

# **TAREBREECHES CREEK-TUSCUMBIA RIVER CANAL WATERSHED IMPLEMENTATION PLAN**



# **Tarebreeches Creek-Tuscumbia River Canal Watershed Implementation Plan**

**Prepared for:**

**Tennessee-Tombigbee River/North Independent Streams Basin Team  
Mississippi Department of Environmental Quality**

**Developed by:**

**Tarebreeches Creek-Tuscumbia River Canal Watershed Implementation Team**

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# I. EXECUTIVE SUMMARY

Tarebreeches Creek-Tuscumbia River Canal Watershed has been identified as a priority watershed by the Mississippi Department of Environmental Quality. Tuscumbia River Canal has three TMDLs; one for Nutrients and Organic Enrichment/Low DO for Bridge and Elam Creeks and Tuscumbia River Canal (2004), the second for Biological Impairment Due to Sediment in the Tuscumbia River Canal (2005), and the third for Fecal Coliform For Tuscumbia River Canal (2000). Tarebreeches Creek is on the 2012 Section 303(d) List of Impaired Water Bodies for biological impairment. The Mississippi Soil and Water Conservation Commission, Alcorn County Soil and Water Conservation District and USDA Natural Resources Conservation Service thought a great impact on water quality could be made in this watershed. MSWCC submitted a proposal to apply best management practices to address the nutrient loading and sedimentation issue on agricultural lands. That proposal was selected for funding by MDEQ and a contract was awarded to MSWCC. Under that contract, MSWCC is required to assemble a Watershed Implementation Team to address other issues and concerns within the watershed and write a Watershed Implementation Plan.

The key natural resource problems in this watershed are nutrient loading and sedimentation. The Watershed Implementation Plan has the goals of reducing the nutrients and sediment entering the streams and creeks in the watershed, and helping to implement the above mentioned TMDLs and removing Tarebreeches Creek from the 303(d) List of Impaired Waters. To help solve this problem, one of the management actions is to implement a 319 water quality project on the agricultural lands within the watershed. The targeted area for this project is the cropland and pastureland in Alcorn County that lies within the watershed boundaries. This is a three year project that began in 2011 and will end in September 2014. The groups that will be implementing the management action of reducing the sediment loading are the Alcorn County Soil and Water Conservation District, Natural Resources Conservation Service, and the Mississippi Soil and Water Conservation Commission. The Alcorn County Soil and Water Conservation District and the Natural Resources Conservation Service can be contacted at 662-287-7223 ext. 3 for information and assistance about this management action.

Table 1.1 Tarebreeches Creek-Tuscumbia River Canal Management Action Plan

<b>Goal</b>	<b>Who</b>	<b>What</b>	<b>Where</b>	<b>When</b>	<b>Contacts</b>
Reduce sediment and nutrient loading, achieve narrative standards for sediment loading, and Fish and Wildlife Support designated use	MSWCC, USDA NRCS, Alcorn County Soil and Water Conservation District	Continue existing programs and projects related to farmer education, BMP implementation, and habitat conservation	Entire watershed	2012-2014	Mark Gilbert, MSWCC 601-354-7645 Paul Lowry, NRCS 662-287-7223 ext. 3 Sandy Mitchell, SWCD 662-287-7223 ext. 3
	Local Landowners and operators	Field Borders Grade Stabilization Structures Pasture and Hay Land Planting Water and Sediment Control Basins Heavy Use Area Protection Nutrient Management Stream Crossings Tank/Trough Fencing	Entire Watershed	2012-2014	Local landowners

## **II. VISION STATEMENT**

The vision of the Tarebreeches Creek-Tuscumbia River Canal Watershed Implementation Team is to improve and/or protect the quality of water in streams and creeks.

## **III. MISSION STATEMENT**

The mission of the Tarebreeches Creek-Tuscumbia River Canal Watershed Implementation Team is to educate landowners on new and innovative best management practices, land use planning methods and implement the appropriate Best Management Practices that will result in the enhancement and conservation of all the natural resources in the watershed.



## **IV. WATERSHED IMPLEMENTATION TEAM**

Members of the Watershed Implementation Team for the Tarebreeches Creek-Tuscumbia River Canal Watershed include as follows:

Gladys Scott-Landowner

Steve Wilbanks- Landowner

David Rainey- Landowner/Business Operator

Benjamin Scott- Landowner

Danny Turner- Alcorn County Soil and Water Conservation District Commissioner

Lowell Hinton- Alcorn County Soil and Water Conservation District Deputy Commissioner

Patrick Poindexter- Mississippi State Extension Service

Mark Gilbert- Mississippi Soil & Water Conservation Commission (MSWCC)

Patrick Vowell- Mississippi Soil & Water Conservation Commission (MSWCC)

Gail Spears- Mississippi Soil & Water Conservation Commission (MSWCC)

Andy Whittington- Mississippi Farm Bureau Federation (MFBF)

Daniel Stuart- Mississippi Department of Environmental Quality (MDEQ)

Paul Lowry- Natural Resources Conservation Service (NRCS)

Sandy Mitchell- Alcorn County Soil & Water Conservation District (SWCD)

Shane Stocks- United States Geological Survey (USGS)

Dr. John Ramirez-Avila- Mississippi State University (MSU)

Janet Chapman- Mississippi Department of Environmental Quality (MDEQ)

Justin Presson- Natural Resources Conservation Service(NRCS)

## V. WATERSHED DESCRIPTION

The Tuscumbia River Canal watershed is approximately 204,311 acres. The land uses for the Tuscumbia River Canal Watershed include 33,293 acres of pastureland (16.3%), 72,214 acres of forestlands (35.3%), 31,795 acres of cropland (15.6%), and 67,009 acres of urban and other (all together 32.8%). Figure 5.1 shows the land uses in the Tuscumbia River Canal watershed. The targeted area of this watershed is the Tarebreeches Creek Subwatershed (Figure 5.2).

Tarebreeches Creek-Tuscumbia River Canal is located in the north to northwestern portion of Alcorn County, Mississippi (Figure 5.3). There are 16,721 acres located within the watershed boundaries. This watershed is located in a rural area with a population of about 300 people within its boundaries. The community of Gift is located in this watershed. Economic conditions that influence this watershed include farming which is affected by commodity prices and costs in planting and harvesting. There have been no significant changes in land use in this watershed in the last 20 years.

The soils in the watershed include Arkabutla, Mantachie and Rosebloom series soils. The geology of the watershed is Ripley Formation of the Late Cretaceous Epoch. Tarebreeches Creek-Tuscumbia River Canal watershed is located in the Northern Hilly Gulf Coastal Plain ecoregion. Some of the areas alongside the Tuscumbia River Canal in the watershed are wetlands.

Other named water bodies in the watershed include Little Cane Creek and Hughes Break. The Tuscumbia Wildlife Management Area is located within this watershed.

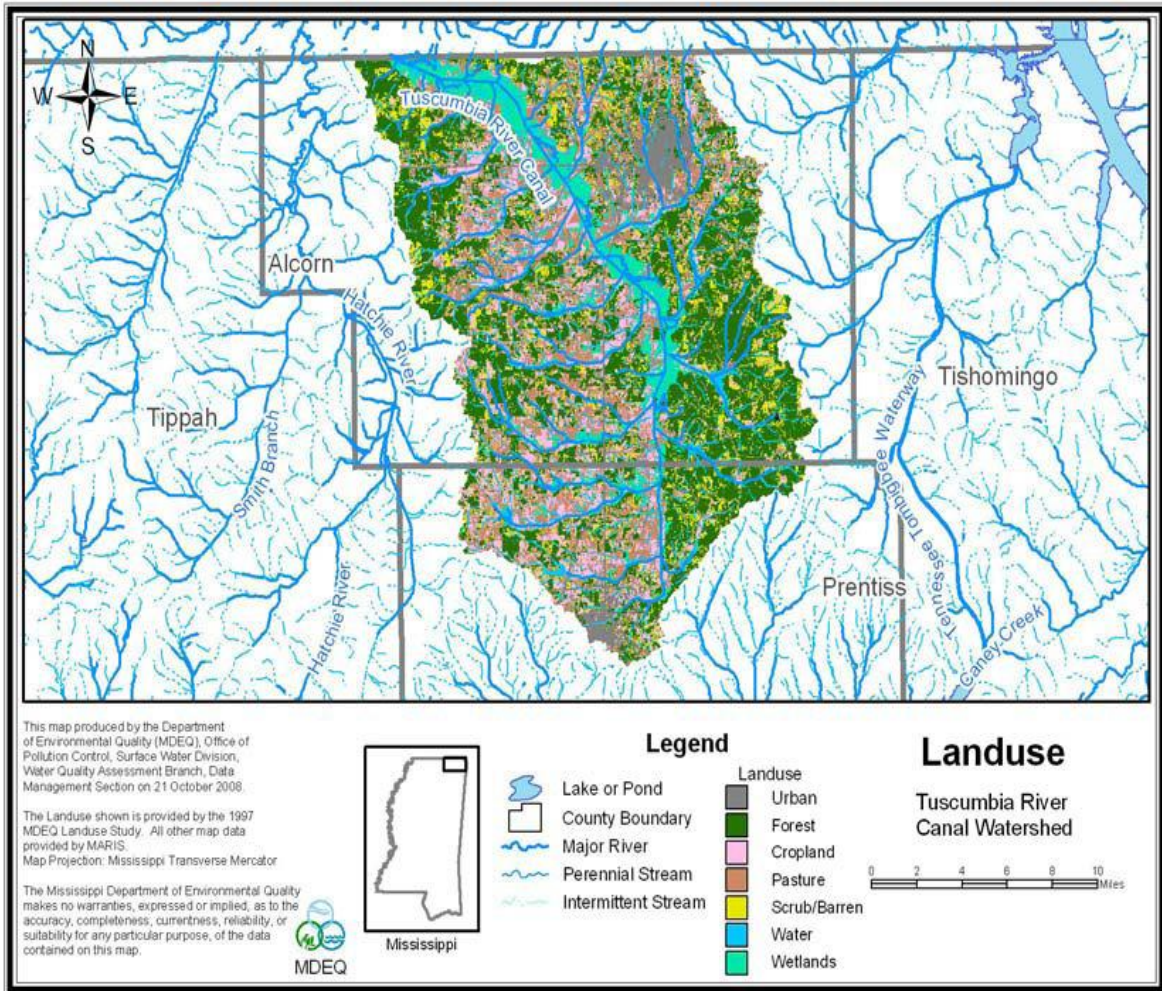


Figure 5.1 Land Use in Tuscumbia River Canal.

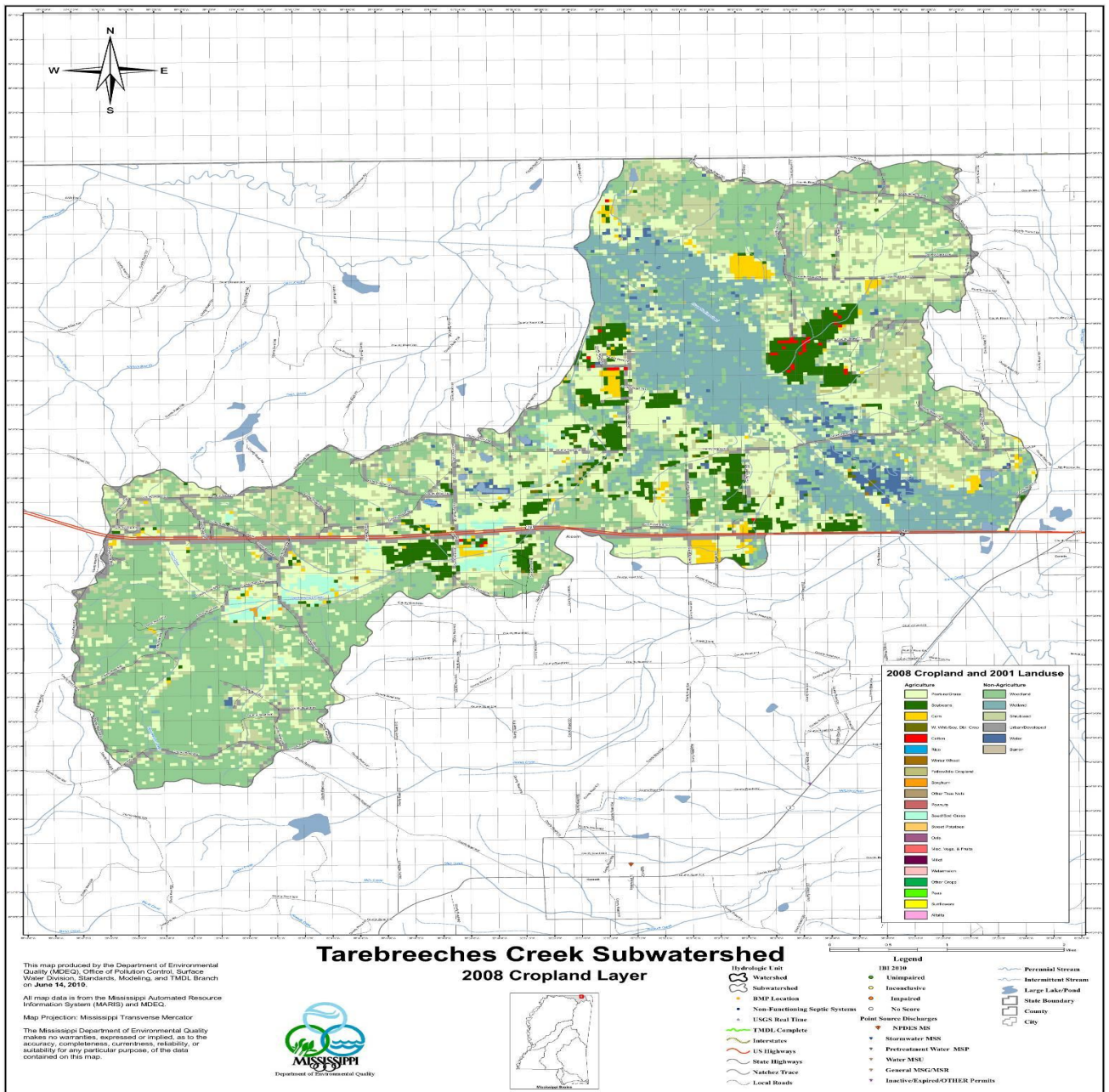


Figure 5.2 Land Use in Tarebreeches Creek-Tuscumbia River Canal.

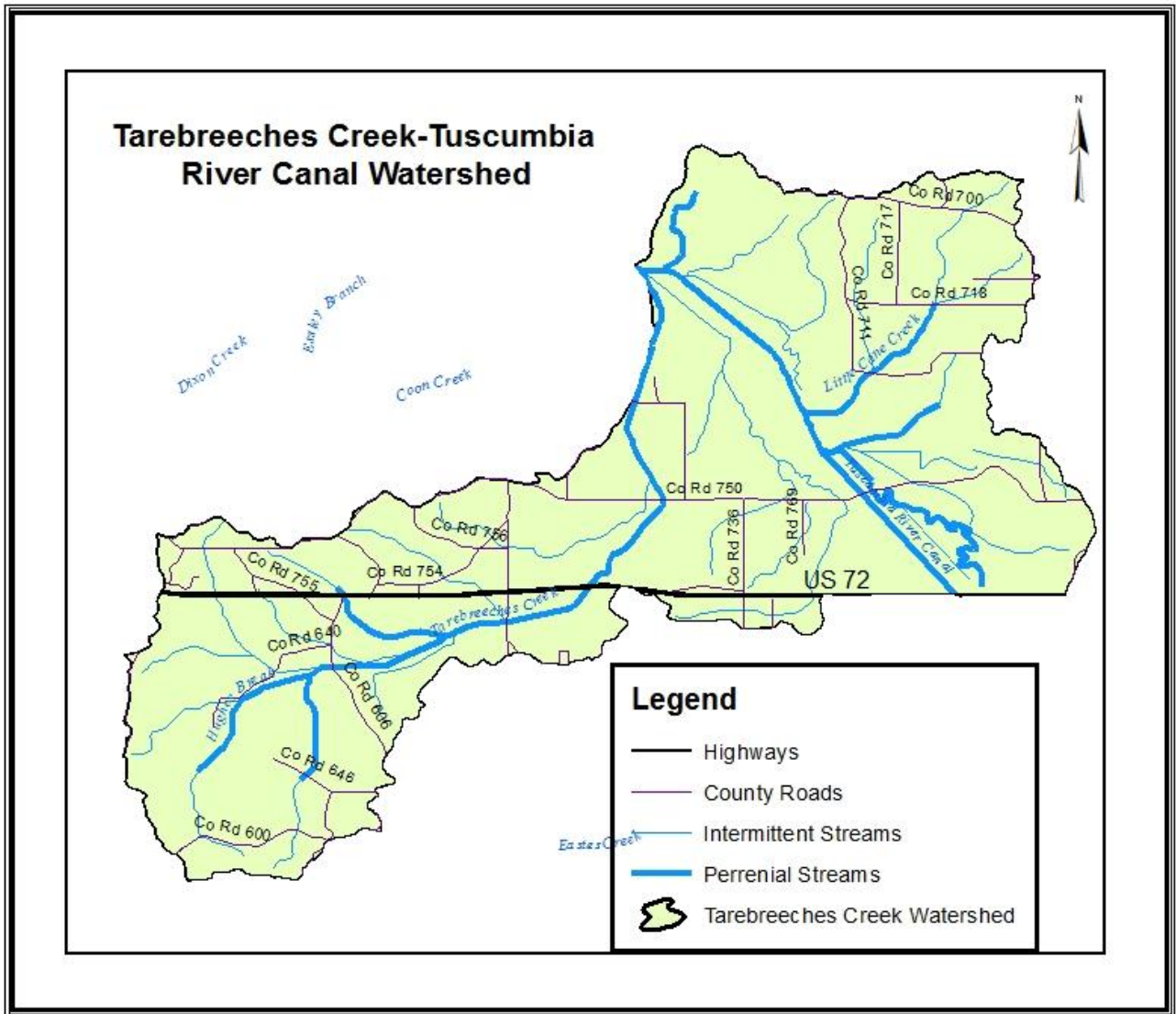


Figure 5.3 Tarebreches Creek-Tuscumbia River Canal Creek Watershed.

## **VI. STAKEHOLDER INTERESTS**

The stakeholders in this watershed want to conserve and preserve the soil, water, and wildlife habitat. Stakeholders in the watershed want to restore the watershed creeks and streams to a state of good water quality. This can be done by reducing runoff (stopping erosion and loss of topsoil) and improving habitat for fish and wildlife. Stakeholders desire to use the natural resources wisely, eliminate snags and debris (through dredging or other alternatives), stop people from littering and provide beaver control. Also, there are issues where people target practice from bridges endangering cattle and other livestock nearby. The stakeholders believe all the interests are tied together. The snags and debris are coming from two different sources. Storm damage to woody areas cause log and brush debris to get into the streams. Also, people toss household trash and old appliances from bridges into the streams and creeks. This debris causes large snags that retard the flow causing flooding. Once the flood waters recede the topsoil is washed away taking nutrients and chemicals with it. This increases the potential of starting head cuts and gullies while leaving debris in pastures and on cropland. Therefore, the stakeholders think stopping the littering would help resolve many of the snag and debris issues in the streams and creeks. This would, in turn, help reduce the sediment and nutrients entering the streams. Landowners are concerned that sediment and other contaminants will affect the water quality in the watershed. Beaver control has always been an issue, but recently the beaver dams have caused flooding of croplands. Due to this flooding, some of the farmers will lose parts of some fields that they farm. Also, wild hogs have become a problem in areas around this watershed and the stakeholders think it is only a matter of time before they are a nuisance here, too. The hogs uproot the fields and forest land and cause devastation to crops.

## **VII. Water Resources**

### **A. History of Activity in the Watershed**

The primary players in restoration and /or conservation efforts in the Tarebreeches Creek-Tuscumbia River Canal Watershed are the Natural Resources Conservation Service, Alcorn County Soil and Water Conservation District and the Mississippi Soil and Water Conservation Commission. Local landowners and operators will play a major role in the restoration and conservation of the natural resources in this watershed by installing best management practices on their land. There have been several programs that have been utilized by landowners in the watershed in past years. These programs include the Environmental Quality Incentive Program (EQIP), Wildlife Habitat Incentives Program (WHIP), Conservation Reserve Program (CRP), Forestry Incentives Program (FIP), Emergency Watershed Program (EWP), Water Quality Incentive Program (WQIP), Hold Our Topsoil (HOT) and the Agricultural Conservation Program (ACP). These programs have helped many landowners apply conservation on the ground while reducing soil loss, enhancing wildlife habitat, enhancing water quality, increasing water quantity, increasing tree production and promoting conservation education.

The Tarebreeches Creek-Tuscumbia River Canal Watershed was selected as a priority watershed by the Mississippi Department of Environmental Quality. As the management agency for Agricultural Nonpoint Source Pollution in Mississippi, the Mississippi Soil and Water Conservation Commission (MSWCC) determined that the Tarebreeches Creek-Tuscumbia River Canal Watershed would be a good candidate for restoration. After meetings with local landowners, Alcorn County Soil and Water Conservation District (SWCD) commissioners and staff and Natural Resources Conservation Service (NRCS) employees that work in this area, MSWCC felt there was enough interest in the watershed that a measurable difference could be shown, and submitted a proposal to the Mississippi Department of Environmental Quality (MDEQ). Through a collaborative effort between Alcorn County SWCD, NRCS, MDEQ and MSWCC, the team members for the Watershed Implementation Team were assembled. At this point in time, there has been no process discussed to modify this team.

## **B. Wildlife and Fisheries**

There are important recreational species located throughout the watershed. These species include deer, turkey, bass, catfish, bream, rabbits, squirrel, and raccoon. The list of plants and animals of special concern are included as Appendix A. There are no animals and plants that are threatened or endangered in this watershed.

## **C. Designated Use Classifications and Water Quality Standards**

The designated beneficial uses for the Tarebreeches Creek and Tuscumbia River Canal and the waterbodies included in the watershed are aquatic life support and secondary contact. The water use classification for the listed segments of Tarebreeches Creek and Tuscumbia River Canal is fish and wildlife support according to the 2002 Water Quality Criteria for Intrastate, Interstate and Coastal Waters. There are no numeric water quality standards for sediment applicable at this time. The acceptable reference yields range for stable streams within HUC 08010207 established by EPA Region IV is .000757 to .00459 tons per acre per day at the effective discharge. It is expected that all values within this range will result in attainment of water quality standards. It is estimated the typical range for unstable streams in HUC 08010207 is .00151 to .0761 tons per acre per day at the effective discharge. This range is representative of the load that would be expected from the Tarebreeches Creek-Tuscumbia River Canal Watershed. The aquatic life use attainment threshold scores associated with the Tarebreeches Creek-Tuscumbia River Canal Watershed is as follows: Tuscumbia River Canal- 63.86. The reference MBISQ score for the Bioregion is 82.27.



Table 7.1 Water Quality Standards.

<b>Parameter</b>	<b>Beneficial Use</b>	<b>Narrative Water Quality Standards</b>
Sediment/ Siltation	Aquatic Life Support	Waters shall be free from materials attributable to municipal, industrial, agricultural, or other dischargers producing color, odor, taste, total suspended solids, or other conditions, in such degree as to create a nuisance, render the waters injurious to public health, recreation, or to aquatic life and wildlife, or adversely affect the palatability of fish, aesthetic quality, or impair the waters for any designated uses.

<b>Parameter</b>	<b>Beneficial Use</b>	<b>Narrative Water Quality Standards</b>
Nutrients	Aquatic Life Support	Waters shall be free from materials attributable to municipal, industrial, agricultural, or other dischargers producing color, odor, taste, total suspended solids, or other conditions, in such degree as to create a nuisance, render the waters injurious to public health, recreation, or to aquatic life and wildlife, or adversely affect the palatability of fish, aesthetic quality, or impair the waters for any designated uses.

<b>Parameter</b>	<b>Beneficial Use</b>	<b>Water Quality Standards</b>
Dissolve Oxygen	Aquatic Life Support	DO concentrations shall be maintained at a daily average of not less than 5.0mg/l with an instantaneous minimum of not less than 4.0mg/l. Natural conditions are defined as background water quality conditions due only to non-anthropogenic sources. The criteria herein apply specifically with regard to substances attributed to sources (discharges, nonpoint sources, or instream activities) as opposed to natural phenomena. Waters may naturally have characteristics outside the limits established by these criteria. Therefore, naturally occurring conditions that fail to meet criteria should not be interpreted as violations of these criteria.

<b>Parameter</b>	<b>Beneficial Use</b>	<b>Water Quality Standards</b>
Fecal Coliform	Secondary Contact	<b>May - October:</b> Fecal coliform colony counts are not to exceed a geometric mean of 200 per 100ml based on a minimum of 5 samples taken over a 30-day period with a minimum of 12 hours between individual samples, nor shall the samples examined during a 30-day period exceed 400 per 100ml more than 10% of the time. <b>November – April:</b> Fecal coliform colony counts shall not exceed a geometric mean of 2000 per 100 ml based on a minimum of 5 samples taken over a 30-day period with no less than 12 hours between individual samples, nor shall the samples examined during a 30-day period exceed 4000 per 100 ml more than 10% of the time.

## **D. Current Status of Water Bodies in the Watershed**

Waterbodies in the Tarebreeches Creek-Tuscumbia River Canal watershed are included on Mississippi's 303(d) list of impaired waters and they are as follows:

Tuscumbia River Canal- listed for Sediment, Low DO/Organic Enrichment, and Nutrients.

## **E. TMDLs**

The Tarebreeches Creek-Tuscumbia River Canal Watershed is located in Alcorn County, Mississippi. The watershed ID number is 0503, and the Hydrologic Unit Code (HUC) code for the watershed is 08010207. This particular watershed is located in the Tuscumbia River Canal Watershed. The streams in Tuscumbia River Canal Watershed are biologically impaired due to sediment/siltation, low dissolved oxygen (DO)/ organic enrichment, and nutrients.

There have been two TMDLs developed for Tuscumbia River Canal. The first TMDL is for biological impairment due to Sediment. The second TMDL is for biological impairment due to Nutrients and Low DO/Organic Enrichment.

The recommended load reduction for sediment is a narrative criteria because at this time Mississippi does not have numeric criteria for sediment. Also, due to sediment data being unavailable and insufficient, the sediment range used for the TMDL were obtained from those values of unstable streams in the level III ecoregion. This range is from .00151 to .0761 tons per acre per day at the effective discharge, therefore, a reduction in the sediment loading is recommended to bring those unstable streams back to yields that are acceptable for stable streams in the ecoregion. The recommended management actions to reduce the loading to the streams are stream bank and riparian buffer zones restoration and any other sediment reduction BMPs, especially for the road crossings, agricultural activities, and construction activities.

The recommended load reduction from the nutrients, low DO and organic enrichment TMDL includes a 77% reduction of phosphorous and an 8.7 % reduction Total Nitrogen (TN) from nonpoint sources. The management actions for this load reduction include riparian buffer zone restoration and other nutrient reduction BMPs. Implementation of these BMP activities should reduce nutrient loading to the streams that will result in attainment of applicable water quality standards.

# **VIII. WATERSHED MANAGEMENT ACTIONS**

## **Agricultural Best Management Practices**

### **A. Sediment and Nutrient BMPs**

#### **1. Stakeholder Interests**

The major interests of the stakeholders are the sediment and nutrient loadings to Tarebreeches Creek and the Tuscumbia River Canal in the watershed. These are the reasons these creeks are impaired and have TMDLs or are listed on Mississippi's 303(d) List of Impaired Waters.

#### **2. Goals/Objectives**

The goal and objective is to reduce the sediment and nutrient loading coming from agricultural lands and bring the creeks back from unstable stream levels to stable stream levels. Doing this will help implement the TMDLs for these creeks and may remove Tarebreeches from the 303 (d) list.

#### **3. Management Actions**

The management action that will be taken to address sediment and nutrient loading is the installation of agricultural BMPs that pertain to sediment and nutrients. These BMPs include but are not limited to:

- Field Borders,
- Grade Stabilization Structures,
- Pasture and Hay Land Planting,
- Nutrient Management,
- Water and Sediment Control Basins,
- Fencing,
- Stream Crossings,
- Heavy Use Area Protection, and
- Tank/Troughs.

These BMPs will be installed by cooperating landowners in the watershed. The program that these BMPs will be installed under is the MSWCC cost-share program. The Natural Resources Conservation Service (NRCS) will provide the technical/planning assistance for this project. Most of the BMPs that will be installed are permanent structures and must be maintained by the landowner for a period of 10 years. NRCS and Alcorn County Soil and Water District employees identified landowners in the watershed that had agricultural land using maps provided by the Mississippi Department of Environmental Quality.

#### **4. Project Tracking/Assessment of Progress**

The Tarebreeches Creek-Tuscumbia River Canal 319 project began in 2011 and is scheduled to end September 2014. The milestones for the Tarebreeches Creek-Tuscumbia River Canal Watershed 319 project are listed below:

1. Assist Natural Resources Conservation Service (NRCS), United States Geological Survey (USGS), and the Alcorn County Soil and Water Conservation District (SWCD), with assistance from Mississippi Department of Environmental Quality (MDEQ), in the development of a Watershed Implementation Team (WIT).
2. Develop a Watershed Implementation Plan (WIP) consistent with MDEQ guidance and assistance from the WIT.
3. Assist in the development and implementation of a watershed monitoring plan for the project.
4. Present a draft WIP to MDEQ and the Tarebreeches Watershed Implementation Team for review and comments.
5. Determine through intensive surveys, priority areas that are contributing significant pollutant loads in the watershed.
6. Inform the public, landowners, and other stakeholders within the project area about the project and secure commitments from priority landowners and others willing to participate in the project.
7. Notify MDEQ project officer, in a timely manner, of all project visits/ inspections/ field days/ and any other public meetings so that the project officer may have an opportunity to attend.
8. Develop plans for Best Management Practices (BMPs) in accordance with approved WIP.

9. Assist landowners and operators in the installation of appropriate BMPs and collect before and after soil loss and GPS coordinates each installed BMP and incorporate into a GIS format.
10. Establish at least two (2) demonstration farms to inform the public about BMPs.
11. Provide a least two (2) informational field days/tours to inform the public about the benefits of the project.
12. Develop and distribute no fewer than 1,000 informational fact sheets highlighting the benefits derived from the project.
13. Publish no fewer than 4 articles about the project in newsletters and local newspapers.
14. Erect no fewer than 20 project roadside signs where water quality practices are installed in the project.
15. Document pre-existing site conditions and improvements by conducting before and after photo documentation.
16. Assist the MDEQ project officer in conducting inspections during construction.
17. Make project presentations as requested by MDEQ.
18. Secure maintenance agreements from cooperators/landowners in accordance with MSWCC state cost-share guidelines.
19. Submit bi-annual reports by every September 25<sup>th</sup> and March 25<sup>th</sup> of each year showing status of tasks and start/completion dates of each task.
20. Submit a final report to MDEQ.

## **5. Desired Results/Benefits**

The desired benefit of this project will be the reduction of sediment and nutrient loading to levels that are considered to be acceptable and remove the impaired segments of Tarebreeches Creek from the 303 (d) list and will help implement the TMDLs for the subwatershed in the Tuscumbia River Canal watershed.

## 6. Roles/Responsibilities

There are several different groups with responsibilities in this watershed. MSWCC has the responsibility and role of administering the 319 project. The Alcorn County Soil and Water Conservation District and the local NRCS staff have the role of technical assistance. The landowners have the responsibility of implementation of BMPs in the project area. The Tarebreeches Creek Watershed Implementation Team has the role of helping gather all the information needed to write the Watershed Implementation Plan. MSWCC also has the responsibility of compiling all the information and writing the initial plan for the watershed. Other programs that are available to landowners in the watershed include EQIP, CRP, and WHIP. Under these three programs, there has been \$194,897 spent over the last three years with another \$190,000 projected to be spent over the next three years.

## 7. Budget

The table below shows a list of potential Best Management Practices to be installed with the 319 grant.

Table 8.1 Funded 319 Project Budget for BMPs.

<b>Practice</b>	<b>Area Affected</b>	<b>BMP Cost</b>	<b>BMP Total</b>
Field Borders	9 acres	\$250/ac	\$2,250
Grade Stabilization Structure	7 structures	\$6,500 ea	\$45,000
Pasture and Hay Land Planting	175 acres	\$200/ac	\$35,000
Water and Sediment Control Basin	4 structures	\$10,000 ea	\$40,000
Nutrient Management	2,000 acres	\$103.8/ac	\$206,167
Tank/Trough	10 each	\$2,500 ea	\$25,000
Stream Crossing	4 each	\$15,000 ea	\$60,000
Heavy Use Area Protection	6,250 sq feet	\$12/sq ft	\$75,000
Fencing	2,500 feet	\$1.30/ft	\$3,250
<b>Total</b>			<b>\$491,667</b>

Table 8.2 Technical Assistance

<b>Item</b>	<b>Cost</b>
Technical Assistance	\$41,667
<b>Total</b>	<b>\$41,667</b>

# IX. EDUCATION/OUTREACH ACTIVITIES

## A. Educational Activities to be Implemented

The overall objective of community education in the Tarebreeches Creek-Tuscumbia River Canal watershed is to develop an atmosphere that promotes sustained, long-term protection and improvement of aquatic resources in the watershed. Specific objectives of education efforts in the watershed include the following:

- Increase public awareness of the value of clean water.
- Increase public awareness of agricultural runoff and encourage behaviors that will reduce levels of sediments and nutrients in the watershed by education, watershed characterization and stewardship opportunities.
- Increase public awareness of how BMPs can be used to reduce negative water quality and habitat effects.
- Increase public awareness of the long term environmental and economic advantages of protecting and improving water quality and habitat in the Tarebreeches Creek-Tuscumbia River Canal watershed.

### 1. Signage

Signs identifying the BMPs that have been installed will be erected throughout the watershed upon permission of landowners.

*Primary partners- Mississippi Soil and Water Conservation Commission, Mississippi Department of Environmental Quality, Alcorn County Soil and Water Conservation District, Natural Resources Conservation Service, and Environmental Protection Agency.*

**a. Indicators**

There will be field days held to show other landowners and the interested public the BMPs installed. Participants will be counted at these field days. Traffic through the watershed cannot be documented, but some areas are along a heavily traveled state highway.

**b. Schedule**

The BMP signs will be erected as practices are completed and/or requested by the landowners throughout the life of the project.

**c. Budget**

Table 9.1 Projected Costs for Signage.

<b>Item</b>	<b>Unit</b>	<b>Cost</b>	<b>Total Cost</b>
Signs	20	\$100.00	\$2,000.00
<b>Total</b>			<b>\$2,000.00</b>

**2. Landowner Meeting and Field Days**

There will be a landowner meeting held to inform landowners in the watershed about the project and what BMPs will be available for implementation on their land. Also, there will be at least two field days held to highlight the BMPs that have been installed during the project period. This will allow other landowners and the interested public to view some of the practices that are being installed to benefit water quality in the watershed.

*Primary partners- Mississippi Soil and Water Conservation Commission, Mississippi Department of Environmental Quality, Alcorn County Soil and Water Conservation District, Natural Resources Conservation Service, and Environmental Protection Agency*

**a. Indicators**

Attendance at the landowner meeting and the field days will be documented and reported to MDEQ. The number of individuals who install BMPs as a result of the field days will also be documented.



## **b. Schedule**

Field days in the watershed will take place in 2012-2014.

## **c. Budget**

Table 9.2 Projected Costs for Landowner Meeting and Field Days.

<b>Item</b>	<b>Units</b>	<b>Cost</b>	<b>Total Cost</b>
Event Flyers	300	.60/each	\$180.00
Mailing/Delivery	300	.45/each	\$135.00
Miscellaneous (Landowner meeting, field days, supplies)	3	\$1,920.67/each	\$5,762.01
<b>Total</b>			<b>\$6,077.01</b>

## **3. Fact Sheets**

A fact sheet will be developed at the end of the project. This fact sheet will contain information about the watershed, the number and type of BMPs that were installed, the number of tons of soil being saved, and the number of acres impacted by the BMPs.

*Primary Partners- Mississippi Soil and Water Conservation Commission, Alcorn County Soil and Water Conservation District, and Natural Resources Conservation Service.*

### **a. Indicators**

1,000 fact sheets will be designed and distributed. These fact sheets will be handed out at the final field day and will also be available in the district offices.

### **b. Schedule**

The fact sheet will be developed once all BMPs are in place to get a total tons of soil saved and the correct number of BMPs installed.

### c. Budget

Table 9.3 Projected Costs for Fact Sheets.

<b>Item</b>	<b>Unit</b>	<b>Cost</b>	<b>Total Cost</b>
Printing	1,000	1.00/each	\$1,000.00
<b>Total</b>			<b>\$1,000.00</b>

## 4. Watershed Harmony Puppet Show

Watershed Harmony is a musical puppet performance aligning with the fourth and fifth grade Mississippi Framework and National Science Standards. Audiences of all ages will delight in environmental stewardship through this toe tapping musical. Performances are not only enjoyed by school groups, but also by adults attending teacher workshops, civic clubs, and conferences. This program serves to inform, excite, and enlist the help of citizens in an ongoing effort to promote water quality in their communities.

*Primary Partners- Mississippi Department of Environmental Quality and Bayou Town Productions.*

### a. Indicators

The number of participants will be documented and submitted to MDEQ.

### b. Schedule

Watershed Harmony will be presented before August 2014.

### c. Budget

Table 9.4 Projected Costs for Watershed Harmony Puppet Show

<b>Item</b>	<b>Unit</b>	<b>Cost</b>	<b>Total Cost</b>
Watershed Harmony Puppet Show	1 show	\$1,000.00	\$1,000.00
<b>Total</b>			<b>\$1,000.00</b>

## 5. Alcorn County Fair

A booth will be set up at the fair with information about the project with pictures of BMPs within the watershed and other educational materials about nonpoint source pollution and the Tarebreeches 319 project. A coloring contest will be held during the fair for 2 age groups, 0-5 years old and 6-8 years old. During the 2 days the booth is set up, there will be awards given every hour to the coloring contest winners. Also, Sam E Soil will be making special appearances throughout the time the booth is set up.

*Primary partners- Mississippi Soil and Water Conservation Commission, Mississippi Department of Environmental Quality, and Alcorn County Soil and Water Conservation District.*

### a. Indicators

The number of brochures that are handed out to adults while the children are participating in the coloring contest will be documented. The number of children who participate in the coloring contest will be documented and the number of coloring books about Sam E Soil given out will be documented.

### b. Schedule

The exhibit will be at the fair for 3 consecutive years.

### c. Budget

Table 9.5 Projected Costs for Fair Exhibit.

<b>Item</b>	<b>Units</b>	<b>Cost</b>	<b>Total Cost</b>
Brochures	3,000	.65/each	\$1,950.00
Coloring Books	6,000	.38/each	\$2,280.00
Litter Bags	2,500	.42/each	\$1,050.00
Gift Cards	48	\$20.00/each	\$960.00
<b>Total</b>			<b>\$6,240.00</b>

## 6. Water Bill Mailers

A flyer will be designed and mailed out to the homes in the Tarebreeches watershed. This flyer will inform them of ways they can help improve water quality in the watershed. This will be mailed out with their monthly water bill.

*Primary partners- Mississippi Soil and Water Conservation Commission, Mississippi Department of Environmental Quality, and Alcorn County Soil and Water Conservation District.*

### a. Indicators

The number of flyers sent out will be documented.

### b. Schedule

This flyers will be mailed before August 2014.

### c. Budget

Table 9.6 Projected Costs for Water Bill Mailers.

<b>Item</b>	<b>Units</b>	<b>Cost</b>	<b>Total Cost</b>
Mailing	500	.44/each	\$225.00
Envelopes	500	.10/each	\$50.00
Flyer	500	.65/each	\$325.00
<b>Total</b>			<b>\$600.00</b>

## 7. Presentations

Presentations relating to water quality will be made to civic organizations. These presentations will inform individuals about how they can improve water quality and reduce nonpoint source pollution.

*Primary partners- Mississippi Soil and Water Conservation Commission, Mississippi Department of Environmental Quality, and Alcorn County Soil and Water Conservation District.*

### a. Indicators

The number of people in attendance will be documented.

### b. Schedule

These presentations will be made before August 2014.

### c. Budget

Table 9.7 Projected Budget for Presentations.

<b>Item</b>	<b>Units</b>	<b>Cost</b>	<b>Total Cost</b>
Miscellaneous	3	\$50.00/each	\$150.00
<b>Total</b>			<b>\$150.00</b>

## 8. Radio Advertisements

Radio advertisements will be run on the local radio station to inform people about water quality and nonpoint source pollution. Each spot will run 5 times a days for 2 weeks.

*Primary partners- Mississippi Soil and Water Conservation Commission, Mississippi Department of Environmental Quality, and Alcorn County Soil and Water Conservation District.*

### a. Indicators

The number of radio ads run and produced will be recorded.

### b. Schedule

The ads will run before August 2014.

### c. Budget

Table 9.8 Projected Costs for Radio Advertisements.

<b>Item</b>	<b>Units</b>	<b>Cost</b>	<b>Total Cost</b>
Ads	3	\$200.00/each	\$600.00
<b>Total</b>			<b>\$600.00</b>

## 9. Adopt-A-Stream

Adopt-A-Stream is a program that promotes environmental stewardship through training workshops, outdoor field activities, and by introducing participants to watershed action projects. One and two-day workshops inform participants about watershed topics such as stream health, stream ecology, aquatic life and water chemistry.

*Primary Partners- Mississippi Department of Environmental Quality and Mississippi Wildlife Federation.*

### a. Indicators

The number of participants and the number of participants that carry on the adoption activities will be documented.

### b. Schedule

At least one event will take place before September 30, 2014.

### c. Budget

Table 9.9 Projected Costs for Adopt-A-Stream Workshop.

<b>Item</b>	<b>Unit</b>	<b>Cost</b>	<b>Total Cost</b>
Adopt A Stream Workshop	1 day workshop	\$1,000.00	\$1,000.00
<b>Total</b>			<b>\$1,000.00</b>

## 10. Total Projected Cost of Education/Outreach Activities

Table 9.10 Total Projected Education Budget

<b>Item</b>	<b>Unit</b>	<b>Cost</b>	<b>Total Cost</b>
Signage	20	\$100.00	\$2,000.00
Landowner Meeting and Field Days	3	\$2,025.67	\$6,077.01
Fact Sheets	1,000	\$1.00	\$1,000.00
Watershed Harmony Puppet Show	1	\$1000.00	\$1,000.00
Alcorn County Fair	3	\$2,080.00	\$6,240.00
Water Bill Mailers	1	\$600.00	\$600.00
Presentations	3	\$50.00	\$150.00
Radio Ads	3	\$200.00	\$600.00
Adopt-A-Stream	1	\$1,000.00	\$1,000.00
<b>Total</b>			<b>\$18,667.01</b>

## 11. Total Budget for Tarebreeches Creek-Tuscumbia River Canal Watershed Implementation Plan

Table 9.11 Tarebreeches Creek-Tuscumbia River Canal Watershed Implementation Plan Total Budget

<b>Item</b>	<b>Cost</b>
BMPs	\$491,667
Technical Assistance	\$41,667
Education/Outreach	\$18,667.01
<b>Total</b>	<b>\$552,001.01</b>

# **X. EVALUATION**

## **A. Plan Evaluation Procedure**

This watershed implementation plan will be evaluated and revised every three to five years or on an as needed basis. The evaluation of this plan will be organized by the Tarebreeches Creek-Tuscumbia River Canal Watershed Implementation Team. At that time, the WIT will develop a detailed schedule for review and revision of this watershed implementation plan. The WIT members will be responsible for notifying their stakeholders of the opportunity to propose changes to the watershed implementation plan. One month will be allowed for notification of stakeholders.

The plan will be evaluated by the team, or their designee, and any interested stakeholders. One month will be allowed for evaluation and submittal of comments. Therefore, comments will be due two months after the evaluation procedure is initiated. The plan will be evaluated in two ways. First, to determine if the plan goals have been achieved, and second, to determine if it reflects the current condition of the watershed, state of science, and issues in the watershed.

## **B. Implementation Evaluation Strategy**

**1.** The following measures and indicators of progress will be utilized to track the success of this plan by MSWCC:

- Before and after photo documentation on a representative sample of the BMPs installed,
- Before and after soil loss collection on each BMP installed, and
- An R5 Load estimation Model Field Data Entry Sheet completed on each BMP installed,
- Establishment of two demonstration farms that will be used to inform the public about best management practice systems, and
- Informational fact sheets will be distributed that highlight the benefits derived through the installation of Best Management Practices.

**2.** MDEQ will be responsible for any monitoring at the conclusion of the project to determine the pollutant reductions achieved by the application of Best Management Practices in the watershed.



# **XI. PLAN REVISION**

## **A. Plan Revision Procedure**

After evaluation, MDEQ will prepare a revised watershed implementation plan incorporating the changes requested by the reviewers. At this point it may be necessary to call a meeting to reconcile any conflicting comments or requests for change.

If the evaluation criteria are all being met in Tarebreeches Creek-Tuscumbia River Canal surface waters, the watershed implementation plan will be revised to address a different restoration issue or issues, or to protect the water quality of the watershed. If the evaluation criteria for the watershed are not being met, the approach for restoring Tarebreeches Creek-Tuscumbia River Canal watershed will be revised based on the knowledge that has been gained since 2011.

The draft watershed implementation plan will be submitted to the Implementation Team, and all others who submitted comments. Within two weeks of receiving the draft watershed implementation plan, the Implementation Team will notify their stakeholders of the availability of the revised watershed implementation plan for stakeholder review. One month will be allowed for review of the draft. Comments will be due at the end of this review period.

Within a month after the comments on the draft watershed implementation plan are received, the DRAFT watershed implementation plan will be submitted to the Implementation Team for review and approval. After the DRAFT watershed implementation plan has been approved, the Implementation Team will notify their stakeholders of the completion and availability of the plan for use as a guide to watershed restoration and protection activities.

## XII. RESOURCES

MDEQ. 2005. Total Maximum Daily Load Tuscumbia River Canal Watershed for Biological Impairment Due to Sediment. Mississippi Department of Environmental Quality. Jackson, Mississippi.

MDEQ 2009. Total Maximum Daily Load Nutrients and Organic Enrichment/Low DO for Bridge and Elam Creek and Tuscumbia river Canal, Mississippi Department of Environmental Quality. Jackson, Mississippi.

MDEQ 2000. Fecal Coliform TMDL For Tuscumbia River Canal North Independent Basin, Alcorn and Prentiss Counties, Mississippi, Mississippi Department of Environmental Quality. Jackson, Mississippi

"Natural Heritage Inventory: Search Animal Database." *Mississippi Museum of Natural Science*. <[http://www.mdwfp.com/museum/html/Research/query\\_animals.asp](http://www.mdwfp.com/museum/html/Research/query_animals.asp)>

"Natural Heritage Inventory: Search Plant Database." *Mississippi Museum of Natural Science*. <[http://www.mdwfp.com/museum/html/Research/query\\_plants.asp](http://www.mdwfp.com/museum/html/Research/query_plants.asp)>

USDA. SCS. 1971. Soil Survey of Alcorn County, Mississippi.

# **Appendix A**

## **Plant and Animal Species of Special Concern**

## Animals of Special Concern in Alcorn County

Scientific Name	Common Name
AINOPHILA AESTIVALIS	BACHMAN'S SPARROW
CYPRINELLA WHIPPLEI	STEELCOLOR SHINER
ETHEOSTOMA ZONISTIUM	BANDFIN DARTER
PLEUROBEMA BEADLEIANUM	MISSISSIPPI PIGTOE
PROCAMBARUS ABLUSUS	A CRAYFISH
PSEUDOTRITON RUBER	RED SALAMANDER
ZAPUS HUDSONIUS	MEADOW JUMPING MOUSE

## Plant Species of Special Concern in Alcorn County

Scientific Name	Common Name
CHELONE GLABRA	WHITE TURTLEHEAD
PLATANThERA INTEGRILABIA	WHITE FRINGELESS ORCHID
PLATANThERA PERAMOENA	PURPLE FRINGELESS ORCHID
SALVIA URTICIFOLIA	NETTLE-LEAF SAGE
SILENE OVATA	OVATE CATCHFLY

# **Appendix B**

## **Funded 319 Project Proposal**

**PROJECT TITLE:**

Tarebreeches Creek-Tuscumbia River Canal Watershed Nonpoint Source Pollution Project

**PROJECT ABSTRACT:**

This project will be located in the north central portion of Alcorn County in Mississippi.

The objectives of this project will be:

To improve water quality and protect high quality waters through the implementation of selected BMPs in targeted areas.

To apply Best Management Practices (BMPs) to agricultural lands in the project area so as to reach the desired outcome of reduced nutrient loads entering streams in the watershed.

To inform and educate the public about Best Management Practices that benefit water quality.

The project cost is \$550,001. Of this amount, \$330,000 in 319 funds are requested with the balance of \$220,001 to be supplied as match.

**LEAD ORGANIZATION:**

Mississippi Soil and Water Conservation Commission  
Mark Gilbert, Project Manager  
P.O. Box 23005  
Jackson, MS 39225-3005

Phone: (601) 354-7645  
Fax: (601) 354-6628  
e-mail: mgilbert@mswcc.state.ms.us

**COOPERATING AGENCIES AND ORGANIZATIONS:**

Alcorn County Soil and Water Conservation District; USDA Natural Resources Conservation Service; Mississippi Department of Environmental Quality

**GRANT ADMINISTRATOR:**

Mark E. Gilbert, Environmental Administrator  
MS Soil & Water Conservation Commission  
P.O. Box 23005  
Jackson, MS 39225-3005

Phone: (601) 354-7645  
(601) 540-4210 (cell)  
Fax: (601) 354-6628  
e-mail: mgilbert@mswcc.state.ms.us

**PROJECT LOCATION:**

Tarebreeches Creek-Tuscumbia River Canal Watershed (08010207-0503)  
(see attachment 1 for maps depicting the location and land use for the watershed)

**PROJECT OBJECTIVE:**

The water quality impairment to be addressed by this project is nutrient loading. Subsequent biological monitoring has concluded the streams are impaired due to biological impairment. The stressor identification process pointed to organic enrichment and nutrient enrichment as probable primary stressors. The Mississippi Department of Environmental Quality (MDEQ) has placed segment MS203TE, MS203BE, and MS204E of Tuscumbia River Canal, Bridge Creek, and Elam Creek, respectively, on the 2008 Section 303(d) List of Waterbodies as monitored water body segments, due to nutrients and organic enrichment/low DO. The State's 2008 303(d) list of monitored water bodies lists the designated use of Tuscumbia River Canal as fish and wildlife support. MDEQ has developed a TMDL for the listed segment of Tuscumbia River Canal. The TMDL model indicates violation of the preliminary target numbers allowable to meet standards for its designated use. The existing condition load was based on a special study conducted in 2006 in and around Corinth and resulted in findings of an overall 77% reduction in nonpoint phosphorous loads and an 8.7% reduction in TN from nonpoint sources. (a copy of the TMDL is attached)

Another objective of this project will be to reduce soil loss on pasture land in the watershed. BMPs listed on the following page will not only reduce nutrients and pathogens but will also reduce the amount of sediment entering Tuscumbia River Canal from pasture land in the watershed.

**PROJECT DESCRIPTION:**

This project will implement selected Best Management Practices (BMPs) on targeted areas in the Tuscumbia River Canal Watershed that will result in reduced pollutant loadings from agricultural nonpoint sources. The targeted area within this watershed will be the Tarebreeches Creek Watershed. The main water quality problem to be addressed by this project is nutrients from agricultural nonpoint sources. Of primary concern are animal waste runoff and the animal access to streams from cattle operations in the watershed. Also, soils in the watershed are very erosive, with sheet and gully erosion occurring on sloping hay land and pastureland. Erosion is occurring from pasture and hay land in the project area at the rate of 8-10 tons per acre per year. Nutrients and pathogens from animal waste as

well as sediment contained in runoff are entering the Tuscumbia River Canal and its tributaries causing degradation of the resource base.

The erosion of the soil resource base removes nutrients, reduces water holding capacity, undermines plant rooting systems, reduces the soil's organic matter content, reduces soil tilth and degrades water quality within the project area.

The Tuscumbia River Canal Watershed is approximately 204,311 acres. The watershed is predominately rural. The current land uses in the Tuscumbia River Canal Watershed include 31,795 acres of cropland, 33,293 acres of pasture land, 72,214 acres of timber land, 18,380 acres of urban land, 22,143 acres of barren land, 23,156 acres of wetlands and 3,330 acres of water. This project will target the Tarebreeches Creek-Tuscumbia River Canal Watershed which is approximately 16,721 acres. Within this watershed, the project will be implemented on an area of about 9,240 acres that contains about 2,000 acres of pasture land.

**This project will be implemented in three phases.** Phase 1 will consist of analyzing existing assessment data, determining target areas within the watershed where the stressors are causing the greatest damage and if the application of needed Best Management Practices will yield a beneficial reduction in pollutant loadings. Education and outreach activities will also be conducted during this phase to inform landowners in the watershed about the objectives of the project. The Mississippi Soil and Water Conservation Commission (MSWCC) will cooperate with the Alcorn County Soil and Water Conservation Districts in identifying the appropriate Best Management Practices for targeted areas in the watershed and educating landowners as to the need for their participation.

Phase 2 will consist of (based upon the finding of phase 1) the application of best management practices on targeted areas in the watershed that will result in desired pollutant load reductions. The Mississippi Soil and Water Conservation Commission will accomplish this through its water quality cost share program. In this project, records will be kept at both the state level and local level so as to determine the progress being made in carrying the project out and the benefits that are being received as related to the improvement of water quality within the project. During the planning process with participants, the amount of soil loss from the area to be treated with a particular BMP will be determined and recorded. The amount of soil saved as a result of applying the BMP will also be determined and recorded. Additional information will be collected on each BMP installed in the project that will be provided to MDEQ and used to calculate the pollutant load reduction for each BMP installed. This information will indicate the project effectiveness in reducing pollutant loadings. Participants in the project will be required to maintain BMPs for a period of up to ten years after installation.

Additional education and outreach efforts will be conducting during this phase to inform and educate the public about Best Management Practices that benefit water quality. This will be accomplished by the following:

Establish at least 2 demonstration farms to inform the public about best management systems.

Conduct at least 2 field day/tours during the life of the project.

Prepare and distribute at least 1,000 fact sheets highlighting the benefits derived from the project.

Publish at least 4 articles about the project in newsletters and local newspapers.

Erect at least 20 project roadside signs that designate where water quality practices are in progress or have been completed.



To address the above stated water quality problems, Best Management Practices (BMPs) will be installed on agricultural lands in the project area. Potential BMPs to be installed include but are not limited to:

- 9 acres of field borders
- 7 grade stabilization structures
- 175 acres of pasture & hay land planting
- 4 water and sediment control basins
- 2,000 acres of nutrient management
- 10 watering troughs or tanks
- 4 stream crossings
- 6,250 square feet of heavy use area protection
- 2,500 feet of fencing

Phase 3 will consist of post BMP monitoring to determine the pollutant load reductions achieved by the application of Best Management Practices. The MSWCC will coordinate with the MDEQ in conducting these activities.

## **MILESTONES:**

1. Sign grant contract with MS Department of Environmental Quality. (Month 0)
2. Determine priority areas that are contributing significant loads in the watershed. (Month 1)
3. Issue policies and procedures for implementing the project to the SWCD office. (Month 1)
4. Meet with the board of SWCD commissioners to get their understanding of their responsibilities and participation. (Month 2)
5. Provide training to district staff. (Month 2-3)
6. Assist in establishing an evaluation system in conjunction with the MS Department of Environmental Quality to indicate the benefits of the project. (Month 2-3)
7. Conduct a landowner meeting to inform potential participants about the project. (Month 3)
8. Secure commitments from several landowners and operators who are willing to participate in the project. (Month 3-4)
9. Assist participants in developing a conservation plan and applying best management practices (Month 4-12)
10. Establish at least demonstration farm (Month 4-12)
11. Document pre-existing site conditions. (Month 2-12) (Before and after photo documentation will be conducted).
12. Accelerate conservation planning and application assistance. Special effort will be made to complete conservation plans during this time frame. (Month 13-24)
13. Conduct at least 1 informational field day/tour to inform the public about the project . (Month 13-24)
14. Establish at least 1 demonstration farm. (Month 13-24)
15. As requested, assist DEQ with evaluations. (Month 0-36)
16. Collect GPS coordinates and other data required by MDEQ on all BMPs installed in the project. (Month 0-36)
17. Assemble data on the amount of soil saved. (Month 0-36)
18. Erect project roadside signs which designate where water quality practices are in progress or have been completed. (Month 4-36)
19. Provide continued conservation planning and application assistance to participants. (Month 25-36)
20. Review the status of applying best management practices to reach the objectives of the project. (Month 25)
21. Based upon the needs and finding of milestone 18, assistance in planning and/or application will be redirected and/or accelerated. (Month 25-36)
22. Publish at least 4 articles about the project. (Month 0-36)
23. Publicity of the project will be increased; at least 1 field day/tour will be conducted and at least 1,000 fact sheets will be developed and distributed. (Month 25-36)
24. Bi-annual reports will be made to MSDEQ. (Month 0-36)
25. Make Final report to MSDEQ. (Month 36)

## **CRITERIA FOR EVALUATION**

**(also see Phase 1 and 3 information under Project Description)**

The following measures and indicators of progress will be utilized to track the success of this project:

NPS Pollutant Load Reduction – the amount of soil saved as a result of the installation of best management practices (BMPs) in this project will be a direct indicator of sediment load reduction to Tuscumbia River Canal along with its tributaries. Since nutrients and animal waste are transported to the waters by over land flow along with sediment, any reduction in sediment loadings will result in a reduction of nutrient loadings thereby enhancing the effectiveness and success of the project. Other data collected for MDEQ will be used to calculate pollutant load reductions for each BMP installed in the project.

Implementation of NPS Controls – this project will involve the installation of Best Management Systems. Best Management Systems are defined as a combination of BMPs, both structural and vegetative, which are the most practical, effective and economical means of preventing or reducing pollution from nonpoint sources to a level compatible with water quality goals. **The estimated types and numbers of BMPs to be installed as part of Best Management Systems are listed in the project description of this proposal.** The application of best management systems in the project will be the responsibility of the landowners and operators participating in the project as cooperators of the local soil and water conservation district.

Public Education, Awareness, and Action - this project will include the establishment of at least 2 demonstration farms that will be used to inform the public about best management systems. These will be utilized during the 2 field day/tours that will be conducted in the project. Also, at least 1,000 informational fact sheets highlighting the benefits derived from the project will be developed and distributed as well as the publishing of at least 4 articles about the project in newsletters and local newspapers. At least 20 project roadside sign will be erected where water quality practices are installed in the project. Other educational actions will be conducted to measure the success of the project. These include such things as increased public awareness; before and after photo documentation; increased cooperation among agencies, associations, public bodies and educational institutions; and the economic benefits of applying best management practices. The Mississippi Soil and Water Conservation Commission will request information through the local soil and water conservation district that will assist in measuring the success of the project in the demonstration area.

## **MONITORING**

At a selected site or sites on the main tributaries of the watershed, water samples will be taken and analyzed for organic enrichment/low dissolved oxygen and nutrient content. After BMPs are installed at the site or sites, additional samples will be taken and analyzed to determine the actual load reduction resulting from the implementation of the BMPs. A plan for the monitoring will be developed by the USGS to determine the exact procedures and details of the monitoring regime. Funding for this portion of the project is included in the project budget.

## **PROJECT PERIOD**

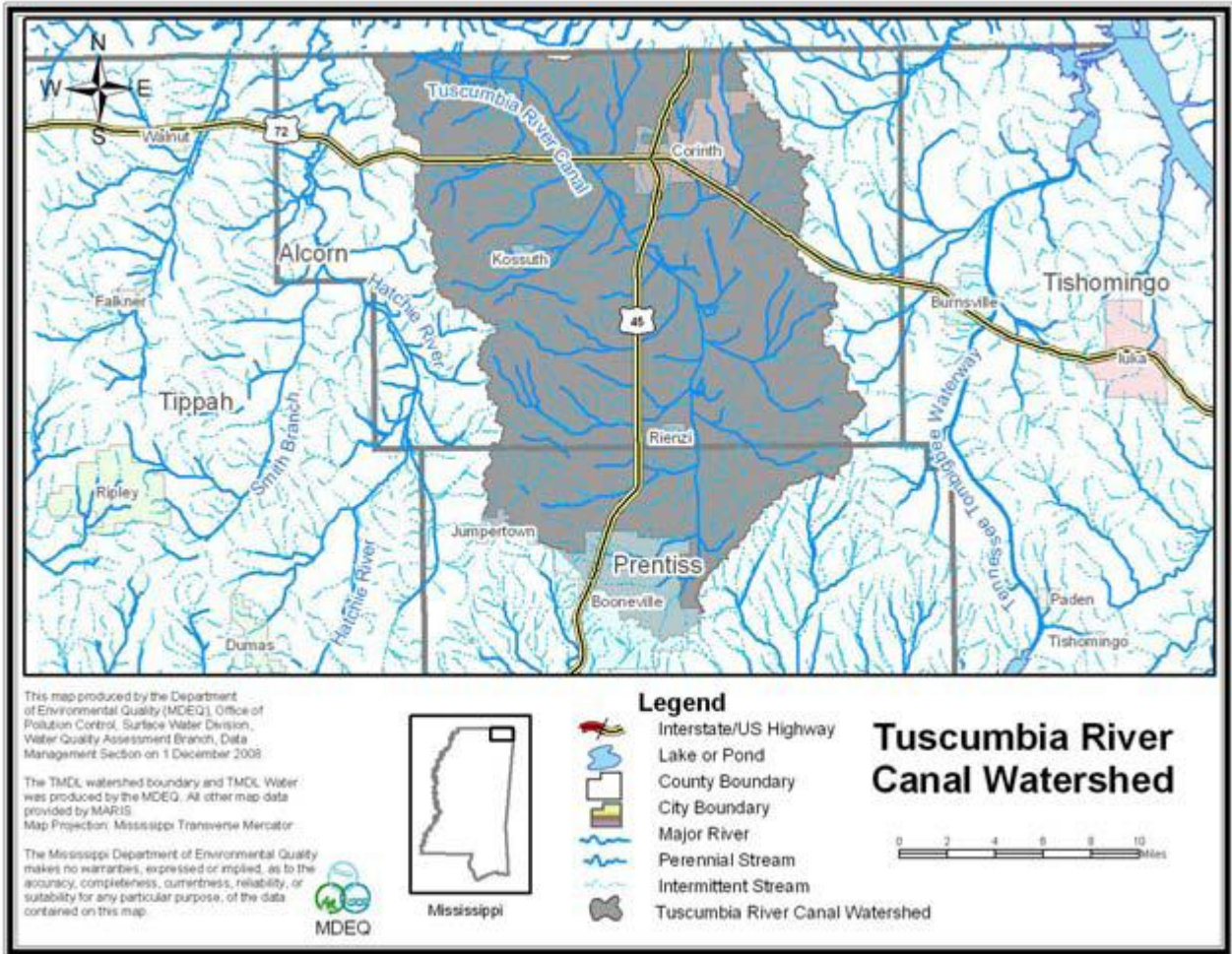
The length of this project will be 3 years.

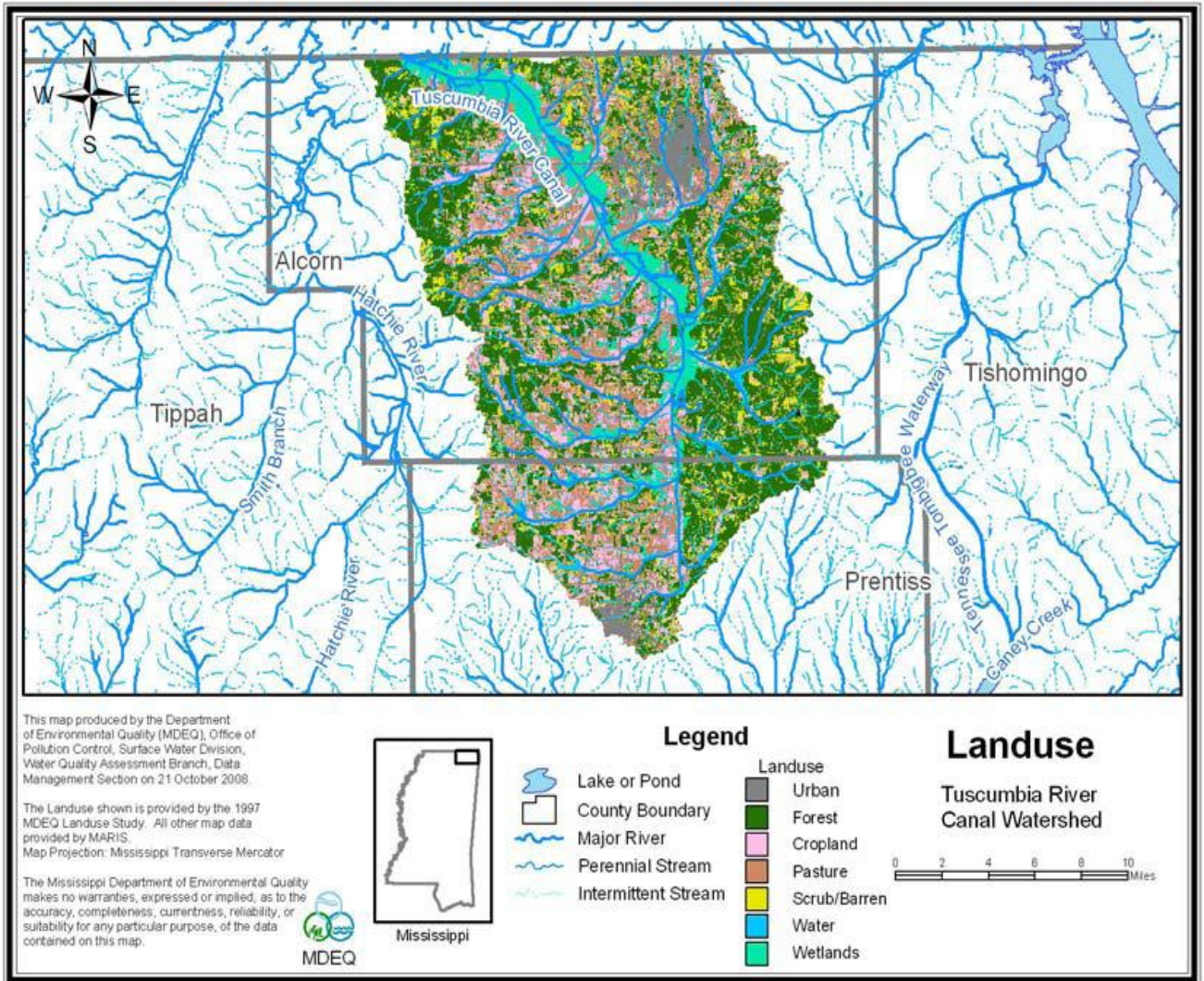
## PROJECT BUDGET

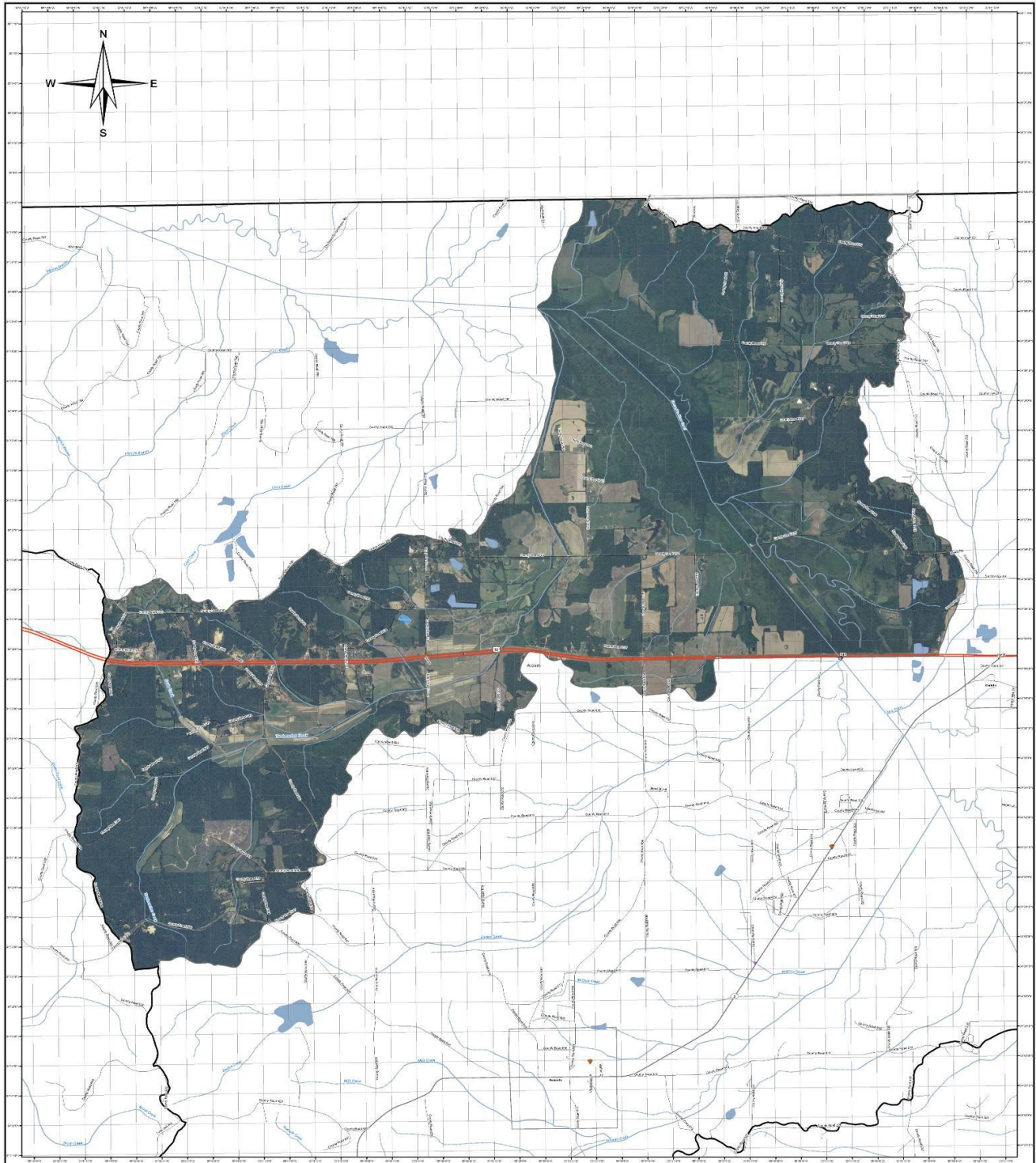
BUDGET CATEGORY	FEDERAL FUNDS	NON-FEDERAL FUNDS	TOTAL
Technical Assistance/ Travel	\$ 25,000	\$ 16,667 *	\$ 41,667
Installation of BMPs	\$ 195,000	\$ 130,000 **	\$ 325,000
Contractual	\$100,000	\$ 66,667 **	\$ 166,667
Information/Education	\$ 10,000	\$ 6,667 *	\$ 16,667
TOTAL	\$ 330,000	\$ 220,001	\$ 550,001

\* Non-federal match for technical assistance/travel and information/education will be provided the local soil and water conservation district commissioners, soil and water conservation district staff and Mississippi Soil and Water Conservation Commission staff time spent on the project.

\*\* Non-federal match for installation of BMPs and contractual will be provided by out of pocket expenses of the landowners and operators participating in the project.







## Tarebreeches Creek Subwatershed

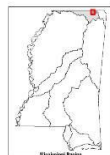
### 2009 NAIP Aerial Photography

This map produced by the Department of Environmental Quality (MDEQ), Office of Pollution Control, Surface Water Division, Standards, Modeling, and TMDL Branch on June 14, 2010.

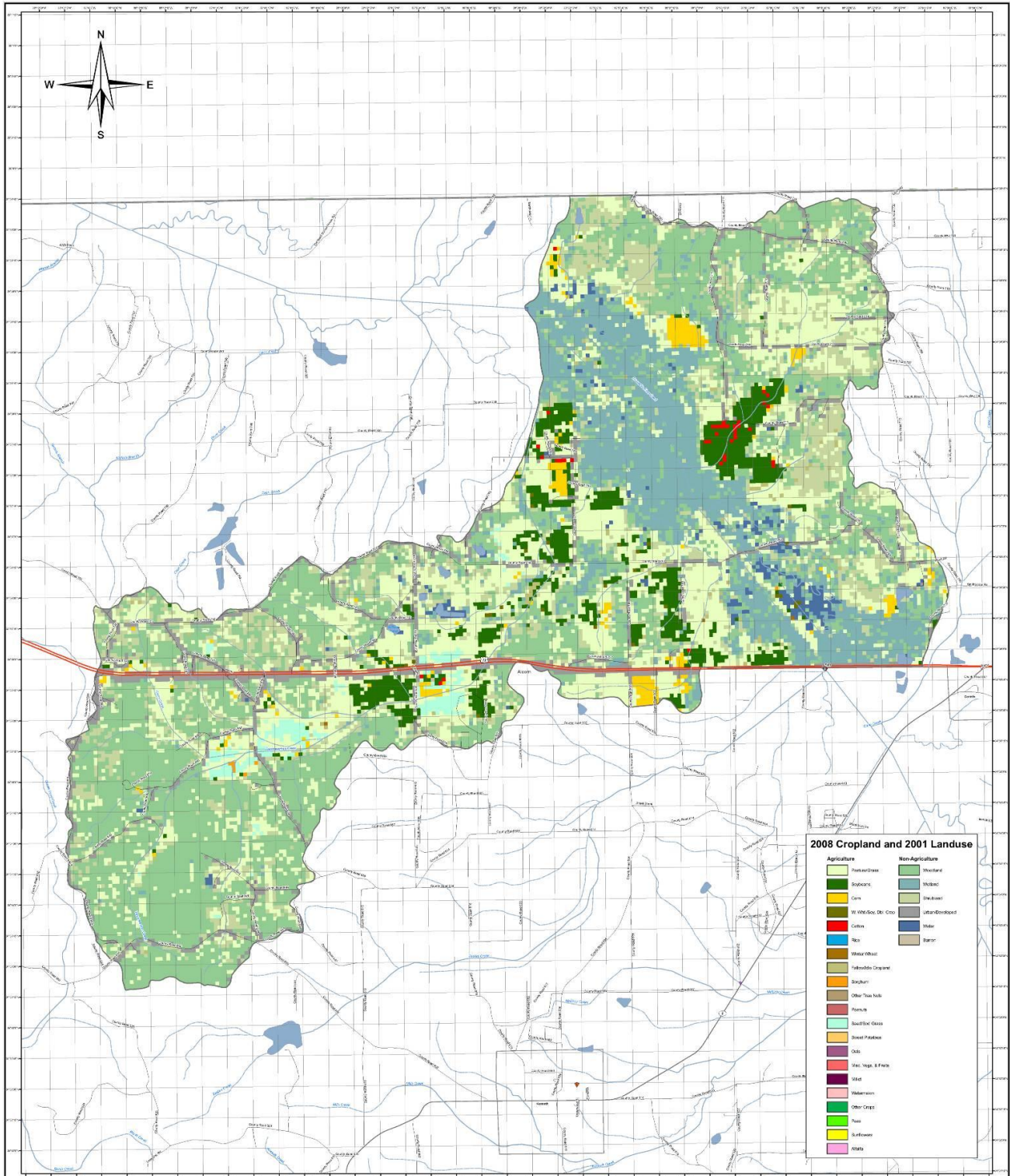
All map data is from the Mississippi Automated Resource Information System (MARIS) and MDEQ.

Map Projection: Mississippi Transverse Mercator

The Mississippi Department of Environmental Quality makes no warranties, expressed or implied, as to the accuracy, completeness, currency, reliability, or suitability for any particular purpose, of the data contained on this map.



- |   |  |  |
|---|--|--|
| <ul style="list-style-type: none"> <li> Hydrologic Unit</li> <li> Watershed</li> <li> Subwatershed</li> <li> BMP Location</li> <li> Non-Functioning Septic Systems</li> <li> USGS Real Time</li> <li> TMDL Complete</li> <li> Interstates</li> <li> US Highways</li> <li> State Highways</li> <li> Natchez Trace</li> <li> Local Roads</li> </ul> | <ul style="list-style-type: none"> <li> IBI 2010</li> <li> Unimpaired</li> <li> Inconclusive</li> <li> Impaired</li> <li> No Score</li> </ul> <p><b>Point Source Discharges</b></p> <ul style="list-style-type: none"> <li> NPDES MS</li> <li> Stormwater MSS</li> <li> Pretreatment Water MSP</li> <li> Water MSU</li> <li> General MSG/MSR</li> <li> Inactive/Expired/OTHER Permits</li> </ul> | <ul style="list-style-type: none"> <li> Perennial Stream</li> <li> Intermittent Stream</li> <li> Large Lake/Pond</li> <li> State Boundary</li> <li> County</li> <li> City</li> </ul> |
|---|--|--|



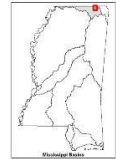
### Tarebreches Creek Subwatershed 2008 Cropland Layer

This map produced by the Department of Environmental Quality (MDEQ), Office of Pollution Control, Surface Water Division, Standards, Modeling, and TMDL Branch on June 14, 2010.

All map data is from the Mississippi Automated Resource Information System (MARIS) and MDEQ.

Map Projector: Mississippi Transverse Mercator

The Mississippi Department of Environmental Quality makes no warranties, expressed or implied, as to the accuracy, completeness, currentness, reliability, or suitability for any particular purpose, of the data contained on this map.





# **Appendix C**

## **Stressors**

**Table 2**  
**Stressor Summary Table**

<b>Concern</b>	<b>Link/Immediate Cause</b>	<b>Stressor</b>	<b>Description of Stressor</b>	<b>Location/Extent</b>
Sediment Loading From Agricultural Lands	Landuse runoff and in-channel sediment processes	Sediment	A TMDL was completed for Tuscumbia River Canal Watershed. This analysis identified sediment as one of the probable stressor of the waterbody. Certain contaminants may be associated with sediment such as pesticides and nutrients. However, these contaminants would also be controlled using the same best management practices (BMPs) that control sediment coming from fields. Tarebreeches Creek subwatershed is located in the Tuscumbia River Canal Watershed.	See figure 5.2 for the locations of agricultural lands along streams. There are approximately 16,271 acres in the watershed. There is 2,000 acres of pastureland located within. All the lands referred to above are in HUC 08010207-0503.

<b>Concern</b>	<b>Link/Immediate Cause</b>	<b>Stressor</b>	<b>Description of Stressor</b>	<b>Location/Extent</b>
Nutrient Loading From Agricultural Lands	Degradation of in-stream biological conditions	Nutrients	A TMDL was completed for Tuscumbia River Canal Watershed. This analysis identified nutrients and organic enrichment as a probable stressor of the waterbody. Certain contaminants may be associated with nutrients such as pesticides and sediment. However, these contaminants would also be controlled by some of the same best management practices (BMPs) that control nutrients coming from fields.	See figure 5.2 for the locations of agricultural lands along streams. There are approximately 16,271 acres in the watershed. There is 2,000 acres of pastureland located within. All the lands referred to above are in HUC 08010207-0503.

<b>Concern</b>	<b>Link/Immediate Cause</b>	<b>Stressor</b>	<b>Description of Stressor</b>	<b>Location/Extent</b>
Littering	Increasing the number of snags and the amount of debris in the creeks and streams	Litter	People dumping old appliances, household trash, old mattresses and other garbage into the creeks and streams from bridges and letting it wash down the creeks and streams when the flow is increased.	This occurs throughout the watershed at most bridge sites in rural areas.

# **Appendix D**

## **Checklist of Watershed Implementation Elements**

**Table D. 9 Key Elements of a Watershed Plan for 319 Grant**

<b>Required WIP Elements for 319 Grant</b>	<b>Location in Watershed Implementation Plan</b>
1. Watershed Description and Background	Chapter V, Chapter VII Section A
2. Implementation	Chapter VIII Section A Subsection 3
3. Project Goals	Chapter VIII Section A Subsections 2 and 5
4. Project Costs	Chapter VIII Section A Subsection 7 Chapter IX Section A Subsection 7, 8
5. Education and Outreach	Chapter IX
6. Implementation Schedule	Chapter VIII Section A Subsection 4
7. Milestones	Chapter VIII Section A Subsection 4
8. Adaptations and Revisions	Chapter X Section A, Chapter XI Section A
9. Monitoring	Chapter X Section B Subsections 1 and 2