protect wetlands, it is nonetheless the only federal tool at this time for regulating wetland development statewide.

5.4 National Estuary Program (NEP)

The NEP was established under *§320 of the 1987 Clean Water Act* (CWA) *Amendments* as an EPA place-based program to protect and restore the water quality and ecological integrity of estuaries of national significance. *Section 320* of the CWA calls for each NEP to develop and implement a *Comprehensive Conservation and Management Plan* (CCMP). The CCMP is a long-term plan that contains specific targeted actions designed to address water quality, habitat, and living resources challenges in its estuarine watershed. Each NEP has a Management Conference (MC) made up of diverse stakeholders including citizens, local, state, and federal agencies, as well as with non-profit and private-sector entities. Using a consensus-building approach and collaborative decision-making process, each MC works closely together to implement the CCMP. The MC ensures that the CCMP is uniquely tailored to the local environmental conditions, is based on local input, and supports local priorities.

Currently, there are 28 estuaries located along the Atlantic, Gulf, and Pacific Coasts and in Puerto Rico designated as estuaries of national significance. Each NEP focuses its work within a particular place or boundary called a study area which includes the estuary and surrounding watershed. The State of Mississippi operates the Grand Bay National Estuarine Research Reserve (hereafter referred to as the Reserve) encompassing approximately 18,049 acres of coastal wetlands and estuarine waters along the southeastern coast of Mississippi immediately adjacent to the Mississippi-Alabama state line in Jackson County. The Reserve includes one of the largest estuarine systems in Mississippi and encompasses a variety of wetland types, including tidal estuary and non-tidal wetlands which support a highly diverse community of plants and animals. The Reserve was designated into the National Estuarine Research Reserve System (NERRS) in 1999 as the 24th reserve, as authorized under the provisions of the Coastal Zone Management Act of 1972 (CZMA). The CZMA recognized the significance of coastal resources and authorized the federal government to establish the Coastal Zone Management Program and the NERRS to manage these resources. The Mississippi Department of Marine Resources (MDMR) was designated to manage the Reserve, in conjunction with the National Oceanic and Atmospheric Administration (NOAA) as part of a state-federal partnership to provide for long-term stewardship. In 1972, the Mississippi Legislature also recognized the importance of Mississippi's coastal resources and passed the Coastal Wetlands Protection Act. Subsequently, the Mississippi Coastal Program was established in 1980.

The mission of the Reserve is to practice and promote informed stewardship of the *Grand Bay National Estuarine Research Reserve* (NERR) and Mississippi coastal resources through innovative research, education and training. Reserve education and training activities will share the results of these projects with the public and local decision-makers. Education programs primarily target students, teachers and the general public; whereas, the Coastal Training Program targets decision-makers. Each year, several research seminars are presented which include speakers from the NERR in Mississippi, other NERR facilities, universities, and others who are conducting coastal research.

5.5 Coastal Preserves Program

The Mississippi Department of Marine Resources (MDMR) Coastal Preserves Program was developed in 1992 by authority of the Wetlands Protection Act. The Coastal Preserves Programs objective is to acquire, protect, and manage sensitive coastal wetland habitats along the Mississippi Gulf Coast, therefore ensuring the ecological health of Mississippi's coastal wetland ecosystems. The State currently has title to approximately 30,000 acres of the designated 72,000 acres of crucial coastal wetland habitat within Mississippi's 20 coastal preserve sites. The Coastal Preserves Program is dedicated to effectively preserving, conserving, restoring, and managing Mississippi's coastal ecosystems to perpetuate their natural characteristics, features, ecological integrity, social, economic and aesthetic values for future benefit. Goals of this program include the protection and preservation of habitat of any rare, threatened or endangered species of plants and animals present on the Coastal Preserves and to increase public awareness through education programs and increased opportunities for public appreciation. A volunteer program is in place for several of the coastal preserve areas.

5.6 Section 6217 Coastal Nonpoint Pollution Control Program

Section 6217 of the *Coastal Zone Act Reauthorization Amendments* (CZARA) of 1990 requires states with approved coastal management programs to develop and implement a *Coastal Nonpoint Pollution Control Program* (CNPCP). This program builds on existing coastal management and NPS-pollution programs to reduce and prevent coastal water-quality problems. The program is administered jointly at the federal level by the National Oceanic and Atmospheric Administration (NOAA) and the Environmental Protection Agency (EPA). The Mississippi Department of Marine Resources (MDMR) is the lead state agency responsible for the CNPCP. The MDMR is working cooperatively with the *§319* NPS staff in MDEQ and with other agencies to implement this program. Mississippi's NPS Management Program incorporates the elements and requirements of *§319* and *§6217*.

The Coastal Nonpoint Program focuses time and energy on preventing and controlling significant impacts of NPS pollution on coastal resources and human health. Coordination and integration of coastal NPS programs with other programs and water-quality initiatives, e.g., state *§319* NPS programs, the development of Total Maximum Daily Loads (TMDLs) under *§303(d) of the Clean Water Act*, the *Environmental Quality Incentives Program* (EQIP) under the *1996 Farm Bill*, National Estuary Programs, and State Watershed Plans are considered in establishing priorities and developing strategies.

5.7 Forestry Protection

The Mississippi Forestry Commission (MFC) is responsible for managing forestry practices on state-owned forestlands and providing technical and financial assistance to nonindustrial private landowners. The MFC also provides technical and financial assistance on urban-forest management to Mississippi cities and towns. The United States Forest Service (USFS) oversees all forestry activities taking place in the six national forests in Mississippi. The NRCS provides technical assistance to local governments, landowners, and land users. The Farm Service Agency (FSA) provides funding for forestry cost-share programs. The Cooperative Extension Service (CES) provides education on BMPs and timber management to landowners and loggers. The MFC, with assistance from the Mississippi Forestry Association (MFA), CES, and the forestry industry ensures that forestry activities do not negatively impact water quality.

In an effort to improve coordination activities for addressing NPS pollution on federal lands, the USFS and the MDEQ entered into an agreement in February, 1990. The USFS accepted the responsibility for the development, implementation, and monitoring of BMPs for management activities on lands within national forests and to reduce NPS pollution.

Although the use of BMPs is voluntary in Mississippi, MDEQ does handle the investigation and enforcement of logging activities that negatively impact State waters and degrade water quality. This is done using *State Law Section 49-17-29 (2) (a)* which states:

> *It shall be unlawful for any person (i) to cause pollution of any waters of the State or to place or cause to be placed any wastes in a location where they are likely to cause pollution of any waters of the State; (ii) to discharge any wastes into any waters of the State which reduce the quality of such waters below the water quality standards established therefor by the commission; or (iii) to violate any applicable pretreatment standards or limitations, technology-based effluent limitations, toxic standards or any other limitations established by the commission. Any such action is hereby declared to be a public nuisance.*

Normal ongoing silvicultural activities that involve wetlands that are dredged or filled are exempt from *Section 404 of the Clean Water Act* provided the activity complies with BMPs. Should the activity not comply with BMPs, a permit will be required and all the standards and provisions under *§404* apply.

5.8 State Agricultural Conservation

The Mississippi Soil and Water Conservation Commission (MSWCC) is the lead agency responsible for abatement of agricultural NPS pollution through training, promotion, and installation of BMPs on agricultural lands. The NRCS provides technical assistance to the MSWCC through its conservation districts which are located in each county. The NRCS assists animal producers in developing nutrient-management plans and grazing-management plans.

The MDEQ is the lead agency for overall responsibility of water quality and quantity protection and for NPS pollution management. The MDEQ issues permits for waste-treatment lagoons involving Confined Animal Feeding Operations (CAFOs); all new CAFO permits require a “zero discharge” with the land application. The MDEQ also oversees permit applications for the washout facilities of aerial applicators of pesticides. The MDEQ and MSWCC have a MOA concerning agricultural NPS pollution and work

closely together to reduce agricultural NPS pollution through the *§319 NPS Program.*

State agencies listed below affect Mississippi's water resources directly or indirectly through their agricultural programs.

- The Mississippi Department of Agriculture and Commerce (MDAC) regulates the use, storage, and handling of pesticides on farms through training and certification of pesticide applicators.
- The USDA Farm Service Agency (FSA) provides funding for federal cost-share programs and any producer receiving those funds must farm in an environmentally sensitive manner. There are also cost-share incentives for farmers to install conservation practices.
- The Mississippi State University Cooperative Extension Service (CES) oversees several water-quality and environmentally related programs as part of its broad, educational mission.
- Resource Conservation and Development (RC&D) Councils encourage economic development, conservation and utilization of the human and natural resources. The six RC&D areas in Mississippi cover all 82 counties. These councils provide assistance on the local level to promote NPS education, planning, and the development and implementation of programs that will improve and enhance the social, economic, and environmental conditions in rural Mississippi.

5.9 Pesticide Management

Under the provisions of the *Mississippi Pesticide Law of 1975, (Miss. Code Ann. Sections 69-23-1 through 69-23-27)* the Mississippi Department of Agriculture and Commerce (MDAC), Bureau of Plant Industry (BPI) carries out various activities. These are listed below:

- Register and inspect pesticide products
- Administer special types of pesticide registrations and exemptions
- License dealers of restricted-use pesticides
- Conduct activities protecting the general public and the environment from possible pesticide contamination and misuse.

Through a *§319* subgrant from MDEQ, Mississippi farmers continue to take advantage of economical ways to address waste-pesticide disposal problems and improve water quality in their watersheds at the same time. They do this through waste-pesticide disposal events that have been held over the last several years. These events have been coordinated by the Mississippi State University (MSU) Extension Service, with assistance from the BPI.

5.10 Water Quality Monitoring and Assessment

The objectives of the water-quality monitoring program in Mississippi are diverse. The first objective is to develop and maintain an understanding of the quality of all waters within the State and the causes and effects of such quality. The second objective is to acquire the necessary data to accurately report on this water quality and its causes and effects. Thirdly, the monitoring program is utilized to support the State's water-quality management and regulatory programs and to assess the overall effectiveness of the State's pollution-control program. This monitoring for program effectiveness will not only document environmental improvements and successes, but also can identify problem areas where management practices and resources need to be focused.

In order to accomplish these objectives, the MDEQ carries out a broad range of monitoring activities before and after implementing controls such as BMPs. These multi-faceted activities consist of actual measurements of water-quality parameters in State waters followed by the investigation and evaluation of factors determining these water-quality findings. The monitoring process culminates with an overall assessment of the specific effects of such quality upon the beneficial uses of the State's waters.

5.11 Mississippi TMDL Program

The identification of waterbodies not meeting their designated use and the development of total maximum daily loads (TMDLs) for those waterbodies are required by *§303(d) of the Clean Water Act* and *EPA Water Quality Planning and Management Regulations (40 CFR part 130).* The TMDL process is designed to restore and maintain the quality of those impaired waterbodies through the establishment of pollutant-specific allowable loads and can be used to establish water-quality based controls to reduce pollution from both point and nonpoint sources. The State's NPS Program is a vital funding mechanism for implementation of projects in watersheds requiring NPS load reductions. MDEQ utilizes a non-regulatory, incentive-based approach to TMDL implementation. Through the Basin-wide Approach and the NPS Program, MDEQ seeks support and voluntary involvement of key stakeholders in each watershed and includes TMDL projects conducted by MDEQ or by other natural resource cooperators. A balanced watershed and a statewide focus prioritizes projects based on type and degree of impairment.

5.12 Contaminated Site Assessment and Remediation

Accidents, spills, leaks and past improper disposal and handling of hazardous materials and waste have resulted in a number of sites that have contaminated land, water, and air. Through five programs, the Brownfields Program, the Uncontrolled Sites Program, the Voluntary Evaluation Program (VEP), the CERCLA Program, and the Underground Storage Tanks (UST) Program, the staff of the Groundwater Assessment and Remediation Division (GARD) is responsible for the protection of human health and the environment by overseeing the assessment and remediation of contaminated sites in Mississippi. When it comes to cleaning up brownfields and other contaminated sites, GARD staff evaluates the impact of cleanup and redevelopment on the air, land, and water and require permits, NPS BMPs and other controls during the assessment and cleanup process.

Brownfield sites offer opportunities that go beyond their old uses. Developers have transformed brownfields into everything from golf courses and driving ranges to mixed developments with housing, offices, shopping, and open space. Smaller properties have found new life as bakeries and greenhouses. Urban brownfield redevelopment typically accommodates growth without sprawl. One acre of redeveloped brownfield property saves 4.5 acres of farms and countryside from sprawl development due to higher density of development on brownfield sites and the elimination or reduction of the additional lands for associated infrastructure for greenfield development. Brownfield development, because it tends to be higher density than alternative greenfield development, lowers run-off and improves water quality.

EPA has estimated that there are as many as 500,000 to 1 million brownfield sites in the United States that range from large former industrial sites, to mom-and-pop dry cleaners, vacant lots or gas stations. Though no formal study has been conducted, it is estimated that Mississippi may have as many as 6,000 sites where the expansion, redevelopment, or reuse is complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant.

5.13 Clean Water State Revolving Loans for NPS Projects (SRF)

The Federal *Clean Water Act* (CWA) amendments of 1987 authorized a *Clean Water State Revolving Fund* (CWSRF) loan program to assist states with: the financing of publicly owned treatment facilities (Section 212); Non-point Source (NPS) management activities (Section 319) and Storm Water pollution control projects (Section 402). Title VI, Section 601 of the CWA authorizes the Administrator of EPA to award capitalization grants to states for the purpose of establishing a low-interest loan program to assist eligible CWSRF loan recipients. Under the program, EPA provides "seed money" to states in order to capitalize on state-loan funds. The states, in turn, make below-market interest-rate loans to eligible public entities for projects that remediate water quality problems. In creating the CWSRF, Congress ensured that it would be able to fund virtually any type of water-quality project, including NPS, wetlands restoration and protection, estuary protection, watershed, brownfield remediation and stormwater pollution control, as well as the more traditional municipal, wastewater treatment systems. The CWSRF loan program is managed by the MDEQ. An applicant for a CWSRF loan is termed a loan recipient. In Mississippi, an eligible CWSRF loan recipient is defined as a county, municipality, municipal public utility, authority, district, political subdivision, or other governmental unit created under State law which has authority to dispose of the following: 1) domestic wastewater, 2) industrial wastewater, 3) wastewater sludge resulting from the treatment of such wastewater and 4) stormwater or nonpoint sources of pollution. This loan recipient must also have the authority under State law to receive CWSRF loan assistance, has the ability to comply with CWSRF program regulations and the requirements of the loan agreement, and is not in arrears in repayments of any previous loan.

5.14 Source Water Protection

The Mississippi Department of Environmental Quality (MDEQ) has received primacy from the EPA to administer the related Federal programs dealing with groundwater and surface water quality in the state. The Groundwater Planning Branch in MDEQ's Office of Land and Water Resources (OLWR) has the primary responsibility of coordinating groundwater (quality) protection efforts in Mississippi. Activities to prevent the contamination of drinking-water sources in the state have focused mainly on the completion of the Source Water Assessment Program requirements, addressing the Source Water Protection Program related measures and implementation of the Wellhead Protection Program.

5.14.1 Source Water Assessment Program

The 1996 amendments to the Safe Drinking Water Act mandated states to develop and implement a Source *Water Assessment Program* (SWAP). The purpose of this program was to notify Public Water Systems (PWS) and customers regarding the relative susceptibility of their drinking-water supplies to contamination. Congress intended for these susceptibility assessments to encourage efforts that would enhance the protection of PWSs by managing identified potential contaminant sources of concern. Also through the 1996 amendments, the Drinking Water State Revolving Fund (DWSRF) program was established and provides loan assistance to eligible public water systems for infrastructure improvements (http://www.epa.gov/ogwdw/dwsrf/pdfs/source.pdf). In 1998, the Mississippi State Department of Health (MSDH) contracted with MDEQ to develop and administer the SWAP in Mississippi. Required elements of assessments include the following: 1) delineating *Source Water Protection Areas* around PWS wells; 2) inventorying potential contaminant sources in the protection

areas; 3) assigning susceptibility rankings to wells; and 4) notifying the public regarding the availability of SWAP information.

Assessments in Mississippi use the following rankings to notify PWSs of their relative susceptibility: (1) Higher, (2) Moderate, and (3) Lower. Most of the public groundwater system wells in the state have received a Moderate ranking (63%), while 29% have received Lower rankings and only 8% have received higher susceptibility rankings. Some of the criteria considered when assigning these rankings to public groundwater systems include aquifer confinement, MSDH minimum well design criteria, potential contaminant sources identified within the delineated Source Water Protection Area, and abandoned wells within the protection area.

The size of a Source Water Protection Area is based on eight delineation scenarios that were developed using EPA's Wellhead Protection Area (WHPA code) computer program. The different scenarios are a result of countless computer modeling runs and an extensive data review of aquifer characteristics and well data from the USGS and MDEQ's Office of Geology and OLWR. The eight developed delineation scenarios incorporate differing model input parameters including well discharge, aquifer porosity and transmissivity, aquifer thickness, and time. The approved pumping scenarios are arranged according to well discharge ranges with larger pump rates corresponding to larger Source Water Protection Areas.

Assessments of all public groundwater systems and the three public surface water systems operating in the state have been completed. After MDEQ mailed the prepared assessment reports to the systems, it became their responsibility to notify their customers that a SWAP report was available for review upon request. As another reminder, the EPA required the annual Consumer Confidence Report (CCR) prepared by systems to include a reference regarding the SWAP report and a brief summary of the assessment findings.

The SWAP reports and corresponding maps of delineated Source Water Protection Areas are available online at the MDEQ website: http://landandwater.deq.ms.gov/swap. As a result of recent MDEQ regulatory changes, all new PWS wells now require that preliminary assessments be performed by MDEQ prior to the issuance of groundwater withdrawal permits. These preliminary assessments allow the suitability of proposed well sites to be screened prior to the drilling and completion of PWS wells.

5.14.2 **Source Water Protection Strategy**

A successful *Source Water Protection Program* must encourage cooperation and promote coordination among state and federal agencies, local governments, the planning and development community, and the stakeholders located in the *Source Water Protection Area* (SWPA). Cooperation and coordination are necessary to implement BMPs throughout the watershed that are consistent with existing stormwater-management plans, ordinances, and zoning codes, and result in the overall improved water quality within the watershed. Such cross-jurisdictional partnerships are essential for meeting the goals of public agencies and municipalities and still be consistent with the priorities of landowners, drinking-water customers, and the general public. Because these partnerships are vitally important, NRCS developed the *Collaboration Toolkit of Protecting Drinking Water Sources through Agricultural Conservation Practice (http://www.sourcewatercollaborative.org/swp-usda/).*

Mississippi's Source Water Protection Strategy for PWS wells using unconfined aquifers involves the integration/coordination of protection efforts with the MSDH as well as with various environmental-regulatory programs within MDEQ, such as *Underground Storage Tanks* (UST), *Resource Conservation and Recovery Act* (RCRA), *Comprehensive Environmental Response, Compensation, and Liability Act* (CERCLA), and *Brownfields/Uncontrolled Sites*. The implementation of this strategy is initiated when the corresponding regulatory programs are provided a Source Water Assessment analysis of a PWS well from the Groundwater Planning Branch. This direct cross-program involvement should help to ensure contaminant plumes do not degrade shallow groundwater sources used for public water supply. The strategy will be considered complete after MDEQ meets with representatives of systems to explain pertinent protection measures.

The protection strategy for public groundwater systems using deeper confined wells focuses on the hydrogeolologic confinement (vulnerability) of their production aquifers. Adequate aquifer confinement is generally assumed if an overlying confining unit of clay is at least 30 feet in thickness and/or the corresponding potentiometric surface (head) extends at least 10 feet above the screened aquifer. The implementation of this strategy is considered complete when the confinement is verified and a system is notified of any abandoned (unplugged) wells that may pose public-health issues.

The Source Water Protection Strategy for the four surface water intakes used in the State involves the integration of public drinking-water protection into MDEQ's Basin Management Approach (See Section 3.4.1) that is designed to protect and restore the quality of Mississippi's surface water resources. This integration component was well received by the two relative Basin Management Teams which incorporated extra protection measures into their management plans to complete the strategy. EPA Region IV and the Tennessee Valley Authority are assisting MDEQ with these projects. Meetings with these PWS systems have been held and additional meetings to discuss protection measures are intended. The State is also participating in a national pilot project to address the integration of the SDWA and the CWA.

The largest surface-water intake for public drinking water in the State is the Ross Barnett Reservoir. The MDEQ has collaborated with the Pearl River Valley Water Supply District (PRVWSD) to initiate *Rezonate*, a comprehensive effort to protect and restore water quality in the Ross Barnett Reservoir. The Reservoir serves as the source of drinking water for the City of Jackson. In the Reservoir watershed, the water utility (City of Jackson), is responsible for meeting the drinking -water standards, while PRVWSD and local governments, such as counties and cities (depending upon jurisdictional boundaries) are responsible for regulating land use within the watershed. Thus, it is important for the local governments and City of Jackson to closely coordinate efforts to promote water quality.

5.14.3 **Wellhead Protection Program**

Initial groundwater protection efforts by the Groundwater Planning Branch focused on the State *Wellhead Protection Program* (WHPP). This program conceptually was designed to identify and properly manage potential contaminant sources in Wellhead Protection Areas from which public water- system (PWS) wells capture their water over a specific period of time. Demonstration projects for several high-priority PWSs in Mississippi resulted in the first local management plans being

completed in the State by the mid-1990s. MDEQ used the success of these projects to spearhead interest in cross-program coordination of groundwater protection activities in Mississippi.

Since the mid-1990s, the Mississippi Rural Water Association has utilized a national EPA grant to fund a technician who has assisted MDEQ in the development and implementation of local Wellhead Protection management plans. Most of the WHPP activities over the past eight years have centered around Rural Water's efforts to develop management plans for at least 12 rural PWSs per year.

The *Agricultural Chemical Groundwater Monitoring (AgChem) Program*, which serves as the State's ambient groundwater monitoring program, samples shallow-water wells to determine the possible impact of pesticide and fertilizer use on the aquifers located in the State. Other agencies involved in groundwater protection activities in Mississippi are, the Mississippi Department of Agriculture and Commerce's Bureau of Plant Industry, and the U.S. Geological Survey. Groundwater Protection and Remediation Division staff is devoted to protecting the water resources of the State that lie beneath the surface of the ground. These resources are vital to Mississippi's economy as groundwater is the principle source of water for much of the State's industrial and agricultural base.

5.15 Nonpoint Source Education and Outreach

Cleaning up and preventing NPS pollution in a watershed involves extensive education of the public, including students, land managers, road builders, entire communities, public decision makers, and just about everyone. The process of mobilizing the cleanup or protection of a watershed crosses political boundaries and must extend into the philosophy of individual commitment. Proof exists that in order for a NPS education project to effectively bring about a change of habit, the participants should be actively involved with the project, a community spirit should be generated, and the participants should be able to perpetuate the learning and educational experience with a long-term commitment. The most important goal of Mississippi's NPS pollution education program is to create an awareness among school children and adults of where and how polluted runoff is generated; how it affects our quality of life; and the practices and habits which can be implemented to improve water quality or to maintain a pristine water body. After increasing awareness, MDEQ uses extended and active education projects and events to shape the philosophies, habits, and practices of young people and adults so they will make changes at home and in their work and recreation environments to reduce NPS pollution, improve water quality, and improve the quality of their lives. In addition, many projects related to NPS education and information are implemented by other agencies and organizations using *§319* grant funds. Some of these projects are statewide in scope, while others aim to educate and inform citizens within a particular watershed or community. Examples of some of these projects are detailed below:

Mississippi Envirothon High School Competition

The 2013 team members are Yujing Zhang, Mark Zhao, Julie Shaw, Joshua Michael Redding, and Joelle Young. The team advisor (not pictured) is Renee Dayan

The Mississippi Envirothon (hereafter called Envirothon) is a high-school competition sponsored by MDEQ's NPS Program and the Mississippi Association of Conservation Districts. The competition focuses on the topics of aquatic biology, soil science, wildlife biology, forestry, and a special topic which changes each year, e.g. NPS pollution, green infrastructure, urban forestry, estuaries, and sustainable agriculture. The Envirothon is part of an international competition where a governing board is responsible for selecting the special topic and the venue for the international competition each year. Throughout the year, MDEQ representatives and other natural-resource professionals conduct training and workshops throughout Mississippi for students and their team sponsors, provide literature and web sites for independent-literature study, and conduct field studies in order to prepare the teams for the competition.

Adopt-A-Stream

The Mississippi *Adopt-A-Stream (AAS) Program* is a state award-winning program which is sponsored and funded by MDEQ's *§319* Program and implemented by the Mississippi Wildlife Federation (MWF) in cooperation with MDEQ. This program promotes environmental stewardship by training volunteer citizens about stream ecology, land- use BMPs, topographic mapping, aquatic life, and water chemistry. Volunteers attend a water-education workshop lasting one to two days to learn how to monitor a stream, conduct a stream cleanup, or mark storm drains. The *AAS Program* coordinator and MDEQ representatives also train Envirothon teams and/or their team sponsors, students, and teachers in workshops, classrooms, and field-trip settings. In addition, nearly 10,000 people are reached with the *AAS Program* statewide through large-venue environmental events.

Environmental Teacher Workshops

Teacher workshops are a major environmental- education component of MDEQ's NPS grant each year. The workshops include classroom interactive instruction and field trips involving some of the best environmental/natural-resource speakers in Mississippi. Topics include instruction to teachers in aquatic ecology, stream monitoring, watershed mapping, forestry, wildlife,

soils, agriculture, cultural resources; and, lesson- plan curricula. Teachers can obtain Continuing Education Units (CEUs) credit in order to maintain their teaching licenses.

Blueways

A project sponsored by a NPS grant introduced the concept of recreational paddling trails called *Blueways* to Mississippi citizens. This project was first introduced at Old Fort Bayou in Ocean Springs in which 13 miles were designated as a *Blueway*. Since that project, *Blueways* have become a well-known part of Mississippi's outdoor activities. Continuing the effort of providing recreational paddling trails in Mississippi, seven other *Blueways* have been added in various watersheds throughout the State since its first use. *Blueway* designations provide for additional opportunities for eco-tourism while fostering stream stewardship. The NPS program will continue to promote the development of additional *Blueways*.

WaterFest Event on the Ross Barnett Reservoir

The Ross Barnett Reservoir *WaterFest* is an exciting conservation event held annually in conjunction with the Annual Independence Day Celebration. The Pearl River Valley Water Supply District, Ross Barnett Reservoir Foundation and MDEQ partner to create an exceptional event. *WaterFest*, the signature event for *Rezonate*, highlights the need to protect and improve water quality within the Ross Barnett Watershed. This annual *WaterFest* event features fun, educational/interactive activities, and exhibits from over 25 exhibitors and food vendors.

Watershed Harmony Musical Puppet Theater

The *Watershed Harmony Musical Puppet Theater* (hereafter called *Watershed Harmony*) performance is a 30-minute musical play with seven songs that convey a water-quality stewardship theme. The play portrays adults, students and wildlife by using large puppets and is performed on on a colorful, multi-level, 12'x12'stage. MDEQ and Bayou Town Productions completed the first performance of *Watershed Harmony* in October 2003. Since that time, an average of four (4) performances per month have toured the State reaching more than 120,000 students, teachers, and others. Pre-test/post-test scores reveal a significant increase in knowledge and awareness of water-pollution problems, solutions, and stewardship as a result of watching the performance as well as by interactive participation in activities and by local watershed information being presented. The play focuses on the prevention of polluted runoff by promoting the use of BMPs and individual stewardship to improve water quality. *Watershed Harmony* conforms to the 4th- and 5th-grade *Mississippi Framework Curriculum* and the *National Science Standards*. The performance is frequently used as a school presentation and as a part of

environmental field-day student events. In addition to students, the show is enjoyed and seen by all ages and many groups, including civic clubs, special-event groups, summer-reading programs, scout troops, and summer camps.

Student Environmental Day Camps

Each year, seven or more sessions of campers attend five days of intensive environmental training and field experiences where they learn about aquatic biology, NPS pollution, entomology, soils, wildlife biology, forestry, research projects, geography, journalism, and other topics.

Enviroscape and Groundwater Models

The Enviroscape-landscape model and the groundwater-aquifer sand-tank model are used regularly to teach citizens about NPS pollution in Mississippi. Over 110 models were purchased and distributed statewide by MDEQ to the Soil and Water Conservation Districts, the Extension Service, the Department of Health, the Choctaw Indian Reservation, environmental learning centers and to other environmental-education staff. The water models are used continuously for conservation field days for students and in workshops as well as public venues.

Make-A-Splash Event

The *Make-A-Splash* water education event is held each September at the Mississippi Museum of Natural Science in Jackson, Mississippi where students visit 20 different water-related interactive booths to learn about polluted runoff, wildlife, water use, groundwater, surface water, and macroinvertebrates, etc.

Storm Drain Marking Program

The Storm Drain Marking Program is another cooperative program between MDEQ and the MWF. The program promotes awareness of the water-quality impacts of polluted runoff in urbanized communities. Small plastic disks are placed on storm drains by local volunteers with the message "*No Dumping, Drains to River*." Volunteers glue the markers to storm drains and distribute door hangers to homes. Students and scouts also talk with residents about storm-water runoff and the need to prevent pollutants from entering storm drains. A brochure entitled *How to Conduct a Storm Drain Marking Project* is available.

5.16 Other Support Programs

The Gulf Region Water and Wastewater Plan

During 2006, the Mississippi Department of Environmental Quality developed the *Mississippi Gulf Region Water and Wastewater Plan*, as directed by Governor Haley Barbour, in response to Hurricane Katrina. This plan recommended over $600 million to fund water and wastewater projects in Mississippi coastal counties (Pearl River, Stone, Hancock, Harrison and Jackson) to: 1) support existing and future growth patterns, particularly as realized through new housing construction; 2) promote economic development; and 3) emphasize the regional concept for infrastructure management. The funding was provided by the US Department of Housing and Urban Development (HUD) through the *Disaster Recovery Community Development Block Grants* (CDBG-DR) program.

Through mid-2014, the program has expended more than $615M to build 32 water supply wells, 31 elevated water tanks (and one ground tank), 338 miles of water mains, 291 miles of sewer mains, 59 wastewater pump stations and 17 wastewater treatment facilities. MDEQ required the construction contractors and owners to obtain all the necessary permits for construction/ operation of these facilities, including the preparation of *Stormwater Improvement Plans*.

Contractors used Best Management Practices in all construction-related activities. Perhaps most significantly, not only has the CDBG-DR program eliminated more than 2055 septic tanks, some of which were failing and thereby contributing to the pollution load in stormwater runoff, but it also is helping to avoid the construction of more than 40,000 septic tanks (based on population projections) by providing backbone infrastructure for centralized wastewater collection and treatment.

This program is funded by a one-time grant from HUD. Therefore, once all the funds are depleted (which is slated for December 2015), this program will cease to exist.

Pollution Prevention (P2)

Pollution prevention is defined in the Pollution Prevention Act (Oct. 25, 1990) as "source reduction." Under *§6602(b)* of the Act, Congress established a national policy that:

- pollution should be prevented or *reduced* at the source whenever feasible;
- pollution that cannot be prevented should be recycled in an environmentally safe manner whenever feasible;
- pollution that cannot be prevented or recycled should be treated (reused) in an environmentally safe manner whenever feasible; and
- disposal or other release into the environment should be employed only as a last resort and should be conducted in an environmentally safe manner.

MDEQ, under Mississippi Code *§49 Chapter 31 (Mississippi Multimedia Pollution Prevention Program Act),* has been charged with the promotion of alternatives to waste disposal, such as pollution prevention and recycling technologies and procedures.

Atmospheric NPS Pollutant Transport and Deposition

A relationship exists between atmospheric transport and deposition of NPS pollutants and impaired water quality is recognized. The Air Division (AD) of the MDEQ administers Air *Programs* pursuant to *Division 3* of the regulations and laws and delegable provisions of the *Code of Federal Regulations [Title 40, Vol. 1, Chapter I, Subchapter C (Air Programs), Parts 50-96]* Some State NPS actions related to air pollution are unlikely to result in substantial remedial progress compared to what may be accomplished on national and international levels, e.g. mercury TMDLs. Ambient odors, volatiles, dust, smoke, or other air-pollution issues will only be addressed by §319 grant funding as an indirect derivative of NPS water-quality BMP implementation.

5.17 Climate Change

Disagreements continue to exists as to the sources, causes, timing, severity, and rate (e.g., what, where, when, how) greenhouse gases (carbon dioxide, methane, troposphere ozone, and nitrous oxide) adversely affect human and environmental health. Complexities and uncertainties are politically, socially, and scientifically contentious. While proponents point to evidence that seemingly confirms a current and growing problem, some people outright dismiss the notion while others are confused or unsure if a problem actually exist. The EPA National Water Program Strategy: Response to Climate Change (2012) describes the impacts of climate change and its implications for EPA clean surface water and groundwater protection programs. Statewide and local community management strategies are unlikely to result in substantial remedial progress compared to what may be accomplished on national and international levels.

Chapter 6: Nonpoint Source Enforceable Mechanisms and Policies

Both voluntary and regulatory efforts are needed to accomplish the objectives of Mississippi's total NPS management program for achieving success in reducing NPS pollutant discharges to surface waters and groundwaters. On the regulatory side of this equation, the State of Mississippi manages NPS pollution through its compliance and enforcement regulatory programs. The State's NPS regulatory programs employ water-quality based enforceable mechanisms to require that regulated sectors comply with State water-quality standards. According to EPA, "An enforceable mechanism consists of a *standard* applicable to an identified entity or entities; a *sanction* such as a civil, criminal, or administrative penalty, loss of a license, and performance of required remedial action, but not mere loss of an incentive; and a *process*, either explicit or implied, for applying the standard and imposing the sanction." (EPA, Region IV, Pollution Prevention and Control, Polluted Runoff)

6.1 Mississippi State Law

Nearly all States have some general statutory authority to deal with nonpoint source discharges that can be shown to result in water pollution. These "general discharge prohibition" authorities come in different forms, but most are parts of states' water pollution control laws (EPA, Region IV, Pollution Prevention and Control, Polluted Runoff). Mississippi's effort to regulate NPS pollution utilizes legal authorities dependent on both federal and state law. MDEQ is designated as the lead agency in Mississippi for purposes of the *Clean Water Act* (CWA), and all of its provisions. Federal statutory authority for NPS water-quality regulatory programs is provided by the 1987 amendments to the CWA through *§319, §401, §402*, etc.

MDEQ handles all investigation of and enforcement against those who negatively impact State waters and degrade water quality because of their operations. This is done using *State Law Section 49-17-29 (2) (a)* which states:

> *It shall be unlawful for any person (i) to cause pollution of any waters of the State or to place or cause to be placed any wastes in a location where they are likely to cause pollution of any waters of the State; (ii) to discharge any wastes into any waters of the State which reduce the quality of such waters below the water-quality standards established therefore by the commission; or (iii) to violate any applicable pretreatment standards or limitations, technology-based effluent limitations, toxic standards or any other limitations established by the Commission. Any such action is hereby declared to be a public nuisance.*

Activities regulated by the NPS regulatory programs in Mississippi include: construction, stormwater, mining, and hydrologic modifications, e.g. streambank stabilization, wetlands dredging/filling impacts. The strategies for management of these activities are to continue developing and implementing educational programs and to continue issuing permits while maintaining compliance and enforcement activities.

6.2 Regulations for NPS Pollution Activities

Under its statutory authority, the State has established regulations that relate to abatement of NPS pollution. Among these are regulations for the following: 1) permitting and control of agricultural animal facilities; 2) stormwater management and sediment control; 3) NPDES stormwater discharges; 4) onsite disposal systems; 5) solid-waste disposal activities; 6) mining operations; 7) permits for construction in navigable waters; and 8) others. The Environmental Permits Division (EPD) implements and oversees most of the permitting programs for MDEQ.

Based on Mississippi statute, the professional staff of MDEQ spends thousands of hours each year developing various types of environmental permits which are then presented to the Environmental Quality Permit Board for issuance. The Permit Board issues, reissues, modifies, denies, transfers, and revokes Mississippi permits and certifications administered under the Clean Water Act, the Clean Air Act, the Resource Conservation and Recovery Act, the Surface Mining Control and Reclamation Act, state mining laws, and state water resource control laws.

MDEQ's Environmental Permits Division's (EPD) functions include reviewing the majority of the permit-related issues, including permit applications, meeting with the permit applicants, reviewing permit renewal and modification applications, and making recommendations to the Permit Board. Currently, the EPD manages permits for over 20,000 sites. Many of these sites have permits that by state and federal regulation expire every five years and have to be re-issued. As new companies come into the State and existing companies have changes or modifications, these activities also require permitting actions.

The EPD works closely with the Mississippi Development Authority (MDA) in helping these new industries to Mississippi find sites. EPD believes that a key element in effectively addressing environmental issues surrounding greenfield projects is early interaction between the proposed company and the MDEQ. The EPD offers and encourages pre-application meetings. Time spent in refining the information needed for permit applications at the front end of a project typically reduces the overall time to bring a project and permitting to a decision point. MDA, EPD, and other MDEQ executive staff, branch managers, and permitting staff are committed to working together to effectively meet these ends (*MDEQ 2013 Annual Review*).

EPD also provides support to the Environmental Compliance and Enforcement Division (ECED) in regulating permitted facilities. Other State agencies such as the Department of Transportation (MDOT) and the Department of Health (MSDH) also have applicable NPS-related regulations. Access to the public for information about permitted facilities is provided through the MDEQ enSearch online database.

The amended *Administrative Procedures Act* passed by the State legislature mandated that all State agencies have uniform numbering to conform to a statewide administrative code. Thus, as of August 26, 2013, the Mississippi environmental regulations have been renumbered and reformatted. The regulations of the *Mississippi Commission on Environmental Quality* and the *Mississippi Environmental Quality Permit Board* (hereafter called "Permit Board") are now referenced and cited consistent with standard form required by the Secretary of State. While the numbering and citation of the regulations have been changed, the numbering, formatting and citation of the State environmental statutes remain the same. Guidance for the New Regulation Citation Form is available online at the MDEQ Environmental

Regulations webpage. The old regulations, which were effective until August 26, 2013, will remain on the website for historical and cross-referencing purposes until permits that refer to the old regulations have expired. The webpage also contains a guidance for cross referencing the new and old regulations.

6.3 NPDES Stormwater Permits

Stormwater permits provide a means of managing erosion and sediment as well as other pollutants (*EPA, Region IV, Pollution Prevention and Control, Polluted Runoff*). The reader is referred to Chapter 7, Section 7.4.3 for MDEQ's *Five-Year Action Plan* regarding urban stormwater and construction. Urban areas have a high concentration of impervious surfaces. Rainwater running off impervious surfaces such as roads, parking lots, and roofs can pick up pollutants and carry them into storm drains and then into rivers, streams, and lakes. In Mississippi, the MDEQ is designated as the lead agency for implementing an urban and polluted, runoff-control program including the *Stormwater Program*.

The 1987 amendments to the *Clean Water Act* (CWA) required EPA to establish regulations to control discharges of stormwater associated with industrial activity. EPA completed the regulations in November of 1990. Mississippi received authority to issue general permits on September 27, 1991. On July 14, 1992, the Permit Board issued eight general NPDES permits for industrial activities.

Since 1998, the Environmental Permits Division (EPD) of the Office of Pollution Control, General Permits Branch, has been primarily responsible for developing stormwater related general permits, reissuing general permits and granting coverages under the general permits. The Mississippi Department of Transportation is responsible for implementation of erosion- and sediment-control practices on highway construction. (*MDEQ - Urban Stormwater and Construction*)

General permits designed strictly to reduce the introduction of pollutants to stormwater are: 1) Baseline Industrial; 2) Large Construction (EPA classifies construction disturbing five or more acres differently than small construction); 3) Small Construction (disturbing less than five acres); 4) *Superfund Amendments and Reauthorization Act (SARA) Title III*; and 5) MS4 (Municipal) Phase II. Further general permits exist that include a stormwater component but do not deal with stormwater exclusively (See EPD General Permits for details).

Implementation of Phase II of the Federal Stormwater Regulations began on March 10, 2003. Under Phase II of the *Stormwater Program*, large, rapidly growing communities (greater Jackson area, the Coast, and Desoto County) are required to obtain a stormwater permit. This permit requires them to conduct local education and pass ordinances to control erosion, sediment, and stormwater. Phase II rules also require all construction activities that disturb more than one acre to use BMPs.

On January 11, 2011, The Permit Board reissued the *Large Construction Stormwater General Permit* (MSR10) for construction activities that disturb five or more acres. The permit is reissued for a five-year period that will end on December 31, 2015. On April 18, 2013, EPD reissued the *Small Construction General Permit* (MSR15) covering the discharge of treated/managed stormwater runoff into the waters of the State. This permit covers construction activities that disturb one acre to less than five acres. This reissuance will allow the continued discharge of treated/managed stormwater for an additional five-year period.

6.4 Mining Permits

The *Mississippi Surface Mining & Reclamation Act* (*Sec. 53-7-1-75 MS Code 1972 Annotated*) and the *Mississippi Surface Coal Mining and Reclamation Law* serve as part of an overall management plan towards effective control of NPS pollution in the State. The reader is referred to Chapter 7, Section 7.4.5 for MDEQ's *Five-Year Action Plan* regarding mining. Surface mining can generate significant polluted runoff at any phase of operation. Dredging operations in flowing streams can change the stream's characteristics by increasing its ability to carry water. This increase in capacity may lead to lowering the local groundwater levels or increased drainage from local wetland systems as well as stream-channel erosion. Stream diversion, a practice often necessary in recovering materials, can have significant impacts on both water quality and quantity at downstream locations.

Prior to the granting of a mining permit, applicants must address certain issues to ensure there will be no significant or adverse water-pollution impacts resulting from their mining activities. Provisions that address the control of NPS pollution must be included as part of a mine-reclamation plan. However, control of pollution, especially NPS, from grandfathered or abandoned mines poses a more difficult problem because of associated costs and lack of regulatory controls. On November 10, 1992, the Permit Board issued the *Mining Stormwater General Permit* for active or inactive surface-mining operations.

Within MDEQ, the Division of Surface Mining and Reclamation is responsible for administering and implementing both the *MS Act* and the *Federal Surface Mining and Reclamation Control Act* and their associated regulations and permitted activities. In addition to permitting and enforcement, the Mining and Reclamation Division provides the required Mine Safety and Health Administration (MSHA) training for mining operations in the State. MSHA regulations require an eight-hour, refresher-training course be taught to all mine workers.

The Coal Mining Division was established during 2007 to focus on the complexities of coal-mine regulation. Within Mississippi, it is estimated that five-billion tons of surface-mineable lignite, a low-grade coal ranked just below sub-bituminous coal, is available for industrial use. The *Mississippi's Abandoned Mine Land Program* has identified four abandoned and historic coal-mine sites. All of these sites are believed to have been active sometime in the period from the mid-late 1800s to the late 1920s.

The Mining and Solid Waste Branch of the Environmental Permits Division is responsible for the issuance of all media-environmental permits for Standard Industrial Classification (SIC) Codes that are related to solid-waste management and mining activities. The Office of Geology, Mining and Reclamation Division continues to update a mining database to provide data to the *Mississippi Digital Earth Model Program*. This database provides valuable mining information in a GIS format so that mining sites can be located and viewed by anyone on the internet.

6.5 Wetlands Protection Program

Wetlands provide many benefits including fish and wildlife habitat, erosion control, and water- quality improvement. The reader is referred to Chapter 7 to see the State's *Five-Year Action Plan* regarding this subject. Since the 1800s, almost 60% of Mississippi's wetlands have been lost. To mitigate these conditions, Mississippi employs a strategy of reviewing all activities deemed by The U. S. Army Corps of Engineers (USACE) to require an individual *§404* permit. This review takes place during a public comment period during which the applicant must address feasible alternatives to the activity, initial and secondary impacts of the proposed activity, mitigation, compliance with water-quality standards, stormwater management, wastewater approval, and other factors that would affect water quality. The entire scope of review for project activities is outlined in the *Mississippi Wastewater Regulations for Water Quality Certification*. Certification resulting from this review process typically includes conditions that the applicant must satisfy to be in compliance with water-quality standards. This State certification becomes part of the respective *§404 Permit*.

The *Wetlands Permitting Program*, as one can see, has both state and federal components, with the initial steps being federal requirements. The Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (USACE) are responsible for administering the federal program for development in wetlands, with USACE being the permitting authority. To determine whether or not a *§404 Permit* will be required for some activity, the applicant contacts the appropriate USACE District for a jurisdictional determination or the Mississippi Department of Marine Resources (MDMR) if in the three coastal counties of the State. The USACE District or MDMR (if coastal) will make a determination if the proposed activity would be authorized under an existing *Nationwide Permit* or *General Permit* or if an individual permit will be required.

For individual permits, *§401 of the Clean Water Act* provides that applicants shall provide the licensing or permitting agency a state certification that the discharge will comply with applicable sections of the law. In Mississippi, the MDEQ Environmental Permitting Division (EPD) is tasked with certifying that discharges will comply with State water-quality standards. EPD may require that selected and appropriate BMPs be implemented in order to meet these standards. Examples of construction activities needing *§401 Certification* include docks, bridges, and dams. The certification also applies to certain activities that may adversely affect wetlands. If the proposed wetland alteration takes place in the coastal- zone area, the certification process is coordinated with the MDMR. A certification is denied if the activity will have permanent adverse effects on existing or designated uses. Most certifications of the activity are issued with conditions that are enforceable by the permitting or licensing process.

The EPD administers the §401 Water Quality Certification Program which is the primary focus of wetland regulation and protection at the State level. MDEQ looks at proposed physical and hydrological impacts on wetlands and water quality in order to protect existing uses and prevent degradation. MDEQ may waive, issue with conditions, or deny a *§401 Certification*. The *Federal 404 Permit* is not issued until MDEQ gives a §*401 Certification.*

Additionally, the State of Mississippi manages a *Coastal Preserves Program* to enhance the ecological and economic value of its important coastal habitats. This program is intended to maintain native habitats and to provide appropriate transition zones for inland migration of coastal marshes in the face of sea-level

rise. The strategy utilizes invasive-species control and native vegetation plantings to restore ecological function to these unique and important habitats by targeting the most threatening and destructive invasive species. By strategically restoring wetlands and removing invasive species, projects within the *Coastal Preserves Program* will revitalize important fish and wildlife resources.

6.6 Compliance and Enforcement

Mississippi has a goal of continuous compliance with all applicable environmental laws, regulations and standards. *State Law Section 49-17-29(2)(a)* authorizes MDEQ to implement corrective action against parties responsible for NPS-related water-quality violations. Responsive action to NPS incidents minimizes further degradation of surface waters. The three MDEQ regional offices each have staff assigned to investigate and resolve NPS incidents. Regional personnel assess NPS incidents and investigate NPS complaints as received and, if necessary, will involve relevant Central Office personnel. The agency is typically notified about acute NPS problems through citizen complaints while chronic NPS problems are often identified through the State's monitoring and watershed programs.

In the context of both forestry and agriculture, states have in many different ways contrived mechanisms to make BMPs either enforceable or at least something more than voluntary by linking them to other enforcement mechanisms (*EPA, Region IV, Pollution Prevention and Control, Polluted Runoff*). In Mississippi, attempts are made to resolve problems by working with landowners or land users to either stop the pollution-causing activity or apply proper BMPs.

The OPC currently receives one to two complaints each quarter regarding adverse impacts from NPS pollution. Normally, these complaints include issues related to stormwater and agriculture, but the OPC also partners with the Mississippi Forestry Commission (MFC) to investigate complaints concerning forestry operations. The MFC investigates these complaints to determine if adverse impacts have occurred to state waters. If significant impacts are found, the MFC contacts the responsible parties to establish necessary NPS controls required and negotiates a schedule for their implementation. If the responsible party will not cooperate with the MFC, the matter is turned over to OPC staff. An order may be issued at that time to formalize the negotiated activities to take place. The OPC will then conduct a follow-up inspection to determine if the control measures are installed by the negotiated deadline. If action has not been taken to control the NPS problem, a hearing may be held to determine if there is just cause for noncompliance or to levy penalties .

The Environmental Compliance & Enforcement Division (ECED) within the Office of Pollution Control implements and oversees compliance and enforcement for Agriculture/Construction and Building Materials, Chemical Manufacturing, Energy and Transportation, Metals and Metal Manufacturing, Municipal and Private, Service and Miscellaneous Industries, Timber and Wood Products, and Solid Waste and Mining. The Permitting and Monitoring Division within the Office of Land and Water Resources implements and oversees all the water withdrawal compliance for groundwater and surface water. The Mining and Reclamation Division of the Office of Geology implements and oversees surface and coal-mining compliance.

On-site inspections are performed by ECED or the Field Services Division of MDEQ periodically or in response to citizen complaints. When citizens report an environmental problem, they are asked to explain

the nature of the problem and give the location. The citizen's name is not required, however, if a name and contact information is provided. MDEQ either contacts the plaintiff during the investigation or provides the results of the investigation after the investigation is complete.

When a site fails to comply with the permit(s) or regulations governing it, appropriate enforcement action is taken to promptly return the site to compliance. Enforcement proceedings typically include conferences, negotiations, and the issuance of a *Consent Order*. *Consent Orders* usually consist of stipulations agreeing to the incident, resultant damage, necessary corrective action, and a civil penalty. Refusal by a violator to sign a *Consent Order* results in issuing a non-negotiable *Administrative Order* mandating mitigation and penalties. *Administrative Orders* may be appealed through the State's legal system.

6.7 Animal Feeding Operations

State governments find agriculture to be the most problematic area for enforceable mechanisms; enforceable regulation of agricultural nutrients presents a mixed picture. Many states' laws of general applicability have exceptions for agriculture. Where state laws exist, they often defer to incentives, cost-sharing, and voluntary programs (*EPA, Region IV, Pollution Prevention and Control, Polluted Runoff*).

Enforceable authorities, when they exist, most commonly include concentrated animal feeding operation (CAFO) regulations based on the federal requirements (*EPA, Region IV, Pollution Prevention and Control, Polluted Runoff*). In Mississippi, the Agricultural Branch of the Environmental Permits Division (EPD) oversees the development, issuance, and maintenance of the permits issued for agricultural related facilities. Agricultural related facilities include, but are not limited to, animal-growing operations, food-processing operations, crop-maintenance services, grain-storage and processing operations, and vegetable-oil processing operations.

Application of pesticides by eligible operators, and Animal Feeding Operations (AFOs) are covered by statewide general permits called *State Operating Permits*. These permits are reviewed and renewed every five years or so. For AFOs, a nutrient-management plan is required to obtain a permit. In animal feeding operations, animals are confined in a small-land area where feed is brought to them rather than the animals grazing or seeking feed in an open area such as rangeland or an open pasture. Potential sources of water-quality pollution from AFOs include urine, manure, feed, and dead animals. An operation is considered an AFO if the animals are confined for at least 45 days in a 12-month period and there is an absence of grass or other vegetation in the confinement area during the normal growing season. A multimedia general permit for dry-litter poultry facilities, which also requires having a nutrient-management plan, is also issued by EPD staff. EPD staff members have provided education and assistance to producers in determining which facilities qualify as Confined Animal Feeding Operations (CAFOs) and require permit coverage.

The EPA has set criteria to designate further certain AFOs as CAFOs for which a point-source discharge permit is required. These criteria were established as a rule in the Federal Register dated February 12, 2003 and are primarily based on the number of animal units contained in the AFO. Depending on the number of animal units, the facility is designated as a large, medium, or small CAFO. In Mississippi, facilities designated as Large CAFOs require coverage under *CAFO Multimedia General Permit*

(MSG22). For example, AFOs that confine at least 1,000 cattle or cow/calf pairs are designated as Large CAFOs. In order to require permit coverage, facilities that qualify as either a Large or Medium CAFO (based on animal units) must also have one of the following: 1) either a manmade ditch or pipe that carries manure or wastewater to surface water or; 2) must have the animals come into contact with surface water that passes through the confinement area. Facilities that are designated as Small CAFOs (based on animal units) can be designated as CAFOs and required to obtain a permit on a case-by-case basis by the permitting authority.

As of the date of this document, the EPD, the administrator of the CAFO Program, has permitted 49 CAFO operations in Mississippi. Based on a federal rule established in the Federal Register dated November 20, 2008, CAFOs seeking permit coverage are required to submit nutrient-management plans with their permit applications. Staff within EPD review these nutrient-management plans and are required to provide an opportunity for public comment. Terms of the nutrient-management plans are required to be included in the CAFO general permit conditions. The reader is referred to Chapter 7 of this document for objectives, actions, and tracking measures related to the AFO and CAFO Programs.

Several other sources of NPS pollution are subject to enforceable mechanisms. Onsite-sewage disposal systems (septic tanks) and hydromodification, including drainage- and stream-alteration activities, are subject to a great deal of state regulation, some of which address NPS impacts of the activity. Less explicit state law speaks to highways and certain other state-agency activities, but some mechanisms exist there as well. The most sophisticated enforceable requirements of the State appear to be arising on a targeted-watershed basis in the context of watershed protection areas, estuaries and coastal waters, wild and scenic rivers, and targeted-impaired waters.

Chapter 7: Mississippi's NPS Five-Year Action Plan

7.1 Introduction

In Mississippi, like elsewhere in the country, we are facing serious challenges to the sustainability of our ground and surface-water resources, both in terms of quantity and quality. Although Mississippi is blessed with an abundance of water resources, these resources are being adversely impacted in certain areas by sediment, nutrients, and other NPS pollutants. Thus, the beneficial uses of those waterbodies, such as good fish and wildlife habitat, swimming and other recreational benefits, have been impeded. These impediments can be caused by inappropriate conservation and management practices carried out within the following major NPS pollution categories:

- Agriculture
- Forestry
- Urban Stormwater
- Construction
- Land Disposal
- Groundwater Protection
- Mining
- Wetlands & Hydrologic Modification

As mentioned in Section 3.1 above (Overview of Mississippi Efforts to Control NPS Pollution), MDEQ relies on both statewide- and targeted-watershed approaches. Before one can implement these statewide- and targeted-watershed approaches, a plan of goals, objectives, and action items should be elucidated to provide a blueprint for direction and ultimate implementation. First, long-term goals need to be established. Then, objectives with five-year action plans and tracking measures are required to achieve these goals.

The following sections include both the overarching goals of the statewide NPS Program followed by supporting tables containing objectives and five-year action plans. These objectives and plans first pertain to the statewide program and then include the five-year action plans by NPS categories. The NPS Management Plan presents action items in this chapter that:

- Identify outcome-based deliverables;
- Place an emphasis on reducing NPS pollutant loadings, e.g. nitrogen, phosphorous, and sediment as well as priority TMDL pollutants of concern;
- Support statewide efforts to expeditiously meet state water quality standards and sustain water quality benefits;
- Integrate and leverage human and financial capital of national, regional, state and local programs and projects;
- Align multiple project planning and implementing processes using a holistic approach;
- Enhance public/private sector project partnerships, local "ownership", transparency, and accountability;

- Support a flexible, targeted, iterative, holistic watershed-based approach to reach a *consensus for desired environmental outcomes*.

Appendix H was developed to provide a summary of key potential measures and indicators of progress and success toward meeting the programs goals, objectives, and supportive 5-year action plan. This appendix helps meet the USEPAs Key Component Number one (1) of the 2014 revised guidelines for implementation of state NPS management programs.

7.2 NPS Management Program Goals

The overarching goals below have been developed for the five-year period of 2014 through 2018. Some goals are more specific to the funds designated as **NPS Program Funds** while others are more specific to **Watershed Project Funds**. There are goals and objectives that apply on a statewide basis without reference to a specific watershed or project within a specific watershed; however, some activities, e.g., *Watershed Harmony* within the *Education and Outreach Program*, are required to address priority watersheds within the State before addressing non-priority watersheds. Other goals and objectives, although considered statewide, apply more specifically to targeted priority watersheds and will be ultimately addressed with WBPs. First, the reader is directed to the following goals:

1. The state will continue to manage and implement a NPS management program efficiently and effectively, assuring use of all financial and technical resources and leveraging funds with other programs to target priority issues and areas.

2. The state will continue to focus Section 319 annual grant funds and other leveraged resources on a statewide NPS management program that balances education, monitoring and assessment, BMP implementation, regulation, and technical assistance activities in all NPS pollution categories.

3. The state will work to increase and maintain awareness of water quality and NPS pollution through an effective education and outreach program by developing and implementing an effective education and outreach program that targets the general public, local elected officials, professionals, and K-12 students.

4. The state will continue to collaborate with key partners to develop a statewide and a targeted assessment and monitoring program in order to characterize and quantify impacts of NPS pollution and document water quality trends.

5. The state will continue to collaborate with key partners to develop NPS TMDLs and appropriate water quality standards, including the development of numeric nutrient criteria.

6. The state will seek to improve working relationships with local agencies, communities, watershed groups, and individuals to promote the development and implementation of locally-led Watershed Based Plans (WBPs).

7. The state will continue to collaborate with key partners to leverage resources needed to preserve and protect unimpaired waters and to restore those that are impaired by NPS pollution. All applicable NPS Best Management Practices (BMPs) will be implemented to provide the mechanisms to remove these impaired waters from the 303(d) list.

8. The state will continue to support and lead the sustainable water quality initiative by promoting conjunctive water management that includes innovative conservation practices.

9. State will continue efforts to reduce adverse impacts from individual on-site wastewater disposal systems (OSDS) through homeowner and installer education, regulation of system installation and repair, and decommissioning of failing systems.

10. The state will continue to maintain program quality, efficiency, and transparency using quantifiable science-based methods and data management and reporting tools to: 1) document water quality trends; 2) conduct watershed prioritization; 3) support program planning and implementation; 4) track progress of program activities; and 5) facilitate data sharing.

11. The state will continue to pursue full approval of the Coastal NPS program and strive to implement all applicable CZARA 6217(g) management measures to restore and protect coastal waters.

12. The state will continue to periodically review and assess the goals and objectives of the NPS Management Program and revise as new information becomes available.

13. The state will report progress made in water-quality improvements to USEPA and the public through the NPS Annual Report and the NPS website.

14. The state will produce annual Success Stories for water bodies that meet water-quality standards because of NPS restoration activities that have been implemented.

7.3 Statewide Five-Year Action Plans

7.3.1 Program Administration

The overarching goal for the administration of the NPS Management Program is to plan and execute an efficient program that meets targeted goals and objectives in a timely manner dictated by its *Five-Year Action Plan* and its annual work plans. The administration of the NPS Program with its various goals, objectives, and action items or strategies is overseen by the NPS Coordinator within MDEQ and in turn, by his mid-level management supervisor, the Chief of MDEQ's Surface Water Division (SWD). To achieve the goals and objectives given in Table 12 below, the NPS *Five-Year Action Plan*, the NPS Coordinator relies on input from entities within MDEQ and others outside of MDEQ. These may include those such as the Mississippi Soil and Water Conservation Commission (MSWCC), the Mississippi Forestry Commission (MFC), the various Resource Conservation and Development Councils, the Mississippi Department of Transportation (DOT), and various federal agencies, e.g. NRCS, US Forest Service, and various NPOs (list is not exhaustive).

The NPS *Five-Year Action Plan* illustrated within the various tables below was developed by using a two-prong approach. The first prong of this approach included documenting NPS activities that are being done within MDEQ under the purview of the *§319 Program*. The first prong of this approach was further subdivided into documenting 1) activities or programs that are done within the Surface Water Division (SWD) of MDEQ and then 2) activities or programs done within other entities of MDEQ, such as the Environmental Compliance and Enforcement Division (ECED) and the Office of

Land and Water (OL&W), to name a few. Thus, both entities within the SWD and entities outside the SWD, but within MDEQ were surveyed. They were both surveyed for their goals, objectives, and strategies of operations that may have a bearing or impact(s) on NPS pollution. These goals, objectives, and strategies were then assimilated into the tables that appears below in this chapter.

The second prong of the above approach included documenting activities and operations by federal, state, and NGOs that may impact or affect NPS pollution. In the same manner as described above, other agencies or entities were surveyed for their goals, objectives, and strategies. This survey was done both by letter and by meeting with them. Just as for in-house information, the resultant out-of-house information was also assimilated into the tables that appear below in this chapter.

The various tables below are delineated into both Statewide Programs and NPS Categories, the latter of which is further delineated into various impact categories that affect NPS pollution. The tables are generally organized into *Objectives*, and subsequent *Action Items* with associated *Tracking Measures*. Where possible, a time line is indicated that shows years 2014 through 2018 in which these strategies will hopefully be accomplished.

Table 12 5-Year Action Plan for NPS Program Administration

NPS-Related Objectives and Actions			Target Years	Goal Ref.
Objective 1:	Ensure the acquisition and efficient use of all available resources to implement a balanced statewide NPS program.		2014-2018	1, 2, 10
	Action 1:	Develop and submit an annual 319 NPS workplan and application.	2014-2018	
	Tracking Measure:	Conduct basin team meetings to identify NPS priorities to be targeted during the first quarter of the federal fiscal year.	2014-2018	
	Tracking Measure:	Collaborate with resource partners to leverage resources needed to develop watershed based plans and/or statewide projects to target identified priorities in the second quarter of the federal fiscal year.	2014-2018	
	Tracking Measure:	Submit annual workplan and application for EPA review no later than September 30th each year.	2014-2018	
	Action 2:	Efficiently allocate available resources to support statewide program activities and targeted watershed protection and restoration projects.	2014-2018	
	Tracking Measure:	Focus on funding product-oriented projects that will result in measurable improvements to water quality in order to realize the greatest amount of benefit from the funds spent.	2014-2018	
	Tracking Measure:	Work to solicit high-quality proposals from potential project subgrantees/contractors by providing technical support as needed, issuing clear guidance for proposal development and continuing to offer an optional pre-review of proposals.	2014-2018	
	Tracking Measure:	Ensure that 319 grant funds are allocated to meet the federal EPA requirement of a balanced budget split between program and project funds of 50% each.	2014-2018	
	Tracking Measure:	Ensure that the federal 40% state and local match requirement is met.	2014-2018	
	Tracking Measure:	Ensure that watershed based plans are developed in accordance with the 9 key elements of an effective watershed based plan.	2014-2018	
	Tracking Measure:	Ensure the obligation of all 319 grant funds within one year of grant award.	2014-2018	
Objective 2:	Ensure availability of proper mechanisms that will achieve effective program oversight.		2014-2018	1, 2, 5, 6, 7, 10,12

	Action 1:	Take a lead role by identifying water quality priorities and soliciting buy-ins from multiple agencies and stakeholders.	2014-2018	
	Tracking Measure:	Provide direction and ensure coordination between the NPS Management Branch, the Basin Management Branch, Assessment and Monitoring Branch, the Water Quality Standards Branch, and the Modeling and TMDL Branch to identify watershed priorities.	2014-2018	
	Tracking Measure:	Promote information sharing and collaboration between resource agencies, universities, watershed groups, and other non-governmental organizations, etc.	2014-2018	
	Action 2:	Play an active role by participating on various National, Regional, State and local committees and work groups to leverage additional resources to target priority NPS issues.	2014-2018	
	Tracking Measure:	Conduct an annual evaluation of the level of involvement to ensure continued maintenance and expansion upon existing involvement of committees and workgroups. (Refer to section 3.3.3.)	2014-2018	
	Action 3:	Provide an opportunity for the citizens of Mississippi to have input into the state's NPS Management Program.	2014-2018	
	Tracking Measure:	Conduct a minimum of two stakeholder meetings within each basin group per year to provide interested audiences and the general public an opportunity to learn and share ideas.	2014-2018	
	Tracking Measure:	Ensure stakeholder input by working with all basin team coordinators to incorporate relevant NPS agenda items during planned meeting of the various forums.	2014-2018	
	Action 4:	Seek to expand involvement in national policies, guidelines, and trends related to nonpoint source pollution.	2014-2018	
	Tracking Measure:	Provide comments on regional and national policy and other guidance documents proposed by EPA for state NPS program management as public comment opportunities allow.	2014-2018	
	Tracking Measure:	Respond to audit/surveys by EPA headquarters and Government Accountability Office (GAO) and the Office of Management and Budget (OMB) as required.	2014-2018	
Objective 3:	Efficiently track all NPS program activities and comply with all reporting requirements.		2014-2018	1, 2,10, 13,14
	Action 1:	Conduct efficient sub-grant preparation, negotiation, and signing.	2014-2018	
	Tracking Measure:	As needed, conduct pre and post meetings with all potential sub-grantees to negotiate and finalize agreements.	2014-2018	
	Tracking Measure:	Ensure that all sub-grant agreements are signed within 30 days.	2014-2018	
	Action 2:	Management of project activities by NPS Staff.	2014-2018	
	Tracking Measure:	As needed, conduct inspections/business meetings with sub-grantees to insure timely fulfillment of all project deliverables.	2014-2018	
	Tracking Measure:	Pay project subgrantee/contractor requests for reimbursements in a timely manner.	2014-2018	
	Tracking Measure:	Require the submission of progress reports (monthly, biannual, and final) for all Section 319 funded projects.	2014-2018	
	Tracking Measure:	Conduct monthly updates of expenditure reports.	2014-2018	
	Tracking Measure:	Prepare Project Closeout Reports upon completion of all Section 319 funded projects; providing necessary financial and grant reporting to EPA and other parties by established deadlines.	2014-2018	
	Action 3:	Ensure that all required reports are submitted to EPA in a timely manner.	2014-2018	
	Tracking Measure:	Document all NPS activities in the EPA's Grants Reporting and Tracking System (GRTS) and conduct weekly updates/maintenance to ensure that all GRTS data are entered as it becomes available.	2014-2018	

	Tracking Measure:	Submit an annual report to EPA on projects and grants not later than December 1st of each year.	2014-2018	
	Tracking Measure:	Submit grant close out report (providing necessary financial and grant reporting to EPA and other parties within three months of grant expiration).	2014-2018	
	Tracking Measure:	Submit a minimum of one success story per year.	2014-2018	
	Tracking Measure:	Document monitoring data into EPA's STORET system as required.	2014-2018	
	Tracking Measure:	Ensure that all QA/QC procedures are followed pursuant to the Office of Pollution Control's Quality Management Plan (QMP), and Quality Assurance Project Plans (QAPPs) are developed and approved by EPA.	2014-2018	
	Tracking Measure:	Submit an updated NPS Program Management plan to include EPA's 8 key elements to an effective NPS Management Program every 5 years.	2014-2018	
Objective 4:	Conduct an annual NPS program evaluation and review to track progress towards meeting the overall goals of the program.		2014-2018	1, 2,10,12,13
	Action 1:	Ensure consistency of the annual workplans with the overall 5-year action plan.	2014-2018	
	Tracking Measure:	Review eligibility of all proposed activities and projects included in the annual workplan based upon meeting the goals established in the 5-year management plan.	2014-2018	
	Tracking Measure:	Coordinate with EPA in their annual review of the Mississippi NPS program.	2014-2018	

7.3.2 **Education and Outreach**

As mentioned in Section 5.11 above, a large part of the *Statewide Programs* is the *Education and Outreach Prog*ram. This program focuses on educating both students (K-12) and adults, e.g. teachers, alike concerning NPS pollution. The most important issue within the Education and Outreach statewide category is "how we can change behavior patterns of both children and adults to prevent NPS pollution." It would naturally follow that the most important goal of Mississippi's NPS pollution education program is to create an awareness of where and how polluted runoff is generated; how it affects our quality of life; and the practices and habits which can be implemented to improve water quality or to maintain a pristine water body. Even though the *Education and Outreach Program* is a Statewide Program that reaches across the State, MDEQ places much emphasis on the fact that the Program's activities take place first in priority watersheds before targeting other less important watersheds. To achieve the aforementioned goal, MDEQ must partner with many other federal, state, and NGOs. As an example, MDEQ partners with various Mississippi Resource Conservation and Development (RC&D) Councils throughout the State to plan and execute teacher workshops that train teachers to educate their students about NPS pollution and its effects on water quality. Another example is a partnership with the Mississippi Wildlife Federation which assists MDEQ with the conduct of *Adopt-A-Stream* workshops. There are many other partners that assist MDEQ in obtaining this goal. Other partners, to name a few, are:

- US Department of Agriculture Natural Resources Conservation Service
- Mississippi Soil and Water Conservation Commission
- Mississippi Forestry Foundation
- Mississippi Urban Forestry Council
- Mississippi Environmental Education Alliance

- Mississippi Department of Health
- Barnett Reservoir Foundation
- Wolf River Conservation Society

To learn more about some of the programs offered by the NPS Education and Outreach Program, the reader is referred to the following link:
http://www.deq.state.ms.us/MDEQ.nsf/page/NPS_Education_Public_Outreach?OpenDocument

This *Education and Outreach Statewide Program's* objectives, action items, and tracking measures are shown in Table 13 below.

Table 13 5-Year Action Plan for Statewide NPS Education and Outreach

NPS-Related Objectives and Actions			Target Years	Goal Ref.
Objective 1:	Continue to conduct an effective Education and Outreach statewide program designed to increase awareness, change behaviors and promote understanding of environmental and related health issues to target educators.		2014-2018	3,10
	Action 1:	Conduct teachers workshops statewide.	2014-2018	
	Tracking Measure:	Conduct no less than 10 teacher workshops per year (approximately 200 teachers per year).	2014-2018	
	Tracking Measure:	Conduct teacher evaluations at the conclusion of the workshops.	2014-2018	
	Tracking Measure:	Offer Continuing Education Units (CEUs) to teachers who complete the workshop and report the number of CEUs awarded.	2014-2018	
	Action 2:	Conduct Adopt-A-Stream workshops and training statewide.	2014-2018	
	Tracking Measure:	Conduct a minimum of three, one-day workshops per year about NPS pollution, land use, and water quality.	2014-2018	
	Tracking Measure:	Conduct a minimum of one, two-day comprehensive workshop per year.	2014-2018	
	Tracking Measure:	At the conclusion of each workshop, conduct a survey to evaluate behavior change.	2014-2018	
	Action 3:	Support the Mississippi Environmental Education Alliance workshops, conferences, and field trips.	2014-2018	
	Tracking Measure:	Conduct teacher and environmental educators training at the annual conference each year and offer CEU credits for teachers.	2014-2018	
	Tracking Measure:	At the conclusion of each workshop, conduct surveys of participants to evaluate the effectiveness of the workshop and the level of awareness gained.	2014-2018	
	Tracking Measure:	Offer Continuing Education Units (CEUs) to teachers who complete the workshop and report the number of CEUs awarded.	2014-2018	
	Action 4:	Support the Project Learning Tree (PLT) Program.	2014-2018	
	Tracking Measure:	Conduct a minimum of 10 PLT teacher workshops per year (approximately 150 teachers).	2014-2018	
	Tracking Measure:	At the conclusion of each workshop, conduct surveys of participants to evaluate the effectiveness of the workshop and the level of awareness gained.	2014-2018	
	Tracking Measure:	Conduct a minimum of two PLT facilitator sessions per year to train new instructors.	2014-2018	
Objective 2:	Continue to conduct an effective Education and Outreach statewide program designed to increase awareness, change behaviors and promote understanding of environmental and related health issues to target decision makers.		2014-2018	3,10
	Action 1:	Support the Mississippi Urban Forestry Council.	2014-2018	

Table 13 5-Year Action Plan for Statewide NPS Education and Outreach				
NPS-Related Objectives and Actions			Target Years	Goal Ref.
	Tracking Measure:	Update the Resource Manual of Environmental Programs, Urban Forestry Manual, and the Scenic Community Program.	2015-2016	
	Tracking Measure:	Expand training to include the adoption of community policies and ordinances that incorporate low impact development and green infrastructure.	2014-2018	
	Tracking Measure:	Provide a minimum of eight workshops on Urban Forestry, Water Quality, and provide CEU credits.	2014-2018	
	Action 2:	Support the National Estuarine Research Reserve (NERR) Coastal Training Program.	2014-2018	
	Tracking Measure:	Participate in a minimum of two training sessions per year for the Coastal Training Program for decision makers.	2014-2018	
	Tracking Measure:	Conduct a needs assessment to determine what information is needed by local stakeholders in order to better manage coastal resources.	2014-2018	
	Tracking Measure:	Water quality information will be used to develop K-16 experiential environmental or STEM educational programs and opportunities that increase students' awareness and knowledge of coastal ecosystems, including water quality.	2014-2018	
	Action 3:	Participate in annual conferences and workshops for decision makers.	2014-2018	
	Tracking Measure:	Participate annually in the Mississippi Municipal League, Mississippi Association of Supervisors, Mississippi Planning and Development Districts, etc.	2014-2018	
	Action 4:	Provide technical support resources to community leaders to address construction and urban stormwater issues.	2014-2018	
	Tracking Measure:	Document the number of requests received and processed.	2014-2018	
Objective 3:	Continue to conduct an effective Education and Outreach statewide program designed to increase awareness, change behaviors and promote understanding of environmental and related health issues to target professionals (please refer to section 7.4 for a detailed list of actions targeting all professionals by NPS category).		2014-2018	1,2,10,13, 14
	Action 1:	Support development of training materials.	2014-2018	
	Action 2:	Support efforts to conduct training and evaluate progress.	2014-2018	
	Action 3:	Participate in community events to interact with professionals and share information on environmental issues and Best Management Practices.	2014-2018	
Objective 4:	Continue to conduct an effective Education and Outreach statewide program designed to increase awareness, change behaviors and promote understanding of environmental and related health issues to target grades K-12 students .		2014-2018	1,2,12,13
	Action 1:	Support the development, printing and distribution of NPS education and outreach material targeting K-12 students.	2014-2018	
	Tracking Measure:	Maintain an adequate supplies of printed materials related to all NPS categories, e.g. Sam-E-Soil activity book, Watershed and Me- A to Z, NPS brochures, etc.	As Needed.	
	Tracking Measure:	Disseminate NPS education materials at all conferences, workshops, performances, and events.	As Needed.	
	Tracking Measure:	Collaborate with educational partners to incorporate environmental education curricula for K-12 students.	As Needed.	
	Action 2:	Conduct the Watershed Harmony Musical Puppet Theater (Stewardship Program).	2014-2018	
	Tracking Measure:	Conduct a minimum of 10 shows per year targeting grades 4 & 5.	2014-2018	
	Action 3:	Support the Mississippi Envirothon Competitions and Training sessions for High School students.	2014-2018	

Table 13 5-Year Action Plan for Statewide NPS Education and Outreach				
NPS-Related Objectives and Actions			Target Years	Goal Ref.
	Tracking Measure:	Conduct four regional Envirothon competitions for approximately 300 students per year.	2014-2018	
	Tracking Measure:	Collect pre- and post-surveys on NPS pollution by the 50+ teams with their team sponsors to evaluate behavior change.	2014-2018	
	Tracking Measure:	Conduct one state competition event per year.	2014-2018	
	Tracking Measure:	Provide statewide NPS/environmental training to 10 teams per year and to team sponsors (teachers) through AAS trainings, teacher workshops, and MS Environmental Education Alliance (MEEA) training sessions, etc.	2014-2018	
	Tracking Measure:	Support the state competition winners at the International or Regional Competition each year.	2014-2018	
	Action 4:	Support Summer Ecology Day Camps.	2014-2018	
	Tracking Measure:	Conduct four, five-day Ecology/NPS camp sessions for approximately 100 students per year.	2014-2018	
	Tracking Measure:	Collect pre- and post-surveys on NPS pollution by the students to evaluate behavior change.	2014-2018	
	Action 5:	Support the Make-A-Splash Event at MS Natural Science Museum (for grades 4 &5).	2014-2018	
	Tracking Measure:	Provide 20 water-related booths to approximately 850 students at one event per year.	2014-2018	
	Tracking Measure:	Provide CEU credits to 10 teachers who attend the Make-A-Splash event.	2014-2018	
	Tracking Measure:	Collect a hand-written booklet from the students about the "Make-A-Splash" event.	2014-2018	
	Tracking Measure:	At the conclusion of the event, conduct surveys of teachers to evaluate the effectiveness of the event and the level of awareness gained.	2014-2018	
	Action 6:	Conduct Adopt-A-Stream Program for K-12.	2014-2018	
	Tracking Measure:	Conduct activity booths at a minimum of 10 conservation field day-style events for approximately 500 students per year.	2014-2018	
	Tracking Measure:	Conduct training for a minimum of six Envirothon high school teams per year.	2014-2018	
	Tracking Measure:	Set up displays at four large-venue events per year.	2014-2018	
	Tracking Measure:	Conduct two storm drain marking projects per year.	2014-2018	
	Action 7:	Assist SWCDs with Conservation field days.	2014-2018	
	Tracking Measure:	Present NPS information at a minimum of two conservation field days to approximately 400 students.	2014-2018	
	Action 8:	Support the National Estuarine Research Reserve (NERR) Education Program.	2014-2018	
	Tracking Measure:	Participate in a minimum of two training sessions for the NERR Education program for grades K-12 and adults per year.	2014-2018	
	Action 9:	Continue to utilize water models, education equipment and technologies for educational purposes, e.g. Enviroscape and Groundwater Aquifer Models, Secchi disks, monitoring kits.	2014-2018	
	Tracking Measure:	Continue to promote use of environmental models distributed to Soil and Water Conservation Districts to promote awareness of NPS issues.	2014-2018	
	Tracking Measure:	Present the environmental models a minimum of eight times per year at school events.	2014-2018	

Table 13 5-Year Action Plan for Statewide NPS Education and Outreach				
NPS-Related Objectives and Actions			Target Years	Goal Ref.
Objective 5:	Continue to conduct an effective Education and Outreach statewide program designed to increase awareness, change behaviors and promote understanding of environmental and related health issues to target general public.		2014-2018	3,10
	Action 1:	Support efforts to raise awareness of NPS issues and events via media outlets.	2014-2018	
	Tracking Measure:	Continue to allocate resources to fund Public Service Announcements (PSAs), publishing of NPS articles, and advertisements related to major NPS environmental events.	2014-2018	
	Tracking Measure:	Continue to enhance MDEQ's NPS webpage to provide information to the public about NPS pollution in Mississippi.	2014-2018	
	Action 2:	Support the development, printing and distribution of NPS education and outreach material targeting the general public.	2014-2018	
	Tracking Measure:	Maintain an adequate supplies of printed materials related to all NPS categories, e.g. 10 Things Brochure, Citizen Guides, Rain Garden manuals, etc.	As Needed.	
	Tracking Measure:	Disseminate NPS education materials at all conferences, workshops, performances, and events.	As Needed.	
	Action 3:	Continue to utilize water models, education equipment and technologies for educational purposes, e.g. Enviroscape and Groundwater Aquifer Models, Secchi disks, monitoring kits.	2014-2018	
	Tracking Measure:	Continue to promote use of environmental models distributed to Soil and Water Conservation Districts to promote awareness of NPS issues.	2014-2018	
	Tracking Measure:	Present the environmental models a minimum of eight times per year at public events.	2014-2018	
	Action 4:	Display the NPS exhibit at large-venue events.	2014-2018	
	Tracking Measure:	Participate in a minimum of four exhibits per year and track the number of people who visit booth.	2014-2018	
	Action 5:	Enhance minority, low income, and/or non-English education and outreach of NPS issues.	2014-2018	
	Tracking Measure:	Collaborate with MDEQ's Office of Community Outreach to increase the diversity of people reached.	2014-2018	

7.3.3 **Assessment and Monitoring**

As mentioned in Section 5.10 above, there are three main objectives of the water-quality monitoring program in Mississippi. These objectives include developing, acquiring, and maintaining water-quality data. This data is necessary to assess the overall effectiveness of the NPS program on water quality. In order to accomplish the above objectives, the MDEQ carries out a broad range of monitoring activities before and after implementing controls such as BMPs. These multi-faceted activities consist of quantitative measurements of water-quality parameters in State waters followed by the investigation and evaluation of factors determining these water-quality findings. The monitoring process culminates with an overall assessment of the specific effects of such quality upon the beneficial uses of the State's waters. After initial assessment and monitoring of the State's waters, watersheds considered to have water-quality impediments are prioritized. Priority watersheds receive emphasis for further assessment, monitoring, follow-up BMP implementation, and finally more monitoring to see if improvements of water quality have been made.

The NPS program partners with several agencies and universities to implement a successful Assessment and Monitoring program. These partners include MDEQ's Field Services Division, the United States Geological Survey's National Water-Quality Assessment Program, and Mississippi State University. The reader is referred to the following links for more information on MDEQ's Assessment and Monitoring:

MDEQ's Field Services Laboratory
http://www.deq.state.ms.us/MDEQ.nsf/page/FS_labserv?OpenDocument

MDEQ's Surface Water Quality Assessments
http://www.deq.state.ms.us/MDEQ.nsf/page/FS_SurfaceWaterQualityAssessments
United States Geological Survey National Water-Quality Assessment Program
http://water.usgs.gov/nawqa/about.html
Mississippi State University's Water Quality Lab
http://www.fwrc.msstate.edu/water/

MDEQ's statewide objectives, actions, and tracking measures for *Assessment and Monitoring* are found in Table 14 below.

Table 14 5-Year Action Plan for NPS Assessment and Monitoring

NPS-Related Objectives and Actions			Target Years	Goal Ref.
Objective 1:	Develop and implement an ambient monitoring program to determine water body health in state waters.		2014-2018	4, 10
	Action 1:	Develop QAPPs for the following annual ambient monitoring programs: MBISQ monitoring program not on MS Alluvial Plain wadeable streams, DBISQ monitoring program on MS Alluvial Plain wadeable streams, MCA monitoring on estuaries, Lakes sampling and analysis, bacteriological monitoring on primary contact recreation waterbodies, Fish Tissue Monitoring, beach monitoring, and fixed station monitoring. (Refer to MS Surface Water Monitoring Plan)	2014-2018	
	Tracking Measure:	Formulate a development team and develop a draft for internal review and approval.	2014-2018	
	Tracking Measure:	Implement the timeline as defined in the QAPP.	2014-2018	
	Tracking Measure:	Perform recalibration of index as needed (generally every 5 years).	2014	
	Action 2:	Consider the expansion of the ambient monitoring program to include: bacteriological monitoring for primary contact recreation lakes and estuaries, design for biological index for higher order streams (Strahler order 5-6), and fisheries index for non-wadeable streams, rivers and estuaries.	2014-2018	
	Tracking Measure:	Planning and leveraging with other partners.	2014-2018	
	Tracking Measure:	Develop methodology and QAPP.	2014-2018	
	Tracking Measure:	Conduct monitoring and analysis on primary contact recreation lakes and reservoirs.	2014-2018	
	Tracking Measure:	Perform data QA/QC.	2014-2018	
	Action 3:	Plan and develop a protocol and procedure for measuring primary productivity in state waters.	2014-2016	
	Tracking Measure:	Develop a standard operation procedure for all water body types.	2014-2015	

Table 14 5-Year Action Plan for NPS Assessment and Monitoring				
NPS-Related Objectives and Actions			Target Years	Goal Ref.
	Tracking Measure:	Develop QA/QC measures and seek peer review and final approval.	2016	
	Action 4:	Continue to collaborate with other resource agencies and stakeholders to leverage additional resources to expand ambient monitoring capacity.	2014-2018	
	Tracking Measure:	Apply for at least one funding resource per year.	2014-2018	
	Tracking Measure:	Steer available resources to target priority monitoring needs.	2014-2018	
Objective 2:	Plan and conduct targeted monitoring, e.g., biological, physical/chemical, habitat, sediment in support of NPS related program activities		2014-2018	4,10
	Action 1:	Identify annual NPS assessment and monitoring priorities	2014-2018	
	Tracking Measure:	Conduct a minimum of one planning meeting annually to identify priorities	2014-2018	
	Action 2:	Collaborate with agencies and other partners to develop and implement targeted assessment and monitoring plans for priority watersheds.	2014-2018	
	Tracking Measure:	Develop a QAPP.	2014-2018	
	Tracking Measure:	Implement the timeline as defined in the QAPP.	2014-2018	
	Tracking Measure:	Assess the data to determine water quality changes	2014-2018	
Objective 3:	Perform surface water quality assessments pursuant to Sections 305(b), 303(d), and NPS 319 of the Clean Water Act (CWA).		2014-2018	4,10
	Action 1:	Perform Statewide Surface water quality assessments.	2014-2018	
	Tracking Measure:	Submittal of electronic assessment data to EPA.	2014-2018	
	Tracking Measure:	Generate georeferrenced segment data.	2014-2018	
	Tracking Measure:	Development/Revision of the state's Consolidated Assessment and Listing Methodology.	2014-2018	
	Tracking Measure:	Develop and submit narrative Section 305(b) report.	2014-2018	
	Action 2:	Identify waters that are impaired for 1 or more uses according to Section 303(d) of the CWA.	2014, 2016, 2018	
	Tracking Measure:	Identify and provide list of impaired waters.	2014-2018	
	Action 3:	Participate in Stressor Identification Process for Biologically impaired waters.	2014-2018	
	Tracking Measure:	Identify impaired waters.	2014-2018	
	Tracking Measure:	Prioritize waters for SI process.	2014-2018	
	Tracking Measure:	Identify addition monitoring needs.	2014-2018	
	Tracking Measure:	Collect data and perform analysis.	2014-2018	
	Tracking Measure:	Identify primary probable cause of impairment.	2014-2018	
Objective 4:	Ensure availability of adequate resources to meet federal and state data management and reporting requirements		2014-2018	4,10
	Action 1:	Provide electronic ambient data to EPA pursuant to Section 106 grant commitments	2014-2018	
	Action 2:	Submit ambient surface water quality chemical, assessment, and beach monitoring and closure data to EPA.	2014-2018	

Table 14 5-Year Action Plan for NPS Assessment and Monitoring				
NPS-Related Objectives and Actions			Target Years	Goal Ref.
	Action 3:	Develop the database and flow for biological community data	2014-2018	
Objective 5:	Continue to utilize existing mechanisms for data sharing with other agencies and the general public		2014-2018	4, 10
	Action 1:	Maintain the Water Quality Compendium	2014-2018	
Objective 6:	Perform Field inspections and laboratory analysis in support of compliance activities.		2014-2018	4,10
	Action 1:	Perform inspections.	As Needed	
	Action 2:	Perform laboratory analysis of field samples.	As Needed	
Objective 7:	Continue to utilize the partnership established in the MOA with USGS in conducting assessment and monitoring activities.		2014-2018	4, 10
	Action 1:	Conduct assessment and monitoring activities with program partners.	2014-2018	
	Tracking Measure:	Conduct spatial analyses of NPS activities and issues through the GIS Compendium application and promote collaboration to improve data collection.	2014-2018	
	Tracking Measure:	Identify gaps and/or overlaps in data collection, and routinely update the data compendium; and Improve natural resource management.	2014-2018	
	Tracking Measure:	Collaborate with partners to store and analyze NPS pollution monitoring data using the enSPIRE database, and report it to EPA.	2014-2018	
	Tracking Measure:	Monitor receiving waters of targeted watersheds to characterize nutrient and organic loadings; understand and account for Point sources in overall watershed implementation plans.	2014-2018	
	Tracking Measure:	Develop a process of describing and monitoring stream channel evolution and stability characteristics that can be linked to important habitat variables.	2014-2018	
	Tracking Measure:	Develop tools using existing biological and water quality/habitat databases to describe stressor/response relationships for use in identifying and understanding causes of impairment.	2014-2018	
	Tracking Measure:	Use existing and expand new surface water/ground water monitoring stations to collect data to understand mechanisms of surface water/groundwater interactions, specifically in the MS Alluvial Plain.	2014-2018	
	Action 2:	Use monitoring results to extrapolate to TMDL/NPS goals.	2014-2018	
	Tracking Measure:	Use SPARROW or other models to determine levels of upscale needed to treat a target drainage area or watershed (10 digit, 8 digit, etc.) to reach goals based on monitoring results at the tiered level strategy.	2014-2018	
	Action 3:	Evaluate the response of aquatic ecosystems to changing hydrologic, physical and chemical conditions of surface water.	2014-2018	
	Tracking Measure:	Develop a tool to characterize the biological conditions of large rivers using associations with a gradient of abiotic factors.	2014-2018	
	Tracking Measure:	Develop a tool to characterize algal community responses to varying levels of nutrient concentrations in Mississippi aquatic ecosystems.	2014-2018	
	Tracking Measure:	Quantify relationships between streamflow characteristics and biological species diversity and health.	2014-2018	
Objective 8:	Expand existing agencies' monitoring efforts to better characterize the spatial and temporal variation in water quality across the MS Gulf Coast.		2014-2018	4, 10, 11
	Action 1:	Add eight water quality monitoring stations within the Grand Bay National Estuarine Research Reserve (NERR), operated according to NERRs SWMP Standard Operating Procedures.	2014-2018	
	Tracking Measure:	Hire additional monitoring staff to oversee this process.	2014-2018	
	Tracking Measure:	Install infrastructure as needed (pilings, sonde deployment tubes, etc.)	2014-2018	
	Tracking Measure:	Purchase data loggers and telemetry equipment.	2014-2018	
	Action 2:	Establish nine water quality monitoring stations in the Pascagoula River Marshes Coastal Preserve, to be operated according to NERRs SWMP Standard Operating Procedures.	2014-2018	

Table 14 5-Year Action Plan for NPS Assessment and Monitoring				
NPS-Related Objectives and Actions			Target Years	Goal Ref.
	Tracking Measure:	Hire additional monitoring staff to oversee this process.	2014-2018	
	Tracking Measure:	Install infrastructure as needed (pilings, sonde deployment tubes, etc.)	2014-2018	
	Tracking Measure:	Purchase data loggers and telemetry equipment.	2014-2018	
Objective 9:	Collect water quality data by volunteers to increase their stewardship of water resources and provide data for water quality management.		2014-2018	4,10
	Action 1:	Continue to support volunteer monitoring efforts by resource agencies and local stakeholders: TNC, Adopt-a-Stream, Grand Bay NERR, etc.	2014-2018	
	Action 2:	Support efforts by NERR to establish framework for a volunteer water monitoring program focusing on coastal waters.	2014-2018	
	Tracking Measure:	Hire Volunteer Coordinator.	2014-2018	
	Tracking Measure:	Determine parameters to measure.	2014-2018	
	Tracking Measure:	Order equipment and supplies.	2014-2018	
	Tracking Measure:	Build a database to contain and manage volunteer data.	2014-2018	
	Tracking Measure:	Hold regular training sessions for new volunteers.	2014-2018	
	Tracking Measure:	Hold QA/QC sessions for active volunteers.	2014-2018	
	Tracking Measure:	Develop QAPP and submit to MDEQ and EPA for approval.	2014-2018	
	Tracking Measure:	Publish a quarterly newsletter for volunteer program.	2014-2018	

7.3.4 **Nutrient Criteria and Standards**

As stated in Section 4.3.6 above, excessive nutrient (phosphorus and nitrogen) loss from watersheds is frequently associated with degraded water quality in streams and other water bodies. When too much nitrogen and phosphorous enter the water from primarily agricultural runoff, algae blooms can occur. These blooms consume large amounts of oxygen on which other aquatic organisms, such as fish, depend. Thus, the aquatic ecosystem is degraded from poor water quality. Because of this degradation to water bodies in states, the Clean Water Act was enacted.

The Clean Water Act requires the State to assign designated uses to its surface waters and adopt criteria designed to protect those uses. The Act further requires that degradation of those waters be allowed to occur only under very limited circumstances. With oversight by EPA, MDEQ has the authority to designate uses of surface waters, establish protective water quality criteria, and adopt an antidegradation policy to protect existing levels of water quality. The MDEQ works to gather data needed to develop scientifically defensible nutrient criteria for the State's water bodies. A need continues to exist for additional data collection to fill data gaps and characterize the causal and response relationships required to develop and implement protective, appropriate, and attainable numeric-nutrient criteria. The nutrient monitoring supported by EPA grants will be consistent with the EPA-approved *Mississippi Plan for Nutrient Criteria Development*. MDEQ plans to coordinate nutrient criteria established for each water-body type using an ecosystem approach to ensure

consistency throughout the systems. Additional assessment is needed to meet MDEQ'S goal for completing and adopting nutrient criteria for lakes and reservoirs, rivers and streams, and coastal- and estuarine-water bodies.

To achieve in the continued development of numeric nutrient criteria for Mississippi's various water-body types, Mississippi is partnering with numerous agencies and private organizations. As mentioned in Section 4.3.6 above, MDEQ relies on input from what is called the *Mississippi Nutrient Technical Advisory Group* containing over 30 members representing a broad range of scientific- and engineering-technical expertise. This group assists MDEQ in producing water-quality standards regulations that are periodically updated. Mississippi's water quality standards regulations are entitled "State of Mississippi Water Quality Criteria for Intrastate, Interstate, and Coastal Waters". This document contains all the water quality standards applicable to the state's surface waters. The reader is referred to the following hyperlink for more information on MDEQ's Water Quality Standards:

http://www.deq.state.ms.us/MDEQ.nsf/page/WMB_Water_Quality_Standards

MDEQ's statewide goals, objectives, and strategies for *Nutrient Criteria Development* are found in Table 15 below.

Table 15 5-Year Action Plan for Water Quality Standards Development

NPS-Related Objectives and Actions			Target Years	Goal Ref.
Objective 1:	Periodically review and evaluate Mississippi's Water Quality Standards to determine if new standards are needed or if existing standards need to be revised.		2014-2018	5,10
	Action 1:	Review new and revised criteria published by EPA.	As Needed.	
	Action 2:	Update Mississippi's Water Quality Standards to reflect the latest scientific information available.	As Needed.	
	Tracking Measure:	Conduct the triennial review of Mississippi's Water Quality Standards.	2015, 2018	
	Tracking Measure:	Issue public notices and hold a public hearing to solicit input from all interested groups and parties on the proposed revisions.	2015, 2018	
	Action 3:	Present proposed revisions to the Mississippi Commission on Environmental Quality for adoption. Once adopted, propose the revisions to and to EPA for approval.	2016, 2019	
	Tracking Measure:	Publish/incorporate as a revised regulation.	2016, 2019	
	Action 4:	Review and revise designated use of water bodies as needed.	As Needed.	
	Action 5:	Conduct anti-degradation reviews as needed.	As Needed.	
Objective 2:	Continue to support the development and implementation of numeric nutrient criteria in accordance with the most recent mutually agreed upon plan with EPA.		2014-2018	5,10
	Action 1:	Seek and secure resources needed to continue supporting the development of numeric nutrient criteria.	2014-2018	
	Tracking Measure:	Continue to explore and take advantage of any available funding opportunities.	2014-2018	
	Tracking Measure:	Apply to a minimum of one funding source per year.	2014-2018	
	Action 2:	Continue to support statistical analysis of data as needed.	As Needed.	
	Tracking Measure:	Produce technical reports summarizing analysis.	As Needed.	
	Action 3:	Continue to support Mississippi's Nutrient Criteria Technical Advisory Group (TAG).	2014-2018	
	Tracking Measure:	Conduct a minimum of two TAG meetings per year.	2014-2018	

Table 15 5-Year Action Plan for Water Quality Standards Development				
NPS-Related Objectives and Actions			Target Years	Goal Ref.
	Action 4:	Continue planning efforts for the Implementation of numeric nutrient criteria.	2014-2018	
	Tracking Measure:	Produce the nutrient criteria implementation planning document.	To be determined	
	Action 5:	Present recommendations for numeric nutrient criteria to the Mississippi Commission on Environmental Quality.	To be determined	
Objective 3:	Ensure transparency and stakeholder involvement.		2014-2018	5,10
	Action 1:	Issue public notices and hold public hearings to solicit input from all interested groups and parties.	2014-2018	
	Tracking Measure:	Maintain record of public notices and hearings and file according to internal protocol.	2014-2018	
	Action 2:	Accommodate requests and conduct focus meetings with special interest groups and other interested parties.	As Needed.	
	Action 3:	Continue to conduct nutrient criteria stakeholder update sessions.	2014-2018	
	Tracking Measure:	Conduct a minimum of two stakeholder update sessions per year.	2014-2018	
	Action 4:	Continue to maintain websites, produce publications and reports, and provide public access to pertinent documents.	2014-2018	

7.3.5 **TMDL Development**

As mentioned in Section 5.11 above, the Total Maximum Daily Load (TMDL) is a calculation of the greatest amount of any single pollutant that can assimilate in surface waters while continuing to meet water-quality standards. The TMDL also determines how much of the pollutant comes from point sources, such as industry and communities, or nonpoint sources, such as storm-water runoff from urban areas or agriculture. Mississippi's TMDL program, a branch of the Surface Water Division, is responsible for developing TMDLs. All of the TMDL development work is done within MDEQ. Water bodies that do not meet water quality standards are identified as "impaired" for the particular pollutants of concern. Under *§303(d)* of the CWA, states are required to develop a list of impaired waters needing TMDLs. The majority (87%) of the current impaired water listings in the State is based on *Mississippi's Index of Biological Integrity (IBI)*. The *IBI*-monitoring project determines the health of a stream based on the biology of the stream. The process allows for a ranking of either good or poor streams. The poor streams are considered impaired and placed on MDEQ's *§ 303(d)* list for future TMDL development. The biggest issue and primary obstacle to TMDL Development is *Mississippi's Stressor Identification (SI) Process*. To address the impaired streams with TMDL development, MDEQ must first perform an *SI* on the *§303(d)*- listed water. The *SI Process* takes an in-depth look at all of the data that were used to classify the biology of the stream. The probable primary stressors to the poor biology are identified. Once this process establishes the pollutant of concern, then the TMDL can be completed for that pollutant. The key problem associated with the *SI process* is that it is data and labor intensive. It requires multiple trips to the watershed to reconnoiter the watershed and land use practices, and additionally the process requires monitoring within the stream. So, one of the primary objectives of TMDL Development is to continually try to improve and streamline the *SI Process*. Please see Table 16 below for Mississippi's *Five-Year Action* plan that includes objectives and action items to address TMDL Development.

The reader can refer to the following hyperlink for more information about TMDLs:

http://www.deq.state.ms.us/MDEQ.nsf/page/TWB_Total_Maximum_Daily_Load_Section

Table 16 5-Year Action Plan for NPS TMDL Development

NPS-Related Objectives and Actions			Target Years	Goal Ref.
Objective 1:	Develop NPS TMDLs and establish NPDES permit limits.		2014-2018	5,10
	Action 1:	Complete 10 TMDLs per year for 5 years from the Biological Impairment listings on the 2014 Section 303d list. These TMDLs are nonpoint source in nature and will include sediment, nutrient, and organic enrichment TMDLs.	2014-2018	
	Tracking Measure:	Identify pollutants through stressor identifications.	2014-2018	
	Tracking Measure:	Develop mapping (GIS), field recon reports, Water Quality Models (WASP).	As Needed.	
	Tracking Measure:	Transfer LIDAR to Digital Elevation Model (DEM) coverage for state.	As Needed.	
	Tracking Measure:	Develop load allocations to submit to public review and EPA approval.	2014-2018	
	Action 2:	Develop Waste Load Allocations (WLA).	As Needed.	
	Tracking Measure:	Consider developing a Use Attainability Analysis (UAA) process for small communities struggling with nutrient criteria development.	As Needed.	
	Action 3:	Establish annual TMDL development goals to target priority watersheds.	2014-2018	
	Tracking Measure:	Produce GIS based tracking program to show percentage of TMDL coverage to achieve TMDL development goals.	2014	
	Tracking Measure:	Work with EPA to develop TMDL targeted goals and a statewide baseline.	2014-2018	
	Tracking Measure:	Develop spreadsheet to establish baseline for TMDL development.	2014-2018	
Objective 2:	Provide the required analysis and data review for production of the impaired waters list every even year.		2014, 2016, 2018	5,10
	Action 1:	Assess available data.	As Needed.	
	Tracking Measure:	Solicit all data	As Needed.	
	Tracking Measure:	Assess data	As Needed.	
	Tracking Measure:	Create GIS coverage	As Needed.	
	Action 2:	Public review and input	As Needed.	
	Tracking Measure:	Public Notice	As Needed.	
	Tracking Measure:	Public Hearing	As Needed.	
	Tracking Measure:	Commission Approval	As Needed.	
Objective 3:	Create WASP models to develop site specific numeric nutrient TMDLs and targets based on modeling for the large non-wadeable rivers in the state.		2014-2018	5,10
	Action 1:	Pearl River models	2014	
	Action 2:	Yazoo River Models	2015-2017	
	Action 3:	Pascagoula River models	2016-2018	
	Action 4:	Others as required.	As Needed.	
Objective 4:	Create BASINs, LSPC, and WASP models to develop numeric nutrient TMDLs and targets based on modeling for the wadeable streams in the state.		2014-2019	5,10
	Action 1:	Tallahala Creek	2014-2015	
	Action 2:	Sowashee Creek	2016-2018	
	Action 3:	Town Creek - Tupelo	2017-2019	
	Action 4:	Others as required.	As Needed.	

7.3.6 **Watershed Based Planning and Implementation**

As mentioned in Section 4.3 above, Mississippi's approach to watershed-based planning and implementation is through use of the Basin Management Approach (BMA). Prioritization of these watersheds within each of the four basin groups is done by multi-agency teams in the BMA. Within priority watersheds, activities are implemented to address parameters of concern that appear on the State's *§303(d)* list. The State's NPS Program also incorporates the *Coastal NPS Program Strategy*, the recently developed *Mississippi Delta Nutrient Reduction Strategy*, *Basinwide Approach Strategy*, and the State's *Strategy for the Development and Implementation of NPS Total Maximum Daily Loads (TMDLs).* The NPS Program incorporates the aforementioned strategies in order to characterize, quantify, prioritize and target watersheds. Once a watershed has been determined a priority watershed, a Watershed Implementation Team (WIT) is developed in order to formulate the Watershed Based Plan (WBP). The WIT may include members from various federal, state, NGOs, and local agencies with which MDEQ can partner.

As stated above, Mississippi has four major *River Basin Groups*. These groups, have various waterbodies with appurtenant characteristics identified in Appendix F (Priority Watersheds by Basin). Mississippi's challenge, within the next year, is to prioritize these watersheds and produce appropriate WBPs for each. A major objective of watershed based planning and implementation is that more emphasis needs to be placed on achieving a greater number of WBPs in a timely manner. To expedite prioritization of the WBPs, an effort is underway to develop and finalize a new prioritization framework by the end of the second quarter of 2015.

MDEQ's statewide objectives and strategies for Watershed Based Planning and Implementation are found in Table 17 below.

The reader is also referred to the hyperlink below for more information on the BMA and the various aforementioned strategies related to Watershed Based Planning and Implementation:
http://www.deq.state.ms.us/mdeq.nsf/page/WMB_Basin_Management_Approach?OpenDocument

Table 17 5-Year Action Plan for NPS Watershed Based Planning and Implementation

NPS-Related Objectives and Actions			Target Years	Goal Ref.
Objective 1:	Utilize existing forums and tools under the Basin Management Approach (BMA) to characterize watersheds.		2014-2018	6, 7,10
	Action 1:	Collaborate with partners to collect and assess all relevant data, e.g. land use, stream density and classification, erosion potential.	2014-2018	
	Tracking Measure:	Maintain and strengthen existing Memorandum of Agreements (MOAs) e.g. USGS, NRCS, USACE, EPA, colleges, and universities.	As Needed.	
	Tracking Measure:	Submit data requests and renew data sharing agreements in a timely manner.	As Needed.	
	Action 2:	Update the Mississippi Water Characterization and Ranking Tool (MWCRT) with existing data layers in order to recalibrate the tool output.	2014-2018	
	Tracking Measure:	Update the MWCRT a minimum of twice per year.	2014-2018	

Table 17 5-Year Action Plan for NPS Watershed Based Planning and Implementation				
NPS-Related Objectives and Actions			Target Years	Goal Ref.
	Action 3:	Enhance the characterization capabilities of the MWCRT by incorporating additional parameters of concern such as TMDLs, surface and ground water permits, Confined Animal Feeding Operations (CAFOs).	2014-2018	
	Tracking Measure:	Establish a diverse multiagency steering committee to help guide the process.	2014	
	Tracking Measure:	Conduct QA/QC and peer review.	2015	
	Action 4:	Utilize new watershed characterization to promote awareness of impacts of NPS pollution.	2014-2018	
	Tracking Measure:	Conduct at minimum of two basin team meeting per year to share new findings.	2014-2018	
	Tracking Measure:	Utilize new characterization to update all relevant publications, websites, and reports.	2014-2018	
Objective 2:	Collaborate with agency partners and other stakeholders to quantify water resource issues and leverage resources as needed.		2014-2018	6,7,10
	Action 1:	Continue to support and expand existing collaborative efforts to conduct efficient surface water quality assessments and evaluations to make determinations of impaired waterbody status.	2014-2018	
	Action 2:	Utilize existing assessments for stressor identifications to determine the level of NPS impairments and to estimate the amount of pollutant load reductions needed for restoration	As Needed.	
	Action 3:	Continue to seek partnering opportunities to leverage additional resources.	As Needed.	
Objective 3:	Collaborate with agency partners and other stakeholders to identify watershed based protection and restoration priorities and leverage resources as needed.		2014-2018	1, 6, 7,10
	Action 1:	Formulate an internal multi-program workgroup to enhance existing prioritization capabilities through the development of a prioritization framework document.	2014	
	Tracking Measure:	Convene workgroup a minimum of once per year.	2014-2018	
	Action 2:	Develop a comprehensive watershed prioritization framework to identify a process that will guide the integration of multiple water resource program priorities, e.g. NPS, TMDL, Monitoring and Assessment and update as needed.	2015	
	Action 3:	Ensure the incorporation of targeting measures that factor in waterbody recovery potential, stakeholder interest and involvement, resource availability, socio-economics, equitability, and sustainability.	2015	
	Action 4:	Compile a list of priority watersheds for protection and restoration and finalize.	2015	
	Action 5:	Conduct annual reviews and assessment to reevaluate priorities.	2015-2018	
Objective 4:	Develop comprehensive Watershed Based Plans (WBP) to target priority watersheds with protection and restoration activities.		2014-2018	6,10
	Action 1:	Coordinate with resource agencies and other stakeholders to secure resources needed to develop WBPs prior to implementation of any on-the-ground projects.	2014-2018	
	Tracking Measure:	Quantify existing capabilities and leveraging opportunities on the Federal, State and Local level	2014-2018	
	Tracking Measure:	Finalize commitments and establish roles and responsibilities along with an overall budget	2014-2018	
	Action 2:	Establish or reconvene existing locally led Watershed Teams to develop WBPs for priority watersheds.	2014-2018	
	Tracking Measure:	Establish or reconvene a minimum of two Watershed Teams per year	2014-2018	
	Action 3:	Provide guidance and support to Watershed Teams in the development of WBPs that meet the nine (9) key elements.	2014-2018	

Table 17 5-Year Action Plan for NPS Watershed Based Planning and Implementation				
NPS-Related Objectives and Actions			Target Years	Goal Ref.
	Tracking Measure:	Develop a minimum of four WBPs per year.	2014-2018	
	Action 4:	Incorporate all WBPs into the annual NPS Workplan and submit to EPA for approval and funding	2014-2018	
	Tracking Measure:	Submit NPS Annual Plan by September 30th	2014-2018	
Objective 5:	Collaborate with resource agencies and stakeholders to implement WBPs.		2014-2018	6,10
	Action 1:	Coordinate with resource agencies and other stakeholders to secure resources needed and to define roles to implement WBPs	2014-2018	
	Action 2:	Reconvene existing locally led Watershed Teams to implement WBPs for priority watersheds.	2014-2018	
	Action 3:	Provide guidance and support to Watershed Teams by identifying and securing contractual support needs to effectively implement the nine (9) key elements in the WBP.	2014-2018	
	Tracking Measure:	Document all contractual agreements in internal tracking system (WRMS) and the federal GRTS	2014-2018	
	Action 4:	Initiate implementation efforts in accordance with project management protocols	2014-2018	
	Tracking Measure:	Conduct project kick-off meeting as soon as agreements are executed	2014-2018	
	Action 5:	Evaluate progress and implement adaptive management measures	2014-2018	
	Tracking Measure:	Conduct meetings/inspections of all active projects	As Needed.	
	Action 6:	Report accomplishments and water resource improvements	2014-2018	
	Tracking Measure:	Compile project closeout reports in accordance with Section 319, NPS guidelines	2014-2018	
	Tracking Measure:	Evaluate accomplishments and water quality improvements for meeting EPA Success Story requirements. Refer to EPA's WQ-10 requirements.	2014-2018	
Objective 6:	Emphasize stakeholder involvement and ensure transparency in all phases of the watershed based management process which includes characterization, quantification, prioritization and targeting (Planning and Implementation).		2014-2018	6,10
	Action 1:	Maintain and strengthen existing Memorandum of Agreements (MOAs) e.g. USGS, NRCS, USACE, EPA, colleges, and universities and seek additional MOAs as needed.	2014-2018	
	Tracking Measure:	Conduct annual evaluations of all existing MOAs	2014-2018	
	Action 2:	Maintain an open line of communication with all stakeholders and Watershed Teams regarding NPS related issues	2014-2018	
	Action 3:	Provide an opportunity for the citizens of Mississippi to have input into the state's NPS Management Program.	2014-2018	
	Tracking Measure:	Conduct a minimum of two stakeholder meetings within each basin group per year to provide interested audiences and the general public an opportunity to learn and share ideas.	2014-2018	
	Tracking Measure:	Ensure stakeholder input by working with all basin team coordinators to incorporate relevant NPS agenda items during planned meeting of the various forums.	2014-2018	
	Action 4:	Continue to update websites, Basin Citizen Guides, other publications, reports, and ensure public access to the NPS management plan.	As Needed.	
	Tracking Measure:	Conduct monthly evaluations and perform maintenance on NPS webpage	2014-2018	
	Tracking Measure:	Update the Basin Citizen Guides	2016	
	Tracking Measure:	Publish at least one NPS Success Story per year	2014-2018	
	Tracking Measure:	Compile the Annual NPS Report and post on MDEQ webpage.	2014-2018	

Table 17 5-Year Action Plan for NPS Watershed Based Planning and Implementation				
NPS-Related Objectives and Actions			Target Years	Goal Ref.
	Tracking Measure:	Update the publically accessible Mississippi Water Resources Data Compendium with relevant NPS data	As Needed.	

7.3.7 **Conjunctive Water Management**

In November 2011, MDEQ started the *Delta Sustainable Water Resources Initiative*, as stated in Section 4.3.9 above, in order to fulfill its responsibilities of addressing the water-resource challenges facing the Delta in Mississippi. The goal of this initiative is to restore/protect water resources in the Delta by managing every drop of water effectively and efficiently. The initiative is a collaborative one using the expertise and skills of various agencies. The initiative focuses on processes of storing water when it is plentiful and then using the stored water when water is not plentiful. It also pursues all alternative water sources.

The *Conjunctive Water Management Work Group* of the *Delta Sustainable Water Resources Task Force developed The Path Forward* concept in order to apply quantitative-ranking criteria to prioritize alternative water supplies and to develop a metric(s) that is quantitative and consensus-based as well as illustrating sustainable-water resources in the Delta. Components of the strategy developed include hydrologic characterization, instream flows, minimum lake levels and use classifications; economic incentives and funding; monitoring and assessment; administrative structure and process; and policy, law, and regulation.

One of the biggest issues in addressing conjunctive water management is to illustrate to the local land-owner that various water-conservation methods and tools can actually save him or her money while conserving precious natural resources. To do this, MDEQ is partnering with various agencies such as Delta F.A.R.M., Mississippi State University, NRCS, and others through demonstration projects and an education and outreach program with convincing data and trends. The State must continue to emphasize these demonstration and education and outreach programs in order to reach a wider audience over a broader geographic area.

MDEQ's statewide objectives and strategies for *Conjunctive Water Management* are found in Table 18 below.

Table 18 5-Year Action Plan for NPS Conjunctive Water Management				
NPS-Related Objectives and Actions			Target Years	Goal Ref.
Objective 1:	Continue to support the Advancement of Water Resource Conservation in the Yazoo River Basin.		2014-2018	7, 8,10
	Action 1:	Use additional resources to target and implement BMPs in the Yazoo River basin in Steele Bayou, Wolf Lake, Porter Bayou, Harris Bayou, Coldwater River and Bee Lake watersheds, in order to achieve the environmental benefits that their implementation plans were designed to achieve.	2014-2018	
	Action 2:	Continue to coordinate efforts among partners and provide guidance and incentives to local stakeholders to advance existing watershed plans and regional strategies.	2014-2018	

Table 18 5-Year Action Plan for NPS Conjunctive Water Management				
NPS-Related Objectives and Actions			Target Years	Goal Ref.
	Action 3:	Continue to collaborate with federal, state, and local agencies/organizations and agricultural industry to seek additional financial and technical resources to advance Yazoo Basin Watershed Plans, the Delta Nutrient Reduction Strategy, and the Delta Sustainable Water Resource Task Force throughout the project period.	2014-2018	
	Action 4:	Continue monitoring to characterize nutrient and organic loadings according to the NRCS contract associated with the NWQI.	2014-2018	
Objective 2:	Promote practices in the MS Delta to maximize water quantity and quality benefits through runoff reduction by educating the agricultural community on the benefits of installing conservation methods.		2014-2018	7, 8,10
	Action 1:	Coordinate presentations by various agencies and institutions on the benefits of installing conservation methods.	2014-2018	
	Tracking Measure:	Conduct at minimum of four presentations per year in the MS Delta.	2014-2018	
	Action 2:	Pursue funding and landowner cooperation for the installation of conservation practices.	2014-2018	
	Tracking Measure:	Track the funding and landowner cooperation received.	2014-2018	
	Action 3:	Continue to educate producers and stakeholders on conservation practices and showcase new and innovative practices through field days.	2014-2018	
	Tracking Measure:	Track the number of conservation methods installed and conduct a minimum of 2 field days per year.	2014-2018	
Objective 3:	Develop and implement alternative water supplies to ensure adequate resources in the MS Delta as part of the larger conjunctive water management efforts.		2014-2018	7, 8,10
	Action 1:	Develop a list of possible alternative water supply projects and rank feasibility.	2014-2018	
	Action 2:	Pursue funding and landowner cooperation for the development of feasible alternative water supply projects.	2014-2018	
	Action 3:	Implement alternative water supply projects determined to ensure adequate resources.	2014-2018	
	Tracking Measure:	Track the number of conservation methods installed and conduct a minimum of two field days per year to showcase methods.	2014-2018	
Objective 4:	Develop an integrated monitoring network in the Delta to track the success of water quality and water quantity improvement efforts in the MS Delta.		2014-2018	7, 8,10
	Action 1:	Inventory available monitoring activities by members of the Monitoring, Assessment, and Data Management team.	2014-2018	
	Tracking Measure:	Complete inventory and assess gaps in available monitoring efforts.	2014-2018	
	Action 2:	Coordinate with agency partners to expand monitoring networks and to fill in gaps.	2014-2018	
	Action 3:	Develop and approve a draft implementation plan for the integrated monitoring network.	2014-2018	
	Action 4:	Initiate the implementation plan and begin collecting essential data.	2014-2018	
	Action 5:	Analyze status and trends of water quality and quantity data.	2014-2018	
	Tracking Measure:	Note successes and areas needing more efforts for further data collection.	2014-2018	
Objective 5:	Modify the MS Watershed Characterization and Ranking Tool (MWCRT) to integrate water quantity considerations.		2014-2018	8,10
	Action 1:	Determine what data is necessary to modify the tool.	2014-2018	
	Tracking Measure:	Collect the data needed and modify the tool.	2014-2018	
	Action 2:	Use the tool to rank areas in the Delta to determine where best to put existing resources.	2014-2018	

7.3.8 **Data Management and Technical Support**

Data management tools and technical support are critical for all the strategies of Mississippi's NPS pollution management program. They are used to promote its administrative objectives (See Section 7.3.1) as well as strategies in its other statewide action plans (Sections 7.3.2 – 7.3.7): Education Outreach, Assessment and Monitoring, Nutrient Criteria and Standards, TMDL Development, Watershed Based Planning and Implementation, and Conjunctive Water Management, and the NPS Pollution Category Plans (for agriculture, forestry, and etc.).

Therefore, the NPS Management Program 5 Year Action Plan has among its goals that:

> The state will continue to maintain program quality, efficiency, and transparency using quantifiable science-based methods and data management and reporting tools to: 1) document water quality trends; 2) conduct watershed prioritization; 3) support program planning and implementation; 4) track progress of program activities; and 5) facilitate data sharing.
>
> The NPS Program database management tools and technical support provide capacity for quality, consistency, and transparency for the NPS Program in the following ways:
>
> - Provide for professional training, and maintenance of scientific standards, and for quantifiable analysis of NPS pollution impacts and water quality trends (Objectives 2 and 3, below);
> - Support prioritization of watersheds and development and implementation of NPS program plans (Objectives 4, below);
> - Support fiscal management and help maintain transparency and program accountability to EPA and the public (Objectives 4 and 5, below);
> - Support quantifiable analysis and reporting of the success of NPS Program strategies in achieving its goals and objectives (Objectives 4 and 5, below);
> - Facilitate the flow of information between the various entities that make up the OPC NPS Program (Objective 1, below);
> - Maintain quality support through funding and iterative review and revision of technical support tools themselves (Objective 6, below).
>
> Particular issues that will be addressed in the Quality Assurance 5-Year Action Plan are these: The NPS Program will work towards obligating §319 funds within 3 months of Grant Awards. The NPS Branch also intends to collaborate with DID staff to perfect entry and reporting of budgetary elements; to refine entry of project tracking measures, and continue to create reports useful in promoting program transparency and accountability.
>
> The NPS Program strategy for conducting scientifically defensible environmental monitoring and assessment, as described in Sections 4.3.5(?) and 7.3.2 above, requires rigorous technical support including maintenance of and comparison to Water Quality Standards. The NPS Program will continue to provide technical support for improvement and use of the Numeric Nutrient Criteria (Section 7.3.3) under advisement of the State's Nutrient Technical Advisory Group (TAG), and will support the re-calibration of the Mississippi Benthic Index of Stream Quality (M-BISQ).

In support of the NPS Program commitment to project-specific NPS-related monitoring, and due to recent EPA guidance, the NPS Program will collaborate with the SWD to begin entering data from this monitoring in enSPIRE in order to help measure the success of its projects in improving water quality. The NPS Program will collaborate with the SWD and DID to ensure that this data is transmitted from enSPIRE to EPA's STORET data warehouse over the Water Quality Exchange (WQX) node, and incorporated in the written §305(b) report that is submitted to EPA. Additionally, selected data will be presented for inter-agency and stakeholder use in a web-deployed GIS application called the Mississippi Water Resources Data Compendium.

As per 48 CFR 46, 40 CFR 31, and 40 CFR 35, the MDEQ is required to maintain a quality management plan for data management and proscribed procedures within the organization. The Quality Management Plan (QMP) for MDEQ was last updated in 2009. The NPS Program will continue to work within QMP guidelines, and will participate as requested by MDEQ in producing updates to it.

NPS Management Branch staff will continue to work toward improving and harmonizing enSPIRE and the MWCRT and other tools and database applications used, by the NPS-related programs and groups with which they coordinate, for quantified analysis and prioritizing of watersheds and for stream modeling. During the next five years, the NPS Branch intends in particular to collaborate with … someone … to produce standardized QAPP templates for its projects. The Branch intends to improve technical support for the stressor identification process to facilitate developing improved TMDLs based upon achievable load reductions. Several advances are also contemplated for the Watershed Resource Management System (WRMS). The NPS Program will implement iterative review and improvement of these tools and their use during cyclical opportunities (e.g., NPS project tracking, the NPS Program Annual Report, Annual Grant Closeout Reports, and §319 Grant Proposals).

MDEQ's objectives, actions, and tracking measures for its NPS Program Technical Support are found in Table 19 below.

Table 19 5-Year Action Plan for NPS Data Management and Technical Support

NPS-Related Objectives and Actions			Target Years	Goal Ref.
Objective 1:	Collaborate with other resource agencies and partners to identify and secure resources needed to maintain data management and technical support.		2014-2018	10
	Action 1:	Determine support required by Data Integration Division (DID) for Watershed Resources Management System (WRMS), Water Quality Exchange (WQX), Grants Reporting and Tracking System (GRTS), Environmental Surface Water Portal for Information Repository and Exchange (enSPIRE), and GIS and secure funding for it.	2014-2018	
	Action 2:	Determine effort required for continued compliance with the MDEQ Quality Management Plan (QMP) and secure funding for it.	2014-2018	
	Action 3:	Determine support required for the Water Resources Data Compendium (The Compendium) and secure funding for it.	2014-2018	
	Action 4:	Determine support required for the Mississippi Watershed Characterization and Ranking Tool (MWCRT) and secure funding for it.	2014-2018	

Table 19 5-Year Action Plan for NPS Data Management and Technical Support				
NPS-Related Objectives and Actions			Target Years	Goal Ref.
Objective 2:	Develop, maintain, and improve data management support tools for technical and operational standards.		2014-2018	10
	Action 1:	Participate in maintaining/updating and complying with NPS-related aspects of the QMP as required by MDEQ.	2014-2018	
	Action 2:	Support development, based on the recommendations of the Mississippi Nutrient Technical Advisory Group (TAG), of scientifically defensible and environmentally protective numeric-nutrient criteria for Mississippi.	2014-2018	
	Action 3:	Support re-calibration of the Mississippi Benthic Index of Stream Quality (M-BISQ), and development of the Delta Benthic Index of Stream Quality (D-BISQ), in order to improve the accuracy of the water quality assessment process.	2014-2018	
	Action 4:	Coordinate with Surface Water Division (SWD) and Field Services Division (FSD) on sample collection methods for NPS pollution-related parameters that fall under Mississippi Consolidated Assessment and Listing Methodology (CALM), and on laboratory standard operating procedures (SOPs) for these samples.	2014-2018	
	Action 5:	Collaborate on technical support for stressor identification and development of improved TMDLs based upon achievable load reductions.	2014-2018	
	Action 6:	Collaborate on technical support for the enhancement and maintenance of the Mississippi list of BMPs.	2014-2018	
	Action 7:	Collaborate with Basin Management Teams on technical support for development of the Delta, Coastal and Upland Watershed Nutrient Reduction Strategies.	2014-2018	
	Action 8:	Collaborate with Basin Management Teams to oversee the development and implementation, pursuant to EPA guidelines, of Quality Assurance Project Plan (QAPPs) for all NPS monitoring funded by EPA 319 grants.	2014-2018	
	Tracking Measure:	Produce QAPP templates to effect a consistent standard and to facilitate the process of designing them.	2014-2018	
Objective 3:	Ensure appropriate training of NPS-related professionals and/or technicians.		2014-2018	2,10
	Action 1:	Determine and provide or support appropriate technical and/or professional NPS-related training for NPS and other staff that perform specific NPS-related duties.	2014-2018	
	Tracking Measure:	Attend all Annual Regional and National GRTS and NPS Program / Section 319 Managers Meetings.	2014-2018	
	Tracking Measure:	Develop and review SOPs for the Mississippi Water Resources Data Management System (WRMS) and maintain the WRMS Wiki page.	2014-2018	
	Tracking Measure:	MDEQ managers and staff will participate in Quality Assurance (QA) training as appropriate for their responsibilities related to data collection, management, and analysis; or to environmental technology.	2014-2018	
	Tracking Measure:	Train all NPS staff on tools to estimate load reductions from completed projects and give third party project sponsors access to these tools for estimating their own load reductions as needed.	As Needed.	
	Tracking Measure:	Continue to support the training of FSD staff in the collection and processing of NPS-related water quality data as needed.	As Needed.	
Objective 4:	Maintain NPS pollution-related GIS-enabled applications and tools; ensuring that they can perform spatial and tabular representation of surface water monitoring and assessment, BMP planning and implementation, and NPS-related plans and projects.		2014-2018	10, 13
	Action 1:	Maintain the GIS-based MWCRT to produce quantified ranking of watersheds based on the needs of industry and the public, and pollution impacts to surface water.	2014-2018	
	Tracking Measure:	Update the MWCRT a minimum of twice per year.	2014-2018	

Table 19 5-Year Action Plan for NPS Data Management and Technical Support				
NPS-Related Objectives and Actions			Target Years	Goal Ref.
	Action 2:	Maintain the Compendium for inter-departmental, inter-agency, and public transparency of NPS pollution-related issues, programmatic efforts to address these issues, and their results.	2014-2018	
	Action 3:	Work with all agricultural agencies and other stakeholders to enhance capabilities to track and document Best Management Practices (BMPs) and their effectiveness in producing pollutant load reductions of nitrogen, phosphorus, and sediment.	2014-2018	
	Tracking Measure:	Facilitate documentation of Success Stories by supporting USGS in nutrient sampling and stream-flow monitoring in watersheds where nutrient reduction efforts are being planned and implemented.	2014-2018	
	Tracking Measure:	Continue to migrate data into WRMS and the Compendium as projects progress BMP data submitted by MDEQ partners.	2014-2018	
	Tracking Measure:	Continue to develop and update WRMS and the Compendium to improve the integration process for representing installed BMPs submitted by MDEQ partners.	2014-2018	
	Tracking Measure:	Collaborate with DID to populate and QA the enSPIRE with NPS-related monitoring and assessment data (e.g., project-specific USGS data) as part of the SWD monitoring and assessment business process.	2014-2018	
	Tracking Measure:	Continue to use GIS tools to identify watersheds where impairments have been addressed through projects (both 319 and non-319). Provide for follow-up monitoring where needed to better assess project effectiveness.	2014-2018	
	Tracking Measure:	Begin to develop a mechanism for project effectiveness evaluation to model load reduction estimates, pre- and post-project water quality monitoring, and/or other types of monitoring.	2014-2018	
	Action 4:	Integrate, configure, and deploy the GIS module of the WRMS for use by NPS Branch staff for spatial analysis of NPS Program activities.	2014-2018	
	Action 5:	Ensure data management tools are reliable for budgetary, project status, and Project Closeout Reports.	2014-2018	
	Tracking Measure:	Reconcile WRMS and Microsoft Excel spreadsheets (Excel) to support and document obligation of §319 Grant Awards within 3 months of receipt.	2014-2018	
	Tracking Measure:	Use the WRMS to track project expected outputs and produce Project Closeout Reports.	2014-2018	
	Tracking Measure:	Investigate usability of WRMS to produce a draft template on which to build NPS Management Program Grant Closeout Reports.	2014-2018	
	Tracking Measure:	Investigate usability of WRMS to enter, analyze and report on NPS-related programs, planning and strategy.	2014-2018	
	Tracking Measure:	Ongoing Quality Assurance/Quality Control (QC) of data; and production of ad hoc Reports, Tables, and Graphs generated from data as requested.	2014-2018	
	Action 6:	Maintain and improve data interoperability among the GIS, database applications, and other tools that support NPS management strategies and objectives.	2014-2018	
Objective 5:	Collaborate with DID and SWD to ensure BMPs, pollutant load reduction calculations, and NPS pollution-related monitoring and assessment data are reported to EPA.		2014-2018	10,13
	Action 1:	Report NPS Program data to EPA using its GRTS as required.	2014-2018	
	Tracking Measure:	Transfer mandated project elements into GRTS from WRMS biannually (i.e. Prior to March 30 and Sept 30).	2014-2018	
	Action 2:	Collaborate with SWD and DID in reporting assessments of NPS-related impacts on surface waters of Mississippi.	2014-2018	
	Tracking Measure:	Ensure flow of the NPS pollution-related monitoring and assessment data from enSPIRE to EPA's STORET over the Water Quality Exchange (WQX).	2014-2018	
	Tracking Measure:	Provide content for MDEQ Assessment Section 305(b) Report, subsection(s) regarding NPS pollution.	2014-2018	

Table 19 5-Year Action Plan for NPS Data Management and Technical Support				
NPS-Related Objectives and Actions			Target Years	Goal Ref.
Objective 6:	Iteratively review and evaluate the quality of NPS Program technical support and data management tools and synchronize in accordance with changes to EPA, MDEQ, or other relevant policies and guidance.		2014-2018	10
	Action 1:	Convene annual meeting to evaluate the need for any enhancements or modifications.	2014-2018	
	Action 2:	Reconfigure all relevant technical tools to accommodate changes in EPA guidance, NPS Management Program 5-Year Plans, and MDEQ policy.	As Needed.	

7.4 Statewide Five Year Action Plans by NPS Category

Goals, Objectives, and Strategies with associated *Milestones/Tracking Measures* have been developed that relate to the seven major categories of NPS pollution. These categories such as agriculture, forestry, etc. are given below.

7.4.1 **Agriculture**

As mentioned in Section 2.4.2 above, according to December 2013 estimates provided by the Mississippi State University, Division of Agriculture, Forestry and Veterinary Medicine and the Mississippi Farm Bureau Federation, farming is the number one industry in Mississippi. Approximately 11.2 Million acres of land is used for farming crops or livestock production. Agriculture's impacts to NPS pollution in Mississippi constitute one of the largest areas of concern for preventing and controlling pollution that may be caused by cultivation and harvesting practices as well as overgrazing by animals and other animal-production practices. These practices can lead to erosion causing an overabundance of sediment entering waterbodies with concomitant nutrient enrichment. Over the next five years, the NPS program will continue to work with agency partners, such as US EPA, USDA NRCS, USDA *Farm Service Agency* (FSA), MSWCC, *Mississippi Department of Agriculture and Commerce* (MDAC), MSU Cooperative Extension Services, MS RC&D Councils and Delta F.A.R.M to implement goals to: accurately assess and monitor the sources, impacts and effects of pollutants from agricultural sources; manage practices and control the delivery of NPS pollutants to receiving resources; track, assess and report the effectiveness of BMPs installed to address agricultural pollutants; and support management practices with appropriate education/outreach efforts. The NPS program will also collaborate with agency partners in compliance and enforcement of these efforts. Methods utilized to accomplish these goals include: enrolling farm land in nutrient management programs; installing water and sediment control basins; creating stream crossings, areas of permanent vegetation and critical planting; installing stream crossings, fencing, tailwater recovery systems, grade stabilization structures; stabilizing streambanks, creating grassed waterways and field borders, installing heavy use areas, and animal watering facilities.

To understand and prevent these agriculturally-related NPS impacts, the reader is referred to the following links:

National Management Measures to Control Nonpoint Source Pollution from Agriculture
http://water.epa.gov/polwaste/nps/agriculture/agmm_index.cfm

Best Management Practices for Agriculture
http://www.deq.state.ms.us/MDEQ.nsf/page/NPS_Agriculture?OpenDocument

USDA Natural Resources Conservation Service Field Office Technical Guide (FOTG)
http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/technical/fotg/

Mississippi Soil and Water Conservation Commission Water Quality Projects
http://www.mswcc.state.ms.us/wqproj.html

Delta F.A.R.M. (Farmers Advocating Resource Management) Resources
http://www.deltafarm.org/resources

Goals, Objectives, and Strategies for agricultural impacts are found in Table 20 below.

Table 20 5-Year Action Plan for Agricultural NPS

NPS-Related Objectives and Actions			Target Years	Goal Ref.
Objective 1:	Continue to collaborate with agricultural agencies and stakeholders to leverage all available resources to target priority water resource issues.		2014-2018	1,2, 7,10
	Action 1:	Continue to maintain and strengthen existing formal agreements with NRCS, USGS, Delta FARM, MSWCC, and others.	2014-2018	
	Tracking Measure:	Plan and conduct a minimum of two meetings per year.	2014-2018	
	Tracking Measure:	Continue participation and active involvement on all work groups within the Delta Sustainable Water Resources Task Force to focus efforts to address water quality and quantity issues.	2014-2018	
	Tracking Measure:	Continue participation and active involvement on the Gulf Hypoxia Task Force.	2014-2018	
	Tracking Measure:	Continue to lead the Nutrient Reduction Technical Advisory Group.	2014-2018	
	Tracking Measure:	Continue participation and active involvement on the Gulf of Mexico Alliance Teams.	2014-2018	
	Action 2:	Continue to utilize section 319 funds to seek and direct additional leveraging opportunities on the federal, state and local levels.	2014-2018	
	Action 3:	Continue to collaborate with the NRCS to leverage all applicable Farm Bill programs, e.g. MRBI, WRP, RCPP, NWQI, EQIP, and CRP, to address priority water resource issues.	2014-2018	
	Tracking Measure:	Continue participation and active involvement on NRCS state technical committee.	2014-2018	
	Tracking Measure:	Continue to implement existing nutrient and sediment reduction watershed projects and seek additional partnering opportunities.	2014-2018	
	Action 4:	Promote the MSWCC equipment loan program (Revolving Loan Fund Program) to the Soil and Water Conservation Districts (SWCD).	2014-2018	
	Tracking Measure:	Increase SWCD participation in the Revolving Loan Fund Program by 5%.	2014-2018	
	Tracking Measure:	Encourage the purchase of $200,000 worth of equipment for districts to make available to landowners for conservation work.	2014-2018	
	Action 5:	Continue to coordinate with Mississippi Department of Agriculture and Commerce (MDAC) Bureau of Plant Industry and the Mississippi State University Cooperative Extension Service to ensure the proper application and disposal of agricultural chemicals.	2014-2018	
	Action 6:	Continue to work through the Basinwide Approach to build locally-led watershed teams and partnerships to focus on controlling NPS pollution from agriculture.	2014-2018	
	Tracking Measure:	Participate in all basin team and watershed based planning team meetings (8 per year).	2014-2018	
	Tracking Measure:	Participate as members of local watershed groups, providing input and technical assistance on water quality issues.	2014-2018	

Table 20 5-Year Action Plan for Agricultural NPS				
NPS-Related Objectives and Actions			Target Years	Goal Ref.
	Action 7:	Work with MDEQ's Environmental Permit Division more closely to strengthen permits in areas of noncompliance.	2014-2018	
	Tracking Measure:	Meet with EPD annually to discuss common areas of noncompliance.	2014-2018	
	Tracking Measure:	Modify general permits as needed.	2014-2018	
	Action 8:	Continue to support and evaluate the need for increasing the number of inspections of CAFO/AFO facilities.	2014-2018	
	Tracking Measure:	Review the annual EPA inspection commitments and determine the number of mandated inspections annually.	2014-2018	
	Tracking Measure:	Plan to increase inspections and review areas where additional inspections can be conducted, as well as evaluate the budget constraints and secure necessary funding.	2014-2018	
	Tracking Measure:	Modify EPA workplans to depict the inspection increases where appropriate and as resources allow.	2014-2018	
	Action 9:	Work with MDEQ's Environmental Permit and Compliance Divisions (EPCD) more closely to strengthen CAFO/AFO permits in priority watersheds and in noncompliance areas.	2014-2018	
	Tracking Measure:	Meet annually to discuss common areas of noncompliance.	2014-2018	
	Tracking Measure:	Coordinate with Permitting Division to modify permits as needed.	2014-2018	
	Action 10:	Nutrient management plans for CAFOs and AFOs are required under the MDEQ Environmental Permit Division.	2014-2018	
Objective 2:	Continue to advance educational outreach and perform research and technology transfer to evaluate the effectiveness of agricultural approaches and to promote adoption of scientifically recognized methods.		2014-2018	3, 7, 10, 14
	Action 1:	Continue to promote the use and development of educational materials.	2014-2018	
	Tracking Measure:	Maintain a current list and hyperlinks to all educational materials on the MDEQ NPS webpage.	As Needed.	
	Tracking Measure:	Utilize SWCDs to distribute all educational materials to land owners and producers.	As Needed.	
	Action 2:	Continue and expand education related to water quality issues, nutrient management plans, and the use of BMPs in agriculture.	2014-2018	
	Tracking Measure:	Develop a broad water quality information and education program directed at rural and urban audiences.	2014-2018	
	Tracking Measure:	Conduct nutrient management workshops for new Extension agents and NRCS personnel.	2014-2018	
	Tracking Measure:	Support expansion of education and outreach efforts to develop and implement nutrient management plans for farmers with AFOs.	2014-2018	
	Tracking Measure:	Continue to conduct a minimum of two educational farm field days per watershed project to encourage adoption of BMPs.	2014-2018	
	Tracking Measure:	Continue to develop and install signage to increase the awareness of BMPs.	2014-2018	
	Action 3:	Continue to support annual meetings, conferences, and workshops to promote technology transfer.	2014-2018	
	Tracking Measure:	Support the Mississippi Water Resources Conference	2014-2018	
	Tracking Measure:	Support the Mississippi Association of Soil and Water Conservation Districts Conference	2014-2018	
	Action 4:	Continue to support efforts to evaluate the effectiveness of traditional and innovative BMPs and promote their use where deemed valuable.	2014-2018	
	Tracking Measure:	Continue to promote the use of two stage ditches, tail water recovery systems, on-farm storage, and other BMPs with water quality and quantity benefits.	2014-2018	

Table 20 5-Year Action Plan for Agricultural NPS				
NPS-Related Objectives and Actions			Target Years	Goal Ref.
	Tracking Measure:	Track and assess effectiveness of BMPs installed to address agricultural pollutants.	2014-2018	
	Tracking Measure:	Continue to support efforts to showcase new BMP technology through demonstration projects.	2014-2018	
	Tracking Measure:	Continue to promote the use of *Pipe Hole and Universal Crown Evaluation Tool (PHAUCET)* Program and other technologies to maximize water use efficiency.	2014-2018	
	Action 5:	Promote the use of *Research and Education to Advance Conservation and Habitat (REACH)* Program to provide coordination and support for documenting the benefits of conservation efforts.	2014-2018	
	Tracking Measure:	Create a network of cooperative farms to illustrate the success of conservation practices.	2014-2018	
	Tracking Measure:	Utilize the REACH Program as an educational tool in every 319 NPS Ag project.	2014-2018	
	Action 6:	Modify existing practices utilizing adaptive management processes.	2014-2018	
	Tracking Measure:	Collaborate with academia partners to study and identify areas for practice improvement.	2014-2018	
	Tracking Measure:	Collaborate with producers to field test and modify practices.	2014-2018	
	Tracking Measure:	Offer improved practices to producers and industry for implementation .	2014-2018	
	Tracking Measure:	Document specific areas of improvement, field testing and demonstration, and modified and functional practices.	2014-2018	
	Action 7:	Continue to collaborate with Agricultural Research Service (ARS), Water Resource Research Institute (WRRI) and other institutions to support research and development efforts.	2014-2018	
Objective 3:	Continue to collaborate with agricultural agencies and stakeholders to focus resources on the development and implementation of projects to abate the impacts of agricultural NPS pollution.		2014-2018	6, 7,10
	Action 1:	Continue to support the development and/or update of Agricultural watershed based plans in priority areas to implement nutrient reduction strategies.	2014-2018	
	Tracking Measure:	Consider the development of WBPs and continue to expand the implementation of BMPs in areas possibly including Ashlog Creek, Pearl River, Bear Creek, Buttahatchee River, Horn Lake Creek, Upper Pascagoula River, Tuxachanie River, Upper Black Creek, Tchoutacabouffa River, Red Creek, West Boley Creek, Old Fort Bayou, St. Louis Bay, Jasper Creek, Cowpen Creek-Skuna River Canal, and Little Topashaw Creek.	2014-2018	
	Action 2:	Continue to support the Nutrient Reduction Project and BMP implementation in the Bell Creek - W. Prong Muddy Creek Watershed.	2014-2018	
	Tracking Measure:	Cost share with landowners on the installation of approximately: 3 water & sediment control basins; 300 acres of nutrient management; 25 grade stabilization structures; 5 watering facilities; 300 acres of pasture & hayland planting; 4,000 feet of fencing.	2014-2018	
	Tracking Measure:	Continue monitoring to characterize nutrient and organic loadings; understand and account for Point sources in overall watershed implementation plans.	2014-2018	
	Tracking Measure:	Prepare and distribute at least 1,000 fact sheets highlighting the benefits derived from the project.	2014-2018	
	Tracking Measure:	Erect at least 20 project roadside signs that designate where water quality practices are in progress or have been completed.	2014-2018	
	Tracking Measure:	Track progress via biannual and final closeout report and document all BMPs, load reductions, and water quality improvements.	2014-2018	

Table 20 5-Year Action Plan for Agricultural NPS				
NPS-Related Objectives and Actions			Target Years	Goal Ref.
	Action 3:	Continue to support the Nutrient Reduction Project and BMP implementation in the Tarebreeches Creek - Tuscumbia River Canal Watershed.	2014-2018	
	Tracking Measure:	Cost share with landowners on the installation of approximately: 3 water & sediment control basins; 300 acres of nutrient management; 25 grade stabilization structures; 5 watering facilities; 300 acres of pasture & hayland planting; 4,000 feet of fencing.	2014-2018	
	Tracking Measure:	Continue monitoring to characterize nutrient and organic loadings; understand and account for Point sources in overall watershed implementation plans.	2014-2018	
	Tracking Measure:	Prepare and distribute at least 1,000 fact sheets highlighting the benefits derived from the project.	2014-2018	
	Tracking Measure:	Erect at least 20 project roadside signs that designate where water quality practices are in progress or have been completed.	2014-2018	
	Tracking Measure:	Track progress via biannual and final closeout report and document all BMPs, load reductions, and water quality improvements.	2014-2018	
	Action 4:	Continue to support the Nutrient Reduction Project and BMP implementation in the North Tippah Creek Watershed.	2014-2018	
	Tracking Measure:	Continue to partner with NRCS, MSWCC and the Tippah County Soil and Water Conservation District to identify additional BMP needs within the watershed.	2014-2018	
	Tracking Measure:	Continue monitoring to characterize nutrient and organic loadings according to the NRCS contract associated with the NWQI.	2014-2018	
	Tracking Measure:	Educate individuals living in the North Tippah Creek watershed about nonpoint source pollution and ways that they can help in preventing it.	2014-2018	
	Tracking Measure:	Track progress via biannual and final closeout report.	2014-2018	
	Action 5:	Continue to support the Nutrient Reduction Project and BMP implementation in the Coldwater River Watershed.	2014-2018	
	Tracking Measure:	Implement Tail Water Recovery System (1 site min), On-Farm Storage Reservoirs (1 site min), Two-stage ditches (+/- 7,500 feet), Low Grade Weirs (+/- 8), Grade Control Structures (+/- 20 sites).	2014-2018	
	Tracking Measure:	Coordinate implementation of the WIP within the Coldwater River Watershed and continue to facilitate implementation of a monitoring strategy	2014-2018	
	Tracking Measure:	Leverage additional monitoring in Coldwater to be added to the Harris and Porters bayou sampling set and sent to MDEQ lab for analyses.	2014-2018	
	Tracking Measure:	Track progress via biannual and final closeout report and document all BMPs, load reductions, and water quality improvements.	2014-2018	
	Action 6:	Continue to support the Nutrient Reduction Project and BMP implementation in the Upper Porter Bayou, Middle Porter Bayou, and Overcup Slough Watersheds, Jasper Creek, Cowpen Creek-Skuna River Canal, and Little Topashaw Creek.	2014-2018	
	Tracking Measure:	Implement water control structures and two-stage ditch/weir systems in the Upper Porter Bayou, Middle Porter Bayou, and Overcup Slough watersheds.	2014-2018	
	Tracking Measure:	Upper Porter Bayou- Water Control Structure (each) = 45, Two-Stage Ditches (Ln.Ft.) = 15,000, Low Grade Weirs (each) = 12.	2014-2018	
	Tracking Measure:	Middle Porter Bayou- Water Control Structure (each) = 15, Two-Stage Ditches (Ln.Ft.) = 5,000, Low Grade Weirs (each) = 4.	2014-2018	
	Tracking Measure:	Overcup Slough- Water Control Structure (each) = 15, Two-Stage Ditches (Ln.Ft.) = 5,000, Low Grade Weirs (each) = 4.	2014-2018	
	Tracking Measure:	Calibrate the Nutrient Tracking Tool (NTT) specifically for Mississippi, that was developed by Tarleton State University (TSU) in collaboration with NRCS to better calculate the nutrient load reductions and water quality benefits within these watersheds.	2014-2018	

Table 20 5-Year Action Plan for Agricultural NPS				
NPS-Related Objectives and Actions			Target Years	Goal Ref.
	Tracking Measure:	Continue to collaborate with monitoring partners such as Mississippi State University, USDA ARS, U.S. Army Corp of Engineers, and the U.S. Geological Survey.	2014-2018	
	Tracking Measure:	Track progress via biannual and final closeout report and document all BMPs, load reductions, and water quality improvements.	2014-2018	
	Action 7:	Continue to support the Nutrient Reduction Project and BMP implementation in the Rotten Bayou Watershed.	2014-2018	
	Tracking Measure:	Cost share with landowners on the installation of approximately: 3 water & sediment control basins; 300 acres of nutrient management; 25 grade stabilization structures; 5 watering facilities; 300 acres of pasture & hayland planting; 4,000 feet of fencing.	2014-2018	
	Tracking Measure:	Continue monitoring to characterize nutrient and organic loadings; understand and account for Point sources in overall watershed implementation plans.	2014-2018	
	Tracking Measure:	Prepare and distribute at least 1,000 fact sheets highlighting the benefits derived from the project.	2014-2018	
	Tracking Measure:	Erect at least 20 project roadside signs that designate where water quality practices are in progress or have been completed.	2014-2018	
	Tracking Measure:	Track progress via biannual and final closeout report and document all BMPs, load reductions, and water quality improvements.	2014-2018	
	Action 8:	Provide continued support to Agriculture Chemical Groundwater Monitoring Program (AgChem)	2014-2018	
	Tracking Measure:	Monitor 60 to 80 wells a year and investigate any defects.	2014-2018	
	Tracking Measure:	Consult with MS Dept. of Agriculture, if needed.	2014-2018	
	Action 9:	Provide continued support to the Waste Pesticide Disposal Program	2014-2018	
	Tracking Measure:	Conduct at least 2 collection days per year.	2014-2018	
	Tracking Measure:	Collect at least 300,000 lbs./yr.	2014-2018	
	Action 10:	Collaborate with NRCS, MSWCC, MSU, and Alcorn State University to develop an agricultural NPS program directed at small farmers.	2014-2018	

7.4.2 **Forestry**

As stated in Section 2.4.3 above, 18.6 million (62%) acres in Mississippi are forested. Timber is second only to poultry production in terms of agricultural income in Mississippi. It would naturally follow that with that amount of production, logging and timber-production activities have various impacts on NPS pollution. Based on the most recent forestry compliance survey, conducted by the Mississippi Forestry Commission (MFC), the above activities are not a big contributor to polluted runoff in the State, due to the large ownership of public-held and corporate-held lands with good forestry practices. However, nearly 7 million of these 18.6 million acres are owned by individuals. These individuals could benefit from more exposure to education and outreach activities focusing on forestry BMPs. This is because poor forestry practices produce erosion with sediment-carrying runoff. This sediment is the greatest pollutant of concern and is primarily caused by the construction and use of roads, water crossings, and poor timber harvest design and layout. Excessive erosion following mismanaged silvicultural burns or extreme fire events can also occur. Pesticides and nutrients can also be of concern if pesticide and fertilizer applications are not managed properly.

Over the next five years, the forestry NPS program will be implemented primarily through existing programs that include voluntary use of BMPs, education and outreach and BMP compliance monitoring. These programs will be implemented through a cooperative approach that involves key agencies like the USFS, MFC, MFA, USDA, MDEQ, MCES private industry and individuals. A Best Management Practices Implementation Survey will be completed on a 3 year cycle and will provide metrics to determine if Mississippi Forestry BMPs are proving effective in protecting site productivity and water quality from nonpoint source pollutants. Educational efforts will be maintained and expanded to target problem areas. A public lands management program will be implemented. A complete revision of Mississippi's BMP Handbook for Forestry Operations in Wetlands will be released and a forest land status assessment will be conducted on a three year cycle. The MOU between the MFC and MDEQ will be continued and a MOA between MDEQ and MFC for handling complaints from timber harvesting will be finalized

US EPA – National Management Measures to Control Nonpoint Source Pollution from Forestry, EPA 841-B-05-001, May 2005
http://water.epa.gov/polwaste/nps/forestry/forestrymgmt_index.cfm

Mississippi's BMPs, Best Management Practices for Forestry in Mississippi
http://www.mfc.ms.gov/pdf/Mgt/WQ/Entire_bmp_2008-7-24.pdf

MDEQ's *Objectives and Strategies* for forestry impacts are found in the Table 21 below.

Table 21 5-Year Action Plan for Forestry NPS

NPS-Related Objectives and Actions			Target Years	Goal Ref.
Objective 1:	Continue to collaborate with forestry agencies and stakeholders to leverage all available resources to target priority water resource issues.		2014-2018	2, 7,10
	Action 1:	Continue to maintain and strengthen existing agreements and relations with MS Forestry Commission (MFC), US Forest Service, Mississippi Forestry Association (MFA) and others.	2014-2018	
	Tracking Measure:	Plan and conduct a minimum of two meetings per year.	2014-2018	
	Tracking Measure:	Continue participation and active involvement on all work groups to focus efforts to address water quality issues.	2014-2018	
	Tracking Measure:	Continue to collaborate with the Urban Forestry Council and other stakeholders to promote local initiatives.	2014-2018	
	Tracking Measure:	Ensure cooperation between MDEQ and MFC for the protection of receiving streams from impacts of timber harvesting.	2014-2018	
	Tracking Measure:	Continue participation and active involvement on the Biomass BMP Advisory Work Group.	2014-2018	
	Action 2:	Continue active involvement related to the Sustainable Forestry Initiative (SFI).	2014-2018	
	Action 3:	Continue to utilize section 319 funds to seek and direct additional leveraging opportunities on the federal, state and local levels.	2014-2018	
	Action 4:	Continue to work through the Basinwide Approach to build locally-led watershed teams and partnerships to focus on controlling NPS pollution from forestry.	2014-2018	
	Tracking Measure:	Participate in all basin team and watershed based planning team meetings (8 per year).	2014-2018	
	Tracking Measure:	Participate as members of local watershed groups, providing input and technical assistance on water quality issues.	2014-2018	

Table 21 5-Year Action Plan for Forestry NPS				
NPS-Related Objectives and Actions			Target Years	Goal Ref.
	Action 5:	Continue to collaborate with MFC to coordinate activities related to complaint response and enforcement of actions.	2014-2018	
	Tracking Measure:	Meet with MFC annually to discuss common areas of noncompliance.	2014-2018	
	Tracking Measure:	Track all complaints and resolutions in the Ensite database.	2014-2018	
	Action 6:	Encourage voluntary incorporation of biomass BMPs into timber harvesting plans for forestry operations.	2014-2018	
	Action 7:	Support the MS Tree Farm Committee in providing incentives or cost-share funds to consulting foresters for writing forest management plans in order to qualify for Tree Farm Certification.	2014-2018	
	Tracking Measure:	Administer incentive/cost-share funds to stimulate the development of written forest management plans.	2014-2018	
	Tracking Measure:	Conduct resulting Tree Farm Certification procedures, maintain a database of existing and new Tree Farms, and maintain detailed records.	2014-2018	
Objective 2:	Continue to advance educational outreach and perform research and technology transfer to evaluate the effectiveness of forestry approaches and to promote adoption of scientifically recognized methods.		2014-2018	3, 7, 10, 13, 14
	Action 1:	Continue to promote the use and development of educational materials.	2014-2018	
	Tracking Measure:	Maintain a current list and hyperlinks to all educational materials on the MDEQ NPS webpage.	As Needed.	
	Tracking Measure:	Utilize MFC and MFA to distribute all educational materials to land owners and operators.	As Needed.	
	Action 2:	Complete revision of Mississippi's BMP Handbook for Forestry Operations and release for general distribution.	2014-2018	
	Tracking Measure:	Create state biomass harvesting guidelines that will be included within existing state forestry BMPs.	2014-2018	
	Tracking Measure:	Develop biomass harvesting guideline (BHG) committee to develop proposed guidelines	2014-2018	
	Tracking Measure:	Develop proposed BHG, present for review and Publish as part of new state BMP manual.	2014-2018	
	Tracking Measure:	Distribute handbook through various partners and agencies.	2014-2018	
	Action 3:	Implement a public lands management program to include sustainable forestry guidelines integrated within a GIS database.	2014-2018	
	Tracking Measure:	Provide exchange of information with logger groups, landowners, industry and urban audiences through a web site, presentations and workshops.	2014-2018	
	Tracking Measure:	Develop two newsletters promoting water quality and forest stewardship.	2014-2018	
	Tracking Measure:	Publish results of State BMP Implementation Survey and post to MFC website - share with MDEQ and Sustainable Forestry Initiative.	2014-2018	
	Action 4:	Expand educational efforts to target problem areas identified by monitoring for BMPs compliance.	2014-2018	
	Tracking Measure:	Document number of outreach events and number of attendees.	2014-2018	
	Tracking Measure:	Document meetings and action items.	2014-2018	
	Tracking Measure:	Continue to promote Urban Forestry program by working with cities and towns to develop local management capabilities.	2014-2018	
	Action 5:	Continue to support efforts to evaluate the effectiveness of traditional and innovative BMPs and promote their use where deemed valuable.	2014-2018	
	Tracking Measure:	Continue to promote the use of BMPs with water quality benefits.	2014-2018	

Table 21 5-Year Action Plan for Forestry NPS				
NPS-Related Objectives and Actions			Target Years	Goal Ref.
	Tracking Measure:	Track and assess effectiveness of BMPs installed to address forestry pollutants.	2014-2018	
	Tracking Measure:	Continue to support efforts to showcase new BMP technology through demonstration projects.	2014-2018	
	Action 6:	Identify new technologies and procedures to improve upon BMP and Water Quality monitoring efforts.	2014-2018	
	Tracking Measure:	Identify partners interested in the use of LiDAR and large scale hydrographic GIS.	2014-2018	
	Tracking Measure:	Develop guidelines for utilizing geospatial technologies for water quality management.	2014-2018	
	Tracking Measure:	Identify new and existing processes to automate and streamline BMP management.	2014-2018	
	Action 7:	Modify existing practices utilizing adaptive management processes.	2014-2018	
	Tracking Measure:	Collaborate with academia partners to study and identify areas for practice improvement.	2014-2018	
	Tracking Measure:	Collaborate with operators to field test and modify practices.	2014-2018	
	Tracking Measure:	Offer improved practices to operators and industry for implementation.	2014-2018	
	Tracking Measure:	Document specific areas of improvement, field testing and demonstration, and modified and functional practices.	2014-2018	
	Action 8:	Continue to support and implement BMP training programs.	2014-2018	
	Tracking Measure:	Assist MSU Extension with BMP training sessions across the state.	2014-2018	
	Action 9:	Conduct annual forestry education workshops for landowners.	2014-2018	
	Tracking Measure:	Document the number in attendance.	2014-2018	
	Action 10:	Support the MS Tree Farm Committee in conducting a promotional campaign to encourage forest landowners to seek Tree Farm certification.	2014-2018	
	Tracking Measure:	Prepare, publish, and distribute a bi-annual newsletter promoting Tree Farm certification and water quality for forest landowners.	2014-2018	
	Tracking Measure:	Create and maintain a forest landowner website to promote Tree Farm and water quality.	2014-2018	
	Tracking Measure:	Plan, develop, and conduct Tree Farm and water quality educational programs for forest owners.	2014-2018	
	Action 11:	Continue to collaborate with MS State University Department of Forestry and other institutions to support research and development efforts.	2014-2018	
Objective 3:	Continue to collaborate with forestry agencies and stakeholders to focus resources on the development and implementation of projects to abate the impacts of forestry NPS pollution.		2014-2018	6, 7,10
	Action 1:	Continue to support the development and/or update of watershed based plans in priority areas to address forestry issues of concern.	2014-2018	
	Action 2:	Conduct Best Management Practices Implementation Surveys on a 3 year cycle to provide metrics to determine if Mississippi Forestry BMPs are proving effective in protecting site productivity and water quality from non-point source pollutants.	2016, 2019	
	Tracking Measure:	Determine sampling intensity based on harvesting activity.	2014-2018	
	Tracking Measure:	Determine individual site selection, covering states 10 watersheds, through approved GIS procedures.	2014-2018	
	Tracking Measure:	Document number of complaint inspections.	2014-2018	
	Action 3:	Develop a forest land status assessment and conduct assessment on a 3 year cycle.	2016, 2019	
	Tracking Measure:	Assess workload of silvicultural initiative.	2014-2018	

Table 21 5-Year Action Plan for Forestry NPS				
NPS-Related Objectives and Actions			Target Years	Goal Ref.
	Action 4:	Collaborate with NRCS, USFS, USGS, MFC, MFA, and other entities to support activities related to the development and implementation of the Upper Black Creek Watershed Initiative.	2014-2018	

7.4.3 **Urban Stormwater and Construction**

Stormwater runoff from roofs, lawns, parking lots, streets, industrial sites, and other pervious and impervious areas washes a number of pollutants into groundwater, lakes, and streams. A large volume of the pollutants in urban runoff is comprised of sediment and debris from decaying pavements and buildings that can clog sewers and waterways, reducing hydraulic capacity and thus increasing the chance of flooding and degrading aquatic habitat. Heavy metals and inorganic chemicals (including copper, lead, zinc, and cyanide) arising from transportation activities, building materials, and other sources are also significant pollutants. Nutrients are added to urban runoff from fertilizers applied around homes, parks, industrial areas, commercial landscaping, and public areas. Over half of all pesticides used in the United States are in urban settings: home, commercial, and industrial. Urban runoff is a major source of NPS pollution in the nation's streams, lakes, rivers, and groundwater as well as in Mississippi.

Both structural and nonstructural practices are available to control, and in some cases treat, urban NPS runoff. These methods retain water and/or solids within basins and/or runoff conveyance systems, or allow water to percolate into the ground, in a manner that does not threaten groundwater, to reduce the peak flows and pollutants which reach water bodies.

"Green Infrastructure" is a term being used today to address the above urban stormwater and construction impacts. Green infrastructure uses vegetation, soils, and natural processes to manage water and create healthier urban environments. At the scale of a city or county, green infrastructure refers to the patchwork of natural areas that provides habitat, flood protection, cleaner air, and cleaner water. At the scale of a neighborhood or site, green infrastructure refers to stormwater management systems that mimic nature by soaking up and storing water. *Green Infrastructure* includes the utilization of existing wetlands or the creation of artificial wetlands to provide settling of solids, nutrient removal through plant utilization, and chemical breakdown through biological activity.

The MDEQ is designated as the lead agency for implementing an Urban NPS Pollution Control Program. As with other categories of NPS pollution, the Program relies on a combination of regulatory, non-regulatory, and public outreach programs and activities to minimize pollution to state waters. The main focus of these activities is the implementation of preventative measures at the source rather than trying to clean up receiving waters after they have been damaged. Proper land management and future planning to facilitate smart growth is highly emphasized and the most efficient way to minimize this type of pollution and enhance quality of life.

Over the next five years, the MDEQ NPS program plans to accomplish the following: Increase protection for waters in urban and construction areas; promote stormwater management on the local level; encourage and assist municipalities and county government in obtaining loans to address local

NPS pollution control issues; Continue to work with MDEQ's ECED to increase compliance and enforcement activities for construction projects; Continue outreach and education on stormwater management; Establish Urban BMP demonstration sties at different regions in the state; Continue to support Nutrient Reduction, BMP Demonstration and LID Demonstration in the state.

The reader is referred to the following linked references for Urban Stormwater and Construction that addresses *Green Infrastructure* and BMPs in urban areas:

US EPA – Green Infrastructure Permitting and Enforcement Series: Factsheet 1
http://water.epa.gov/infrastructure/greeninfrastructure/upload/EPA-Green-Infrastructure-Factsheet-1-061212-PJ-2.pdf

US EPA – National Management Measures to Control Nonpoint Source Pollution from Urban Areas, Publication Number EPA 841-B-05-004, November 2005
http://water.epa.gov/polwaste/nps/urban/

MDEQ – Erosion Control, Sediment Control and Stormwater Management on Construction Sites and Urban Areas
http://deq.state.ms.us/MDEQ.nsf/page/NPS_PlanningandDesignManual2ndEd_Vol1?OpenDocument

MDEQ's *Objectives, and Strategies* for urban stormwater and construction impacts are found in Table 22 below.

Table 22 5-Year Action Plan for Urban Stormwater and Construction NPS

NPS-Related Objectives and Actions			Target Years	Goal Ref.
Objective 1:	Continue to collaborate with agencies and stakeholders to leverage all available resources to target priority water resource issues.		2014-2018	2, 7,10
	Action 1:	Continue to maintain and strengthen existing relations with MS Department of Transportation, Federal Highway Administration, Mississippi Municipal League, Mississippi Association of Supervisors, construction industry and others.	2014-2018	
	Tracking Measure:	Continue participation and active involvement on all work groups to focus efforts to address water quality issues.	2014-2018	
	Tracking Measure:	Work with MDOT to address runoff from highways, roads, and bridges, and to minimize salt/sand applications and address runoff during construction.	2014-2018	
	Tracking Measure:	Coordinate with MDOT on programs to reduce sediment from road and highway projects.	2014-2018	
	Action 2:	Continue to utilize section 319 funds to seek and direct additional leveraging opportunities on the federal, state and local levels.	2014-2018	
	Tracking Measure:	Coordinate with counties and municipalities to reduce sediment from residential construction projects.	2014-2018	
	Action 3:	Continue to work through the Basinwide Approach to build locally-led watershed teams and partnerships to focus on controlling NPS pollution from urban stormwater and construction.	2014-2018	
	Tracking Measure:	Participate in all basin team and watershed based planning team meetings (8 per year).	2014-2018	
	Tracking Measure:	Participate as members of local watershed groups, providing input and technical assistance on water quality issues.	2014-2018	
	Tracking Measure:	Partner with stakeholders on nutrient reduction activities in urban and rural communities.	2014-2018	

Table 22 5-Year Action Plan for Urban Stormwater and Construction NPS				
NPS-Related Objectives and Actions			Target Years	Goal Ref.
	Action 4:	Support efforts by MDOT to provide waste characterization profiling and waste disposal assistance and to collect samples for laboratory analysis and review analyses to detect concentration of chemical constituents which require specific handling and disposal methods.	2014-2018	
	Tracking Measure:	Quarterly meetings of the Technical Advisory Committee	2014-2018	
	Tracking Measure:	Monthly Inspection Reports performed by MDOT personnel	2014-2018	
	Tracking Measure:	Annual Assessment Inspection Report prepared by a third party	2014-2018	
	Action 5:	Support efforts by MDOT to provide inspection follow-up, assistance with permitting, and general (on-call) services	2014-2018	
	Tracking Measure:	Develop corrective measures for non-compliant issues observed during facility inspections.	2014-2018	
	Tracking Measure:	Follow-up inspections may be performed to assist MDOT personnel with the implementation of the corrective measure or to assure that the corrective measure was completed and the issue can be closed.	2014-2018	
	Tracking Measure:	Quarterly meeting of the Technical Advisory Committee	2014-2018	
	Action 6:	Work with MDEQ's Environmental Permit Division more closely to strengthen permits in areas of noncompliance.	2014-2018	
	Tracking Measure:	Aid in the implementation of Phase II of the Storm Water Program due to local ordinances for 31 counties and cities now being mandatory. Other cities will be discretionary by the permitting authority.	2014-2018	
	Tracking Measure:	Meet with EPD annually to discuss common areas of noncompliance.	2014-2018	
	Action 7:	Continue to work with MDEQ's Environmental Compliance and Enforcement Division (ECED) to increase compliance and enforcement activities for construction projects.	2014-2018	
	Tracking Measure:	Develop a storm water compliance and enforcement strategy and continue to conduct stormwater inspections following rain events.	2014-2018	
	Tracking Measure:	Allocate additional funding to ECED for contractual support in the effort to inspect noncompliance.	2014-2018	
	Tracking Measure:	Allocate additional personnel in ECED so more time can be devoted to storm water compliance and in order to respond to citizen complaints.	2014-2018	
	Tracking Measure:	Continue to meet at least annually with local governments to leverage assistance to ensure compliance and in order to ensure local governments comply with MS4 permits (if applicable).	2014-2018	
	Action 8:	Work with MDEQ ECED to increase the number of stormwater inspections conducted.	2014-2018	
	Tracking Measure:	Review the annual EPA stormwater inspection commitments and determine the number of mandated stormwater inspections annually.	2014-2018	
	Tracking Measure:	Plan to increase inspections and review areas where additional inspections can be conducted, as well as evaluate the budget constraints and secure necessary funding.	2014-2018	
	Tracking Measure:	Modify EPA work plans to depict the inspection increases where appropriate and as resources allow.	2014-2018	
	Action 9:	Encourage and assist municipalities and county government in obtaining SRF loans to address local NPS pollution control issues.	2014-2018	
	Tracking Measure:	Continue to make new entities eligible to receive State SRF low interest loans for stormwater management.	2014-2018	
	Tracking Measure:	Develop educational material to advertise updates in the SRF program and explain its benefits.	2014-2018	
	Tracking Measure:	Educate entities on the application procedures for SRF.	2014-2018	

Table 22 5-Year Action Plan for Urban Stormwater and Construction NPS				
NPS-Related Objectives and Actions			Target Years	Goal Ref.
Objective 2:	Continue to advance educational outreach and perform research and technology transfer to evaluate the effectiveness of urban stormwater and construction approaches and to promote adoption of scientifically recognized methods.		2014-2018	3, 7, 10, 14
	Action 1:	Continue to promote the use and development of educational materials.	2014-2018	
	Tracking Measure:	Maintain a current list and hyperlinks to all educational materials on the MDEQ NPS webpage.	2014-2018	
	Tracking Measure:	Utilize partners to distribute all educational materials to land owners and operators.	2014-2018	
	Tracking Measure:	Continue to promote Urban Forestry program by working with cities and towns to develop local management capabilities.	2014-2018	
	Action 2:	Continue and expand education related to water quality issues, sediment reduction plans, and the use of BMPs in urban stormwater and construction.	2014-2018	
	Tracking Measure:	Support expansion of education and outreach efforts to develop and implement sediment reduction plans for land owners and operators.	2014-2018	
	Action 3:	Continue to participate in annual conferences and meetings to present updates on latest information related to urban stormwater and construction.	2014-2018	
	Tracking Measure:	Participate in a minimum of two conferences or workshops per year.	2014-2018	
	Action 4:	Continue implementing a Statewide Urban and Construction NPS Education Program similar to the National Nonpoint Source Education for Municipal Official (NEMO) Program (Community Growth Readiness Program).	2014-2018	
	Tracking Measure:	Document the number in attendance for each program.	2014-2018	
	Action 5:	Provide technical assistance to all municipalities impacted by Stormwater Regulation.	2014-2018	
	Tracking Measure:	Produce guidance material.	2014-2018	
	Tracking Measure:	As needed, conduct education presentation in all communities with a population over 5000.	As Needed.	
	Action 6:	Continue to support efforts to evaluate the effectiveness of traditional and innovative BMPs and promote their use where deemed valuable.	2014-2018	
	Tracking Measure:	Continue to promote the use of BMPs with water quality benefits.	2014-2018	
	Tracking Measure:	Track and assess effectiveness of BMPs installed to address urban stormwater and construction pollutants.	2014-2018	
	Tracking Measure:	Continue to support efforts to showcase new BMP technology through demonstration projects.	2014-2018	
	Action 7:	Identify new technologies and procedures to improve upon BMP and Water Quality monitoring efforts.	2014-2018	
	Tracking Measure:	Identify new and existing processes to automate and streamline BMP management.	2014-2018	
	Action 8:	Modify existing practices utilizing adaptive management processes.	2014-2018	
	Tracking Measure:	Collaborate with academia partners to study and identify areas for practice improvement.	2014-2018	
	Tracking Measure:	Collaborate with operators to field test and modify practices.	2014-2018	
	Tracking Measure:	Offer improved practices to operators and industry for implementation.	2014-2018	
	Tracking Measure:	Document specific areas of improvement, field testing and demonstration, and modified and functional practices.	2014-2018	
	Action 4:	Support efforts by MDOT to conduct site inspections of all MDOT Maintenance Facilities and provide on-site training of MDOT Maintenance Staff.	2014-2018	

Table 22 5-Year Action Plan for Urban Stormwater and Construction NPS				
NPS-Related Objectives and Actions			Target Years	Goal Ref.
	Tracking Measure:	Include County Maintenance Headquarters, District Complexes, Central Shop, Material Stockpiles, and other related MDOT facilities. Weigh stations, welcome centers, and rest areas may also be inspected.	2014-2018	
	Tracking Measure:	Monthly Inspection Reports performed by MDOT personnel	2014-2018	
	Tracking Measure:	Annual Assessment Inspection Report prepared by a third party	2014-2018	
	Action 5:	Support efforts by MDOT to conduct Annual Environmental Awareness Training of MDOT District Supervisory Personnel.	2014-2018	
	Tracking Measure:	Conduct quarterly Meetings of the Technical Advisory Committee	2014-2018	
	Tracking Measure:	Monthly Inspection Reports performed by MDOT personnel	2014-2018	
	Tracking Measure:	Annual Assessment Inspection Report prepared by a third party	2014-2018	
	Action 9:	Support efforts by MDOT to maintain and update the Material Safety Data Sheet (MSDS) Library System.	2014-2018	
	Tracking Measure:	Quarterly Meetings of Technical Advisory Committee	2014-2018	
	Tracking Measure:	Monthly Inspection Reports performed by MDOT personnel	2014-2018	
	Tracking Measure:	Annual Assessment Inspection Report prepared by a third party	2014-2018	
	Action 10:	Support efforts by MDOT to maintain the elements of MDOT's Stormwater Management Plan as part of the NPDES Phase II MS4 Permit	2014-2018	
	Tracking Measure:	Confirm with each of the responsible parties within the agency that the tasks and responsibilities of the permit are being carried out.	2014-2018	
	Tracking Measure:	Complete an annual report.	2014-2018	
	Action 1:	Support efforts by MDOT to maintain the elements of the Large Construction Notice of Intent or Small Construction Notice of Intent as applicable in our construction projects	2014-2018	
	Tracking Measure:	Direct contractors in the requirements of the LCNOI in our construction projects with 5 acres or greater impacts or SCNOI in our construction projects with 1 acres or greater impacts as applicable.	2014-2018	
	Tracking Measure:	Weekly and Monthly inspections as required.	2014-2018	
	Tracking Measure:	Weekly Summaries Generated	2014-2018	
	Tracking Measure:	Follow-up inspections included as warranted	2014-2018	
Objective 3:	Continue to collaborate with agencies and stakeholders to focus resources on the development and implementation of projects to abate the impacts of urban stormwater and construction NPS pollution.		2014-2018	6, 7,10
	Action 1:	Consider the development and/or update of WBPs and continue to expand the implementation of BMPs in areas possibly including: Turkey Creek, Rhodes Bayou, Watts Bayou, Magnolia Bayou, Bear Point Bayou, Coffee Creek, Oyster Bayou, Brickyard Bayou, and Bayou Chico.	2014-2018	
	Action 2:	Establish five Urban NPS BMP demonstration sites at different regions in the state.	2014-2018	
	Tracking Measure:	Identify partners, establish site selection criteria, identify sites, and implement.	2014-2018	
	Tracking Measure:	Annually evaluate progress in each of these activities	2014-2018	
	Action 3:	Continue to support the Sediment/Nutrient Reduction and BMP Demonstration Project in the Ross Barnett Reservoir Watershed.	2014-2018	

Table 22 5-Year Action Plan for Urban Stormwater and Construction NPS				
NPS-Related Objectives and Actions			Target Years	Goal Ref.
	Tracking Measure:	Implement a minimum of three Demonstration BMPs identified that reduce sediment and peak-storm water-flow loading into the watershed.	2014-2018	
	Tracking Measure:	Assist Monitoring Work Group in the implementation of a monitoring plan in order to assemble data on pollutant reduction.	2014-2018	
	Tracking Measure:	Implement signage at each of the installed BMP project locations to inform and educate the public about the project detailing the techniques used in the project that benefit water quality in the Ross Barnett Reservoir Watershed.	2014-2018	
	Tracking Measure:	Develop Education and outreach training material to be used to conduct workshops targeting decision makers, professionals and developers in the watershed.	2014-2018	
	Action 4:	Continue to support the Low Impact Design and BMP Demonstration Project in the City of Diamondhead.	2014-2018	
	Tracking Measure:	Implement a minimum of three Demonstration BMPs identified that reduce sediment and peak-storm water-flow loading into the watershed.	2014-2018	
	Tracking Measure:	Assist Monitoring Work Group in the implementation of a monitoring plan in order to assemble data on pollutant reduction.	2014-2018	
	Tracking Measure:	Implement signage at each of the installed BMP project locations to inform and educate the public about the project detailing the techniques used in the project that benefit water quality in the Rotten Bayou Watershed.	2014-2018	
	Tracking Measure:	Develop Education and outreach training material to be used to conduct workshops targeting decision makers, professionals and developers in the watershed.	2014-2018	
	Action 5:	Collaborate with MDOT and MSU to assist Desoto County with implementation of a project to develop bio-swales and various vegetation features to reduce sediment and toxins that may be carried off by stormwater runoff.	2014-2018	
	Tracking Measure:	Review plans and assist with the permitting process.	2014-2018	

7.4.4 Land Disposal and Groundwater Protection

One of the primary goals of Mississippi's land-disposal control activities is the protection of the State's groundwater resources; hence, these two activities are discussed together. Land disposal activities are discussed first with a following sub-section for groundwater protection.

Land Disposal

Although modern solid-waste disposal sites are considered point sources of pollution and are regulated, leachate from sanitary landfills and other types of landfills have the potential to contaminate adjacent groundwater aquifers. Toxic compounds are commonly a part of the overall composition of landfill leachate, especially when the landfill has been used for the disposal of municipal garbage which contains household hazardous wastes. Because of this toxic-compound issue, one of MDEQ's major objectives is to ensure that toxic compounds are addressed in land-disposal operations and that these compounds do not contaminate adjacent aquifers.

Regulatory authority in Mississippi over solid-waste disposal activities resides with the Mississippi Department of Environmental Quality (MDEQ). The disposal of solid waste is regulated by the Department under the authority of the *Mississippi Solid Waste Law of 1974*. The *Mississippi Nonhazardous Waste Management Regulations* were originally promulgated in the mid-1970s

when the program was administered by the State Health Department. In the 1990's, these regulations have been amended several times, as a result of additional requirements of state and federal solid-waste laws and due to public demand. Requirements which have been incorporated into the regulations include location restrictions. These restrictions are in relation to adjacent properties, residential areas, wetlands, surface water, groundwater aquifers, seismic impact zones, floodplains, etc. There are provisions regarding operation and design plans, runoff controls, leachate management, and groundwater monitoring.

Groundwater Protection

More than 80% of the total water supply used in Mississippi (more than an estimated 2,600 million gallons) is obtained from groundwater resources. This reliance on groundwater is atypical of most states which are much more dependent on surface water than Mississippi. Fourteen major aquifers and numerous minor aquifers occur in the State. This widespread availability allows water users in many regions of Mississippi to select among several fresh- water aquifers at various depths depending on the specific water quantity and quality needed for their intended beneficial use. Groundwater is used exclusively to supply the water needs for more than 93% of the potable water consumed in Mississippi and for over 100,000 acres of catfish ponds located throughout the State.

The overall quality of the groundwater resources in Mississippi is quite good. Incidents of groundwater contamination impacting large segments of the population have been rare, because most of the drinking water supply in the State is obtained from deep aquifers that are naturally protected to some extent by overlying (confining) layers. The recharge areas where confined aquifers crop out at the surface, as well as the regions of the State underlain with shallow unconfined aquifers, are especially vulnerable areas of the State. Special efforts are being made to protect these areas of concern from contamination. Most of the documented cases involving groundwater contamination have been localized incidents involving point sources such as leaky underground (gasoline) storage tanks and abandoned water wells. However, nonpoint sources of pollution, such as septic systems and areas where pesticide and fertilizer are applied, are major concerns for groundwater as well.

As stated above in Section 5.14, MDEQ's Office of Land and Water Resources (OLWR) Groundwater Investigation & Planning Division conducts hydrologic investigations and evaluations of the groundwater resources that are current or potential sources of water supply throughout the State. OLWR administers several programs that are directly involved in addressing groundwater protection in the State. For example, the *Wellhead Protection* and *Source Water Assessment* programs (See Section 5.14) address the protection of the 1,535 public water systems operating in Mississippi. These programs attempt to identify contaminant sources that could potentially impact the water systems. Subsequently, the programs ensure the development and implementation of appropriate management plans to enhance groundwater protection efforts. OLWR works with the US EPA regarding *Underground Injection Control*. Groundwater wells meeting this classification require a permit for operation through the US EPA (see hyperlink below).

The Groundwater Assessment and Remediation Division (GARD) within MDEQ is responsible for other aspects of groundwater protection in the State. As an example, the Underground Storage

Tank (UST) Program is responsible for the prevention, detection, and cleanup of releases to groundwater from underground storage tanks. Other agencies involved in groundwater protection activities in Mississippi are the Department of Agriculture and Commerce's Bureau of Plant Industry, and the U.S. Geological Survey.

The reader is referred to the following links for more information on Mississippi's Groundwater Protection Program:

US EPA – Region 4: Underground Injection Control
http://www.epa.gov/region4/water/uic/

MDEQ – Groundwater Investigation and Planning Division
http://www.deq.state.ms.us/MDEQ.nsf/page/L&W_Groundwater?OpenDocument

MDEQ – UST (Underground Storage Tank) Home Page
http://www.deq.state.ms.us/MDEQ.nsf/page/UST_PageHome?OpenDocument

MDEQ – Home page of the Source Water Assessment Branch
http://www.deq.state.ms.us/MDEQ.nsf/page/GPB_GroundwaterPlanningBranch?OpenDocument

MDEQ – Home page of the Groundwater Assessment and Remediation Division (GARD)
http://www.deq.state.ms.us/MDEQ.nsf/page/GARD_home?OpenDocument

MDEQ's *Goals, Objectives, and Strategies* for land disposal and groundwater impacts are found in Table 23 below.

Table 23 Table 13: 5-Year Action Plan for NPS Land Disposal and Groundwater Protection

NPS-Related Objectives and Actions			Target Years	Goal Ref.
Objective 1:	Continue to collaborate with agencies and stakeholders to leverage all available resources to target priority water resource issues.		2014-2018	2, 7,10
	Action 1:	Continue to maintain and strengthen existing relations with MS Department of Health and other land disposal and groundwater protection partners.	2014-2018	
	Tracking Measure:	Plan and conduct a minimum of two meetings per year.	2014-2018	
	Tracking Measure:	Continue participation and active involvement on all work groups to focus efforts to address water quality issues.	2014-2018	
	Action 2:	Continue to utilize section 319 funds to seek and direct additional leveraging opportunities on the federal, state and local levels.	2014-2018	
	Action 3:	Continue to work through the Basinwide Approach to build locally-led watershed teams and partnerships to focus on controlling NPS pollution from land disposal and groundwater protection.	2014-2018	
	Tracking Measure:	Participate in all basin team and watershed based planning team meetings (8 per year).	2014-2018	
	Tracking Measure:	Participate as members of local watershed groups, providing input and technical assistance on water quality issues.	2014-2018	
	Action 4:	Work with MDEQ Groundwater Assessment and Remediation Division (GARD) to protect and restore our Water Resources to ensure that drinking water is safe, and that aquatic ecosystems sustain fish, plants and wildlife, and economic recreation and subsistence activities.	2014-2018	
	Tracking Measure:	By 2018, 90 percent of all remediation sites actively overseen by GARD Staff (as of 2014) will have information demonstrating no impact to a drinking water resource or no direct exposure pathway present.	2014-2018	

Table 23 Table 13: 5-Year Action Plan for NPS Land Disposal and Groundwater Protection				
NPS-Related Objectives and Actions			Target Years	Goal Ref.
	Tracking Measure:	By 2018, 90 percent of all Underground Storage Tank Sites requiring cleanup (as of 2014) will have a remediation system installed and fully operational.	2014-2018	
	Tracking Measure:	By 2018, 90 percent of all remediation sites actively overseen by GARD Staff (as of 2014) will have some form of groundwater use restrictions (e.g., environmental covenants, ordinances, Agreed Orders, etc.) executed thereby eliminating human exposure to contaminants in groundwater.	2014-2018	
	Tracking Measure:	By 2018, 90 percent of all remediation sites actively overseen by GARD staff (as of 2014) will have information demonstration no significant impact to a surface water body.	2014-2018	
	Tracking Measure:	By 2018, 90 percent of all sites actively overseen by GARD staff requiring cleanup of a surface water body (as of 2014) will have a remedial action implemented.	2014-2018	
	Action 5:	Continue to support regulations through MDEQ's Solid Waste Program to control non-point source runoff and leachate from landfills.	2014-2018	
	Action 6:	Continue to evaluate the need for increasing the number of inspections of land disposal and groundwater protection complaints.	2014-2018	
	Tracking Measure:	Plan to increase inspections and review areas where additional inspections can be conducted, as well as evaluate the budget constraints and secure necessary funding.	2014-2018	
	Action 7:	Continue to screen proposed solid waste facility sites for State Locational Criteria prior to approval of land disposal.	2014-2018	
	Action 8:	Initiate surface water assessments and corrective actions at land disposal sites where regulatory violations have been documented.	2014-2018	
	Tracking Measure:	Evaluate current resources to ensure proper implementation.	2014-2018	
	Action 9:	Work with MDEQ's Environmental Permit and Compliance Divisions (EPCD) more closely to strengthen permits in priority watersheds and in noncompliance areas.	2014-2018	
	Tracking Measure:	Meet annually to discuss common areas of noncompliance.	2014-2018	
	Tracking Measure:	Coordinate with Permitting Division to modify permits as needed.	2014-2018	
	Action 10:	Continue to support reduction and recycling efforts.	2014-2018	
	Tracking Measure:	Evaluate current resources to ensure proper implementation.	2014-2018	
	Tracking Measure:	Document reductions and generate annual reports.	2014-2018	
	Action 11:	Encourage voluntary development of land disposal and groundwater protection management plans for home owners and local stakeholders.	2014-2018	
	Action 12:	Seek candidate landfill and Brownfields projects for SRF loans.	2014-2018	
	Action 13:	Provide continued support to Agriculture Chemical Groundwater Monitoring Program (AgChem)	2014-2018	
	Tracking Measure:	Monitor 60 to 80 wells a year and investigate any defects.	2014-2018	
	Tracking Measure:	Consult with MS Dept. of Agriculture, if needed.	2014-2018	
Objective 2:	Continue to advance educational outreach and perform research and technology transfer to evaluate the effectiveness of land disposal and groundwater protection approaches and to promote adoption of scientifically recognized methods.		2014-2018	3, 7, 9, 10, 14
	Action 1:	Continue to promote the use and development of educational materials.	2014-2018	
	Tracking Measure:	Maintain a current list and hyperlinks to all educational materials on the MDEQ NPS webpage.	As Needed.	
	Tracking Measure:	Utilize Mississippi Department of Health (MSDH) to distribute all educational materials to land owners and operators.	As Needed.	

Table 23 Table 13: 5-Year Action Plan for NPS Land Disposal and Groundwater Protection				
NPS-Related Objectives and Actions			Target Years	Goal Ref.
	Action 2:	Develop effective training for wastewater installers which includes NPS information, water model demonstrations, ways to detect and fix failing systems, and information on proper selection and installation of new systems.	2014-2018	
	Tracking Measure:	Utilize NPS demonstrations and workshops to teach on-site wastewater system installers how to repair failing septic systems and other on-site Disposal Systems (OSDS) by providing educational field days as a part of the recertification training.	2014-2018	
	Tracking Measure:	Initiate a specific grading system of licensing, which would require higher levels of training for those wishing to install alternative disposal systems.	2014-2018	
	Action 3:	Provide training sessions which include NPS education to wastewater installers.	2014-2018	
	Tracking Measure:	Conduct at least 2 training sessions per year per health district.	2014-2018	
	Action 4:	Continue and expand education and outreach to all homeowners with OSDS.	2014-2018	
	Tracking Measure:	Distribute video produced from current 319 project to homeowners which demonstrates how to efficiently manage their systems.	2014-2018	
	Tracking Measure:	Develop or order literature/information and distribute it to homeowners through each county's Cooperative Extension Service and the MSDH.	2014-2018	
	Action 5:	Continue and expand education related to water quality issues, sediment reduction plans, and the use of BMPs in land disposal and groundwater protection.	2014-2018	
	Tracking Measure:	Support expansion of education and outreach efforts to develop and implement sediment reduction plans for home owners and local stakeholders.	2014-2018	
	Action 6:	Continue to identify non-point sources from solid waste sources and evaluate the need for surface and groundwater monitoring at existing non-point source sites within each of the state's basins.	2014-2018	
	Tracking Measure:	Solicit input from stakeholders identified under the Basinwide Approach.	2014-2018	
	Action 7:	Continue monitoring groundwater and where appropriate, surface waters to prevent and detect impacts to water quality from land disposal activities	2014-2018	
	Tracking Measure:	Evaluate current resources to ensure proper implementation.	2014-2018	
	Action 8:	Continue to support efforts to evaluate the effectiveness of traditional and innovative BMPs and promote their use where deemed valuable.	2014-2018	
	Tracking Measure:	Continue to promote the use of BMPs with water quality benefits.	2014-2018	
	Tracking Measure:	Track and assess effectiveness of BMPs installed to address forestry pollutants.	2014-2018	
	Tracking Measure:	Continue to support efforts to showcase new BMP technology through demonstration projects.	2014-2018	
	Action 9:	Identify new technologies and procedures to improve upon BMP and Water Quality monitoring efforts.	2014-2018	
	Tracking Measure:	Identify new and existing processes to automate and streamline BMP management.	2014-2018	
	Action 10:	Develop upgraded programs for monitoring of land spreading of animal manures and continue to investigate alternative means for circumventing animal waste discharge into state waters.	2014-2018	
	Tracking Measure:	Survey stakeholders for any innovative means of achieving the above action.	2014-2018	
	Action 11:	Modify existing practices utilizing adaptive management processes.	2014-2018	

Table 23 Table 13: 5-Year Action Plan for NPS Land Disposal and Groundwater Protection				
NPS-Related Objectives and Actions			Target Years	Goal Ref.
	Tracking Measure:	Collaborate with academia partners to study and identify areas for practice improvement.	2014-2018	
	Tracking Measure:	Collaborate with operators to field test and modify practices.	2014-2018	
	Tracking Measure:	Offer improved practices to operators and industry for implementation.	2014-2018	
	Tracking Measure:	Document specific areas of improvement, field testing and demonstration, and modified and functional practices.	2014-2018	
	Action 12:	Conduct an assessment to estimate the number of Brownfields in Mississippi.	2014-2018	
	Tracking Measure:	Make available Section 319 funds if needed.	2014-2018	
	Action 13:	Eliminate Discharges of Groundwater from Purging Monitoring Wells for Sampling Purposes and for Well Development	2014-2018	
	Tracking Measure:	Containerize the purge water and well development water by revising the procedures to perform the task (SOP).	2014-2018	
	Tracking Measure:	Evaluate current resources to ensure proper implementation and change internal procedures as needed for project managers and inspectors.	2014-2018	
	Tracking Measure:	Setup procedures for reimbursing the activities and contact the consultants that perform Mississippi Groundwater Trust Fund (Trust Fund) work to notify them of the change in procedures	2014-2018	
	Action 14:	Eliminate Discharges of Water from Remediation System Cleaning by using a vacuum truck for cleaning and containerizing the water from the cleaning.	2014-2018	
	Tracking Measure:	Revise the internal technical procedures and contact the consultants about the change in policy.	2014-2018	
	Action 15:	Identify all large capacity septic systems located within delineated source water protection areas around public water supply wells and surface water intakes.	2014-2018	
	Tracking Measure:	Unify water disposal activities in accordance with other MDEQ construction programs.	2014-2018	
	Tracking Measure:	Review water disposal guidance for other MDEQ programs.	2014-2018	
	Tracking Measure:	Create summary document from MDEQ current water disposal guidance.	2014-2018	
	Tracking Measure:	Collaborate with MDEQ Staff regarding effective disposal programs and any proposed changes to existing guidance.	2014-2018	
	Action 16:	Reduce the threat of surface and ground water pollution caused by storage tanks through environmental remediation, leak protection, and leak detection.	2014-2018	
	Tracking Measure:	Coordinate with MDEQ's UST to ensure proper tracking measures are being completed.	2014-2018	
	Tracking Measure:	Collaborate with MS UST Certified Contractors to discuss issues related with various forms of waste water disposal.	2014-2018	
	Tracking Measure:	Collaborate with MS UST Certified Contractors to discuss issues related with various forms of waste water disposal and conduct one workshop per year with interested contractors.	2014-2018	
	Tracking Measure:	Revise the "Guidelines for Permanent Closure of Petroleum USTs" to address the proper disposal of water removed during the removal of underground storage tanks and request comments from UST Certified Contractors.	2014-2018	
	Tracking Measure:	Log comments received and create a list of interested contractors.	2014-2018	
	Action 17:	Revise "Guidelines for Permanent Closure of USTs."	2014-2018	
	Tracking Measure:	Prepare draft document incorporating data collected.	2014-2018	

Table 23 Table 13: 5-Year Action Plan for NPS Land Disposal and Groundwater Protection				
NPS-Related Objectives and Actions			Target Years	Goal Ref.
	Tracking Measure:	Request comments from UST Contractors and MDEQ construction programs.	2014-2018	
	Tracking Measure:	Finalize revised document.	2014-2018	
Objective 3:	Continue to collaborate with agencies and stakeholders to focus resources on the development and implementation of projects to abate the impacts of land disposal NPS pollution.		2014-2018	6, 7,10
	Action 1:	Continue to support the development and/or update of watershed based plans in priority areas to include land disposal and groundwater protection components.	2014-2018	
	Action 2:	Continue to support efforts to maintain and update a GIS based tracking system for land disposal and groundwater protection.	2014-2018	
	Action 3:	Provide continued support to Agriculture Chemical Groundwater Monitoring Program (Agchem)	2014-2018	
	Tracking Measure:	Monitor 60 to 80 wells a year and investigate any defects.	2014-2018	
	Tracking Measure:	Consult with MS Dept. of Agriculture, if needed.	2014-2018	
	Action 9:	Provide continued support to the Waste Pesticide Disposal Program	2014-2018	
	Tracking Measure:	Conduct at least 2 collection days per year.	2014-2018	
	Tracking Measure:	Collect at least 300,000 lbs./yr.	2014-2018	
	Action 10:	Provide continued support to the Wellhead Protection Program	2014-2018	

7.4.5 **Mining**

Mississippi's mineral production consists of both fuel and non-fuel minerals that provide raw materials for construction products, road and dam construction, and energy production. Current law does not allow for the collection of information regarding the amounts of material mined or the value of the materials. The Office of Geology maintains an inventory of mining sites located in the State.

As mentioned in Section 6.4 above, surface mining has the potential to generate NPS pollution at any phase of operation. The phases of operation of a mining site usually include mineral exploration, mine development extraction, transportation, mining and processing, product storage, waste disposal, and reclamation. A particular set of potential surface and/or groundwater pollutants must be identified for each mine due to the differing range of geologic, hydrologic, and surface conditions encountered at each site. NPS impacts related to surface mining activities include hydrologic modification, erosion and sedimentation, water quality deterioration, fish and wildlife disturbances, and public nuisances.

Activities associated with mining can result in changes to the hydrologic cycle of the local area. Removing vegetation and topsoil can cause an increase in surface runoff and subsequent decrease in infiltration to the groundwater system. Accelerated soil erosion can then occur and the displaced sediment is washed into nearby streams. The increased sediment load to nearby streams reduces the volume of water carried by the stream and may result in increased damage in the floodplain. Dredging operations, although no longer permitted in flowing streams, have changed the stream's characteristics by increasing its ability to carry water. This increase in flow may lead to lowering the local groundwater levels or increased drainage from local wetland systems. Stream diversion, a practice

often necessary in recovering materials, can have significant impacts on both water quality and quantity at downstream locations.

Erosion and sedimentation are the most common adverse impacts mining exerts on the environment. These impacts include water quality degradation from increased turbidity in local water bodies, damage to aquatic flora and wildlife habitat, and fluctuations in pH resulting from the leaching of various soils being exposed to weathering. Mining areas exposed to extensive erosion activity include the active and past extraction areas, unpaved haul and access roads, and areas cleared for plant or other mine site structures. Stockpiles of product, overburden, or waste fines materials can be easily eroded due to steep slope angles and the presence of fine grained materials.

The above impacts associated with mining, as mentioned in Section 6.4 above, is addressed by granting or denying a permit. Prior to the granting of a mining permit, applicants must address certain issues to ensure there will be no significant or adverse water-pollution impacts resulting from their mining activities. Provisions that address the control of NPS pollution must be included as part of a mine-reclamation plan.

The reader is referred to the following link for more information on Mississippi's Mining Program:

MDEQ – Mining and Reclamation Division
http://www.deq.state.ms.us/MDEQ.nsf/page/Geology_mining_and_reclamation?OpenDocument

MDEQ's *Objectives, and Strategies* for mining impacts are found in Table 24 below.

Table 24 5-Year Action Plan for Mining NPS

NPS-Related Objectives and Actions			Target Years	Goal Ref.
Objective 1:	Continue to collaborate with agencies and stakeholders to leverage all available resources to target priority water resource issues.		2014-2018	2, 7,10
	Action 1:	Continue to maintain and strengthen existing agreements with all mining partners.	2014-2018	
	Tracking Measure:	Continue participation and active involvement on all work groups to focus efforts to address water quality issues.	2014-2018	
	Action 2:	Continue to utilize section 319 funds to seek and direct additional leveraging opportunities on the federal, state and local levels.	2014-2018	
	Action 3:	Continue to work through the Basinwide Approach to build locally-led watershed teams and partnerships to focus on controlling NPS pollution from mining.	2014-2018	
	Tracking Measure:	Participate in all basin team and watershed based planning team meetings.	2014-2018	
	Tracking Measure:	Participate as members of local watershed groups, providing input and technical assistance on water quality issues.	2014-2018	
	Action 4:	Consider executing a memorandum of agreement with MSWCC to provide assistance to conservation districts, conduct surface mine activities, implement watershed land treatment , and maintain involvement with NPS Educational activities.	2014-2018	
	Tracking Measure:	Carry out duties as set forth in the MS Surface Mining Reclamation Act.	2014-2018	
	Tracking Measure:	Receive comments on bond release applications from SWCDs on 15% of applications received.	2014-2018	

Table 24 5-Year Action Plan for Mining NPS				
NPS-Related Objectives and Actions			Target Years	Goal Ref.
	Action 5:	Continue to support the regulatory provisions of the MS Mining Act and Rules and Regulations and cooperate with the Office of Geology in addressing NPS pollution.	2014-2018	
	Tracking Measure:	The purpose of this program is to review applications for surface mining permits in an effort to reduce sediment pollution from surface mining activities by insuring that reclamation plans are adequate and that mined sites are properly reclaimed.	2014-2018	
	Tracking Measure:	Receive bond release comments from Soil and Water Conservation Districts.	2014-2018	
	Action 6:	Work with MDEQ's Environmental Permit Division more closely to strengthen permits in areas of noncompliance.	2014-2018	
	Tracking Measure:	Meet with EPD annually to discuss common areas of noncompliance.	2014-2018	
	Tracking Measure:	Modify permits as needed.	2014-2018	
	Action 7:	Continue to evaluate the need for increasing the number of inspections of mining complaints.	2014-2018	
	Tracking Measure:	Plan to increase inspections and review areas where additional inspections can be conducted, as well as evaluate the budget constraints and secure necessary funding.	2014-2018	
	Action 8:	Encourage voluntary development of mining management plans for all mining operations.	2014-2018	
Objective 2:	Continue to advance educational outreach and perform research and technology transfer to evaluate the effectiveness of mining approaches and to promote adoption of scientifically recognized methods.		2014-2018	3, 7, 10, 13, 14
	Action 1:	Continue to promote the use and development of educational materials.	2014-2018	
	Tracking Measure:	Maintain a current list and hyperlinks to all educational materials on the MDEQ NPS webpage.	As Needed.	
	Tracking Measure:	Utilize partners to distribute all educational materials to land owners and operators.	As Needed.	
	Action 2:	Continue and expand education related to water quality issues, sediment reduction plans, and the use of BMPs in mining.	2014-2018	
	Tracking Measure:	Support expansion of education and outreach efforts to develop and implement sediment reduction plans for operators.	2014-2018	
	Action 3:	Provide technical assistance to mine operators in the use of BMPs to control conditions that may result in surface or groundwater contamination.	2014-2018	
	Action 4:	Continue to offer sample applications and assistance for permitting, operation, and reclamation of mining sites.	2014-2018	
	Tracking Measure:	Perform on-site inspections on at least 10% of applications received.	2014-2018	
	Action 5:	Inventory both permitted and exempt mining sites using GPS devices to support MDEQ's GIS databases.	2014-2018	
	Action 6:	Develop and publish a mine operator's guide to permitting, operation, and reclamation.	2014-2018	
	Action 7:	Continue to support efforts to evaluate the effectiveness of traditional and innovative BMPs and promote their use where deemed valuable.	2014-2018	
	Tracking Measure:	Continue to promote the use of BMPs with water quality benefits.	2014-2018	
	Tracking Measure:	Track and assess effectiveness of BMPs installed to address mining pollutants.	2014-2018	
	Tracking Measure:	Continue to support efforts to showcase new BMP technology through demonstration projects.	2014-2018	
	Action 8:	Modify existing practices utilizing adaptive management processes.	2014-2018	

Table 24 5-Year Action Plan for Mining NPS				
NPS-Related Objectives and Actions			Target Years	Goal Ref.
	Tracking Measure:	Collaborate with academia partners to study and identify areas for practice improvement.	2014-2018	
	Tracking Measure:	Collaborate with operators to field test and modify practices.	2014-2018	
	Tracking Measure:	Offer improved practices to operators and industry for implementation.	2014-2018	
	Tracking Measure:	Document specific areas of improvement, field testing and demonstration, and modified and functional practices.	2014-2018	
Objective 3:	Continue to collaborate with agencies and stakeholders to focus resources on the development and implementation of projects to abate the impacts of NPS pollution from mining operations.		2014-2018	6, 7,10
	Action 1:	Continue to support the development and/or update of watershed based plans in priority areas to include mining components.	2014-2018	

7.4.6 **Hydromodification/Wetland Protection**

Hydrologic modification consists of activities such as stream-channel modification, dam construction, and streambank and shoreline erosion. Hydrologic modification activities in Mississippi are managed primarily through *USACE's §10 and §404 Permits*, *MDEQ's §401 Water Quality Certification*, and *MDEQ dam permit*. The type of permit required is dependent on the location and type of activity.

As mentioned in Section 6.5 above, a *§404 Permit* is required for all activities taking place in federally navigable waters. All stream-channelization and channel-modification projects require a *§404 Permit* as well as a *State §401 Water Quality Certification*. The certification ensures that such activities will be conducted in a manner so as to not violate state water-quality standards. The following condition is routinely placed in the certifications: *implementation of BMPs during construction so as to minimize erosion and prevent sediment from being moved off-site and permanent stabilization of all disturbed land surfaces upon completion of construction.*

Wetland losses are of great concern to the State as pointed out previously in Section 6.5 above. Nearly half of the wetlands in the United States (lower 48) are in the southeast region of the country. Since the 1800s, almost 60% of Mississippi's wetlands have been lost. Presently, 14 % of the State's area, or 3.7- million acres, is wetlands. This is predominantly pristine forested wetlands. Now more than 365,000 acres of that has been lost or converted over to other wetland types. Over half of this change can be attributed to agricultural development in the Lower Mississippi Alluvial Plain. Wetlands provide many benefits, including fish and wildlife habitat, erosion control and water -quality improvement. Water-quality functions include floodwater retention, groundwater recharge, sediment stabilization, and pollutant assimilation. Historically, Mississippi's wetland losses were due primarily to conversion to agriculture. Urban wetlands are now at higher risk due to increased pressure from residential and commercial development. Because of this huge loss in wetlands, it is incumbent upon MDEQ to do all it can, along with its partners, to prevent future losses and to mitigate the losses that have already occurred.

Mississippi has a wetland protection program integrated into a variety of state laws and regulations. No one agency is solely responsible for wetlands protection and regulation. EPA and the USACE are

responsible for administering the federal program for regulating development in wetlands. The USACE delineates wetlands and determines which wetlands fall under regulatory jurisdiction and require a federal permit for development.

MDEQ administers the §*401 Water Quality Certification Program* which is the primary focus of wetland regulation and protection at the state level. MDEQ looks at proposed physical and hydrological impacts on wetlands and water quality in order to protect existing uses and prevent degradation. MDEQ may waive, issue with conditions, or deny a *§401 Certification*. The federal *§404 Permit* from the USACE is not issued until MDEQ gives a *§401 Certification*. So, it is incumbent upon MDEQ and the USACE to partner as early in the *§404 Permit* and the §*401 Certification Process* as early as possible when wetlands are affected by various anthropogenic activities.

The Mississippi Department of Marine Resources (MDMR) becomes involved in the permitting process if the proposed wetland alteration takes place in the Coastal Zone. The Coastal Zone is the area represented by Hancock, Harrison, and Jackson counties. MDMR considers the critical area of the Coastal Zone to be that area seaward of mean-high tide. Projects proposed in that area are reviewed by MDMR, and if consistent with the *Coastal Zone Management Program*, are issued a *Critical Area Permit*. If the project is outside of the critical area, but within the Coastal Zone, then MDMR will review the project for consistency with the *Coastal Zone Management Program*. In general, MDMR will not approve a project proposal unless no feasible alternatives exist or an overriding public interest can be demonstrated and any substantial environmental impact minimized.

When development or construction is proposed that will have an impact on, or be in wetlands, a *§404 Permit* and a *§401 Certification* is required. This permit and certification require a mitigation process. The mitigation process is required by an applicant prior to impacting wetlands. The process consists of seeing first if impacts can be avoided altogether, then, if that is not possible, if the impact can be minimized, and lastly, if the first two are not possible, then compensation is required. Compensation can consist of wetlands restoration, enhancement, creation, preservation, or some combination thereof. Onsite compensation is more desirable than off-site, and the State follows that guidance when reviewing applications for §*401Certification*. In Mississippi, the acreage of wetlands compensation is at least a 1-1/2 acres of wetlands compensation for every acre filled. Commonly, MDEQ requires two acres of wetlands compensation for every acre filled. Compensation alternatives are required to be protected forever by placing those wetlands in a deed restriction or conservation easement. In the Coastal Zone, just as in the interior part of Mississippi, it is incumbent upon MDEQ to partner with MDMR and this should be done as early as possible when coastal wetlands are being threatened by anthropogenic activities.

The reader is referred to the following links for more information on MDEQ's Hydromodification and Wetlands Protection:

US EPA – National Management Measures to Control Nonpoint Source Pollution from Hydromodification, EPA 841-B-07-002, July 2007
http://water.epa.gov/polwaste/nps/hydromod_index.cfm

US EPA – National Management Measures to Protect and Restore Wetlands and Riparian Areas for the Abatement of Nonpoint Source Pollution, EPA 841-B-05-003, July 2005
http://water.epa.gov/polwaste/nps/wetmeasures/index.cfm

US EPA – Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters, EPA 840-B-92-002, January 1993
http://water.epa.gov/polwaste/nps/czara/index.cfm

MDEQ – Wetlands Protection
http://www.deq.state.ms.us/MDEQ.nsf/page/WQCB_Steam_Wetland_Alteration03?OpenDocument

MDEQ's *Objectives and Strategies* for hydromodifications and wetland-protection impacts are found in Table 25 below.

Table 25 5-Year Action Plan for Hydrologic Modification and Wetland NPS

NPS-Related Objectives and Actions			Target Years	Goal Ref.
Objective 1:	Continue to collaborate with agencies and stakeholders to leverage all available resources to target priority water resource issues.		2014-2018	2, 7,10
	Action 1:	Continue to maintain and strengthen existing relations with US Army Corp of Engineers (USACE), Natural Resource Conservation Service (NRCS), US Fish and Wildlife Service (USFWS), The Nature Conservancy (TNC), water supply districts, land trusts, levee boards and other entities.	2014-2018	
	Tracking Measure:	Continue participation and active involvement on all work groups to focus efforts to address water quality issues.	2014-2018	
	Action 2:	Continue to utilize section 319 funds to seek and direct additional leveraging opportunities on the federal, state and local levels.	2014-2018	
	Action 3:	Continue to work through the Basinwide Approach to build locally-led watershed teams and partnerships to focus on controlling NPS pollution from hydrologic modification and wetland sources.	2014-2018	
	Tracking Measure:	Participate in all basin team and watershed based planning team meetings.	2014-2018	
	Tracking Measure:	Participate as members of local watershed groups, providing input and technical assistance on water quality issues.	2014-2018	
	Action 4:	Continue to support management of stream channel modification, dam construction, and streambank/Shoreline erosion through the USACE section 404 permits, MDEQ's 401 Water Quality Certification, and dam permits.	2014-2018	
	Tracking Measure:	Support Blueway and Greenway initiatives statewide.	2014-2018	
	Action 5:	Continue to support the MS Department of Marine Resources (DMR) in wetlands restorations.	2014-2018	
	Tracking Measure:	Possible funding of watershed development / monitoring.	2014-2018	
	Tracking Measure:	Networking and Outreach with our partners and stakeholders.	2014-2018	
	Tracking Measure:	Possible funding of signage and development.	2014-2018	
	Tracking Measure:	Possible Land Acquisition for Protection along the Blueway.	2014-2018	
	Action 6:	Continue to evaluate the need for increasing the number of inspections of hydrologic modification and wetland sources complaints.	2014-2018	
	Tracking Measure:	Plan to increase inspections and review areas where additional inspections can be conducted, as well as evaluate the budget constraints and secure necessary funding.	2014-2018	

Table 25 5-Year Action Plan for Hydrologic Modification and Wetland NPS				
NPS-Related Objectives and Actions			Target Years	Goal Ref.
	Action 7:	Work with MDEQ's Environmental Permit and Compliance Divisions (EPCD) more closely to strengthen permits in priority watersheds and in noncompliance areas.	2014-2018	
	Tracking Measure:	Coordinate with Permitting Division to modify permits as needed.	2014-2018	
	Action 8:	Encourage voluntary development of hydrologic modification and wetland sources management plans for local stakeholders.	2014-2018	
	Action 9:	Consider providing cost sharing assistance to local watershed sponsors for the rehabilitation, repair or removal of watershed structures built under PL534 and PL566.	2014-2018	
	Tracking Measure:	Work with local watershed sponsors on high hazard dams.	2014-2018	
	Tracking Measure:	Cost share with sponsors on dam upgrades in conjunction with NRCS.	2014-2018	
Objective 2:	Continue to advance educational outreach and perform research and technology transfer to evaluate the effectiveness of natural streambank stabilization and wetland protection and restoration approaches.		2014-2018	3, 7, 10, 13, 14
	Action 1:	Continue to promote the use and development of educational materials.	2014-2018	
	Tracking Measure:	Maintain a current list and hyperlinks to all educational materials on the MDEQ NPS webpage.	As Needed.	
	Tracking Measure:	Utilize partners to distribute all educational materials to land owners and operators.	As Needed.	
	Action 2:	Continue and expand education related to water quality issues, sediment reduction plans, and the use of BMPs in hydrologic modification and wetlands.	2014-2018	
	Tracking Measure:	Support expansion of education and outreach efforts to develop and implement sediment reduction plans for home owners and local stakeholders.	2014-2018	
	Tracking Measure:	Conduct a minimum of two field days per year at natural streambank restoration demonstration sites.	2014-2018	
	Action 4:	Continue to support efforts to evaluate the effectiveness of traditional and innovative BMPs and promote their use where deemed valuable.	2014-2018	
	Tracking Measure:	Continue to support efforts to showcase new BMP technology through demonstration projects.	2014-2018	
	Action 5:	Modify existing practices utilizing adaptive management processes.	2014-2018	
	Tracking Measure:	Collaborate with academia partners to study and identify areas for practice improvement.	2014-2018	
	Tracking Measure:	Document specific areas of improvement, field testing and demonstration, and modified and functional practices.	2014-2018	
	Action 6:	Document hydrologic alterations to the landscape and plan for restoration of these areas as appropriate.	2014-2018	
	Tracking Measure:	Develop GIS information for relevant parameters: wastewater treatment plant service areas, culvert locations, habitat and land use, population density, etc.	2014-2018	
Objective 3:	Continue to collaborate with agencies and stakeholders to focus resources on the development and implementation of projects to abate the impacts of hydrologic modifications and wetland alterations.		2014-2018	6, 7,10
	Action 1:	Continue to utilize GIS tools to characterize riparian zone health to identify areas of concern.	2014-2018	
	Tracking Measure:	Update tools with best available data, incorporate into MWCRT, and share results.	2014-2018	
	Action 2:	Continue to support the development and/or update of watershed based plans in priority areas to include natural streambank stabilization, riparian zone restoration and wetland protection components.	2014-2018	

Table 25 5-Year Action Plan for Hydrologic Modification and Wetland NPS				
NPS-Related Objectives and Actions			Target Years	Goal Ref.
	Action 3:	Support efforts to establish demonstration sites to showcase natural streambank stabilization methods.	2014-2018	
	Tracking Measure:	Implement a minimum of three natural streambank stabilization demonstration projects.	2014-2018	
	Action 4:	Support the development and implementation of sediment reduction projects in the Buttahatchee River.	2014-2015	
	Tracking Measure:	Seek to reduce sediment loading through environmentally compatible riverbank stabilization projects.	2014-2018	
	Tracking Measure:	Pursue funding for river bank stabilization and habitat improvement.	2014-2018	
	Tracking Measure:	Regrade river banks at project site, install bendway weirs, and complete native planting.	2014-2018	
	Tracking Measure:	Identify other project sites and continue stabilizing river bank and native planting	2014-2018	
	Action 5:	Support efforts by TNC and other partners to restore and enhance wetlands at McIntyre Scatters wetland in Leflore County by installing a fixed-elevation weir or weirs to raise water levels in the wetlands to near-historic levels.	2014-2017	
	Action 6:	Support efforts by TNC and other partners to reduce NPS nutrients in nearshore tidally influenced waters by utilizing the natural filtering capacity of native subtidal oyster reefs.	2014-2017	
	Tracking Measure:	Restore oyster bio-mass in Mississippi Sound by establishing an oyster water quality working group to produce monitoring protocols, identify locations, and begin baseline water monitoring.	2014-2018	
	Tracking Measure:	Deploy cultch in back bay areas where determined appropriate.	2014-2018	
	Tracking Measure:	Determine level of oyster reef replication and expansion needed for nutrient reduction success.	2014-2018	

7.4.7 **Prevention and Protection**

In addition to restoring impaired waters, the MDEQ will seek to protect those waters that are not listed as impaired or threatened, but may nonetheless be adversely impacted by nonpoint source pollution or may be high quality, unique waters that warrant special protection. The quality of these surface waters will be maintained and improved through coordinated regulatory and non-regulatory methods, including nonpoint source pollution reduction and control, permitting of point sources, the National Environmental Policy Act (NEPA) review process, Clean Water Act Section 401 certifications, and providing technical assistance and public education. Where possible, the MDEQ will seek to be proactive to prevent new water quality impairments from arising. In its prioritization process for protecting unimpaired waters as mentioned in Chapter 4, Section 4.2.3, Mississippi plans to engage EPA and other agency partners to further discuss and consider appropriate planning frameworks and metrics specifically for watershed projects aimed at protecting unimpaired waters. As mentioned in Section 4.3.2, MDEQ also plans to use the MWCRT for providing a scientific method to allow managers to identify watersheds of interest, make meaningful decisions, and prioritize watersheds for restoration and/or protection activities.

In 2011, the EPA launched its Healthy Watersheds Initiative by releasing the Healthy Watersheds Initiative: National Framework and Action Plan 2011. The purpose of the Healthy Watersheds Initiative is to supplement watershed restoration efforts with proactive, holistic aquatic ecosystem

conservation and protection. The initiative involves "…assessment and management approaches that encourage states, local governments, watershed organizations, and others to take a strategic, systems approach to conserve healthy components of watersheds, and, therefore, avoid additional water quality impairments in the future." The Mississippi Nonpoint Source Program supports proactive efforts to maintain healthy watersheds and will work with EPA as a partner in protecting healthy watersheds in Mississippi as opportunities arise and as available resources allow.

The reader is referred to the following links for more information on the State's Water Quality Protection:

US EPA – Handbook for Developing Watershed Plans to Restore and Protect (italics added for emphasis) Our Waters
http://water.epa.gov/polwaste/nps/handbook_index.cfm
US EPA – Healthy Watersheds Initiative: National Framework and Action Plan 2011
http://water.epa.gov/polwaste/nps/watershed/hwi_action.cfm

MDEQ – Water Quality Standards
http://www.deq.state.ms.us/MDEQ.nsf/page/WMB_Water_Quality_Standards?OpenDocument

MDEQ – State of Mississippi Water Quality Criteria for Intrastate, Interstate, and Coastal Waters
http://www.deq.state.ms.us/MDEQ.nsf/pdf/WMB_adopted_wqsstandoc_aug07/$File/WQS_std_adpt_aug07.pdf?OpenElement

(This link refers to the 2007 document; the reader should note that the 2012 water-quality standards document has been approved by EPA and will be available as a hyperlinked document on the MDEQ web site in the near future).

MDEQ's *Objectives and Strategies* for water-quality protection are found in Table 26 below.

Table 26 5-Year Action Plan for NPS Protection and Prevention

NPS-Related Objectives and Actions			Target Years	Goal Ref.
Objective 1:	Continue to work through the Basinwide Approach to build partnerships to focus on the protection of unimpaired waters.		2014-2018	6, 7,10
	Action 1:	Work with all agencies to develop and implement a method to track and document effectiveness of protective measures.	2014-2018	
	Tracking Measure:	Ensure stakeholder input by working with all basin team coordinators to incorporate relevant NPS agenda items during planned meeting of the various forums.	2014-2018	
	Tracking Measure:	Participate in all basin team and watershed based planning team meetings (*8* per year concurrent with other team meetings pertinent to impaired waters).	2014-2018	
	Tracking Measure:	Participate as members of local watershed groups, providing input and technical advice on protection projects.	2014-2018	
	Action 2:	Continue to promote the use of BMPs for protection by supporting more effective statewide educational programs.	2014-2018	
	Tracking Measure:	Solicit input from Resource Agency Partners, Stakeholder Groups, and individuals to identify educational needs.	2014-2018	
	Tracking Measure:	Continue and expand education related to water quality issues, nutrient management plans, and the use of BMPs for water protection.	2014-2018	
Objective 2:	Continue to look for opportunities to preserve and protect environmentally sensitive areas with waters that could otherwise be adversely impacted by NPS pollution.		2014-2018	7, 10,11

Table 26 5-Year Action Plan for NPS Protection and Prevention				
NPS-Related Objectives and Actions			Target Years	Goal Ref.
	Action 1:	Partner with agencies such as Land Trusts and other natural resource conservation groups to acquire conservation areas.	2014-2018	
	Tracking Measure:	Coordinate with other state agencies (e.g. Attorney General's office) to gain authority in acquiring lands.	2014-2018	
	Tracking Measure:	Coordinate with DMR and NOAA if protected lands fall within the Coastal Zone of the state.	2014-2018	
	Action 2:	Promote the use of greenways and blueways to protect unimpaired waters.	2014-2018	
	Action 3:	Ensure protection of threatened and endangered species.	2014-2018	
Objective 3:	Continue to collaborate with agencies and stakeholders to focus resources on the development and implementation of Watershed protection plans for unimpaired waters.		2014-2018	6, 7,10
	Action 1:	Continue to support the development and/or update of watershed based plans in priority areas to include water quality protection components.	2014-2018	
	Action 2:	Support efforts led by The Nature Conservancy to protect portions of Red Creek, Deaton Reserve, and Old Fort Bayou from sediment loading from stream bank erosion.	2014-2018	
	Tracking Measure:	Develop protection plans for water bodies.	2014-2018	
	Tracking Measure:	Reduce sediment loading through native tree seedling and native groundcover plantings to slow erosion and trap sediment.	2014-2018	
	Tracking Measure:	Complete longleaf, hardwood and native groundcover plantings at Red Creek (40 acres), Old Fort Bayou (5 acres)	2014-2018	
	Tracking Measure:	Complete hardwood plantings at Deaton Preserve (5 acres)	2014-2018	

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Appendix A

EPA's Eight Key Elements of an Effective State Nonpoint Source Program

Key Components of an Effective State Nonpoint Source Management Program

This guidance is an update of the nine key elements guidance contained in the U.S. Environmental Protection Agency's (EPA's) 1997 Guidance for Section 319(h) Grants (water.epa.gov/polwaste/nps/npsguid1.cfm#IIIa), and contains a description of the key components that characterize an effective state nonpoint source (NPS) management program. The original guidance was developed by EPA with input from state lead NPS control agencies. Similarly, during the spring of 2012, EPA convened an EPA-state workgroup to inform section 319 program improvements; this update was developed with input from this workgroup and further refined by comments and input from other states.

EPA expects all states to review and, as appropriate, revise and update their NPS management programs every five years. An updated, comprehensive program is critical to the states and EPA. It will allow EPA and the states to ensure that section 319 funding, technical support and other resources are directed in an effective and efficient manner to support state efforts to address water quality issues on a watershed basis. States should refer to these key components during review and update of their programs. States will then submit their updated programs to EPA for approval.

1. **The state program contains explicit short- and long-term goals, objectives and strategies to restore and protect surface water and ground water, as appropriate.**

   The state's long-term goals reflect a strategically focused state NPS management program designed to achieve and maintain water quality standards and to maximize water quality benefits.The shorter-term objectives consist of activities, with annual milestones, designed to demonstrate reasonable progress toward accomplishing long-term goals as expeditiously as possible. Since the NPS management program is a longer-term planning document, the annual milestones may be more general than are expected in an annual section 319 grant workplan, but are specific enough for the state to track progress and for EPA to determine satisfactory progress in accordance with section 319(h)(8). Annual milestones in a state's NPS management program describe outcomes and key actions expected each year, e.g., delivering a certain number of WQ-10 success stories or implementing projects in a certain number of high priority impaired watersheds. The state program includes objectives that address nonpoint sources of surface water and ground water pollution as appropriate (including sources of drinking water) in alignment with the goals of the Clean Water Act. The objectives include both

implementation steps and how results will be tracked (e.g., water quality improvements or load reductions).

The state program includes long-term goals and shorter-term (e.g., three- to five-year) objectives that are well integrated with other key environmental and natural resource programs, such as those described under component #3. State program goals and objectives are periodically revised as necessary to reflect progress or problems encountered, strategies to make progress towards achieving the goals, and indicators to measure progress.

2. **The state strengthens its working partnerships and linkages to appropriate state, interstate, tribal, regional, and local entities (including conservation districts), private sector groups, citizens groups, and federal agencies.**

The state uses a variety of formal and informal mechanisms to form and sustain these partnerships. Examples include memoranda of agreement, letters of support, cooperative projects, sharing and combining of funds, and meetings to share information and ideas.

The state NPS lead agency works collaboratively with other key state and local NPS entities in the coordinated implementation of NPS control measures in high priority watersheds. Interagency collaborative teams, NPS task forces, and representative advisory groups can be effective mechanisms for accomplishing these linkages, as can more informal but ongoing program coordination and outreach efforts. The state works to ensure that its local partners and grantees have the capacity to effectively carry out watershed implementation projects funded to support its NPS management program.

Further, the state seeks public involvement from local, regional, state, interstate, tribal and federal agencies, and public interest groups, industries, academic institutions, private landowners and producers, concerned citizens and others as appropriate, to comment on significant proposed program changes. This involvement helps ensure that environmental objectives are well integrated with those for economic stability and other social and cultural goals.

3. The state uses a combination of statewide programs and on-the-ground projects to achieve water quality benefits; efforts are well-integrated with other relevant state and federal programs.

The state has the flexibility to design its NPS management program in a manner that is best suited to achieve and maintain water quality standards. The state may achieve water quality results through a combination of watershed approaches and statewide programs, including regulatory authorities, as appropriate. The state NPS management program emphasizes a watershed management approach and includes an explanation of the state's approach to prioritizing waters and watersheds to achieve water quality restoration and protection.

The state NPS management program is well integrated with other relevant programs to restore and protect water quality, aligning priority setting processes and resources to increase efficiency and environmental results. These include the following programs, as applicable:

- Total Maximum Daily Loads (TMDLs);
- Clean Water State Revolving Fund (CWSRF);
- U.S. Department of Agriculture (USDA) farm bill conservation programs;
- state agricultural conservation;
- state nutrient framework or strategy
- source water protection;
- point sources (including stormwater, confined animal feeding operations, and
- enforcement of permitted facilities);
- ground water;
- drinking water;
- clean lakes
- wetlands protection;
- national estuary program;
- coastal nonpoint pollution control program;
- pesticide management;
- climate change planning;
- forestry, both federal (U.S. Forest Service) and state;
- U.S. Army Corps of Engineers programs;
- and other natural resource and environmental management programs.

Because of the significant resources potentially available through USDA conservation programs, the state makes a strong sustained effort to coordinate and leverage with USDA NRCS. Similarly, a state NPS management program is well-integrated and clearly identifies processes to incorporate some of the significant resources of the CWSRF loan program for eligible nonpoint source activities.

Where applicable, the state NPS management program explains how NPS projects fit into the state's prioritization scheme for CWSRF funding, and describes state efforts to increase the use of the state CWSRF for the NPS management program. If there are barriers to prioritization of NPS projects, the state NPS management program describes efforts to coordinate with the CWSRF program and potential future steps to encourage NPS projects are considered.

If, in reviewing federal programs, the state identifies federal lands and activities that are not managed consistently with state nonpoint source program objectives, the state may seek EPA assistance to help resolve issues at the federal agency level. Federal programs subject to review by the state include the land management programs of the Bureau of Land Management and the U.S. Forest Service, USDA's conservation programs, and the U.S. Army Corps of Engineers waterway programs, as well as development projects and financial assistance programs that are, or may be, inconsistent with the state's NPS management program.

As a federal agency, EPA has a role to play in support of the state's NPS management program by working with other federal agencies to enhance their understanding of the significance of nonpoint source pollution and of the need to work cooperatively with the state to solve nonpoint source problems. Where appropriate, EPA will assist in resolving particular issues that arise between the state and federal agencies with respect to federal consistency with the state NPS management program. As EPA becomes aware of these issues, EPA works at a national level to improve consistency among federal programs.

4. **The state program describes how resources will be allocated between (a) abating known water quality impairments from NPS pollution and (b) protecting threatened and high quality waters from significant threats caused by present and future NPS impacts.**

   The program describes its approach to addressing the twin demands of remedying waters that the state has identified as impaired by NPS pollution and preventing new water quality problems from present and reasonably foreseeable future NPS impacts, especially for waters which currently meet water quality standards.

   With limited resources, the state will likely need to make choices about the relative emphasis on restoring impaired waters and protecting high quality waters. The state's program describes how it will approach setting priorities and aligning resources between these two areas of emphasis based on their water quality challenges and circumstances.

5. **The state program identifies waters and watersheds impaired by NPS pollution as well as priority unimpaired waters for protection. The state establishes a process to assign priority and to progressively address identified watersheds by conducting more detailed watershed assessments, developing watershed-based plans and implementing the plans.**

   The state identifies waters impaired by nonpoint source pollution based on currently available information (e.g., in reports under sections 305(b), 319(a), 303(d), 314(a), and 320), and revises its list periodically as more up-to-date assessment information becomes available. As feasible, the state also identifies important unimpaired waters that are threatened or otherwise at risk from nonpoint source pollution.

   In addition the state identifies the primary categories and subcategories causing the water quality impairments, threats, and risks across the state. At regular intervals the state updates the identification of waters impaired or threatened by NPS pollution preferably as part of a single comprehensive state water quality assessment which integrates reports required by the Clean Water Act. The state establishes a process to assign priority and to progressively address identified waters and watersheds by conducting more detailed watershed assessments, developing watershed-based plans, and implementing the plans. Factors used by the state to assign priority to waters and watersheds may include a variety of considerations, for example:

   - human health considerations including source water protection for drinking water;

- ecosystem integrity, including ecological risk and stressors;
- beneficial uses of the water;
- value of the watershed or ground water area to the public;
- vulnerability of surface or ground water to additional environmental degradation;
- likelihood of achieving demonstrable environmental results;
- degree of understanding of the causes of impairment and solutions capable of restoring
- the water;
- implementability (site-specific technical feasibility);
- adequacy of existing water quality monitoring data or future monitoring commitments;
- degree to which TMDL allocations made to point sources are dependent on NPS
- reductions being achieved;
- extent of partnerships with other federal agencies, states, local public and private
- agencies/organizations and other stakeholders to coordinate resources and actions;
- availability and access of funding sources other than section 319(h);
- readiness to proceed among stakeholders and project partners.

The state links its prioritization and implementation strategy to other programs and efforts such as those listed under component #3. In establishing priorities for ground water activities, the state considers wellhead protection areas, ground water recharge areas, and zones of significant ground water/surface water interaction, including drinking water sources.

There are different approaches for prioritizing waters for restoration and protection and EPA offers several tools to assist. For example, EPA's Recovery Potential Screening Tool, available at www.epa.gov/recoverypotential, is useful for comparing restorability of impaired waters across various watersheds. Also, the Nitrogen and Phosphorus Pollution Data Access Tool (NPDAT), at www.epa.gov/nutrientpollution/npdat, is a GIS-based tool designed to assist in identifying priority watersheds to address nutrient pollution.

6. **The state implements all program components required by section 319(b) of the Clean Water Act, and establishes strategic approaches and adaptive management to achieve and maintain water quality standards as expeditiously as practicable. The state reviews and upgrades program components as appropriate. The state program includes a mix of regulatory, nonregulatory, financial and technical assistance, as needed.**

Under section 319(b) state NPS management programs include all of the following components:

(i) An identification of measures (i.e., systems of practices) that will be used to control NPS pollution, focusing on those measures which the state believes will be most effective in achieving and maintaining water quality standards. These measures may be individually identified or presented in manuals or compendiums, provided that they are specific and are related to the category or subcategory of nonpoint sources. They may also be identified as part of a watershed approach towards achieving water quality standards, whether locally, within a watershed, or statewide;

(ii) An identification of the key programs to achieve implementation of the measures, including, as appropriate, nonregulatory or regulatory programs for enforcement, technical assistance, financial assistance, education, training, technology transfer, and demonstration projects. The state is free to decide the best approaches for solving the problems that it identifies under key component #5 above. These approaches may include one or all of the following:

- watershed or water quality-based approaches aimed at meeting water quality standards directly;
- iterative, technology-based approaches based on best management practices or measures, applied on either a categorical or site-specific basis; or
- an appropriate mix of these approaches.

(iii) A description of the processes used to coordinate and, where appropriate, integrate the various programs used to implement NPS pollution controls in the state;

(iv) A schedule with goals, objectives, and annual milestones for implementation at the earliest practicable date: legal authorities to implement the program; available resources; and institutional relationships;

(v) Sources of funding from federal (other than section 319), state, local, and private sources;

(vi) Federal land management programs, development projects and financial assistance programs;

(vii) A description of monitoring and other evaluation programs that the state will conduct to help determine short- and long-term NPS management program effectiveness.

In addition, the state incorporates existing baseline requirements established by other applicable federal or state laws to the extent that they are relevant. For example, a coastal state or territory with an approved coastal zone management program incorporates its approved state coastal nonpoint pollution control programs required by section 6217 of the Coastal Zone Act Reauthorization Amendments (CZARA) of 1990, into its NPS management program since CZARA requires implementation through the state's NPS management program. In this manner, the state ensures that this program and other relevant baseline programs are integrated into, and consistent with, section 319 programs.

7. **The state manages and implements its NPS management program efficiently and effectively, including necessary financial management.**

   The state implements its program to solve its water quality problems as effectively and expeditiously as possible, and makes satisfactory progress each year in meeting program goals. To help assure that priority water quality problems are addressed cost-effectively and in a timely manner, the state includes in its program a process for identifying priority problems and/or watersheds, and deploys resources in a timely fashion to address priorities, including any critical areas requiring treatment and protection within watersheds.

   The state employs appropriate programmatic and financial systems that ensure section 319 dollars are used efficiently and consistent with its legal obligations, and generally manages all section 319 funds to maximize water quality benefits. The state ensures that section 319 funds complement and leverage funds available for technical and financial assistance from other federal sources and agencies.

8. **The state reviews and evaluates its NPS management program using environmental and functional measures of success, and revises its NPS management program at least every five years.**

   The state establishes appropriate measures of progress in meeting programmatic and water quality goals and objectives identified in key component #1 above. The state also describes a monitoring/evaluation strategy and a schedule to measure success in meeting those goals and

objectives. The state integrates monitoring and evaluation strategies with ongoing federal natural resource inventories and monitoring programs.

The state NPS management program is reviewed and revised every five years. The revision is not necessarily a comprehensive update unless significant program changes warrant a complete revision; instead, an update targets the parts of the program that are out-of-date. At a minimum, this includes updating annual milestones and the schedule for program implementation, so that they remain current and oriented toward achieving water quality goals.

Appendix B

Eight Key Elements Crosswalk

Crosswalk for Review of State Management Plan

State of Mississippi

1. Short and Long-term goals, objectives and strategies		
Summary of Federal Requirement		**State Citation (Title, Section/Paragraph)**
The shorter-term objectives: activities with annual milestones demonstrating progress toward long term water quality attainment.		NPS Management Program Goals, 7.2 Statewide Five-Year Action Plans, 7.3 Statewide Five Year Action Plans by NPS Category, 7.4
Annual milestones are specific enough for the state to track progress and for EPA to determine satisfactory progress in accordance with section 319(h) (8).		Statewide Five-Year Action Plans, 7.3 Statewide Five Year Action Plans by NPS Category, 7.4
Annual milestones describe key actions and outcomes expected each year, e.g., delivering a certain number of WQ-10 success stories or implementing projects in a certain number of high priority impaired watersheds.		Program Administration, 7.3.1 Watershed Based Planning and Implementation, 7.3.6 Data Management and Technical Support, 7.3.8
The objectives: implementation steps and results tracked (e.g., water quality improvements or load reductions).		NPS Management Program Goals, 7.2 Statewide Five-Year Action Plans, 7.3 Statewide Five Year Action Plans by NPS Category, 7.4
2. Partnerships and stakeholders involvement		
Summary of Federal Requirement		**State Citation (Title, Section/Paragraph)**
The state establishes and strengthens its working partnerships to all stakeholders, local and federal agencies (MOU, Cooperative agreements etc.).		Memoranda of Agreements, 3.4.2 NPS-Related Committees, Task Forces and Work Groups, 3.4.3 Public Input into the NPS Management Program, 3.4.4
3. The state uses a combination of statewide programs and on-the-ground projects to achieve water quality benefits; efforts are well-integrated with other relevant state and federal programs		
Summary of Federal Requirement		**State Citation (Title, Section/Paragraph)**

Strategies designed to achieve water quality results through a combination of watershed approaches and statewide programs, including regulatory authorities, as appropriate.		Overview of Mississippi's NPS Management Strategy, 4.1 Watershed Based Management, 4.2 Balancing Restoration and Protection, 4.2.3
Strategies that align priority setting processes and resources to increase efficiency and environmental results.		Watershed Based Prioritization, 4.2.2
4. The state program describes how resources will be allocated between (a) abating known water quality impairments from NPS pollution and (b) protecting threatened and high quality waters from significant threats caused by present and future NPS impacts.		
Summary of Federal Requirement		**State Citation (Title, Section/Paragraph)**
The program describes its approach to addressing: (i) Remedying waters that the state has identified as impaired by NPS pollution. (ii) Preventing new water quality problems from present and reasonably foreseeable future NPS impacts, especially protection for waters which currently meet water quality standards.		(i) Overview of Mississippi Efforts to Control NPS Pollution, 3.2 Watershed Based Management, 4.2 Statewide Five Year Action Plans by NPS Category, 7.4 (ii) Balancing Restoration and Protection, 4.2.3 Source Water Protection, 5.14 Wetlands Protection Program, 6.5 Prevention and Protection, 7.4.7
5. The state program identifies waters and watersheds impaired by NPS pollution as well as priority unimpaired waters for protection. The state establishes a process to assign priority and to progressively address identified watersheds by conducting more detailed watershed assessments, developing watershed-based plans and implementing the plans		
Summary of Federal Requirement		**State Citation (Title, Section/Paragraph)**

The state identifies: (i) Waters impaired by nonpoint source pollution based on currently available information (e.g., in reports under sections 305(b), 319(a), 303(d), 314(a), and 320). (ii) Revises its list periodically as more up-to-date assessment information becomes available. (iii) Identifies important unimpaired waters that are threatened or otherwise at risk from nonpoint source pollution. (iv) Identifies the primary categories and subcategories causing the water quality impairments, threats, and risks across the state. (v) At regular intervals, the state updates the identification of waters impaired or threatened by NPS pollution preferably as part of a single comprehensive state water quality assessment which integrates reports required by the Clean Water Act. (vi) Establishes a process to assign priority and to progressively address identified waters and watersheds by conducting more detailed watershed assessments, developing watershed-based plans, and implementing the plans. (vii) The state links its prioritization and implementation strategy to other state programs and efforts.		(i) Assessment of Mississippi's Water Resources, 2.5 Watershed Based Prioritization, 4.2.2 (ii) Assessment and Monitoring, 7.3.3 Watershed Based Planning and Implementation, 7.3.6 (iii) Watershed Based Planning and Implementation, 7.3.6 (iv) Overview of Mississippi Efforts to Control NPS Pollution, 3.2 Statewide Five Year Action Plans by NPS Category, 7.4 (v) Overview of Mississippi Efforts to Control NPS Pollution, 3.2 Watershed Based Planning and Implementation, 7.3.6 (vi) Overview of Mississippi Efforts to Control NPS Pollution, 3.2 Watershed Based Planning and Implementation, 7.3.6 (vii) Watershed Based Management, 4.2
6. The state implements all program components required by section 319(b) of the Clean Water Act, and establishes strategic approaches and adaptive management to achieve and maintain water quality standards as expeditiously as practicable. The state reviews and upgrades program components as appropriate. The state program includes a mix of regulatory, nonregulatory, financial and technical assistance, as needed.		
Summary of Federal Requirement		**State Citation (Title, Section/Paragraph)**

(i)	An identification of measures (i.e., systems of practices) that will be used to control NPS pollution, focusing on those measures which the state believes will be most effective in achieving and maintaining water quality standards.		(i)	Overview of Mississippi Efforts to Control NPS Pollution, 3.2 Statewide Five Year Action Plans by NPS Category, 7.4
(ii)	An identification of the key programs to achieve implementation of the measures, including, as appropriate, nonregulatory or regulatory programs for enforcement, technical assistance.		(ii)	Program Integration, Consensus Building, and Partnering, 3.4 Programs that Support the MS NPS Management Strategy, 5
(iii)	A description of the processes used to coordinate and, where appropriate, integrate the various programs used to implement NPS pollution controls in the state.		(iii)	Program Integration, Consensus Building, and Partnering, 3.4
(iv)	A schedule with goals, objectives, and annual milestones for implementation at the earliest practicable date: legal authorities to implement the program; available resources; and institutional relationships;		(iv)	Legal Authority, 1.5 Memoranda of Agreements, 3.4.2 NPS-related Committees, Task Forces and Work Groups, 3.4.3 Statewide Five Year Action Plans by NPS Category, 7.4
(v)	Sources of funding from federal (other than section 319), state, local, and private sources.		(v)	Section 319 Grants and Eligibility, 5.1 NPS Management Program Goals, 7.2
(vi)	Federal land management programs, development projects and financial assistance programs;		(vi)	Forestry Protection, 5.1 Forestry, 7.4.2
(vii)	A description of monitoring and other evaluation programs that the state will conduct to help determine short- and long-term NPS management program effectiveness.		(vii)	Assessment and Monitoring Strategies, 4.2.5 Nutrient Criteria Development, 4.2.6 Stressor Identification for NPS TMDLs, 4.2.8 Water Quality Monitoring and Assessment, 5.10 Assessment and Monitoring, 7.3.3

The state incorporates existing baseline requirements established by other applicable federal or state laws to the extent that they are relevant.		Balancing Restoration and Protection, 4.2.3 Section 6217 Coastal Nonpoint Pollution Control Program, 5.6 Hydromodification/Wetlands Protection, 7.4.6
7. The state manages and implements its NPS management program efficiently and effectively, including necessary financial management.		
Summary of Federal Requirement		**State Citation (Title, Section/Paragraph)**
(i) A process for identifying priority problems and/or watersheds, and deploys resources in a timely fashion to address priorities. (ii) The state employs appropriate programmatic and financial systems that ensure section 319 dollars are used efficiently and consistent with its legal obligations, and generally manages all section 319 funds to maximize water quality benefits. (iii) The state ensures that section 319 funds complement and leverage funds available for technical and financial assistance from other federal sources and agencies.		(i) Overview of Mississippi's NPS Management Strategy, 4.1 Statewide Five Year Action Plans by NPS Category, 7.4 (ii) Requirements of Clean Water Act Section 319, 1.5 Data Management and Technical Support, 4.3 Grants Reporting and Tracking System (GRTS), 4.3.3 Financial Management, 4.3.6 Section 319 Grants and Eligibility, 5.1 (iii) Basin Management Approach to Water Quality Management, 3.4.1 Memoranda of Agreements, 3.4.2
8. The state reviews and evaluates its NPS management program using environmental and functional measures of success, and revises its NPS management program at least every five years.		
Summary of Federal Requirement		**State Citation (Title, Section/Paragraph)**

(i)	Establishes appropriate measures of progress in meeting programmatic and water quality goals and objectives identified in key component #1 above.	(i)	Overview of Mississippi Efforts to Control NPS Pollution, 3.2 Statewide Five Year Action Plans by NPS Category, 7.4
(ii)	Describes a monitoring/evaluation strategy and a schedule to measure success in meeting those goals and objectives.	(ii)	Mississippi's NPS Five-Year Action Plan Introduction, 7.1 Program Administration, 7.3.1
(iii)	Integrates monitoring and evaluation strategies with ongoing federal natural resource inventories and monitoring programs.	(iii)	Program Integration, Consensus Building, and Partnering, 3.4
(iv)	The state NPS management program is reviewed and revised every five years.	(iv)	Program Administration, 7.3.1
(v)	Updating annual milestones and the schedule for program implementation.	(v)	Program Administration, 7.3.1 Watershed Based Planning and Implementation, 7.3.6

Summary:

A process for targeting and prioritization of program activities for the next five years is included in the Management Plan.

Meaningful metrics to measure the expected outcomes of the program's activities is described.

Schedules and Milestones indicate progress towards better water quality attainment.

Program evaluation for effectiveness and adaptive management processes for prioritization and program outcomes are incorporated in the Management Plan.

From the Management Plan, outcomes to gauge the effectiveness and efficiency of the State's NPS Management Program for the next five years are easily recognized. The program goals and usage of monies received are well documented and transparent.

Appendix C

Legal Opinions

STATE OF MISSISSIPPI

OFFICE OF THE ATTORNEY GENERAL

MIKE MOORE
ATTORNEY GENERAL

JIM WARREN
Special Assistant to the Attorney General

FRANK SPENCER
Assistant Attorney General
Director, Public Advocacy

BEVERLEY D. COLEMAN, CPA
Director, Administration

STEPHEN J. KIRCHMAYR
Deputy Attorney General
Litigation

ROBERT L. GIBBS
Deputy Attorney General
State/Local Government, Opinions

May 1, 1989

Mr. Barry Royals, P. E., Chief
Surface Water Quality Branch
Bureau of Pollution Control
P. O. Box 10385
Jackson, Mississippi 39209

Dear Barry:

Re: Certification of Mississippi Non-Point Source Pollution Management Program

Pursuant to your request, please be advised that the Mississippi Department of Natural Resources, Bureau of Pollution Control, has adequate statutory authority to implement the above referenced management program, pursuant to Section 49-2-9 of the Mississippi Code which, among other things, gives the Commission power to formulate the policy of the Department regarding natural resources within the *jurisdiction of the Department. Also, Section 49-2-9, Subparagraph E,* gives the Commission the authority to enter into and to authorize the Executive Director to execute, with the approval of the Commission, contracts, grants, and cooperative agreements with any federal or state agency in carrying out the provisions of said chapter.

By virtue of the above referenced statutory provisions, I feel that this state does in deed have adequate authority, as required by the Clean Water Act of 1987. If you have any questions regarding this, or if I can be of any additional service to you, please do not hesitate to call. With best wishes, I am

Very truly yours,

Art Prestage
Special Assistant Attorney General

AP:els

Carroll Gartin Justice Building • Post Office Box 220 • Jackson, Mississippi 39205-0220 • (601) 359-3680
Telefax (601) 359-3796

CZARA Legal Opinion

JIM HOOD
ATTORNEY GENERAL

October 19, 2005

Mr. John King, Director
Coastal Programs Division
Office of Ocean and Coastal
Resources Management
National Oceanic and Atmospheric Administration
1305 East-West Highway
Silver Springs, MD 20910

Mr. James D. Giattina, Director
U.S. Environmental Protection Agency, Region IV
Water Management Division
61 Forsyth Street, SW
Atlanta, GA 303003

Re: Clarification of Mississippi Nonpoint Source Pollution Program Legal Opinions dated August 18, 1999, and October 28, 2002

Gentlemen:

This correspondence is clarification to an e-mail from Josh Lott with the National Oceanic and Atmospheric Administration ("NOAA") to Sue Chamberlain, a contractor assisting the Mississippi Department of Environmental Quality ("MDEQ") with Mississippi's Coastal Nonpoint Source Pollution Control Program. Mr. Lott requested clarification that Mississippi has the authority to require implementation of management measures that are consistent and compliant with the Coastal Zone Act Reauthorization Amendments of 1990 ("CZARA"), Section 6217(g) measures promulgated by the U.S. Environmental Protection Agency ("EPA") and NOAA. Mississippi previously submitted the referenced two (2) opinions and this correspondence clarifies the prior submittals.

Mississippi interprets the Mississippi Air and Water Pollution Control Law, the Mississippi Coastal Wetlands Protection Law, Mississippi Coastal Program, the Mississippi water quality standards and other related state laws and regulations as authority for the management measures being incorporated into, and submitted as part of, the State's 6217 Program, which the State contends is in conformity with 6217(g) guidance. Mississippi further maintains the management measures are not limited to 6217(g) measures. If the controls available to Mississippi at present are not in any way sufficient, the State through the applicable regulatory agencies has authority to craft additional regulations to incorporate measures of CZARA Section 6217(g).

If you have any questions related to this correspondence, please contact me at (601) 359-3827.

Very truly yours,

Scott Stuart

Scott Stuart
Special Assistant Attorney General

Cc: Duane Robertson, EPA
Mark Nuhfer, EPA
Don Waye, EPA
Bill O'Beirne, NOAA
Carleigh Trappe, NOAA
Joshua Lott, NOAA
John Kuriawa, NOAA
Mike Walker, Mississippi Department of Marine Resources
Sharon Hodge, Esq.
Roy Furrh, Esq.
Zoffee Dahmash

Appendix D

Memoranda of Agreements

MEMORANDUM OF UNDERSTANDING

Section 41-67-3(1), Mississippi Code Annotated (Supp. 1997) was amended in 1996 in the reenactment of the Individual Onsite Wastewater Disposal System Law to require the Mississippi State Department of Health (MSDH) and the Mississippi Department of Environmental Quality (MDEQ) to enter into a memorandum of understanding which shall clearly define the jurisdiction of each department with regard to wastewater disposal and the procedures for interdepartmental interaction and cooperation. The effective date for this reenactment was July 1, 1996. To comply with this legislative mandate, MSDH and MDEQ are executing this Memorandum of Understanding (Agreement).

Section 49-2-4, Mississippi Code Annotated (Rev. 1990), provides that the Executive Director shall be the chief administrative officer of the MDEQ. Sections 49-2-13 and 49-17-13, Mississippi Code Annotated (Rev. 1990) provide that the Executive Director has the power, with the approval of the Commission, to enter into cooperative agreements with any state agency in connection with carrying out the provisions of Sections 49-2-1, et seq. and Sections 49-17-1 et seq.

Section 41-3-15(4)(e), Mississippi Code Annotated (Supp. 1997), provides that the State Board of Health has the authority to enter into contracts or agreements with any other state agency, if it finds such action to be in the public interest.

The MSDH will regulate all residential on-site wastewater disposal systems and those commercial on-site wastewater disposal systems (excluding industrial wastes) that receive flows of less than 1,000 gallons per day (gpd) and do not discharge to waters of the state, as defined in Section 49-17-5(f), Mississippi Code Annotated (Supp. 1997). The MSDH will also regulate these residential and commercial systems in cases where waste leaves the property of the generator but does not discharge to waters of the state. The MDEQ will regulate those commercial systems that receive flows over 1,000 gpd or discharge to waters of the state.

Upon request by MDEQ or the property owner, the MSDH will provide soil analysis, including a recommendation for any proposed sub-surface system. MSDH will refer a proposed residential lot owner to MDEQ only after it has been determined there is no type of individual system that can be authorized, either design-based or performance-based, that can maintain the wastes on the lot to be developed and that a system discharging to waters of the state should be considered. Referrals to MDEQ must be in writing, signed by the MSDH District Environmentalist, and addressed to the lot owner with a copy to MDEQ. After that, the MDEQ will advise the lot owner of the permitting requirements for systems regulated under the National Pollutant Discharge Elimination System (NPDES) and will schedule a point of discharge inspection. If permitting requirements can be met, the NPDES permitting process for discharge systems will typically require 90 to 120 days to complete. This referral by MSDH does not constitute approval by MDEQ, nor does it insure issuance of an NPDES Permit by the Environmental Quality Permit Board.

Existing residential on-site wastewater disposal systems that fail to adequately treat the wastewater or fail to maintain the discharge on the property of the generator will not be referred to MDEQ. The MSDH shall cause the existing system to be replaced with a system meeting all requirements of the MSDH. If replacement of the existing system is not possible, the existing system shall be repaired to reduce the volume of effluent, to adequately treat the effluent and, to the greatest extent possible, to confine the discharge to the property of the generator and prevent a discharge to waters of the state.

MSDH will notify MDEQ when malfunctions of MDEQ permitted wastewater facilities are noted at establishments also regulated by the MSDH; likewise, MDEQ will inform MSDH in converse situations. MDEQ will pursue action with regard to violations of wastewater system permits issued by MDEQ for establishments also regulated by the MSDH, i.e. food establishments, child care centers, hotels/motels, recreational vehicle campgrounds, and Grade A dairy farms, and will send a copy of the violation citation to the MSDH. MSDH and MDEQ will work together to vigorously pursue these wastewater malfunctions or violations.

With regard to sewage pumpers licensed by the MSDH, both MSDH and MDEQ will inform each other and take appropriate enforcement action concerning approved dump sites for septage and illegal dumping of septage.

To pursue common goals of protecting public health and the environment, both MSDH and MDEQ agree to join in legal action, where appropriate, regarding abatement of public health hazards involving the environment, including, but not limited to, requiring disconnection from individual on-site wastewater disposal systems and connecting to an available, permitted sewerage system.

Both MSDH and MDEQ will encourage the installation of sewage collection and treatment systems in proposed new subdivisions which contain small lots or a large number of lots. Prior to determining the necessity of any feasibility study required by Section 41-67-4, joint site visits by staff of both agencies will be encouraged. In these situations, both agencies will work with developers and engineers in promoting the feasibility of sewers, including options such as small diameter pressure sewers and other cost-effective alternatives. If lots, as platted, are not suitable for individual systems, then a feasibility study is not needed. In such cases, either a sewer system must be installed, or the proposed layout of the subdivision must be altered.

MSDH shall provide project developers an area soil/site evaluation (the raw data and analysis of that data) for proposed subdivisions and, further, shall advise project developers of the restrictions and requirements for the locations of suitable on-site wastewater disposal systems. MDEQ shall maintain a policy on the submission of feasibility studies which will include a list of items to be contained in the submission. MDEQ shall provide a written response regarding the results of the feasibility study to

project developers, their engineers, and the MSDH. A copy of the feasibility study will be forwarded to the MSDH with the letter of response to the project developer.

On a case-by-case basis, the MSDH and MDEQ may, for cause shown, mutually approve variances from or exceptions to the regulatory protocols set forth in this Agreement. Such variances or exceptions shall be in writing, signed by the Director of the Division of Sanitation for MSDH or her designee and the Chief of the Surface Water Division of MDEQ or his designee and shall not be deemed to be a modification of this Agreement.

The provisions of this Agreement shall be followed by personnel of both MSDH and MDEQ as long as this Agreement is in effect. Any modification of this Agreement must be approved in writing by both agencies. In the event either agency determines that a modification is necessary, it shall notify the other agency in writing. The agency notified of a proposed modification shall give notice to the other agency in writing of approval or disapproval of the proposed modification within thirty days after it receives notice of the proposed modification. Agency approval shall not be unreasonably withheld. In the event either agency refuses unreasonably to approve a modification, the other agency may terminate this Agreement by giving written notice thirty days prior to the termination date.

EXECUTED this the 25th day of November 1997.

State Health Officer
Mississippi Department of Health

Executive Director
Mississippi Department of
Environmental Quality

MEMORANDUM OF UNDERSTANDING

BETWEEN THE MISSISSIPPI COMMISSION ON ENVIRONMENTAL QUALITY AND THE MISSISSIPPI SOIL AND WATER CONSERVATION COMMISSION

THIS MEMORANDUM OF UNDERSTANDING (hereinafter "Agreement") is entered into as of the 27th day of MARCH, 1997, by the Mississippi Commission on Environmental Quality (hereinafter "MCEQ"), acting for and on behalf of the Mississippi Department of Environmental Quality (hereinafter "MDEQ"), and the Mississippi Soil and Water Conservation Commission (hereinafter "MSWCC"). All references in this agreement to either MCEQ or MDEQ shall be deemed to cover both.

NOW, THEREFORE, the MCEQ and the MSWCC agree as follows:

1. Agreement Directive.

As required by the 1996 amendments to Section 69-17-13, Mississippi Code of 1972, MCEQ and MSWCC are executing this Agreement to memorialize the relationship which has existed between these two agencies since 1979 in implementing the nonpoint source pollution program for agriculture in the State of Mississippi.

2. Statutory Authority.

Section 49-2-9(e), Mississippi Code of 1972, provides that MCEQ is empowered "to enter into, and to authorize the executive director to execute with approval of the commission, contracts, grants and cooperative agreements with any federal or state agency or subdivision thereof, or any public or private institution located inside or outside the State of Mississippi, or any person, corporation or association in connection with carrying out the provisions of this chapter..." Identical authority is also found in Section 49-17-13 (3), Mississippi Code of 1972.

Section 69-27-13, Mississippi Code of 1972, as amended in 1996, provides that MSWCC is empowered "to enter into and to authorize the executive director to execute with the approval of the commission, contracts, grants, cooperative agreements and memoranda of understanding with any federal or state agency or subdivision thereof, or any public or private institution located inside or outside the State of Mississippi, or any person, corporation or association in connection with carrying out the purposes of this article."

Section 49-17-13, Mississippi Code of 1972, which specifies certain powers and duties for MCEQ, provides, in pertinent part:

(1) The commission is designated as the State Air and Water Pollution Control Agency for this state for all purposes of federal pollution control

legislation and programs...The commission shall be empowered to receive and disperse funds ... for the purposes of preventing the pollution of the air and the water of the state.

(2) The commission shall have the right to call upon and receive the assistance of any officer, board, department, school, university or any other state agency, and officers and employees thereof, for any reasonable assistance necessary or beneficial in carrying out the provisions of Sections 49-17-1 through 49-17-43.

Section 69-17-13, Mississippi Code of 1972, which specifies the powers and duties for MSWCC, provides, in pertinent part, that MSWCC is authorized:

(a) To offer any assistance as may be appropriate to the commissioners of soil and water conservation districts in the carrying out of their powers and programs.

(c) To coordinate the programs of the soil and water conservation districts.

(d) To secure the cooperation and assistance of the United States and any of its agencies and of agencies of this state in the work of the districts.

(f) To seek and receive grants of monies, and other assets, from any source to carry out this article.

(g) To distribute any appropriated or other funds or assets under its control, from the state, federal or other governmental agencies or political subdivisions, or from private grants, including matching funds to districts.

(j) To study, classify and evaluate land use needs and problems in the State of Mississippi; to make recommendations leading to adoption of land use policy and broad guidelines for meeting the needs and problems so identified.

(k) To demonstrate to landowners and operators within the state, equipment that will demonstrate energy and soil and water conservation.

By formal agreement with the United States Environmental Protection Agency (USEPA), MCEQ and MDEQ are fully empowered to administer and enforce provisions of the federal Clean Water Act in Mississippi.

3. Program History.

In 1976, Mississippi received a grant from USEPA under Section 208 of the Clean Water Act to develop a statewide Water Quality Management Plan. A requirement of the grant was that the plan include a nonpoint source pollution assessment and an identification of nonpoint source pollution control needs. MDEQ received assistance from several state agencies in preparing portions of the assessment. MDEQ contracted with MSWCC to develop a nonpoint source pollution assessment list for agriculture, develop agricultural best management practices, and study conservation tillage practices. The Statewide 208 Plan was completed in 1979 and submitted to USEPA through the Office of the Governor. As recommended by MDEQ, the Governor designated the MDEQ, Office of Pollution Control, as the lead water quality agency for all purposes, as provided in the Mississippi Air and Water Pollution Control Act. Also as recommended by MDEQ, the Governor designated MSWCC as the "management agency" (as required by the regulations regarding Section 208) to implement the portion of the plan related to nonpoint source pollution from agriculture. Finally, and as recommended by MDEQ, the Governor designated other agencies as "management agencies" for other purposes covered by the 208 Plan.

At the time the Governor submitted the 208 Plan to USEPA, no funds were available for its implementation. In 1987, the federal Clean Water Act (CWA) Amendments called for states to develop Nonpoint Source Pollution Management Programs with goals and strategies to be implemented with funds made available under Section 319. MDEQ submitted a Nonpoint Source Pollution Assessment Report and a Nonpoint Source Pollution Management Program plan. This Program replaced and superseded, for all purposes, the program outlined in the Statewide 208 Plan, but did not change the historic relationship between MCEQ and MSWCC regarding agricultural nonpoint source pollution programs. MSWCC assisted MDEQ in the preparation of the agricultural portions of these new planning documents.

Approval of the Mississippi Nonpoint Source Pollution Management Program ("Program") was received from USEPA in 1989. MDEQ was designated as the lead agency to implement the Program. The State has received Section 319 grants from USEPA yearly since 1989 to implement Mississippi's Nonpoint Source Pollution Management Program. MDEQ has coordinated closely with MSWCC on the agricultural components of the Program. MSWCC has implemented numerous activities through contract with MDEQ to accomplish goals of the Mississippi Nonpoint Source Pollution Management Program.

4. Program Goals.

MCEQ and MSWCC desire to protect and improve the health and welfare of Mississippi's citizens and the quality of Mississippi's environment. MCEQ has identified nonpoint source pollution as a significant contributor to water quality problems in state waters. MCEQ is committed to developing and implementing a comprehensive statewide program to address all categories of nonpoint source pollution. Components of this program include planning, coordination with state, federal or other entities that have a role in the program, development of Best Management Practices (BMPs) to control nonpoint source pollution, educational and technology transfer activities to encourage use of BMPs, data collection and management, appropriate enforcement, and overall program administration.

MSWCC will assist MCEQ in the continuing development and implementation of an effective, non-regulatory agricultural nonpoint source pollution control program for Mississippi and , as requested, in the continuing development and implementation of effective programs for other categories of nonpoint source pollution.

5. Coordination and Communication.

MCEQ and MSWCC will communicate and coordinate directly with each other on matters related to the planning and implementation of agricultural nonpoint source activities/projects in Mississippi. MSWCC will provide information and recommendations to MCEQ on matters that pertain to controlling agricultural nonpoint sources of pollution. MCEQ and MSWCC staff will meet at least twice each year to review and discuss the state's agricultural nonpoint source water quality program.

As the MCEQ statewide nonpoint source pollution program described in paragraph 4 evolves, it is likely that one or more interagency task forces, such as the Mississippi Agricultural Water Quality Interagency Task Force that was established by MDEQ in 1992, will be organized. MCEQ and MSWCC agree that MSWCC will continue to participate actively in any such interagency task force dealing with agricultural nonpoint source pollution.

6. Program Planning.

As requested by MCEQ, MSWCC will assist MCEQ in updating Mississippi's Nonpoint Source Pollution Assessment Report and Nonpoint Source Pollution Management Program planning document for submission to USEPA. MCEQ and MSWCC will coordinate efforts in the development and submission of an annual agricultural nonpoint source work program to USEPA for Section 319 funding. MSWCC will assist MCEQ in conducting agricultural land use assessments to prioritize watersheds for implementation of nonpoint source program activities. MSWCC will develop and present annually to MCEQ for consideration project proposals to demonstrate and promote the use of BMPs to control nonpoint source pollution from agricultural activities. MSWCC will recommend to MCEQ a priority ranking for the proposals submitted. MCEQ will determine the final priority ranking of the agricultural project proposals and will determine the overall priority of these proposals in Mississippi's Nonpoint Source Pollution Management Program.

7. Program Implementation.

MCEQ will prepare and submit to USEPA all grant applications necessary for obtaining funding under Section 319 of the Federal Water Pollution Control Act (now CWA). MCEQ will provide a portion of its Section 319 funding, not to exceed $150,000 per year, to MSWCC sufficient to provide salary, standard state fringe benefits, travel and other support costs for an estimated 2 full time equivalents (FTEs) for MSWCC employee(s), whose job assignments, supported by documentation prescribed by MCEQ, will be directly related to those goals and activities described in paragraph 4. MSWCC will provide the required state

match for these federal funds. This commitment of funding from MCEQ to MSWCC shall be contingent on the receipt by MCEQ of Section 319 funds from USEPA sufficient for MCEQ to meet both its own obligations under Section 319 and the obligation to provide funding for those MSWCC FTEs.

MSWCC will serve as liaison between MCEQ and other state and federal agricultural agencies, local soil and water conservation districts, landowners and farmers in connection with designated agricultural nonpoint source projects covered by contracts entered into by and between MCEQ and MSWCC. MSWCC also will, at MCEQ's request, provide assistance to MCEQ in any necessary application or enforcement of pollution control laws in an agricultural setting by assisting landowners, operators and farmers in achieving and maintaining compliance with those laws. If MCEQ deems appropriate, MSWCC may assist MCEQ in the implementation of activities related to nonpoint source pollution from sources other than agriculture.

MSWCC will provide required reports to MCEQ for inclusion in the Nonpoint Source Pollution Annual Report submitted to USEPA. MCEQ and MSWCC will comply with all procedures and grant conditions, including financial audits, data quality assurance and quality control, and progress reports, relevant to securing Section 319 funding.

8. Collateral Agreements.

MCEQ and MSWCC will not enter into collateral agreements with any other agency, institution, entity, or individual that are contradictory to this agreement or any subsequent agreement consummated in furtherance hereof, but both MCEQ and MSWCC mutually recognize the statutory authority of each other to enter into any such agreements not inconsistent herewith.

9. Agreement Execution.

This agreement is executed below by J.I. Palmer, Jr., Executive Director, Mississippi Department of Environmental Quality and Gale Martin, Executive Director, Mississippi Soil and Water Conservation Commission each having been first duly authorized so to do by MCEQ and MSWCC, respectively.

10. Amendment of Agreement.

This Agreement may be amended at any time by mutual agreement set forth in writing and signed by both parties.

EXECUTED this the 27th day of March, 1997.

MISSISSIPPI COMMISSION ON
ENVIRONMENTAL QUALITY

BY: _____
J. J. PALMER, JR.
EXECUTIVE DIRECTOR

MISSISSIPPI SOIL AND WATER
CONSERVATION COMMISSION

BY: _____
GALE MARTIN
EXECUTIVE DIRECTOR.

United States Department of Agriculture | Forest Service | National Forests in Mississippi | 100 W. Capitol St. Suite 1141 Jackson, MS 39269 601 965-4391

Reply to: 2500

Date: February 28, 1990

Mr. Robert Seyfarth
Department of Natural Resources
Bureau of Water Pollution Control
P.O.Box 10385
Jackson, Mississippi 39289-0385

Dear Mr. Seyfarth:

Enclosed is the Management Agreement between the National Forests in Mississippi and the Mississippi Department of Environmental Quality which addresses nonpoint source management on National Forest lands in the State. Once the signature page is signed by your department please make the necessary copies for your office and return the original to us.

We look forward to working with the State and demonstrating our commitment to NPS management and good land stewardship.

Sincerely,

KENNETH R. JOHNSON
Forest Supervisor

Enclosure

Caring for the Land and Serving People

FS-6200-28(7-82)

MANAGEMENT AGENCY AGREEMENT
BETWEEN
THE STATE OF MISSISSIPPI
AND
U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE

This Management Agency Agreement is entered into by and between the State of Mississippi, hereinafter referred to as the State, and the U.S. Department of Agriculture, Forest Service, hereinafter referred to as the Forest Service, for the purpose of identifying the responsibilities and activities to be performed by each agency in carrying out the State Water Quality Management Plan (208) and Nonpoint Source Management Plan (319) as related to activities on National Forest System (NFS) lands.

WHEREAS

1. The State has the responsibility under the Mississippi Code of 1972, As Amended to provide for public health and environmental protection by administration of a system to protect water quality of the State of Mississippi.

2. The State is responsible for promulgating a Water Quality Management Plan pursuant to the Federal Water Pollution Control Act (FWPCA), Sections 208 and 319. The plan provides for the attainment of water quality objectives and for protection of beneficial uses of water.

3. The Forest Service is authorized and directed by acts of Congress, namely the Act of June 4, 1897, as amended; Act of June 12, 1960 (16 USC 528-31); and Executive Order Number 11514, approved March 5, 1970; and regulations issued by the Secretary of Agriculture to administer, manage and protect the lands and resources of the National Forest System, and to cooperate with other agencies.

4. The Forest Service, under Section 313 of Public Law 92-500 (33 U.S.C. 1251), Executive Order 12088 and Executive Order 12372, is directed to meet Federal, State, interstate and local substantive and procedural requirements respecting control and abatement of pollution in the same manner, and to the same extent, as a nongovernmental entity.

5. The Forest Service and the State agree that the most practical and effective means of controlling potential nonpoint sources from forest management practices is through development and implementation of preventive land management practices.

6. The State and Forest Service mutually desire:

A. To meet the water quality goals defined by Congress in the FWPCA, as amended;

B. To attain these water quality goals and objectives according to an established plan;

C. To develop and implement procedural methods to minimize duplication of effort and facilitate complementary nonpoint source pollution control and abatement programs;

D. To develop nonpoint source pollution control and abatement programs for forest and range lands in the State of Mississippi that recognize the need for both environmental protection and resource use that will meet short- and long-term local, state, regional, and national needs; and

E. To ensure control, to the maximum extent practicable, of potential nonpoint sources water pollution through the implementation of preventive performance measures generally referred to as Best Management Practices (BMPs).

NOW, THEREFORE

1. The Forest Service agrees to:

A. Accept the responsibility for development, implementation, and monitoring of BMPs for management activities on National Forest System lands and to reduce nonpoint source pollution to the maximum extent practicable. In designing, implementing, and monitoring appropriate BMPs, the following process will be used:

(1) BMP Design and Selection.

a. Recognize State identified beneficial uses of water.

b. Evaluate the physical characteristics of the project site, including a consideration of the soils, geology, climate, hydrology and topography.

c. Determine potential impacts on identified beneficial uses from the proposed activity.

d. Establish standards and guidelines that must be met to minimize adverse impacts of activities. These standards and guidelines will be used to evaluate appropriateness of BMPs through monitoring.

e. Design and/or select appropriate BMPs considering applicability to site specific conditions and technical, economic, and institutional feasibility. Manage the land within the guidelines of the State approved BMPs.

f. Design and/or select BMPs that can be reasonably expected to provide the necessary protection of the beneficial uses of water.

g. Consider projects impact in view of other activities through scheduling, consideration of total number of activities for the area of concern, placement relative to other operations, and maintenance needs and schedules.

(2) Application of Selected Practices.

a. Specify the selected BMPs in Forest Service project and/or operational plans.

b. Include selected BMPs as contractual provisions for FS projects.

c. Incorporate selected BMPs as conditions for special use authorizations.

(3) Monitoring

a. Develop Regional, Forest and/or District plans to monitor the implementation of BMPs, the effectiveness of practices and the validation of water quality criteria. Coordinate monitoring plans with appropriate State agencies.

b. Develop plans to validate modeling techniques and cause-effect coefficients in coordination with the State.

c. Assure application of designed BMPs through implementation monitoring for all activities where BMPs were needed and planned.

d. Determine effectiveness of BMPs in meeting identified resource, aquatic and water quality goals on selected activities.

e. In cooperation with the State, validate water quality criteria and beneficial use goals on strategically selected sites that are representative of a physiographic province or ecosystem area.

f. In cooperation with the State, develop a procedure for the timely modification of ineffective BMPs.

g. Recommend appropriate or needed changes in water quality criteria to the State as part of the State's tri-annual reviews.

h. Recommend State review of water quality criteria and identified beneficial uses when found to restrict land use authorized by Federal or State statute.

i. Provide annual summaries to the State of monitoring results.

B. Cooperate with the State and other appropriate governmental agencies in evaluating potential sources of nonpoint source pollution on NFS lands.

C. Ensure that all new and renewed plans, leases and contracts, Special Use Authorizations, easements, rights-of-way documents and other agreements involving permitted activity on NFS lands, contain provisions for compliance with all water pollution control and abatement statutes, regulations, and ordinances (Federal, State, Local) under the authority of the Clean Water Act as a condition of those agreements.

D. Consider the recommendations, regarding water quality, made by the State concerning proposed or ongoing projects; and agree to meet and attempt to resolve disagreements.

E. Provide the State the opportunity for field review of projects to ascertain implementation of BMPs and environmental constraints identified in Environmental Documents (EAs/EISs), contract and permit documents.

F. Expedite water quality improvement projects which have been identified in Forest Service, State and local water quality management plans, including Section 319 plans.

G. Identify program elements needed to meet the requirements of Sections 208 and 319 and incorporate them into the Forest Service program planning and budgeting system.

H. Use in-Service education and training to increase employee awareness of and sensitivity to the importance of maintaining water quality and of the requirements of State and Federal water quality regulations.

I. Provide the State, on a bi-annual basis, a general assessment of water quality accomplishments, monitoring results, problems and priorities for inclusion in the Mississippi 305-b Reports.

2. The State agrees to:

A. Certify that BMPs developed and implemented according to the Forest Service process herein identified meet State water quality program requirements on National Forest System lands.

B. Incorporate into State water quality plans, including Section 208 and 319 Plans, the Forest Service responsibility for determination of BMPs and that BMPs so identified satisfy State water quality program requirements on National Forest System lands.

C. Coordinate State water quality management planning and implementation with the Forest Service when State and Private Forestry activities or NFS lands are involved and include Forest Service representation on technical advisory committees relating to NFS lands or State and Private activities.

D. Provide drafts of applicable water quality laws and regulations to the Forest Service for review and input during their development and for guidance after promulgation by the State.

E. To provide the Forest Service with appropriate State and local handbooks of BMPs which are approved for reducing nonpoint source pollution.

F. Identify projects that the State wants to review with the Forest Service prior to implementation.

G. Review results of monitoring with the Forest Service and provide consultation on appropriate mitigation where necessary.

H. Review of water quality criteria and beneficial use designations when problems are identified by Forest Service and/or State monitoring information.

3. The Forest Service and State mutually agree:

A. To jointly identify existing or potential sources of nonpoint pollution problems on NFS lands.

B. To designate the Forest Service as the Management Agency for management of water quality on National Forest System lands in the State of Mississippi.

C. To jointly recommend BMPs for those projects on lands adjacent to NFS lands likely to have adverse impacts on the NFS lands.

D. To jointly work on developing applicable water quality standards for nonpoint source pollutants from forest land management activities.

E. To coordinate present and proposed water quality monitoring activities adjacent to and within National Forest boundaries; to share data collection and analysis responsibilities when the results are mutually beneficial to the Forest Service and the State; and to routinely make available any unrestricted water quality data and information.

F. To provide, on request, technical expertise and support not otherwise available to the other party, to the extent the supplying party's program priorities, budget and availability of expertise allow. Requests might involve, but not be limited to, training and education sessions, developing, testing and implementing water quality models, and establishing BMP demonstration projects.

G. To meet no less than annually to maintain coordination/communication, report on water quality management progress, review proceedings under this agreement, and to consider/negotiate revisions and amendments that shall become effective after written approval by both parties.

H. That when the views of the State or Forest Service are contrary to the accepted policy and plans of the other, the Regional Forester and the Governor or their representatives shall meet and attempt to resolve the differences before any further action is taken by either party.

I. That nothing herein shall be construed in any way as limiting the authority of the State in carrying out its legal responsibilities for management or regulation of water quality.

J. That nothing herein shall be construed in any way as limiting the legal authority of the Forest Service in connection with the proper administration and protection of NFS lands in accordance with federal laws and regulations.

K. That nothing in this agreement shall be construed as obligating the Forest Service or the State to expend funds in any contract or other obligation for future payment or services in excess of those available or authorized for expenditure.

L. That this agreement shall become effective as soon as it is signed by the parties hereto and shall continue in force unless terminated by either party upon thirty (30) days notice in writing to the other of the intention to terminate upon a date indicated.

M. That all previous Management Agreements between the Forest Service and the State concerning nonpoint source pollution management, are revoked upon approval of this agreement by both parties.

N. That no member of or delegate to Congress, or Resident Commissioner of the United States, are admitted to any share or part of this agreement, or to any benefit that may arise therefrom.

O. That each and every provision of this Management Agreement is subject to the laws of the State of Mississippi, the laws of the United States, the regulations of the Secretary of Agriculture, and the regulations of the the State of Mississippi.

IN WITNESS THEREOF, the parties hereto have caused this Management Agreement to be executed as of the last date signed below.

DEPARTMENT OF ENVIRONMENTAL QUALITY
State of Mississippi

J. I. Palmer, Jr.
Executive Director

3/9/90
Date

FOREST SERVICE
U.S. Department of Agriculture

FOR Kenneth R. Johnson
Forest Supervisor
National Forests in Mississippi

2/28/90
Date

Agreement No. 68-4423-12-2306
MDEQ Agreement No. 12-00067

Reimbursable Agreement
Between
United States Department of Agriculture
Natural Resources Conservation Service
And
Mississippi Department of Environmental Quality

This agreement is entered into by and between the USDA, Natural Resources Conservation Service hereinafter referred to as "NRCS" and the Mississippi Department of Environmental Quality referred to as "MDEQ".

I. AUTHORITY
Conservation Technical Assistance Program (CTA), 16 U.S.C. 590a-590f, 590q, 7CFR Part 610 (CFDA 10.902); Environmental Quality Incentive Program (EQIP), 16 U.S.C. 3839aa-3839aa-8, 3841, 7CFR Part 1466; Intergovernmental Act U.S.C. 6505 (CFDA 10.912)

II. PURPOSE
Leverage available resources to conserve, restore and enhance the environment for healthy and resilient Mississippi waters and coastal Gulf of Mexico water. Currently MDEQ and NRCS, along with other partners, are leveraging opportunities through the Mississippi River Basin Healthy Watersheds Initiative (MRBI), the Gulf of Mexico Initiative (GOMI) and several 319 projects. This partnership effort has helped establish the regional and national leadership role that Mississippi is taking in solving the water quality problem from excess nutrient loadings to state waters and the Gulf.

III. BENEFITS TO EACH PARTICIPANT
NRCS Strategic Plan sets a priority on creating a climate where private lands conservation will thrive. NRCS believes that voluntary, incentive-based conservation is the best way to achieve positive environmental results, and that requires strong partnerships and coalitions to promote an ethic of conservation stewardship among America's private landowners. This effort will result in getting more conservation on the ground.

MDEQ has identified impaired streams in the state and set targets for improving water quality. Through a basin approach MDEQ has proceeded with the development and implementation of Nutrient Reduction Strategies. This implementation phase requires a strong partnership to reach the targeted goals. This agreement will help MDEQ prioritize and complete implementation in selected watersheds across the state. This will result in improved water quality.

IV. RESPONSIBILITIES

A. MDEQ Agrees to:

1. Provide staff assistance to assess and prioritize watersheds to address nutrient reduction.

2. Provide **$100,000** per year to NRCS for technical assistance to plan and implement conservation plans to address water quality resource concerns. The furnishing of financial assistance is contingent on availability of funds.

3. Explore leveraging opportunities with 319 projects and other Farm Bill programs to address nutrient reduction.

4. Provide the following as liaisons:

Name: Kay Whittington, P.E., BCEE
Address: 515 Amite Street
Jackson, MS 39201

Telephone No.: 601-961-5729
Fax No.: 601-961-5357
Email Address: Kay Whittington@deq.state.ms.us

MDEQ Accounts Payable
Attn: Brad Ware
P.O. Box 2369
Jackson, MS 39225
601-961-5107
brad_ware@deq.state.ms.us

5. Comply with Attachment A, Special Provisions, which is attached and incorporated as part of this agreement.

B. NRCS WILL:

1. Collaborate with MDEQ on priority watersheds and coordinate NRCS field staff and financial resources to selected watersheds for contract development.

2. Provide **$500,000** of financial assistance each year to private landowners in the selected watersheds to implement conservation practices to reduce sediment and nutrients. These funds are provided under separate agreement to carry out conservation practices in selected watersheds.

3. Explore other potential programs and partnerships to address nutrient reduction.

4. Provide the following as liaison:

Name: Kurt Readus, ASTC(P)
Address: Suite 1321, Federal Building
100 West Capitol Street
Jackson, MS 39269
Telephone No: 601-965-5205 x111
Fax No: 601-965-4940
Email Address: Kurt.Readus@ms.usda.gov

V. IT IS MUTUALLY AGREED:

1. This agreement is effective upon date of final signature. This agreement is effective through September 30, 2014.

2. NRCS may amend or modify the award through an exchange of correspondence between authorized officials of the recipient and NRCS. The award is subject to termination if NRCS determines that the recipient has failed to comply with the terms and conditions of the award. In the event that the award is terminated, the financial obligations of the parties will be those set forth in 7CFR Part 3015, Subpart N.

3. *This agreement may be terminated by either party by written notice to the other* party(ies) at least 30 days in advance of the effective date of the termination.

4. The furnishing of financial and other assistance by NRCS is contingent upon funds appropriated by Congress, made administratively available, or authorized by law.

5. NRCS may terminate this agreement in whole or in part if NRCS determines the recipient has failed to comply with any of the conditions of this agreement. NRCS shall promptly notify the recipient in writing of the determination and reasons for the termination, together with the effective date. Payments made by or recoveries made by NRCS under this termination shall be in accord with the legal rights and liabilities of NRCS and the recipient.

6. This agreement may be temporarily suspended by NRCS if NRCS determines that corrective action by the recipient is needed to meet the provisions of this agreement. Further, NRCS may suspend this agreement when it is evident that a termination is pending.

7. Employees of the recipient will not be considered Federal employees or agents of the United States for any purposes under this agreement.

8. By signing this agreement, the recipient assures the Department of Agriculture that the program or activities provided for under this agreement will be conducted in *compliance with all applicable Federal civil rights laws, rules, regulations,* and policies.

VI. SIGNATURES

MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY

By: Kirk Hales

for Title: Executive Director

Date: 4/24/12

U.S. DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

By: [signature]

Title: State Conservationist

Date: April 26, 2012

Attachment A - Special Provisions

ATTACHMENT A - SPECIAL PROVISIONS

The signatories (grantee, recipient sponsor, or cooperator) agrees to comply with the following special provisions which are hereby attached to this agreement.

I. Drug-Free Workplace.

By signing this agreement, the recipient is providing the certification set out below. If it is later determined that the recipient knowingly rendered a false certification, or otherwise violates the requirements of the Drug-Free Workplace Act, the NRCS, in addition to any other remedies available to the Federal Government, may take action authorized under the Drug-Free Workplace Act.

Controlled substance means a controlled substance in Schedules I through V of the Controlled Substances Act (21 U.S.C. 812) and as further defined by regulation (21 CFR 1308.11 through 1308.15);

Conviction means a finding of (including a plea of nolo contendere) or imposition of sentence, or both, by any judicial body charged with the responsibility to determine violations of the Federal or State criminal drug statutes;

Criminal drug statute means a Federal or non-Federal criminal statute involving the manufacturing, distribution, dispensing, use, or possession of any controlled substance;

Employee means the employee of a grantee directly engaged in the performance of work under a grant, including: (I) All direct charge employees; (ii) All indirect charge employees unless their impact or involvement is insignificant to the performance of the grant; and, (iii) Temporary personnel and consultants who are directly engaged in the performance of work under the grant and who are on the grantee's payroll. This definition does not include workers not on the payroll of the grantee (e.g., volunteers, even if used to meet a matching requirements; consultants or independent contractors not on the grantees' payroll; or employees of subrecipients or subcontractors in covered workplaces).

Certification:

A. The grantee certifies that it will or will continue to provide a drug-free workplace by:

(a) Publishing a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in
the grantee's workplace and specifying the actions that will be taken against employees for violation of such prohibition;

(b) Establishing an ongoing drug-free awareness program to inform employees about --

(1) The danger of drug abuse in the workplace;
(2) The grantee's policy of maintaining a drug-free workplace;
(3) Any available drug counseling, rehabilitation, and employee assistance programs; and
(4) The penalties that may be imposed upon employees for drug abuse violations occurring in the workplace;

(c) Making it a requirement that each employee to be engaged in the performance of the grant be given a copy of the statement required by paragraph (a);

(d) Notifying the employee in the statement required by paragraph 9a) that, as a condition of employment under the grant, the employee will --

(1) Abide by the terms of the statement; and
(2) Notifying the employer in writing of his or her conviction for a violation of a criminal drug statute occurring in the workplace no later than five calendar days after such a conviction;

(e) Notifying NRCS in writing, within ten calendar days after receiving notice under paragraph 9(d)(2) from an employee or otherwise receiving actual notice of such conviction. Employers of convicted employees must provide notice, including position title, to every grant officer or other designee on whose grant activity the convicted employee was working, unless the Federal agency has designated a central point for the receipt of such notices. Notice shall include the identification number(s) of each affected grant;

(f) Taking one of the following actions, within 30 calendar days of receiving notice under paragraph (d)(2), with respect to any employee who is so convicted --

(1) Taking appropriate personnel action against such an employee, up to and including termination, consistent with the requirements of the Rehabilitation Act of 1973, as amended; or

(2) Requiring such employee to participate satisfactorily in a drug abuse assistance or rehabilitation program approved for such purposes by a Federal, State or local health, law enforcement, or other appropriate agency;

(g) Making a good faith effort to continue to maintain a drug-free workplace through implementation of paragraphs (a), (b), (c), (d), (e), and (f).

(h) Agencies shall keep the original of all disclosure reports in the official files of the agency.

B. The recipient may provide a list of the site(s) for the performance of work done in connection with a specific project or other agreement.

II. Certification Regarding Lobbying (7 CFR 3018) (Applicable if this agreement exceeds $100,000)

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the recipient, to any person for influencing or attempting to influence an officer or employee of an agency, Member of Congress, and officer or employer of Congress, or a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress, in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form - LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

(3) The recipient shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, Title 31, U. S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

III. Certification Regarding Debarment, Suspension, and Other Responsibility matters - Primary Covered Transactions. (7 CFR 3017)

(1) The recipient certifies to the best of its knowledge and belief, that it and its principals:

(a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;

(b) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, state or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(c) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State, or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and

(d) Have not within a three-year period preceding this application/proposal has one or more public transactions (Federal, State or local) terminated for cause or default.

(2) Where the primary recipient is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this agreement.

IV. Clean Air and Water Certification (Applicable if this agreement exceeds $100,000, or a facility to be used has been the subject of a conviction under the Clean Air Act (42 U.S.C. 1857c-8(c)(1) or the Federal Water Pollution Control Act (33 U.S.C. 1319(c)) and is listed by EPA, or is not otherwise exempt.)

The recipient signatory to this agreement certifies as follows:

(a) Any facility to be utilized in the performance of this proposed agreement is _____, is not_____, listed on the Environmental Protection Agency List of Violating Facilities.

(b) To promptly notify the State or Regional Conservationist prior to the signing of this agreement by NRCS, of the receipt of any communication from the Director, Office of Federal Activities, U. S. Environmental Protection Agency, indicating that any facility
which he/she proposes to use for the performance of the agreement is under consideration to be listed on the Environmental Protection Agency List of Violating Facilities.

(c) To include substantially this certification, including this subparagraph (c), in every nonexempt subagreement.

Clean Air and Water Clause

(Applicable only if the agreement exceeds $100,000, or a facility to be used has been the subject of a conviction under the Clean Air Act (42 U.S.C. 1857c-8(c)(1) or the Federal Water Pollution Control Act (33 U.S.C. 1319(c)) and is listed by EPA or the agreement is not otherwise exempt.)

A. The recipient agrees as follows:

(1) To comply with all the requirements of section 114 of the Clean Air Act as amended (42 U.S.C. 1857, et seq., as amended by Public Law 91-604) and section 308 of the Federal Water Pollution Control Act (33 U.S.C. 1251 et. sq., as amended by Public Law 92-500), respectively, relating to inspection, monitoring, entry, reports, and information, as well as other requirements specified in section 114 and section 308 of the Air Act and the Water Act, respectively, and all regulations and guidelines issued thereunder before the signing of this agreement by NRCS.

(2) That no portion of the work required by this agreement will be performed in a facility listed on the Environmental Protection Agency List of Violating Facilities on the date when this agreement was signed by NRCS unless and until the EPA eliminates the name of such facility or facilities from such listing.

(3) To use their best efforts to comply with clean air standards and clean water standards at the facilities in which the agreement is being performed.

(4) To insert the substance of the provisions of this clause in any nonexempt subagreement, including this subparagraph A. (4).

B. The terms used in this clause have the following meanings:

(1) The term "Air Act" means the Clean Air Act, as amended (42 U.S.C. 1857 et seq., as amended by Public Law 91-604).

(2) The term "Water Act" means Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 et seq., as amended by Public Law 92-55).

(3) The term "clean air standards" means any enforceable rules, regulations, guidelines, standards, limitations, orders, controls, prohibitions, or other requirements which are contained in, issued under, or otherwise adopted pursuant to the Air Act or Executive Order 11738, an applicable implementation plan as described in section 110(d) of the Clean Air Act (42 U.S.C. 1857c-5(d)), and approved implementation procedure or plan under section 111(c) or section 111(d), respectively, of the Air Act (42 U.S.C. 1857c-6(c) or (d)), or an approved implementation procedure under section 112(d) of the Air Act (42 U.S.C. 1857c-7(d)).

(4) The term "clean water standards" means any enforceable limitation, control, condition, prohibition, standards, or other requirement which is promulgated pursuant to the Water Act or contained a permit issued to a discharger by the Environmental Protection Agency or by a State under an approved program, as authorized by section 402 of the Water Act
(33 U.S.C. 1342), or by a local government to ensure compliance with pretreatment regulations as required by section 307 of the Water Act (3 U.S.C. 1317).

(5) The term "compliance" means compliance with clean air or water standards. Compliance shall also mean compliance with the scheduled or plan ordered or approved by a court of competent jurisdiction, the Environmental Protection Agency or any air or water pollution control issued pursuant thereto.

(6) The term "facility" means any building, plant, installation, structure, mine, vessel or other floating craft, location or site of operations, owned leased, or supervised by a sponsor, to be utilized in the performance of an agreement or subagreement. Where a location or site of operations contains or includes more than one building, plant, installation, or structure, the entire location shall be deemed to be a facility except where the Director, Office of Federal Activities, Environmental Protection Agency, determines that independent facilities are collated in one geographical area.

V. Assurances and Compliance

As a condition of the grant or cooperative agreement, the recipient assures and certifies that it is in compliance with and will comply in the course of the agreement with all applicable laws, regulations, Executive Orders and other generally applicable requirements, including those set out in 7 CFR 3015, 3016, 3017, 3018, 3019, and 3052 which hereby are incorporated in this agreement by reference, and such other statutory provisions as are specifically set forth herein.

VI. Examination of Records

Give the NRCS or the Comptroller General, through any authorized representative, access to and the right to examine all records, books, papers, or documents related to this agreement. Retain all records related to this agreement for a period of three years after completion of the terms of this agreement in accordance with the applicable OMB Circular.

MISSISSIPPI STATE UNIVERSITY™

Memorandum of Understanding

Between

United States Environmental Protection Agency
Southeast Region 4

And

Mississippi Department of Environmental Quality

And

Mississippi State University as the Managing Entity of the
Mississippi Water Resources Research Institute
Center of Excellence for
Watershed Management

April 9, 2013

Memorandum of Understanding
Among the United States Environmental Protection Agency, Mississippi Department of Environmental Quality and Mississippi State University as the Managing Entity of the Mississippi Water Resources Research Institute to Designate a Center of Excellence for Watershed Management

I. Common Agreements and Principles

A. This is a voluntary agreement among Mississippi State University (MSU) as the managing entity of the Mississippi Water Resources Research Institute (MWRRI), Mississippi Department of Environmental Quality (MDEQ), and the United States Environmental Protection Agency Region 4 Office (EPA Region 4) (collectively known as the Parties), by which MWRRI is designated a Center of Excellence for Watershed Management. The terms of this Memorandum of Understanding (MOU) shall apply to training and technical assistance to build the capacity of local stakeholders committed to improving and maintaining the natural and economic resources of their watersheds.

B. The Parties agree that the primary purpose of the Center of Excellence for Watershed Management Program is to utilize the diverse talent and expertise of colleges and universities in various geographic areas of Mississippi to provide hands on practical products and services to help communities identify watershed-based problems and develop and implement locally-sustainable solutions.

C. As a Center of Excellence for Watershed Management, MWRRI will actively seek out local stakeholders that need cost effective technical tools for scientific support, engineering support, and information technology, as well as assistance with project management, outreach and education, and watershed planning.

D. Although MWRRI is encouraged to work closely in watersheds within its geographic area of influence, MWRRI, in consultation with MDEQ, will work to identify and facilitate possible partnerships within watersheds that have been identified as priorities. MWRRI will collaborate with the appropriate EPA Region 4 State Watershed Coordinator and MDEQ Liaison to identify opportunities in these priority watersheds.

E. The Parties agree that establishing and maintaining state and community confidence in the Center of Excellence for Watershed Management Program is critical to achieving each organization's goals. To the extent that such actions fall within the MWRRI's outreach and service roles the MWRRI will work with local stakeholders (including regional universities) to address local watershed issues and seek to be recognized as a premier local resource for watershed planning and management assistance for the state of Mississippi.

F. The Parties agree that membership in the Center of Excellence for Watershed Management Network is essential to the cooperative effort to achieve the shared goals stated above. By joining the Center of Excellence for Watershed Management Program, MWRRI will participate within the more encompassing network of Center of Excellence for Watershed Management entities. Dependent upon available funding, participation may include but not be limited to, conference calls, attendance at network meetings, collaboration on special projects, and sharing of unique skills and expertise with other Center of Excellence for Watershed Management entities.

G. EPA Region 4 has broad authority to cooperate with other federal, state, local and interlocal agencies, non-profit institutions and higher education institutions to coordinate research, investigations, experiments, training, demonstrations, surveys, public education programs, and studies relating to the reduction, elimination, and prevention of land, air, and water pollution under the following statutory authorities: Resource Conservation and Recovery Act § 8001(a)(5), 42 U.S.C. § 6981(a)(5); Clean Air Act §103(a)(2) and (b)(2), 42 U.S.C. §§ 7403(a)(2) and (b)(2); Clean Water Act § Section 104(b), 33 U.S.C. 1254(b); and Marine Protection, Research, and Sanctuaries Act § Section 203(a), 33 U.S.C. § 1443(a).

II. Definitions

A. **Geographic Area of Influence**: Geographic area in which MWRRI traditionally works or has authority to work (i.e. within an entire state).

B. **Local Stakeholders**: A governmental entity, non-governmental organization, other group or individual living or working within, or in close proximity to, a particular watershed which is or can be affected by the actions taken to restore or protect the watershed.

C. **Priority Watersheds:** Watersheds selected by MDEQ to focus their resources for the protection and restoration of waters.

D. **Under-served Populations**: Low income, isolated, rural and/or minority populations that are traditionally excluded from or experience barriers related to environmental and watershed protection/restoration information and activities.

E. **Watershed Sustainability**: Ability to ensure the long-term quality and beneficial uses of water resources while reducing adverse impacts on society, the environment, or the economy. Successful sustainable watershed activities include the creation and maintenance of effective partnerships, use of long term monitoring and evaluation to reset and adjust measurable restoration practices, continued emphasis on ecological protection, development of dependable and consistent funding sources, and replication of successful strategies to other watershed locations.

III. Effective Date of MOU and Duration

A. This MOU shall be effective when signed by EPA Region 4, MDEQ, and MSU, acting on behalf of the MWRRI.

B. This MOU shall remain in force for five (5) years or until such time as EPA Region 4 institutes new specifications or discontinues the Center of Excellence for Watershed Management Program. The Parties agree that as scientific knowledge and technologies improve, it may become desirable to change the specifications included in this MOU in order to keep the Center of Excellence for Watershed Management Program responsive and to maintain its integrity.

C. This MOU can be terminated by any party at any time, and for any reason, with no penalty. Written notice of termination must be sent by the terminating party to all other parties 60 days prior to termination.

IV. Center of Excellence for Watershed Management Responsibilities

A. MWRRI, once designated as the Mississippi Center of Excellence for Watershed Management, will serve as the point-of-contact and primary coordinating entity for colleges and universities in Mississippi with water-related expertise and that can provide hands-on, practical products and services to help communities identify watershed-based problems and develop and implement locally-sustainable solutions.

B. MWRRI will appoint a responsible representative as Liaison with EPA Region 4 and MDEQ for the Center of Excellence for Watershed Management Program and notify EPA Region 4 and MDEQ within one (1) month of any change in that Liaison. (See Attachment A.) EPA Region 4 and MDEQ will send all MOU-related materials, annual reports, and other correspondence to that liaison.

C. Prior to joining the Center of Excellence for Watershed Management Program MWRRI demonstrated, to the satisfaction of EPA and MDEQ, that it has the capacity and capability to identify and address the needs of the local watershed stakeholders and that it has support at the appropriate levels of MSU.

D. MWRRI will work with colleges and universities in Mississippi to engage students (graduate and undergraduate), faculty and staff from the full suite of disciplines needed to adequately address specific watershed issues. When needed, MWRRI will also draw upon other local, state, federal and Center of Excellence for Watershed Management Network resources and expertise to minimize duplicative efforts.

E. In addition to helping build local stakeholder capacity, MWRRI will also work with colleges and universities in Mississippi to build their capacity to teach environmental and watershed management approaches to both traditional and nontraditional students.

F. MWRRI will pay special attention to local stakeholders which also represent under-served populations in watershed communities and, when possible, seek ways to work with these unique populations. This approach will build upon a MOU between MWRRI and Alcorn State University designed to maximize water related research in the state of Mississippi.

G. MWRRI will support efforts to collaboratively support the development and implementation of nutrient reduction strategies to benefit the quality of in-state waters and the Gulf of Mexico. MWRRI will work to identify and pursue opportunities to leverage available resources to implement these strategies, where possible.

H. MWRRI will contact the MDEQ basin coordinator (see Section VI) to report any systemic problems experienced by local stakeholders which may be better addressed with EPA Region 4 and/or MDEQ assistance.

I. MWRRI will provide to EPA Region 4, through MDEQ, an annual report on its activities and progress toward achieving the expected measurable results under this MOU (paragraph IV (J)). The report will include any collected data and information that supports the work done and resulting improvements to watershed protection and restoration. The annual report should also include any customer feedback or recommendations that could help improve the Center of Excellence for Watershed Management Program and ensure its relevance to on-the-ground watershed activities. The report should be sent to the EPA Region 4 Center of Excellence for Watershed Management Liaison and MDEQ Liaison by September 30th of each year. Upon completion or termination of this MOU, MWRRI will provide EPA Region 4 and MDEQ a final report that meets the requirements of paragraph IV (J) of this MOU.

J. Measurable Results Requirements under the Center of Excellence for Watershed Management Program:

1. MWRRI will identify all local stakeholders receiving assistance from MWRRI during the life of this MOU, and provide a complete description of the assistance provided. MWRRI will make a good faith effort to provide assistance to at least ten (10) stakeholder groups/entities during the term of this MOU.

2. MWRRI will summarize customer feedback based upon the services provided by MWRRI. At the completion of each project, MWRRI will collect customer feedback regarding the services that it has provided, including any suggestions for improving such services or the Center of Excellence for Watershed Management Program.

3. MWRRI will make a good faith effort to work with stakeholders to assist in the implementation of at least one of the ten planning strategies as identified in the Mississippi Strategies to Reduce Nutrients and Associated Pollutants that has the potential to result in measureable improvement of water quality.

4. MWRRI, in conjunction with MDEQ staff, will respond to at least one Request for Proposals (RFP) per year that utilizes the strengths of each unit to leverage resources for the benefit of local stakeholders.

5. MWRRI will make a good faith effort to work with stakeholders from under-served populations and in rural areas.

K. Proper Use of the Center of Excellence for Watershed Management Program and Center of Excellence for Watershed Management Network Name:

1. MWRRI understands that participation in the Center of Excellence for Watershed Management Program does not constitute an endorsement by EPA or MDEQ of MWRRI or its products or services.

2. If either EPA Region 4 or MWRRI terminates this MOU, MWRRI will no longer be entitled to make reference to the Center of Excellence for Watershed Management Program so as to convey continuing involvement in the program.

3. MWRRI shall not make any misleading statements that imply that data, reports or any other products or services are approved or certified by EPA or EPA Region 4, (e.g., MWRRI shall not make any claims such as "this report is EPA approved" or "these data are EPA certified").

4. MWRRI agrees that it will not use the EPA Logo on any documents or websites without first getting written permission from EPA Region 4 to do so.

L. Environmental stewardship is an integral part of EPA's FY 2011-2015 Strategic Plan. MWRRI will implement stewardship within its daily operations, and to the extent practicable, promote environmental stewardship throughout colleges and universities in Mississippi. Stewardship practices include, but are not limited to, the implementation or use of: an Environmental Management System; green building practices; environmentally preferred purchasing practices (including EnergyStar and WaterSense

products); waste reduction initiatives; low-impact stormwater management; water reuse strategies; and, climate change action plans. Additional stewardship practices can be found in Executive Order 13514, signed by President Obama in October 2009.

V. EPA Region 4 Responsibilities

A. EPA Region 4 will designate a single Liaison for the Center of Excellence for Watershed Management Program and notify MWRRI within one (1) month of any change in such liaison. (See Attachment A.) MWRRI and MDEQ will send all MOU-related materials, annual reports, and other correspondence to that Liaison.

B. EPA Region 4 has designated a single Watershed Coordinator for Mississippi and will notify MWRRI within one (1) month of any change in the Watershed Coordinator.

C. EPA Region 4 will promote the Center of Excellence for Watershed Management Program and encourage local stakeholders and governments to utilize the assistance provided by MWRRI.

D. EPA Region 4 will provide MWRRI with recognition for its work to protect watersheds through participation in the Center of Excellence for Watershed Management Program.

E. EPA Region 4 will provide, to the extent practical and as resources allow, technical assistance to help MWRRI promote and implement environmental and watershed sustainability principles within its daily operations.

F. EPA Region 4 agrees that activities conducted by MWRRI as part of this MOU can assist programmatic initiatives, priorities, and resource commitments of MDEQ.

VI. MDEQ's Responsibilities

A. MDEQ will support the Center of Excellence for Watershed Management Program. MDEQ will provide technical expertise and assistance to help address issues as resources allow.

B. MDEQ will designate a Liaison for the state and to notify MWRRI and EPA Region 4 within one (1) month of any change in liaison designations.

VII. Conflict Resolution

A. Each signatory will exercise good faith as a general principle for resolving conflicts arising under the Center of Excellence for Watershed Management Program.

B. The Parties agree to informally notify each other if a conflict arises and work cooperatively to resolve such conflict at the staff level. If a conflict is not resolved at the staff level, the Parties agree to elevate the conflict to the next management level. Only after the Parties have been unable to resolve any conflict at the supervisory management level may a conflict be elevated to the Parties for mutual resolution. The Parties agree that nothing in this MOU creates any enforceable obligations or rights that may be pursued in any state or federal lawsuit or other proceeding.

C. Procedure for Addressing Substandard Services

1. If EPA Region 4 or MDEQ receives information that MWRRI is not meeting the conditions of this MOU, then EPA Region 4, after consultation with MDEQ, will notify MWRRI and attempt to address and resolve the matter informally.

2. If these informal discussions do not produce a mutually agreeable resolution, EPA Region 4, after consultation with MDEQ, will evaluate the situation and determine the appropriate course of action.

VIII. Freedom of Information Act and Confidential Business Information

The Parties understand that any requests for information provided by MWRRI to EPA Region 4 and MDEQ will be treated by EPA Region 4 as subject to the federal Freedom of Information Act and by MDEQ under applicable state laws, regulations and policies regarding access to public information. Information in the custody and control of MWRRI or MDEQ is not subject to release or disclosure under the federal Freedom of Information Act.

IX. Intellectual Property

The Parties agree that any copyrightable subject matter, including, but not limited to, journal articles, training, educational or informational material or software, created jointly by the Parties as a result of the activities conducted under the MOU may be copyrighted by MWRRI. MWRRI hereby grants to EPA, EPA Region 4 and MDEQ a royalty-free, nonexclusive, irrevocable right to reproduce, distribute, make derivative works, and publish or perform the work(s) created jointly by the parties, or to authorize others to do the same on its behalf, unless such usage is prohibited by the applicable journal.

X. Endorsements

The Parties agree that this MOU does not constitute an endorsement or approval of any of Parties to this MOU, any third-part, or processes, devices or control strategies that may result from this MOU by EPA or MDEQ and cannot be advertised as such. However, the MWRRI may mention that they have entered into this MOU with EPA Region 4 and MDEQ to accomplish the mutually beneficial elements of this MOU.

XI. Expenditure of State and Federal Funds

The Parties agree that this MOU does not create a requirement for expenditure of state or federal funds to pay any other party to this MOU or to any third-party. If any of the Parties elects to spend funds on any item, service, or contract to further the purposes of this MOU, the Parties will do so only through a validly issued contract, grant, cooperative agreement, or interagency agreement.

The Parties agree that if any of the Parties issues a contract, grant, cooperative agreement, or interagency agreement to further the purposes of this MOU, such contract, grant, cooperative agreement, or interagency agreement will control in the event that this MOU is inconsistent with any term or condition of any contract, grant or cooperative agreement or interagency agreement.

XII. Savings

Nothing in this MOU exempts any of the Parties from any applicable requirement of a federal, state, or local environmental statute or regulation or any recordkeeping requirements applicable under federal, state or local laws.

The undersigned hereby execute this Memorandum of Understanding on behalf their organizations. The Mississippi State University signer(s) of this agreement affirms that he/she has the authority to commit MWRRI to participation in the Center of Excellence for Watershed Management Program.

For the U.S. Environmental Protection Agency Region 4:

By: _____ 4/9/13
Gwendolyn Keyes Fleming — Date
Regional Administrator, Region 4

For the Mississippi Departmental of Environmental Quality:

By: _____ 4/9/13
Trudy Fisher — Date
Executive Director

For Mississippi State University:

By: _____ 4/24/13
Gregory Bohach — Date
Vice President for Agriculture, Forestry, and Veterinary Medicine

By: _____ 4.9.13
David Shaw — Date
Vice President for Research and Economic Development

ATTACHMENT A.

EPA Region 4 Liaison:

Paul S. Gagliano, P.E., MSCE
Captain, U.S. Public Health Service, Engineer Officer
U.S. Environmental Protection Agency, Region 4
Florida Watershed Coordinator
Watershed Coordination Section
61 Forsyth Street SW (Sam Nunn Atlanta Federal Center)
Atlanta, Georgia 30303
(404) 562-9373
gagliano.paul@epa.gov

EPA Region 4 Watershed Coordinator

Darryl Williams
Mississippi Watershed Coordinator
Watershed Coordination Section
Water Protection Division
USEPA Region 4
61 Forsyth Street SW (Sam Nunn Atlanta Federal Center)
Atlanta, GA 30303
(404) 562-9297
williams.darryl@epa.gov

MDEQ Liaison

Kay Whittington
Basin Management Branch Chief
OPC/Surface Water Division
Mississippi Department of Environmental Quality
P.O. Box 2261
Jackson, MS 39225
601-961-5729
Kay_Whittington@deq.state.ms.us

MWRRI Liaison

Wayne Wilkerson
Director
Mississippi Water Resources Research Institute
311 Bost
Mailstop 9547
Mississippi State, MS 39762
662-325-8338
waynew@ext.msstate.edu

ATTACHMENT B.

Five Year Plan of Work (2013-2017)

Mississippi Center of Excellence (MCE) for Watershed Management

Cooperators: Mississippi Department of Environmental Quality (MDEQ) and the United States Environmental Protection Agency (EPA), Region 4, Atlanta, GA.

Background: A Memorandum of Understanding (MOU) was signed between the US EPA, MDEQ, and the Mississippi State University (MSU) establishing a Center of Excellence for Watershed Management at Mississippi State University (MSU). The preceding MOU delineates the common agreements and principles guiding the goals, objectives and the desirable activities/outcomes for the Center. Additionally, it lists the responsibilities for each of the cooperators. This Five Year Plan of Work for the MCE is based on the MOU and discussions between MDEQ and Mississippi State University. No funds or additional resources are provided under the MOU. This plan may be revisited by the three cooperators (MCE, MDEQ, and EPA) once annually to assess the progress and make modifications, if needed.

Yearly Activities and Actions

Year 1

1. MCE, through the Mississippi Water Resources Research Institute, will appoint a responsible representative.
2. MCE will establish a point of contact with MDEQ.
3. MCE will establish points of contact with potential MSU collaborators such as the MSU Extension Service, the Mississippi Agricultural and Forestry Experiment Station (MAFES), the Forest and Wildlife Research Center (FWRC), and the Bagley College of Engineering.
4. MCE will also establish points of contact with other Mississippi universities such as Alcorn State University, the University of Mississippi, Jackson State University, and the University of Southern Mississippi.
5. MCE will seek out resources and funding to sustain the MCE.
6. MCE will develop an annual report format.

Year 2

1. MCE will continue with the activities identified in Year 1.
2. MCE will begin work with MDEQ to identify Mississippi's critical watershed needs and opportunities.
3. MCE will utilize staff to prepare research proposals in consultation with MDEQ and other collaborators.
4. MCE will prepare an informative brochure describing the COE programs and approach.
5. MCE will assist MDEQ in the development of at least one Watershed Implementation Plan.
6. MCE will explore opportunities to provide experiential learning opportunities for students in watershed management.
7. MCE will seek out and establish contacts with under-served/minority populations to inform them of the watershed management program.
8. MCE will prepare and submit an annual report.

Year 3

1. MCE will continue with various activities and studies started in Years 1 and 2.
2. MCE will hold a regional workshop on watershed management in conjunction with other collaborating universities, especially Historically Black Land-Grant Universities, and other educational institutions and stakeholder groups.
3. MCE will assist MDEQ in the implementation of at least one of the Watershed-Based Plan.
4. MCE will prepare and submit an annual report.

Year 4

1. MCE will continue with the activities initiated in previous years.
2. MCE will publish a proceedings of the workshop held in the previous year.
3. MCE, MDEQ, and other collaborators will evaluate the ongoing work and make necessary adjustments.
4. MCE will prepare and submit an annual report.

Year 5

1. MCE will finalize activities and projects outlined either in this document or the MOU.
2. MCE will hold a comprehensive meeting of all parties involved to assess the work activities identified in years 1-4, and develop plans for the next five years.
3. MCE will submit the final report to EPA and MDEQ.

MEMORANDUM OF AGREEMENT
AMONG
CERTAIN STATE AND FEDERAL AGENCIES AND NONGOVERNMENTAL ORGANIZATIONS IN MISSISSIPPI WHOSE MISSIONS ADDRESS THE RESTORATION AND PROTECTION OF LAND AND WATER RESOURCES
TO
REDUCE EXCESSIVE NUTRIENT LOADINGS IN-STATE AND TO THE GULF OF MEXICO

WHEREAS, Mississippi is blessed with abundant water resources vital to the well-being of the citizens and the natural environment of the State and the Gulf of Mexico community. Protection of these resources is essential to ensure sustainability of these resources and continuing economic growth; and

WHEREAS, it is recognized that excessive nutrient enrichment is harmful to the quality of Mississippi's waters, the Gulf of Mexico, and the ecosystems and economies that are dependant upon these resources; and

WHEREAS, significant planning efforts have been completed at the national and regional levels to formulate approaches to reduce excessive nutrient loadings to the Mississippi River and to the Gulf of Mexico. During June 2008, the Mississippi River/Gulf of Mexico Watershed Hypoxia Task Force released the *Gulf Hypoxia Action Plan for Reducing, Mitigating, and Controlling Hypoxia in the Northern Gulf of Mexico and Improving Water Quality in the Mississippi River Basin 2008.* The State of Mississippi, represented by the Mississippi Department of Environmental Quality, currently co-chairs the Task Force with the U.S. Environmental Protection Agency. The plan calls for eleven specific actions to reduce nitrogen and phosphorus loadings to the Gulf and reduce the size of the hypoxic "dead zone." A key component of the plan calls for the development of comprehensive State nutrient reduction strategies for those states with significant contributions of nitrogen and phosphorus to the Gulf.

During June 2009, an organization of Gulf coastal states, the Gulf of Mexico Alliance, released the *Governors' Action Plan for Healthy and Resilient Coasts.* The five-year plan focuses on six priority issues to ensure a healthy and resilient Gulf coast, including the reduction of nutrient inputs and impacts to coastal ecosystems and the hypoxic "dead zone." The State of Mississippi, through the Governor and represented by the Mississippi Department of Marine Resources, currently leads the Alliance. The Mississippi Department of Environmental Quality, leads the Alliance's efforts to reduce excessive nutrient loadings to the Gulf. A key component of the plan also calls for the development of an aligned approach by Gulf states to reduce nutrient loadings and their impacts to the Gulf. To achieve this, an aligned nutrient reduction strategy template was developed and endorsed by the Alliance; and

WHEREAS, significant planning and implementation efforts are underway within Mississippi to establish a collaborative, aligned process to reduce excessive nutrient loadings to Mississippi's waters and the Gulf of Mexico. Among the activities underway in Mississippi to reduce excessive nutrient loadings are the development and implementation of comprehensive nutrient reduction strategies. Development and implementation of these strategies include significant contributions of resources from various State and Federal agencies and nongovernmental organizations in Mississippi.

Participating State agencies in these efforts include the Mississippi Department of Environmental Quality, Mississippi Department of Marine Resources, Mississippi Soil and Water Conservation Commission, Mississippi Department of Agriculture and Commerce, Mississippi State University, University of Southern Mississippi, University of Mississippi, Yazoo Mississippi Delta Joint Water Management District and the Mississippi Levee Board. Participating Federal agencies in these efforts include the USDA Natural Resource Conservation Service, USDA Farm Service Agency, USDA Agricultural Research Service, USDA Rural Development Authority, U.S. Geological Survey, U.S. Environmental Protection Agency (EPA), U.S. EPA Gulf of Mexico Program Office, and U.S. Army Corps of Engineers. Participating nongovernmental organizations in these efforts include Delta F.A.R.M. (Farmers Advocating Resource Management), Mississippi Farm Bureau Federation, The Nature Conservancy, and Delta Council. Participating regional interests in these efforts include the Gulf of Mexico Alliance and the Northern Gulf Institute.

NOW THEREFORE, the undersigned parties agree to formalize their working relationship to reduce nutrient loadings within the state and to the Gulf of Mexico through this Memorandum of Agreement pursuant to the following general terms and conditions.

General Terms and Conditions

Signatories to this agreement shall continue to work together to collaboratively support the development and implementation of nutrient reduction strategies to benefit the quality of in-state waters and the Gulf of Mexico. Additionally, these parties will work to identify and pursue opportunities to leverage available resources to implement these strategies, where possible.

This Memorandum of Agreement shall be effective upon October 1, 2010.

SIGNED:

Mississippi Department of Environmental Quality
By: Trudy D. Fisher
Title: Executive Director

USDA Natural Resource Conservation Service
By: Dr. Homer Wilkes
Title: State Conservationist

U.S. Geological Survey Mississippi Water Science Center
By: Mickey Plunkett
Title: Director

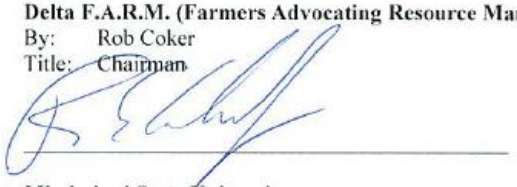
U.S. EPA Gulf of Mexico Program Office
By: Bryon Griffith
Title: Director

Mississippi Soil and Water Conservation Commission
By: Don Underwood
Title: Executive Director

USDA Agricultural Research Service
By: Dr. Edgar G. King
Title: Director, Mid-South Area

USDA Farm Service Agency
By: Michael R. Sullivan
Title: State Executive Director

Delta F.A.R.M. (Farmers Advocating Resource Management)
By: Rob Coker
Title: Chairman



Mississippi State University
By: Dr. David Shaw
Title: Vice President for Research and Economic Development

University of Southern Mississippi
By: Dr. Stephan D. Howden
Title: Associate Professor, Department of Marine Science

Gulf of Mexico Alliance
By: Dr. William Walker
Title: Executive Director

Delta Council
By: Travis Satterfield
Title: Chairman

Mississippi Levee Board
By: Peter Nimrod
Title: Chief Engineer

Mississippi Farm Bureau Federation
By: David Waide
Title: President

The Nature Conservancy
By: Jim Murrian
Title: State Director

Delta Wildlife
By: Jim Luckett
Title: Chairman

Northern Gulf Institute
By: Dr. Mike Carron
Title: Director

USDA Rural Development
By: Trina George
Title: State Director

Yazoo Mississippi Delta Joint Water Management District
By: Dr. Dean Pennington
Title: Executive Director

Mississippi Department of Marine Resources
By: Dr. William Walker
Title: Executive Director

Mississippi Department of Agriculture and Commerce
By: Dr. Lester Spell
Title: Commissioner

University of Mississippi
By: Dr. Alice M. Clark
Title: Vice Chancellor for Research and Sponsored Programs

MDEQ Agreement # 13-00021

Form 9-1366
(Oct. 2005)

U.S. Department of the Interior
U.S. Geological Survey
Joint Funding Agreement

FOR

Customer #:	6000001502
Agreement #:	13ESMSMG0000009
Project #:	MG009KU
TIN #:	64-0629297
Fixed Cost Agreement	☑ Yes ☐ No
USGS MS WSC Duns#:	947589578

THIS AGREEMENT is entered into as of the 1st day of October, 2012, by the U.S. GEOLOGICAL SURVEY, UNITED STATES DEPARTMENT OF THE INTERIOR, party of the first part, and the MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY, NON-POINT SOURCE BRANCH, party of the second part.

1. The parties hereto agree that subject to availability of appropriations and in accordance with their respective authorities there shall be maintained in cooperation the development of monitoring plans and quality assurance project plans, the execution of these monitoring efforts, and the analysis of available data to determine the effectiveness of water quality improvement practices in individual basins; in addition nutrient sampling and flow monitoring in 3 watersheds where nutrient reduction efforts are being planned and implemented, herein called the program. The USGS legal authority is 43 USC 36C; 43 USC 50; and 43 USC 50b.
2. The following amounts shall be contributed to cover all of the cost of the necessary field and analytical work directly related to this program. 2(b) includes In-Kind Services in the amount of $.

(a) $205,000 by the party of the first part during the period October 1, 2012 **to** September 30, 2013

(b) $345,000 by the party of the second part during the period October 1, 2012 **to** September 30, 2013

$140,000 of the amount 2(b) shall be unmatched.

(c) Additional or reduced amounts by each party during the above period or succeeding periods as may be determined by mutual agreement and set forth in an exchange of letters between the parties.

(d) The performance period may be changed by mutual agreement and set forth in an exchange of letters between the parties.

3. The costs of this program may be paid by either party in conformity with the laws and regulations respectively governing each party.
4. The field and analytical work pertaining to this program shall be under the direction of or subject to periodic review by an authorized representative of the party of the first part.
5. The areas to be included in the program shall be determined by mutual agreement between the parties hereto or their authorized representatives. The methods employed in the field and office shall be those adopted by the party of the first part to insure the required standards of accuracy subject to modification by mutual agreement.
6. During the course of this program, all field and analytical work of either party pertaining to this program shall be open to the inspection of the other party, and if the work is not being carried on in a mutually satisfactory manner, either party may terminate this agreement upon 60 days written notice to the other party.
7. The original records resulting from this program will be deposited in the office of origin of those records. Upon request, copies of the original records will be provided to the office of the other party.

Form 9-1366 continued	U.S. Department of the Interior U.S. Geological Survey Joint Funding Agreement	Customer #: Agreement #: Project #: TIN #:	6000001502 13ESMSMG0000009 MG009KU 64-0629297

8. The maps, records, or reports resulting from this program shall be made available to the public as promptly as possible. The maps, records, or reports normally will be published by the party of the first part. However, the party of the second part reserves the right to publish the results of this program and, if already published by the party of the first part shall, upon request, be furnished by the party of the first part, at costs, impressions suitable for purposes of reproduction similar to that for which the original copy was prepared. The maps, records, or reports published by either party shall contain a statement of the cooperative relations between the parties.
9. USGS will issue billings utilizing Department of the Interior Bill for Collection (form DI-1040). Billing documents are to be rendered **QUARTERLY**. Payments of bills are due within 60 days after the billing date. If not paid by the due date, interest will be charged at the current Treasury rate for each 30 day period, or portion thereof, that the payment is delayed beyond the due date. (31 USC 3717; Comptroller General File B-212222, August 23, 1983).

U.S. Geological Survey
United States
Department of the Interior

USGS Point of Contact

Name: Michael L. Plunkett
Address: 308 South Airport Road
Jackson, MS 39208
Telephone: 601-933-2940
Email: plunkett@usgs.gov

Signatures

By _____ Date 9/27/12
Name: Michael L. Plunkett
Title: Director, MS WSC

By _____ Date _____
Name:
Title:

By _____ Date _____
Name:
Title:

MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY
NON-POINT SOURCE BRANCH

Customer Point of Contact

Name: Hollis Allen
Address: P.O. Box 2261
Jackson, MS 39225
Telephone: 601-961-5107
Email:

Signatures

By _____ Date 10/2/12
Name: TRUDY L. FISHER
Title: Executive Director

By _____ Date _____
Name:
Title:

By _____ Date _____
Name:
Title:

Annual Workplan for July 1, 2001, through June 30, 2002

This is the annual workplan for the period July1, 2001, through June 30, 2002, described in Paragraph III B of the Memorandum of Understanding Between the Mississippi Commission on Environmental Quality and the Board of Commissioners for the Yazoo-Mississippi Delta Joint Water Management District.

1) **Activities associated with both water quantity (water use) and water quality issues.**
   a) Before July 1, 2002, the Mississippi Department of Environmental Quality (MDEQ) and the Yazoo-Mississippi Delta Joint Water Management District (YMD) will jointly sponsor and coordinate a meeting of water resource management organizations interested in all aspects of water resources management in the YMD service area. The purpose of the meeting will be for the participating natural resource agencies of Mississippi, Arkansas, and Louisiana to exchange information about current water management issues, projects, and activities in the Delta.
   b) At the regular May 2002 meeting of the YMD Board of Commissioners, MDEQ's Executive Director or his designee will report to the YMD Board on the following:
      i) the quality of YMD's work to assist MDEQ performed pursuant to this Memorandum of Understanding during the period July 1, 2001, through June 30, 2002; and
      ii) a broad overview of the work planned by both organizations for the period July 1, 2002, through June 30, 2003.
   c) MDEQ and YMD staff will continue to meet to further develop data sharing and compatibility regarding Geographic Information Systems (GIS) between the two agencies. This may include YMD keeping statewide GIS-based records of management practices installed through Mississippi's 319 program. Additionally, MDEQ and YMD will work to establish a single data-sharing format.
   d) MDEQ and YMD staff will meet approximately bi-monthly to discuss work identified in this workplan and to exchange information about other water resources related work or plans for such work in the YMD service area. Staff of the two agencies will collaborate in developing the agenda for each of these meetings.
   e) MDEQ will provide assistance to support YMD watershed organizations and projects as staff time allows. At this time, this includes the Coldwater River and Deer Creek Watersheds.
   f) MDEQ and YMD will explore issues related to the development of water management strategies for the Delta.

2) **Activities associated with water quantity and water use issues.**
   a) YMD will continue to conduct the semi-annual static water level survey in the Mississippi River Valley alluvial aquifer (MRVA), subject to review of data by MDEQ. YMD will adhere to the study protocols and quality control procedures

prescribed by MDEQ. These data will be submitted to MDEQ within 30 days of the completion of fieldwork by YMD.

b) YMD will continue to receive and process applications for permits to withdraw either ground water from the MRVA or surface water from Delta streams and lakes for agricultural uses (including row crops and fish production), wildlife habitat, and recreational uses. All other applications for water use permits in the YMD service area will be handled by MDEQ staff. These other applications will include, but will not be limited to, any applications for water use permits for municipal, commercial, or industrial activities, regardless of the source of water, as well as applications for any uses (including agricultural) from the Cockfield, Sparta, or Wilcox aquifer systems.

c) As deemed necessary and/or appropriate by MDEQ and YMD, MDEQ will assist YMD in the presentation of permit applications to the Mississippi Environmental Quality Permit Board for final administrative action, or any hearing associated therewith.

d) YMD will continue to maintain the FTP site that is used every two weeks by MDEQ to download and update water use permit information to data systems.

e) By January 31, 2002, YMD will provide to MDEQ maps in electronic format showing the location and irrigated acreage for only those new permits that were issued between January 1 and December 31, 2001 and as many of the previous years water use permits as YMD staff time allows. This does not mean that all remaining permit boundaries will be completed during this plan of work year.

f) YMD will assist MDEQ in installing gauges to delineate average minimum levels for Delta lakes. YMD and MDEQ will review the current definitions of a lake requiring a minimum level and review specific lakes as staff time allows.

g) YMD will continue to manage low flows in the Sunflower River and will inform MDEQ of all key decisions and activities.

h) YMD and MDEQ will work together to sample wells in the Sparta, Cockfield, and Wilcox aquifers to determine salinity and chloride levels in those waters. Based upon results of sampling of wells in Washington County in the fall of 2001, the frequency of future sampling will be assessed and modified if deemed appropriate.

i) MDEQ and YMD, with the YMD permitting committee, will review the evolving water uses in the Delta and the appropriate permitting responses.

j) YMD will assist MDEQ to get water use permit numbers for driller's logs from the Delta. MDEQ will accept logs without permit numbers and will send a copy of the log to YMD. YMD will use the log to initiate a new water use permit and assign a permit number to the log. Monthly, YMD will notify MDEQ of additions or changes in information about driller's logs.

k) In addition to those activities described elsewhere in this workplan, MDEQ may request in writing that YMD perform specific tasks related to water resource investigations MDEQ is conducting or has interest in. If YMD, based upon its interests, workload, and capabilities, chooses to participate as requested, YMD will adhere to the study protocols and quality control procedures prescribed by MDEQ to the maximum extent feasible within the resources available to YMD.

l) YMD and MDEQ will work together to develop improved annual groundwater use information for agriculture and catfish farming from the Mississippi river valley alluvial aquifer in the Delta in accordance with the written summary of the scope of work as agreed upon in its final form by both parties.

3) **Activities associated with water quality issues.**

a) YMD and MDEQ will work to communicate more effectively on water resource issues in the Delta related to the following programs: 303(d) listings and delistings, fish consumption advisories, 401 water quality certifications, impairment definitions, and NPDES permits.

b) YMD will assist MDEQ in a long on-going effort to accurately locate all NPDES sites in the Delta. This may include on-site GPS or DOQQ imagery siting. This will be part of a cooperative effort to produce a GIS coverage of NPDES permit data for the Delta. Protocols need to be jointly developed to complete this process.

c) MDEQ and YMD will review their needs and uses for information about best management practice effectiveness and contributions to water quality issues within watersheds and the best way to share this information.

Appendix E

Relevant Links

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State of Mississippi Water Quality Criteria for Intrastate, Interstate, and Coastal Waters, Page 13
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http://www.fws.gov/wetlands, Page 14
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Appendix F

Priority Watershed List by Basin

Watershed		Schedule					
		Prior to 2014	2014	2015	2016	2017	2018
Basin Group I							
North Independent Streams							
Bell-Muddy Creek (080102070601)							
WBP Development		**X**					
WBP Revision							
WBP Implementation		**X**	**X**	**X**			
Number of TMDLs Completed*	**0**						
Number of TMDLs Scheduled for Completion	**0**						
Tarebreeches Creek (080102070503)							
WBP Development		**X**					
WBP Revision						**X**	
WBP Implementation		**X**	**X**	**X**			
Number of TMDLs Completed*	**14**						
Number of TMDLs Scheduled for Completion	**0**						
Tennessee River							
None							
Basin Group II							
Yazoo River							
Bee Lake (080302060407)							
WBP Development		**X**					
WBP Revision							
WBP Implementation		**X**	**X**	**X**			
Number of TMDLs Completed*	**9**						
Number of TMDLs Scheduled for Completion	**0**						
Coldwater River (08030204)							
WBP Development		**X**					
WBP Revision							
WBP Implementation		**X**	**X**	**X**			
Number of TMDLs Completed*	**96**						
Number of TMDLs Scheduled for Completion	**0**						
Harris Bayou (0803020703)							

Watershed		Schedule					
		Prior to 2014	2014	2015	2016	2017	2018
WBP Development		X					
WBP Revision				X			
WBP Implementation			X	X	X	X	
Number of TMDLs Completed*	37						
Number of TMDLs Scheduled for Completion	0						
Jasper Creek (080302010404)							
WBP Development			X	X			
WBP Revision							
WBP Implementation				X	X	X	X
Number of TMDLs Completed*	0						
Number of TMDLs Scheduled for Completion	0						
Lake Washington (0803020903)							
WBP Development		X					
WBP Revision			X				
WBP Implementation			X	X			
Number of TMDLs Completed*	30						
Number of TMDLs Scheduled for Completion	0						
Little Topashaw Creek (080302050106)							
WBP Development			X	X			
WBP Revision							
WBP Implementation				X	X	X	X
Number of TMDLs Completed*	1						
Number of TMDLs Scheduled for Completion	0						
Cowpen Creek - Skuna River Canal (080302050206)							
WBP Development				X	X	X	
WBP Revision							
WBP Implementation							
Number of TMDLs Completed*	2						
Number of TMDLs Scheduled for Completion	0						
North Tippah Creek (080302010502)							

Watershed		Schedule					
		Prior to 2014	2014	2015	2016	2017	2018
WBP Development		X					
WBP Revision							X
WBP Implementation		X	X	X			
Number of TMDLs Completed*	0						
Number of TMDLs Scheduled for Completion	0						
Porter Bayou (0803020705)							
WBP Development		X					
WBP Revision					X		
WBP Implementation			X	X	X	X	
Number of TMDLs Completed*	35						
Number of TMDLs Scheduled for Completion	0						
Steele Bayou (08030209)							
WBP Development		X					
WBP Revision			X				
WBP Implementation			X	X	X		
Number of TMDLs Completed*	74						
Number of TMDLs Scheduled for Completion	0						
Wolf-Broad Lake (0803020609)							
WBP Development		X					
WBP Revision					X		
WBP Implementation			X	X	X		
Number of TMDLs Completed*	17						
Number of TMDLs Scheduled for Completion	0						
Basin Group III							
Big Black River							
None							
Pearl River							
Ashlog Creek (031800020302)							
WBP Development		X					
WBP Revision			X				
WBP Implementation							
Number of TMDLs Completed*	5						

Watershed		Schedule					
		Prior to 2014	2014	2015	2016	2017	2018
Number of TMDLs Scheduled for Completion	**0**						
Lake Creek (031800020307)							
WBP Development		**X**					
WBP Revision							
WBP Implementation							
Number of TMDLs Completed*	**9**						
Number of TMDLs Scheduled for Completion	**0**						
Mill Creek (031800020307)							
WBP Development		**X**					
WBP Revision				**X**			
WBP Implementation		**X**					
Number of TMDLs Completed*	**5**						
Number of TMDLs Scheduled for Completion	**0**						
Riley Creek (031800020306)							
WBP Development		**X**					
WBP Revision				**X**			
WBP Implementation							
Number of TMDLs Completed*	**5**						
Number of TMDLs Scheduled for Completion	**0**						
Ross Barnett Reservoir (03180002)							
WBP Development		**X**					
WBP Revision					**X**		
WBP Implementation		**X**	**X**	**X**			
Number of TMDLs Completed*	**53**						
Number of TMDLs Scheduled for Completion	**0**						
South Independent Streams							
None							
Basin Group IV							
Pascagoula River							
Upper Black Creek (03170007)							

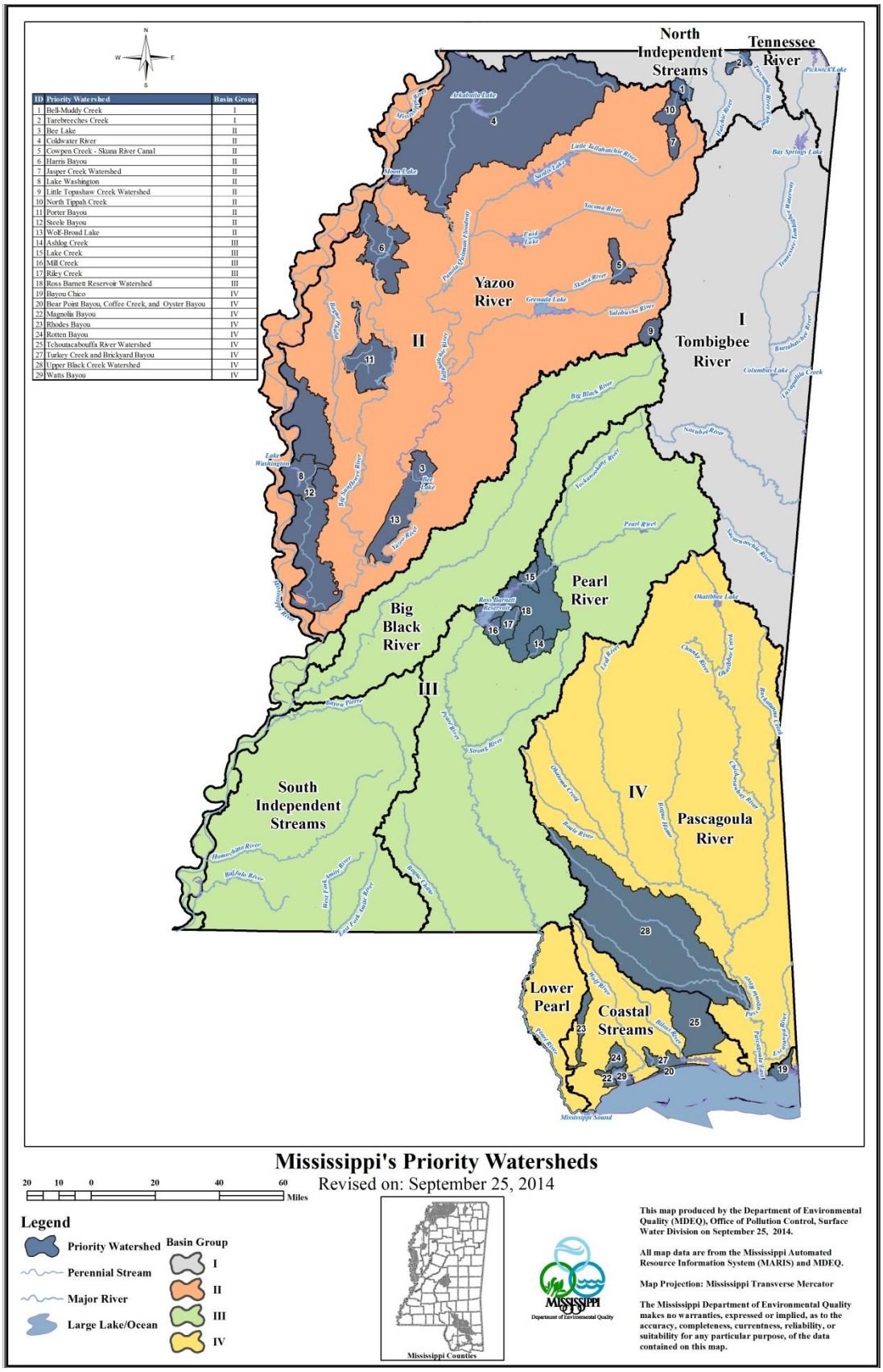
Watershed		Schedule					
		Prior to 2014	2014	2015	2016	2017	2018
WBP Development				X	X	X	
WBP Revision							
WBP Implementation							
Number of TMDLs Completed*	12						
Number of TMDLs Scheduled for Completion	0						
Coastal Streams							
Rotten Bayou (031700091303)							
WBP Development				X			
WBP Revision							
WBP Implementation		X	X	X	X	X	X
Number of TMDLs Completed*	4						
Number of TMDLs Scheduled for Completion	0						
Tchoutacabouffa River (0317000906)							
WBP Development				X	X	X	
WBP Revision							
WBP Implementation							
Number of TMDLs Completed*	2						
Number of TMDLs Scheduled for Completion	0						
Turkey Creek (031700090602)							
WBP Development		X					
WBP Revision				X	X		
WBP Implementation		X					
Number of TMDLs Completed*	15						
Number of TMDLs Scheduled for Completion	0						
Rhodes Bayou (031700090905)							
WBP Development**			X	X	X		
WBP Revision							
WBP Implementation							
Number of TMDLs Completed*	0						
Number of TMDLs Scheduled for Completion	0						

Watershed		Schedule					
		Prior to 2014	2014	2015	2016	2017	2018
Watts Bayou (031700091305)							
WBP Development**			X	X	X		
WBP Revision							
WBP Implementation							
Number of TMDLs Completed*	**6**						
Number of TMDLs Scheduled for Completion	**0**						
Magnolia Bayou (031700091306)							
WBP Development**			X	X	X		
WBP Revision							
WBP Implementation							
Number of TMDLs Completed*	**17**						
Number of TMDLs Scheduled for Completion	**0**						
Bear Point Bayou (031700090801)							
WBP Development**			X	X	X		
WBP Revision							
WBP Implementation							
Number of TMDLs Completed*	**1**						
Number of TMDLs Scheduled for Completion	**0**						
Coffee Creek (031700090801)							
WBP Development**			X	X	X		
WBP Revision							
WBP Implementation							
Number of TMDLs Completed*	**1**						
Number of TMDLs Scheduled for Completion	**0**						
Oyster Bayou (031700090801)							
WBP Development**			X	X	X		
WBP Revision							
WBP Implementation							
Number of TMDLs Completed*	**1**						
Number of TMDLs Scheduled for Completion	**0**						

Watershed		Schedule					
		Prior to 2014	2014	2015	2016	2017	2018
Brickyard Bayou (031700090602)							
WBP Development**			X	X	X		
WBP Revision							
WBP Implementation							
Number of TMDLs Completed*	**15**						
Number of TMDLs Scheduled for Completion	**0**						
Bayou Chico (031700090301)							
WBP Development**			X	X	X		
WBP Revision							
WBP Implementation							
Number of TMDLs Completed*	**2**						
Number of TMDLs Scheduled for Completion	**0**						
Lower Pearl River							
None							
Summary							
WBP Development**		**16**	**10**	**14**	**11**	**3**	**0**
WBP Revision		**0**	**3**	**4**	**4**	**1**	**1**
WBP Implementation		**9**	**12**	**14**	**7**	**5**	**3**

***** Refer to TMDL Webpage: http://deq.state.ms.us/MDEQ.nsf/page/TWB_Total_Maximum_Daily_Load_Section?OpenDocument

****** MDEQ is working concomitantly with The Nature Conservancy and The Audubon Society to develop WBPs and Conservation Action Plans (CAPs) during the time frame noted above.



ID	Priority Watershed	Basin Group
1	Bell-Muddy Creek	I
2	Tarebreeches Creek	I
3	Bee Lake	II
4	Coldwater River	II
5	Cowpen Creek - Skuna River Canal	II
6	Harris Bayou	II
7	Jasper Creek Watershed	II
8	Lake Washington	II
9	Little Tallahatchie River Watershed	II
10	North Tippah Creek	II
11	Porter Bayou	II
12	Steele Bayou	II
13	Wolf-Broad Lake	II
14	Ashlog Creek	III
15	Lake Creek	III
16	Mill Creek	III
17	Riley Creek	III
18	Ross Barnett Reservoir Watershed	III
19	Bayou Chico	IV
20	Bear Point Bayou, Coffee Creek, and Oyster Bayou	IV
22	Magnolia Bayou	IV
23	Rhodes Bayou	IV
24	Rotten Bayou	IV
25	Tchoutacabouffa River Watershed	IV
27	Turkey Creek and Brickyard Bayou	IV
28	Upper Black Creek Watershed	IV
29	Watts Bayou	IV

Appendix G

Watershed Implementation Plan Development Guidance

Mississippi Watershed Implementation Plan Guidance
Compatible with Section 319 Grant Requirements

September 9, 2004

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WATERSHED IMPLEMENTATON PLAN FORMAT GUIDANCE

This document presents a format and guidance for developing an implementation plan for watershed management activities that addresses the requirements of planning for projects funded with Section 319 funds. Under the plan sections, questions are provided to guide the user in determining what information needs to be included. A number of examples of tables that could be used in the plan are included at the end of the example plan format. In addition, a listing of information sources for the plan is included at the end of this document.

EXECUTIVE SUMMARY

A summary table of the information below located at the beginning of the Basin Group I plans served the function of an executive summary (see example Table 1, pg 13). The idea is to provide a clear, concise summary of what is planned and what benefits are expected.

• What are the goals of the watershed implementation plan?
• Who will be implementing activities in the watershed aimed at achieving these goals?
• What activities will be undertaken to achieve the goals?
• When will these activities take place?
• Where in the watershed will these activities take place?
• What benefits are expected from these activities?
• Who can be contacted for information about or assistance with these activities?

1.0 MISSION STATEMENT

What is the purpose of the work of the Watershed Implementation Team in the watershed? Most agencies and watershed groups have mission statements. They can be incorporated into an overall mission for the Team's work in the watershed.

2.0 WATERSHED BACKGROUND

2.1 Watershed Description

Some suggestions for information to include are listed below. Maps are useful for conveying much of this information, include at least a watershed map and a land use map. Maps may already exist for the watershed that could be used here. Tables may also be useful for presenting information such as land use and soil types and their characteristics.

• How big is the watershed?
• Where is the watershed located (site map)?
• How many people live in the watershed?
• Where do people live in the watershed?

• What cities, towns, or communities are located in the watershed?
• What communities not located in the watershed affect the watershed?
• What are economic conditions like in the watershed?
• What is the history of the watershed and its people?
• What are the soils and geology of the watershed like?
• What ecoregion(s) occurs in the watershed?
• What are the land uses/land covers that occur in the watershed?
• Have there been, or are there occurring, significant changes in land use in the watershed over time?
• What is the extent of wetlands in the watershed, where are they located, and how are they managed?
• What water bodies are located in the watershed?

2.2 Stakeholder Interests

• What are stakeholders interests in the watershed?
• What do stakeholders want to preserve or improve in the watershed?
• Are stakeholders interested in watershed recreational opportunities?
• Are stakeholders interested in water supplies?
• Are stakeholders interested in aesthetics?
• Are stakeholders interested in wildlife resources?
• Are stakeholders interested in fishing? Hunting?
• Are stakeholders interested in cultural and/or historical resources?
• What is important to the watershed stakeholders?

2.3 Stakeholder Concerns

A summary listing the issues that have been identified in the watershed. Include the following information about current issues in a table (see example Table 2, pg 14). Discuss in the text those concerns that have been shown to not be a problem (i.e. through more in-depth investigation and/or scientific study), or are no longer a problem (i.e. as a result of previous restoration efforts). These issues should be excluded from the summary table. Note in the text that additional information about causes is included in an appendix (Stressor summary table).

• What is the issue, concern, or problem?
• What are the suspected or known causes of the problem?

• Where in the watershed does this problem occur?
• What is the extent of this problem (e.g. How many miles of stream or acres of land are affected?, How many affected sites are there?)?

2.4 Water Quantity

2.4.1 Condition

• What is the current condition of surface water quantity?
• What is the current condition of ground water quantity?
• What are the factors affecting surface and/or ground water quantity?
• What is the history of surface and/or ground water use?
• What studies of surface and/or ground water quantity have been conducted in the watershed?
• What previous water quantity concerns have been rectified?
• How were these previous water quantity concerns rectified (i.e. shown to have no basis as the result of additional study, or rectified as a result of some action taken)?

2.4.2 Conservation

If water quantity is not an issue in the watershed, there may not be water conservation programs active in the watershed. In that case exclude the subsections and include available information about water quantity in Section 2.3.

• What water conservation programs or activities occur in the watershed?
• What is the target audience for these programs/activities?
• What has been accomplished by these programs or through these activities to date?

2.5 Wildlife Resources

Note that if any of these listings get very long it is better to include them in an appendix. Summary tables (see examples Tables 3 and 4, pgs 14-15) and maps can be very useful here.

• What are the important recreational species in the watershed?
• Where do important recreational species occur in the watershed?
• Where do habitats for important recreational species occur in the watershed?
• Are there threatened and endangered species in the watershed?
• Where do threatened and endangered species occur in the watershed?
• Where do threatened and endangered species habitats occur in the watershed?

• What other species of special concern occur in the watershed?
• Where do species of special concern occur in the watershed?
• Where do habitats of species of special concern occur in the watershed?
• What consumption advisories are in effect in the watershed?

2.6 Water Quality

2.6.1 Standards

Show numeric water quality standards in a table (see example Table 5, pg 15).

• What are the numeric water quality standards that apply to water bodies in the watershed?
• What are the numeric water quality standards that apply to ground water in the watershed?
• What narrative water quality standards (that relate to issues in the watershed) apply to water bodies in the watershed?
• What are the designated beneficial uses of the water bodies in the watershed?
• What is aquatic life support threshold M-BISQ score for the bioregion associated with the watershed? (This information is available from MDEQ. Thresholds have not yet been developed for the delta bioregion)

2.6.2 Condition

If a number of water bodies in the watershed are on the state list of impaired waters, it may be preferable to list them in a table (see example Table 6, pg 6. If the table/list is longer than one page, put it in an appendix. A map showing locations and I.D.s of impaired waterbodies should be included.

• What is the current condition of water quality in the water bodies in the watershed?
• What is the current ground water quality in the watershed?
• Are any of the water bodies in the watershed included on the Mississippi list of impaired waters (303(d) List)?
• If water bodies are listed as impaired, which ones are they and why are they listed?
• Is current ground water quality suitable for existing or desired uses?
• What studies of water quality have been conducted on the surface and ground water in the watershed?
• What are the M-BISQ scores for water bodies in the watershed?
• What are the results of any source water assessments conducted in the watershed?
• What source water protection activities are occurring in the watershed?

2.6.3 TMDLs

Summarize TMDLs completed for water bodies in the watershed. Copies of approved TMDLs are available online at www.deq.state.ms.us/MDEQ.nsf/page/TWB_Total_Maximum_Daily_Load_Section?OpenDocument.

If there are may TMDLs that require pollutant reductions, or many waterbodies with different reduction levels, it may be desirable to include a summary table of this information. Use waterbody i.d.s to tie back to information in Section 2.6.2.

• What water bodies and pollutants are addressed in the TMDL?
• What causes of the impairment are identified in the TMDL?
• What pollutant load reductions are recommended in the TMDL?
• What methods for pollutant load reduction are recommended in the TMDL?

3.0 WATERSHED IMPLEMENTATION PLAN

3.1 Goals

• What do we hope to accomplish as a result of implementing the work outlined in this plan?
• What is the time frame for this plan and these goals (i.e. when do we expect to see results)?

3.2 Management Actions

You may want to include a statement here that all quantities shown in the following sections are estimates and subject to change. Management actions include installation of best management practices, research or studies related to watershed issues, and efforts to organize stakeholders into watershed associations. Include information about these types of activities planned for the watershed here.

3.2.1 Action Name

Include a separate subsection (3.2.1, 3.2.2, etc.) for each action/project planned for the watershed. Include the following subheadings for each action/project.

3.2.1.1 Desired Benefits

This would be a good place to mention economic and social benefits. Quantitative estimates of economic and social benefits would be useful (e.g. What effect, in dollars, is increased tourism as a result of water body restoration expected to have on the local economy? How many jobs may be saved or added?). Because of the Federal mandate to show quantitative results from money spent, for those actions/projects using Section 319 funds, EPA requires that quantitative estimates of water quality benefits be included in implementation plans (e.g. What percent reduction is expected in the pollutant load? By how many lbs/day is the load expected to be reduced?).

• What is the issue this action/project is intended to address?
• What is the anticipated result or benefit of this action/project?
• What are the indicators that the intended outcome is occurring?

3.2.1.2 Actors

• What agencies and/or groups will be involved in this project/action?
• What roles will each agency or group have in the project/action? (e.g. technical resource, implementation, monitoring, assessment).
• What existing programs will be utilized, e.g. EQIP, WHIP, Partners for Wildlife?

3.2.1.3 Activities

Note that education activities should be included in Section 4.2 rather than here, and information about monitoring for the purpose of documentation results of the project/action should be included in Section 5.1 rather than here. It may be appropriate to mention that education and monitoring activities are associated with this management action, but refer readers to the appropriate section for details. For those actions/projects using Section 319 funds, EPA requires quantitative estimates of activities, e.g. 10 sediment control structures will be installed, five wells will be drilled.

• What specific activities will occur during this action/project?
• Who will conduct these activities?

• What specific BMPs will be implemented during this action/project?
• Who will install and maintain these BMPs?
• How will locations be selected for BMP installations?

3.2.1.4 Budget

For those actions/projects using Section 319 funds, EPA prefers that, as applicable, per/unit costs be included here. Summary tables are helpful for showing budget information (see example Table 7, pg 16).

• What will it cost to implement this action/project?
• How will the action/project be funded?
• What funding sources will be utilized?
• What amount of funding will be provided by each source?
• Who will be responsible for managing the action/project budget?

3.2.1.5 Schedule

This schedule will be used to track implementation and progress toward goals (Section 3.1). A summary table may be useful here (see example Table 8, pg 16).

• When is the action/project expected to begin and end?
• What are the schedule milestones for the activities of this action/project?
• How will we know if the action/project is being completed in a timely manner, or if it is experiencing delays?
• When will meetings for tracking implementation progress occur?

4.0 EDUCATION STRATEGY

4.1 Objectives

• What is the purpose of the education and outreach activities that are planned for the watershed?
• What are the desired results of education and outreach activities that are planned for the watershed?
• What benefits are expected?

4.2 Activities

Note that education activities are required for all Section 319 funded projects.

4.2.1 Agency/Group

Include a separate subsection for the activities of each agency or group implementing education and/or outreach activities in the watershed.

4.2.1.1 Activities

• What general education and/or outreach activities of this agency or group occur in this watershed?
• What watershed-specific education and/or outreach activities are on-going or planned by this agency or group?
• Who in this agency or group actually implements these activities?
• Who can be contacted for information about, or requests for, these activities?

4.2.1.2 Indicators

• What indicators will be used to track implementation of education and/or outreach activities? (e.g. number of people contacted, number of pamphlets distributed, number of field days)
• What goals, if any, are there for these indicators? (e.g. two field days per year for the next three years)

4.2.1.3 Schedule

This schedule will be used to track implementation and progress toward goals (Section 3.1). A summary table may be useful here (see example Table 8, pg 16).

• Which activities are on-going or continuous?
• What is the time frame for short-term activities?
• What are the schedule milestones for the activities?
• When will meetings for tracking implementation occur?

4.2.1.4 Budget

For those actions/projects using Section 319 funds, EPA prefers that, as applicable, per/unit costs be included here. Summary tables are helpful for showing budget information (see example Table 7, pg 16).

• What is the cost/budget associated with these activities?
• What funding sources will be used?
• What amount of the funding will come from each source?
• Who will track the budget?

5.0 EVALUATION

5.1 Monitoring

Monitoring is important for determining if goals have been achieved, or if progress has been made toward achieving the goals or not. Note that monitoring to document project effects is required for all Section 319 funded projects. It may be more effective to show some of this information in tables similar to those used in previous sections.

• What indicators or parameters will be monitored?
• How often/when will monitoring or sampling occur?
• Where in the watershed will monitoring occur?
• Where will samples be collected?
• Who will conduct monitoring/sampling?

• Who will analyze samples?
• Who will analyze monitoring results?
• What will monitoring cost?
• How will monitoring be funded?

5.2 Assessment of Progress

• How will implementation of plan actions and activities be tracked?
• Who will be responsible for tracking implementation?
• What criteria will be used to determine if the goals from Section 3.1 have been achieved, or if progress has been made toward achieving those goals?

5.3 Plan Evaluation Procedure

The plan will be evaluated in two ways. First, to determine if the plan goals (from Section 3.1) have been achieved (see criteria in Section 5.2). Second, to determine if it reflects the current condition of the watershed, state of science, and issues in the watershed.

• Who will be responsible for implementing the plan evaluation procedure?
• Who will evaluate the plan?
• How will input be solicited for evaluation of the plan?
• How often/when will the plan be evaluated?

5.4 Plan Revision Procedure

Periodically the plan will need to be revised to reflect changes in work occurring in the watershed, in watershed issues, in science, and in the understanding of the watershed system.

• Who will be responsible for implementing the plan revision procedure?
• How will input be solicited for revision of the plan?
• Who will be involved in revising the plan?
• Who will write the revised plan?
• Who will review the revised plan?
• How often/when will the plan be revised?

6.0 REFERENCES

Include references for information cited in text, especially information from studies that interested folks might want to find/read.

7.0 APPENDICES

Include as many appendices as needed for information that is relevant/important to the text, but too large to include in the text. In addition, include the following (not necessarily in this order) as relevant.

APPENDIX	INFORMATION
Stressor summary table (see example Table 9, pg 17)	Include the following information about each of the potential or known problem causes identified in the table in Section 2.5.
	Identify the stressor (one of the causes identified in the table in Section 2.5).
	Why is this stressor believed to be a cause of the problem listed in the stakeholder concerns?
	Where does this stressor occur in the watershed?
	What is the extent of the occurrence of this stressor (e.g. how many mile of stream, acres of land, or sites)?
History of Watershed Implementation Plan	This provides background information about the restoration and/or conservation process in the watershed that would be useful for someone just becoming involved.
	Who are the primary players in restoration and/or conservation efforts in the watershed?
	Who else is involved in restoration and/or conservation efforts?
	What restoration and/or conservation activities have taken place in the watershed in the past?
	What were the results of these past activities?
	What triggered interest in this watershed?
	How was the implementation team formed?
	What is the process for modifying the team?
Checklist of Watershed Implementation Plan Elements (see example Table 10, pg 18)	Include this only if the plan includes Section 319 funded projects. Use this table to indicate to EPA reviewers where they will find their required Watershed Implementation Plan Elements in this plan. We indicated section numbers in the previous plans, in case page numbers changed when printed out on different systems.
Copies of Section 319 project proposals/plans	Of course, these will only be included if the plan includes Section 319 funded projects.

Table 1. Executive Summary Table.

GOAL	WHO	WHAT	WHERE	WHEN	CONTACTS
Reduce organic matter loads, achieve state dissolved oxygen standards, and Fish and Wildlife Support designated use	MS Forestry Commission	Aerial survey to determine silviculture activity and sampling locations	Entire Watershed	2004	Michael Sampson, MS Forestry Commission 601-359-1812
		Evaluate potential risks to water quality from recently harvested forest tracts.		2005	
		Contact owners of forest tracts at risk for water quality to inform them of risk and suggest BMPs		2005	
	MS Department of Health	Locate failing septic systems	Entire Watershed	2004-2005	Eugene Herring, MS State Department of Health 601-576-7779
	MDEQ	Water quality sampling	Bogue Chitto Creek	2005	Adrien Carroll, MDEQ 601-961-5716
	MSWCC, USDA NRCS, MSU Cooperative Extension Service, US FWS	Continue existing programs and projects related to farmer education, BMP implementation, and habitat conservation.	Entire Watershed	2004-2008	Larry Williams, NRCS 601-965-5227 Mark Gilbert, MSWCC 601-354-7645 Larry Oldham MSU-Extension Service 662-325-2701 Lloyd Inmon, US FWS 601-321-1134
	MSU Cooperative Extension Service	Initiate Phase I of Medallion Farmer Program	Hinds & Madison Counties	2005	Larry Oldham, MSU-Extension Service 662-325-2701
	City of Clinton	Implement pollution reduction activities specified in Storm Water Management Plan	Clinton City Limits	2004-2008	Richard Broome, City of Clinton 601-924-5462
	US Fish and Wildlife Service	Wetland inventory	Entire watershed	2005	Lloyd Inmon, US FWS 601-321-1134

Table 2. Stakeholder Concerns

STATUS	DESCRIPTION
Concern:	Biological impairment and organic enrichment/low dissolved oxygen
Causes:	Agricultural runoff, runoff from lawns and golf courses, runoff from urban areas, malfunctioning on-site wastewater treatment units, loss or alteration of wetlands, NPDES point sources, hydromodification
Location:	Impairment occurs in Bogue Chitto Creek, Limekiln Creek, and Straight Fence Creek
Extent:	Headwaters to confluence with Big Black River
Concern:	High nutrient levels in surface water
Causes:	Runoff from croplands, pastures, livestock operations, lawns, golf courses, and urban areas; loss or alteration of wetlands; hazardous waste operations
Location:	Impairment occurs in Bogue Chitto Creek, Limekiln Creek, and Straight Fence Creek
Extent:	Headwaters to confluence with Big Black river

Table 3. Threatened and endangered species

Scientific Name	Common Name	Federal Status	Habitat
Acipenser oxyrinchus desotoi	Gulf Sturgeon	Threatened	Primarily marine/estuarine in winter; migrates to rivers in spring for spawning; returns to sea/estuary in fall. First two years are spent in riverine habitats. Big river, low gradient, medium river, moderate gradient
Falco peregrinus	Peregrine Falcon	Endangered	Herbaceous wetland, riparian Cliff, urban/edificarian, woodland - conifer, woodland – hardwood, woodland – mixed When not breeding, occurs in areas where prey concentrate, including farmlands, marshes, lakeshores, river mouths, tidal flats, dunes and beaches, broad river valleys, cities, and airports.

Table 4. Species of special concern

Scientific Name	Common Name	Habitat
Accipiters cooperii	Cooper's Hawk	Riparian, forest - conifer, forest - hardwood, forest - mixed, suburban/orchard, woodland - conifer, woodland - hardwood, woodland - mixed Generally is an inhabitant of deep woods, utilizing thick cover both for nesting and hunting. Openings, especially where hedgerows or windbreaks offer shelter for prey species, may also be used when foraging. Johnsgard (1990) states that Cooper's are less fussy about the forest type than sharp-shins, and are more often "associated with deciduous and mixed forests and open woodland habitats such as woodlots, riparian woodlands, semiarid woodlands of the southwest, and other areas where the woodlands tend to occur in patches and groves or as spaced trees."
Alosa alabamae	Alabama Shad	big river, low gradient, medium river, moderate gradient Anadromous; adults live in saltwater and migrate into medium to large coastal rivers to spawn.

Table 5. Numeric water quality standards

Parameter	Criteria
Dissolved Oxygen	5.0 mg/L daily average, 4.0 mg/L instantaneous
PH	Between 6.0 and 9.0 su
Temperature	32.2 deg C
Fecal coliform	May – October: geometric mean of 200 per 100 mL, 400 per 100 mL less than ten percent (10%) of the time during a 30 day period. November – April: geometric mean of 2000 per 100 mL, 4000 per 100 mL less than ten percent of the time during a 30 day period.
Specific conductance	1000 uohms/cm
Dissolved Solids	750 mg/L monthly average, 1500 mg/L instantaneous

Table 6. Impaired water bodies included on the most recent 303(d) list

Water Body Name	Water Body ID	Impaired Beneficial Use	Pollutant/Cause
Johnson Creek	MS311E	Aquatic Life Support	Biological impairment
Strayhorn Creek	MS317E	Aquatic Life Support	Biological impairment
Whites Creek	MS311WE	Aquatic Life Support	Biological impairment
Ark Bayou	MS319E	Aquatic Life Support	Nutrients Organic enrichment/low DO Pesticides Sediment/siltation
Buck Island Bayou	MS313E	Aquatic Life Support	Nutrients Organic enrichment/low DO Pesticides Sediment/siltation

Table 7. Budget Summary

Activity	Unit Cost	Number of Units	Amount	Funding Sources (amount contributed by source)
Total				

Table 8. Schedule

Activity	Milestone	Begin	End
Sediment BMPs	5 Landowner contracts in target area	Month 1	Month 4
	Installation	Month 5	Month18

Table 9. Description of Stressors

Status	Description
Stressor:	Runoff from croplands
Justification:	Water quality sampling of cropland stormwater runoff during the Bogue Chitto Creek Watershed Nonpoint Source Project showed that runoff from croplands does contain high concentrations of suspended solids and phosphorus concentrations approximately an order of magnitude greater than those measured in Bogue Chitto Creek in 1999. TKN and nitrite + nitrate concentrations in the cropland runoff are also a little higher than the concentrations measured in Bogue Chitto Creek
Location:	See Figure 2.3 for the locations of croplands along streams.
Extent:	There were approximately 845 acres of cropland with low plant residues in 2001. The majority were in the unnamed tributary subbasin 0201, and Bogue Chitto Creek subbasin upstream of Limekiln Creek (see Figure 2.3).
Stressor:	Runoff from pastures
Justification:	Runoff from pastures has the potential to contain nutrients and organic matter from animal waste deposited by grazing animals and fertilizers, as well as sediment. Allowing livestock into streams can result in increased suspended sediments and nutrients and habitat alteration. Poor quality pasture has the potential to contribute sediments to surface waters.
Location:	See Figure 2.3 for the locations of pastures adjacent to streams, and Figures 3.2 and 3.3 for sites where livestock have access to streams.
Extent:	There are approximately 4,000 acres of heavily overgrazed pasture in the watershed, and 46 sites where livestock have access to streams (TVA unpublished).

Table 10. Plan checklist

FY04/05 319 Watershed-Based Plans Guide

Name of Watershed-Based Plan: Bogue Chitto Watershed Implementation Plan

Required Watershed Elements	Location
a. An identification of the causes and sources or groups of similar sources that will need to be controlled to achieve the load reductions estimated in this watershed-based plan (and to achieve any other watershed goals identified in the watershed-based plan), as discussed in item (b) immediately below. Sources that need to be controlled should be identified at the significant subcategory level with estimates of the extent to which they are present in the watershed (e.g., X numbers of dairy cattle feedlots needing upgrading, including a rough estimate of the number of cattle per facility; Y acres of row crops needing improved nutrient management or sediment control; or Z linear miles of eroded streambank needing remediation).	Table 2.7, Appendix C
b. An estimate of the load reductions expected for the management measures described under paragraph (c) below (recognizing the natural variability and the difficulty in precisely predicting the performance of management measures over time). Estimates should be provided at the same level as in item (a) above (e.g., the total load reduction expected for dairy cattle feedlots; row crops; or eroded streambanks).	Chapter 3, Sections 3.2.1.1, 3.2.3.1, 3.2.4.1

Required Watershed Elements	Location
c. A description of the NPS management measures that will need to be implemented to achieve the load reductions estimated under paragraph (b) above (as well as to achieve other watershed goals identified in this watershed-based plan), and an identification (using a map or a description) of the critical areas in which those measures will be needed to implement this plan.	Chapter 3, sections 3.2.1.2, 3.2.2.2, 3.2.3.2, 3.2.4.2, 3.2.5.2, 3.2.6.2
d. An estimate of the amounts of technical and financial assistance needed, associated costs, and/or the sources and authorities that will be relied upon, to implement this plan. As sources of funding, States should consider the use of their Section 319 programs, State Revolving Funds, USDA's Environmental Quality Incentives Program and Conservation Reserve Program, and other relevant Federal, State, local and private funds that may be available to assist in implementing this plan.	Chapter 3, Sections 3.2.1.4, 3.2.2.4, 3.2.3.4, 3.2.4.4, 3.2.5.4
e. An information/education component that will be used to enhance public understanding of the project and encourage their early and continued participation in selecting, designing, and implementing the NPS management measures that will be implemented.	Chapter 4
f. A schedule for implementing the NPS management measures identified in this plan that is reasonably expeditious.	Chapter 3, sections 3.2.1.3, 3.2.2.3, 3.2.3.3, 3.2.4.3, 3.2.5.3
g. A description of interim, measurable milestones for determining whether NPS management measures or other control actions are being implemented.	Same as above

Required Watershed Elements	Location
h. A set of criteria that can be used to determine whether loading reductions are being achieved over time and substantial progress is being made towards attaining water quality standards and, if not, the criteria for determining whether this watershed-based plan needs to be revised or, if a NPS TMDL has been established, whether the NPS TMDL needs to be revised.	Chapter 5, Section 5.2, pg 5-2
i. A monitoring component to evaluate the effectiveness of the implementation efforts over time, measured against the criteria established under item (h) immediately above.	Chapter 5, Section 5.1, pg 5-1

RESOURCES

Watershed Description:
MARIS on-line mapping for Mississippi at http://www.maris.state.ms.us/HTM/maps.htm

Wildlife Resources:
Mississippi Natural Heritage Inventory on-line at http://www.mdwfp.com/museum/html/research/general_info.asp, NatureServe Explorer database of species information on-line at http://www.natureserve.org/explorer/

Water Quality Standards:
Through MDEQ Basin Management water quality standards website at http://www.deq.state.ms.us/MDEQ.nsf/page/WMB_Water_Quality_Standards?OpenDocument

Designated Beneficial Uses:
through the MDEQ Basin Management website at http://www.deq.state.ms.us/MDEQ.nsf/page/WMB_Basin_Management_Approach?OpenDocument

MBIS-Q thresholds:
Contact MDEQ. Note that thresholds have not been set for the Delta region.

303(d) List and 305(b) report:
MDEQ on-line at http://www.deq.state.ms.us/MDEQ.nsf/page/TWB_Total_Maximum_Daily_Load_Section?OpenDocument

Approved TMDLS:
MDEQ TMDL website at http://www.deq.state.ms.us/MDEQ.nsf/page/TWB_Total_Maximum_Daily_Load_Section?OpenDocument or through Basin Management website at http://www.deq.state.ms.us/MDEQ.nsf/page/WMB_Basin_Management_Approach?OpenDocument

Potential management actions:
Mississippi NRCS program website at http://www.ms.nrcs.usda.gov/programs/, particularly the EQIP program conservation practice, sign up, and ranking documents

Appendix H

Mississippi's Potential Measures and Indicators of Progress and Success

Mississippi's Potential Measures and Indicators of Progress and Success

	Schedule				
Statewide Milestones for Water Quality Improvement	**2014**	**2015**	**2016**	**2017**	**2018**
1. Water Quality Improvement from Nonpoint Source Controls					
a. **Assess waterbodies for designated use on Mississippi's biennial 305(b) report:** Identify the waters meeting or not meeting the appropriate designated use.	-	**Ongoing**	**305(b)report**	**Ongoing**	**305(b)report**
b. **Waterbodies not meeting designated use placed on Mississippi's 303(d) list of impaired waters.** Identify the waters not meeting one or more designated use and provide appropriate listing	-	**Ongoing**	**303(d)list of impaired waters**	**Ongoing**	**303(d)list of impaired waters**
c. **Report on lifting of fish consumption advisories**	**Data collection at 10% of the sites where consumption advisories exist.**	**-Data collection at 25% of the sites where consumption advisories exist.** **-Data evaluated by Task Force.** **-Advisories lifted based on Task Force recommendations.**	**-Data collection at 25% of the sites where consumption advisories exist.** **-Data evaluated by Task Force.** **-Advisories lifted based on Task Force recommendations**	**-Data collection at 25% of the sites where consumption advisories exist.** **-Data evaluated by Task Force.** **-Advisories lifted based on Task Force recommendations**	**-Data collection at 25% of the sites where consumption advisories exist.** **-Data evaluated by Task Force.** **-Advisories lifted based on Task Force recommendations.**
2. Interim Progress Toward Restored Water Quality and Hydrology					

Statewide Milestones for Water Quality Improvement	Schedule				
	2014	2015	2016	2017	2018
a. **Number of waterbodies identified in Mississippi's 2000 303d/305b list of impaired waters or subsequent years as being primarily NPS impaired that are partially or fully restored (WQ-10):** Identify fully restored water bodies primarily impaired by NPS pollutants; review NPS related activities in watershed where water body was restored; write NPS success story.	**1**	**1**	**1**	**1**	**1**
b. **Number of water bodies where in-stream concentrations of NPS parameters have been reduced (i.e. sediment, fecal coliform, and bacteria) (SP-12):** Annually review water quality data for data trends indicating reductions in sediment, fecal coliform bacteria and nutrients as a result of NPS activities; write NPS success story.	**1**	**1**	**1**	**1**	**1**
c. **Percentage of WBP recommended BMPs Implemented:** Implementing target percentage of recommended BMPs for each grant project implementing specific WBPs that meet EPA's nine elements.	**80%**	**80%**	**80%**	**80%**	**80%**
3. Protection of High Quality Waters					

	Schedule				
Statewide Milestones for Water Quality Improvement	**2014**	**2015**	**2016**	**2017**	**2018**
a. **Develop a plan for protection of high quality waters**	**-**	**Ongoing**	**305(b) report**	**Ongoing**	**305(b) report**
4. Nonpoint Source Pollutant Load Reduction					
a. **Estimated annual reductions in pounds of Nitrogen from NPS in watersheds;** Annually review information from NPS staff and project stakeholders for NPS load reductions of nitrogen; and include information in NPS annual report and GRTS.	**8,000**	**8,000**	**8,000**	**8,000**	**8,000**
b. **Estimated annual reductions in pounds of Phosphorus from NPS in watersheds:** Annually review information from NPS staff and project stakeholders for NPS load reductions of nitrogen; and include information in NPS annual report and GRTS.	**5,000**	**5,000**	**5,000**	**5,000**	**5,000**
c. **Estimated annual reductions in tons of Sediment from NPS in watersheds:** Annually review information from NPS staff and project stakeholders for NPS load reductions of nitrogen; and include information in NPS annual report and GRTS.	**5,000**	**5,000**	**5,000**	**5,000**	**5,000**
5. Implementation of Nonpoint Source Controls					

	Schedule				
Statewide Milestones for Water Quality Improvement	**2014**	**2015**	**2016**	**2017**	**2018**
a. **Develop a plan for Prioritization of TMDL development per the EPA 303(d)/305(b) visioning process:** Plan for prioritizing TMDL or alternative development. This plan will be coordinated with the nonpoint source program's prioritization.	**Plan Development**	**Initial Implementation**	**Ongoing Implementation**	**Ongoing Implementation**	**Ongoing Implementation**
b. **Number of TMDLs or alternative plans developed for impaired watersheds:** Developing TMDLs or alternatives (i.e. 5R or WBP) for impaired waters.	**2**	**2**	**2**	**2**	**2**
c. **Number of Lakes with numeric Nutrient Criteria where none previously existed:** Number of lakes where new standards are developed per Mississippi's Plan for the Adoption of Water Quality Standards for Nutrients.	**-**	**-**	**-**	**4**	**-**
6. Public Education, Awareness, and Action					
a. **Conduct an average of 4 (regional) Envirothon Competitions and 1 state competition per year (to include 300 students per year)**	**4 Regional 1 State**	**4 Regional 1 State**	**4 Regional 1 State**	**4 Regional 1 State**	**4 Regional 1 State**

	Schedule				
Statewide Milestones for Water Quality Improvement	**2014**	**2015**	**2016**	**2017**	**2018**
b. **Conduct a minimum of 4 Adopt-A-Stream workshops and maintain outreach to an average of 10,000 people each year through large venue environmental events**	**4**	**4**	**4**	**4**	**4**
c. **Conduct no less than 10 environmental education teacher workshops, annually, in an average of 5 regions of the state (approximately 200 teachers per year)**	**10**	**10**	**10**	**10**	**10**
d. **Conduct a minimum of 10 PLT workshops per year (approximately 150 teachers)**	**10**	**10**	**10**	**10**	**10**
e. **Provide a minimum of 8 workshops on Urban Forestry and Water Quality**	**8**	**8**	**8**	**8**	**8**
f. **Partner with the Mississippi Pearl River Valley Water Supply District and the Ross Barnett Reservoir foundation to conduct the WaterFest Event, which is enjoyed by more than 5,000 people annually**	**1**	**1**	**1**	**1**	**1**
g. **Support a minimum of 10 performances per year of the Watershed Harmony Musical Puppet Theater, educating an estimated 10,000 students, teachers and others, annually**	**10**	**10**	**10**	**10**	**10**

Statewide Milestones for Water Quality Improvement	Schedule				
	2014	2015	2016	2017	2018
h. **Support an average of 4 sessions of Student Environmental Day Camps, annually, for approximately 100 students per year**	**4**	**4**	**4**	**4**	**4**
i. **Support the annual Make A Splash Event at the MS Natural Science Museum, attended by an average of 1000 students and teachers**	**1**	**1**	**1**	**1**	**1**
j. **Work with the Foundation for Public Broadcasting on Public Service Announcements/Literature Distribution**	**1**	**1**	**1**	**1**	**1**
7. Program Measures of Success					
a. **Number of new nine element watershed based plans developed:**	**4**	**4**	**4**	**4**	**4**
b. **Number of new nine element watershed based plans reviewed and accepted by USEPA:**	**1**	**1**	**1**	**1**	**1**