Fannegusha Creek Watershed Implementation Plan

Final Draft

Fannegusha Creek Watershed Implementation Plan

Prepared for:

Pearl River/South Independent Streams Basin Team
Mississippi Department of Environmental Quality

Developed by:

Fannegusha Creek Watershed Implementation Team

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I. EXECUTIVE SUMMARY

Fannegusha Creek Watershed was identified as a priority watershed by the Pearl River- South Independent Streams Basin Team. Fannegusha Creek is listed on Mississippi's 303(d) list of impaired waters for biological impairment due to sediment. The Mississippi Soil and Water Conservation Commission and USDA Natural Resources Conservation Service felt a great improvement in water quality could be made in this watershed. MSWCC submitted a proposal to apply best management practices to address the 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 problem in this watershed is sedimentation. The Watershed Implementation Plan has the goals of reducing the sediment entering the streams and creeks in the watershed, and removing the impaired segments of streams and creeks in the Fannegusha Creek watershed from the state's 303(d) list of impaired waterbodies. 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 Rankin County that lie within the watershed boundaries. This project is a three year project that began in 2005 and will end in August 2008. The groups that will be implementing the management action of reducing the sediment loading will be the Rankin County Soil and Water Conservation District, the Natural Resources Conservation Service, and the Mississippi Soil and Water Conservation Commission. The Rankin County Soil and Water Conservation District and the Natural Resources Conservation Service can be contacted at 601-824-4601 ext. 3 for information and assistance about this management action.

Table 1.1 Fannegusha Creek Management Action Plan

Goal	Who	What	Where	When	Contacts
Reduce sediment loading, achieve narrative standards for sediment loading, and Fish and Wildlife Support designated use	MSWCC, USDA NRCS, MSU Extension Service, Mississippi Farm Bureau	Continue existing programs and projects related to farmer education, BMP implementation, and habitat conservation	Entire watershed	2005-2008	Mark Gilbert, MSWCC 601-354-7645 Murray Fulton, NRCS 601-824-4601 Brook Stuart, Mississippi Farm Bureau 601-977-4243
	Local Landowners and operators	- Critical area planting - Grade Stabilization Structures - Pasture and Hayland Planting - Nutrient Management - Fencing - Stream Crossings - Diversions - Terraces - Grassed Waterways	Entire Watershed	2005-2008	Local landowners

II. VISION STATEMENT

The vision of the Fannegusha Creek Watershed Implementation Team is to improve and/or protect the quality of water in streams and creeks by reducing sediment transport over the land and improving drainage on lands in the watershed.

III. MISSION STATEMENT

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

IV. WATERSHED IMPLEMENTATION TEAM

Members of the Watershed Implementation Team for the Fannegusha Creek Watershed include as follows:

Ty Irby- Landowner

David Boyd- Landowner

Bernard King- Landowner

Gary Thrash- Landowner

Murray Fulton- Natural Resources Conservation Service (NRCS)

Mark Scott- Natural Resources Conservation Service (NRCS)

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

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

Jeff Wilson- Mississippi Soil and Water Conservation Commission (MSWCC)

Brook Stuart- Mississippi Farm Bureau Federation (MFBF)

Kenneth LaFleur- Mississippi Department of Environmental Quality (MDEQ)

Zoffee Dahmash- Mississippi Department of Environmental Quality (MDEQ)

Ann Porter- Mississippi Department of Environmental Quality (MDEQ)

Brad Shedd- Mississippi Soil and Water Conservation Commission (MSWCC)

Tim Patrick- Rankin County Soil and Water Conservation District (RCSWCD)

Jeannine May- Natural Resources Conservation Service (NRCS)

Janet Chapman- Mississippi Department of Environmental Quality (MDEQ)

V. WATERSHED DESCRIPTION

Fannegusha Creek is located in northeastern portion of Rankin County, Mississippi and northwestern portion of Scott County, Mississippi (Figure 5.1) (MDEQ 2004). There are 47,289 acres located within the watershed boundaries. There are no towns or cities located in this watershed, but there are several communities including Midway, Branch, Pisgah, Redoak, Sandhill and Leesburg. The land uses in the watershed include agriculture lands (45%), forestlands (35%), and barren, urban and other (all together less than 1%). Figure 5.2 shows the land use in Fannegusha Creek watershed.

The soils in the watershed are primarily Kipling-Falkner-Savannah soils and Alluvium Eocene is the geology of the watershed. Fannegusha Creek watershed is located in the Southeastern Plain ecoregion. About 18% or 8,389 acres of the watershed are wetlands.

Other named creeks in the watershed include Red Cane Creek and Hurricane Creek. There are no state or federal parks, wildlife management areas, national forests or other significant management areas located within this watershed. Being in a rural area, there are people located throughout the watershed.

There are many economic conditions that affect the watershed. These conditions include farming, beavers, dumping of trash in creeks and any other idle lands, development, and the rising costs of timber production and all other agricultural related businesses. Some of the historical events that have affected the culture of the watershed include storm damage leaving debris in the creeks and streams dating all the way back to Hurricane Camille, the development of the Ross Barnett Reservoir, and the other developing areas around the reservoir. The sediment loading going into the backwaters of the reservoir from this growth causes waters to back up on croplands in the watershed. The land uses in the watershed are seeing some changes on the Rankin county side more rapidly than the Scott county side of the watershed. There has been a large decrease in the acres planted to cotton due to high production costs and there is no readily available place close enough to gin the cotton. Also, with the growth that the area is experiencing there is more and more development of 5-10 acre home places and communities in the watershed.

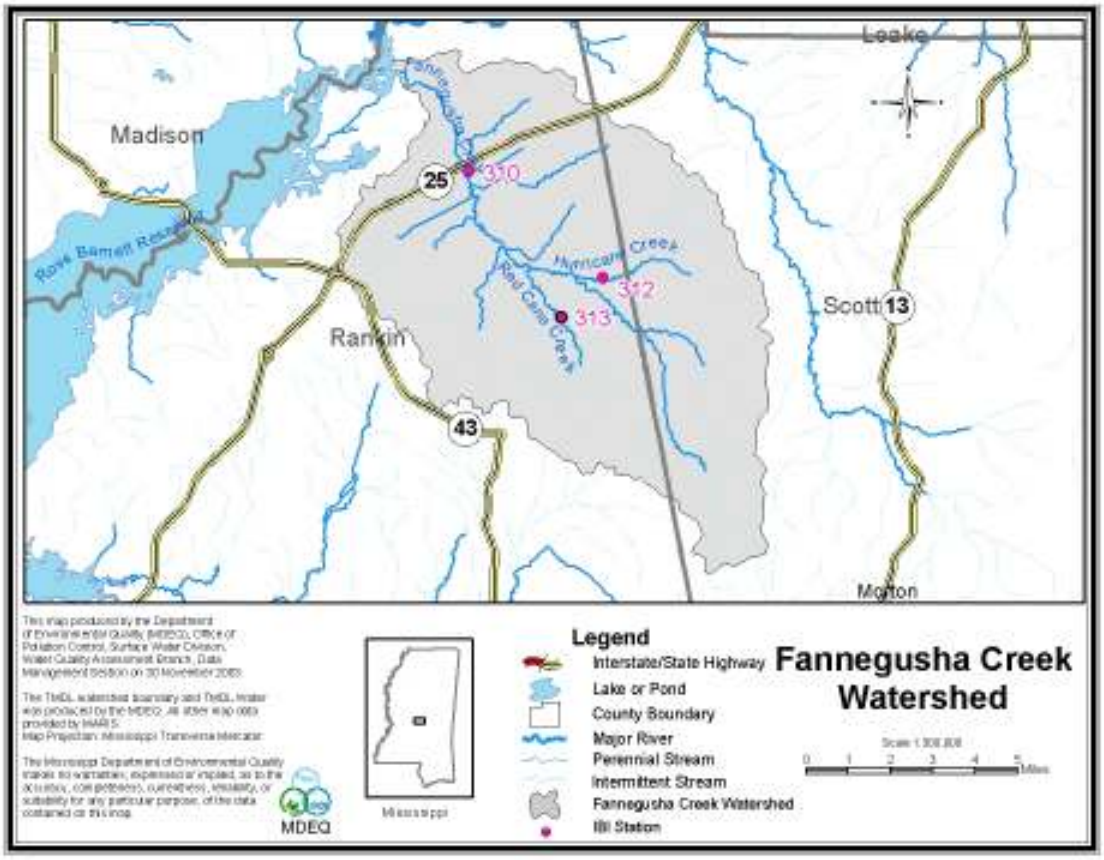

Figure 5.1 Fannegusha Creek Watershed.

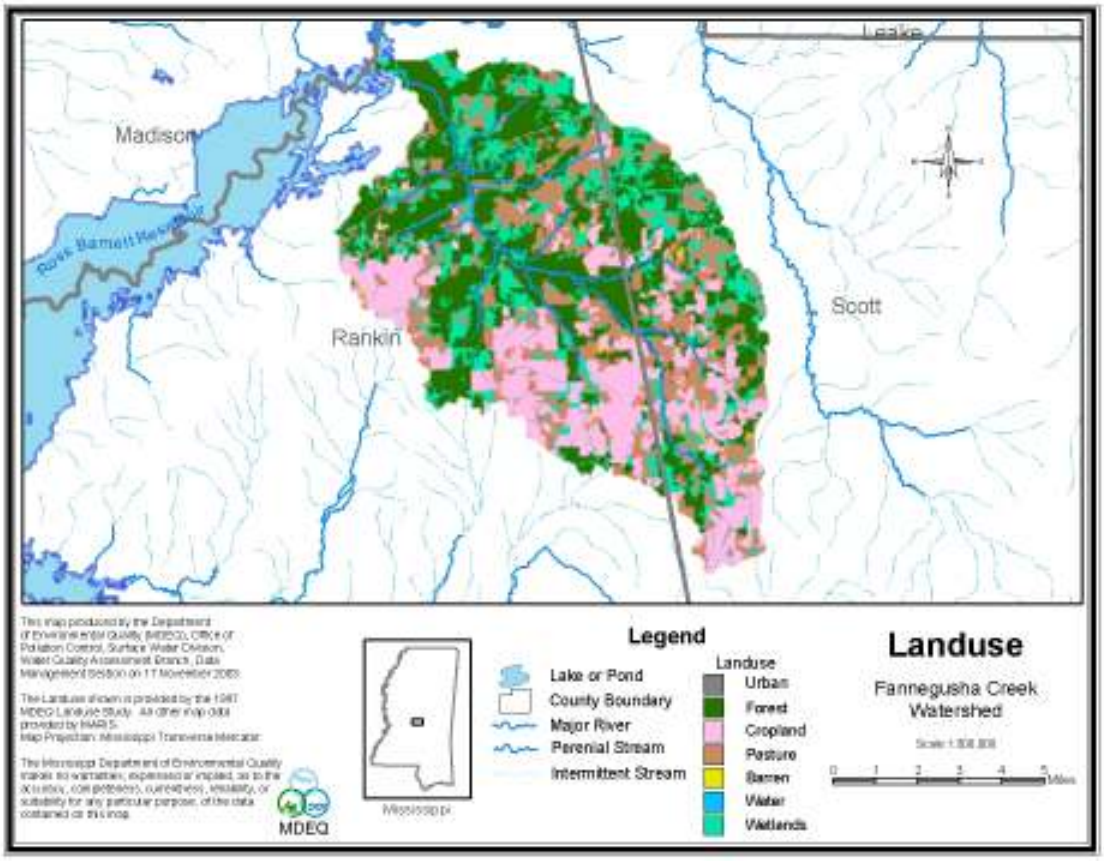

Figure 5.2 Land Use in Fannegusha Creek.

VI. STAKEHOLDER INTERESTS

The stakeholders interests in this watershed includes farming, the recreational areas, and the drainage of this watershed. The drainage is a big issue due to flood waters backing up on cropland and carrying away the topsoil when the flood water recedes. This also causes severe eroding of stream banks. Farming is a way of life for many of the landowners in this watershed. Due to the increased production costs and the other rising costs associated with farming, there is a real concern that family farms are going to become a thing of the past. There are some recreational areas in the watershed that the stakeholders have an interest in preserving these areas for this generation and future generations to enjoy.

The stakeholders have a genuine concern for development in the watershed and the impacts that it will have on sediment entering the streams and creeks within the watershed. The issue with sediment is already there and without well thought out development and proper management of construction sites for erosion and sediment control, sediment could become an even bigger problem. Also, snags and other debris in the streams are a problem because they slow down the flow and cause water to flood cropland and pastureland.

VII. Water Resources

A. History of Activity in the Watershed

The primary players in restoration and /or conservation efforts in the Fannegusha Creek Watershed are the Natural Resources Conservation Service, Rankin County Soil and Water Conservation District and the Mississippi Soil and Water Conservation Commission. Local landowners and operators will play the major role in the restoration and conservation of the natural resources in this watershed by installing best management practices on their land.

The Fannegusha Creek Watershed was selected as a priority watershed by the Pearl River Basin Team. As the management agency for Agricultural Nonpoint Source Pollution in Mississippi, the Mississippi Soil and Water Conservation Commission (MSWCC) determined that the Fannegusha Creek Watershed would be a good candidate for restoration. After meetings with local landowners 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 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.

There have been some conservation measures used in this watershed in the past including the operation fuel program, farm plans, and EQIP programs to dispose of old chemicals. These were some very productive programs for the farmers in the watershed. The Operation Fuel program was a program used to educate farmers on no-till farming. This is a practice that most farmers in the watershed have adopted. The farm plans have helped the farmers in production and gave them a target of where they wanted to go with their farms. The EQIP program helped the farmers get rid of old chemicals that could no longer be used, and chemicals that were out of date.

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.

C. Designated Use Classifications and Water Quality Standards

The designated beneficial use for the Fannegusha Creek and the waterbodies included in the watershed is fish and wildlife support. There are no numeric water standards for sediment applicable at this time for sediment TMDLs in the state of Mississippi. EPA Region IV has established a range of acceptable reference yields for stable streams in the Southeastern Plains ecoregion and that is 6.9E-04 to 4.2E-03 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 this ecoregion is 1.4E-03 to 6.9E-02 tons per acre per day at the effective discharge. This range is representative of the load that would be expected from the Fannegusha Creek Watershed. The aquatic life use attainment threshold scores associated with the Fannegusha Creek Watershed are as follows: Fannegusha- 27.41 and Red Cane Creek- 33.20. The reference MBISQ score for the East Bioregion is 61.35. Based on these scores, Both Fannegusha and Red Cane Creeks are impaired.

Table 7.1 Water Quality Standards.

Parameter	Beneficial Use	Narrative Water Quality Standards
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.

D. Current Status of Water Bodies in the Watershed

Waterbodies in the Fannegusha Creek watershed that are included on Mississippi's list of impaired waters (303(d) list) are Fannegusha Creek, Red Cane Creek, and Hurricane Creek.

Groundwater is used by most of Mississippi's community and non-community water supply systems. However, the City of Jackson's water supply is mostly dependent on surface waters. Specifically, the City of Jackson has a water intake structure on the Ross Barnett Reservoir and another 10 miles downstream on the Pearl

River. The mouth of Fannegusha Creek empties into the Ross Barnett Reservoir. Therefore, the Fannegusha Creek watershed would also be an important part of source water protection.

E. TMDLs

There has been a sediment TMDL completed for Fannegusha Creek located in Rankin and Scott counties in Mississippi. The watershed ID numbers are 0104 and 0105. The Hydrologic Unit Code (HUC) code for the watershed is 03180002. The streams in the watershed are biologically impaired due to sediment. The sources of impairment are landuse runoff and in-channel stream sediment processes. The recommended sediment load reduction in the TMDL brings the sediment loading to acceptable levels of a stable stream in the ecoregion. The recommended management actions to reduce the loading to the stream are streambank restoration, riparian buffer zones restoration and any sediment reduction BMPs, especially for road crossings, agricultural activities, and construction activities.

VIII. WATERSHED MANAGEMENT ACTIONS

A. Sediment

1. Stakeholder Interests

One of the major interests of the stakeholders is the sediment loading to all three creeks in the watershed. This is the reason for Fannegusha, Red Cane and Hurricane creeks being listed on Mississippi's 303(d) list of impaired waters.

2. Goals/Objectives

The goal and objective is to reduce the sediment loading coming from agricultural lands and bring the creeks back from unstable stream levels to stable stream levels. By accomplishing this task, the above named creeks could be removed from the state's 303(d) list.

3. Management Actions

The management actions that will be taken to address sediment are the installation of agricultural BMPs that pertain to sediment. These BMPs include but are not limited to:

- Critical Area Planting,
- Grade Stabilization Structures,
- Pasture and Hayland Planting,
- Nutrient Management,
- Fencing,
- Stream Crossings,
- Diversions,
- Grassed Waterways, and
- Terraces.

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 that are permanent structures must be maintained by the landowner for a period of 10 years. NRCS 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 Fannegusha 319 project began in October 2005 and is scheduled to end August 2008. The milestones for the Fannegusha Creek Watershed 319 project are listed below:

1. Sign grant contract with MS Department of Environmental Quality. (Month 0)

2. Determine priority areas that are contributing significant pollutant loads in the watershed. This will be carried out with assistance from the Fannegusha Creek WIT. (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 one demonstration farm. (Month 4-12)

11. Document pre-existing site conditions. (Before and after photo documentation will be conducted). (Month 2-12)

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 one informational field day/tour to inform the public about the project . (Month 13-24)

14. Establish at least one 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 four articles about the project. (Month 0-36)

23. Publicity of the project will be increased; at least one 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 MDEQ. (Month 0-36)

25. Make Final report to MDEQ. (Month 36)

5. Desired Results/Benefits

The desired benefit of this project will be to reduce the sediment loading to levels that are considered to be acceptable and remove the impaired segments of Fannegusha, Hurricane, and Red Cane creeks from the state's 303(d) list.

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 Rankin 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 Fannegusha 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. MDEQ will conduct stream monitoring in conjunction with the 319 project. Other programs that are available to landowners in the watershed include EQIP, CRP, and WHIP. Under these three programs, there has been $15,000 spent over the last three years with another $70,000 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. We are not limited to using only these BMPs if there are others that are needed that are not listed to address the sediment issue.

Table 8.1 Funded 319 Project Budget for BMPs.

Practice	Area Affected	BMP Cost	BMP Total
Critical Area Planting	50 acres	$200/ac	$10,000
Grade Stabilization Structure	20 structures	$1,500 each	$30,000
Pasture and Hayland Planting	200 acres	$100/ac	$20,000
Nutrient Management	3,000 acres	$84/ac	$252,000
Fencing	52,800 feet	$1.10/foot	$58,080
Stream Crossing	10 structures	$3,000/each	$30,000
Diversions	15, 000 feet	$1.66/foot	$24,900
Terraces	200,000 feet	$1.15/foot	$230,000
Grassed Waterways	40 acres	$500/acre	$20,000
Total			**$674,980**

Table 8.2 Contractual Services for BMP Design

Item	Cost
Contractual Services for BMP Design	$11,667
Total	**$11,667**

Table 8.3 Technical Assistance

Item	Cost
Technical Assistance	$25,000
Total	**$25,000**

IX. EDUCATION/OUTREACH ACTIVITIES

A. Educational Activities to be Implemented

The overall objective of community education in the Fannegusha Creek 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 affects.
- Increase public awareness of the long term environmental and economic advantages of protecting and improving water quality and habitat in the Fannegusha Creek watershed.

1. Signage

Signs identifying the BMPs that have been installed will be erected in areas where they will be visible and landowners will allow the signs to be erected.

Primary partners- Mississippi Soil and Water Conservation Commission, Mississippi Department of Environmental Quality, Rankin 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 heavily traveled being along a 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.

Item	Unit	Cost	Total Cost
Signs	20	$100.00	$2,000.00
Total			**$2,000.00**

2. Field Days

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, Rankin County Soil and Water Conservation District, Natural Resources Conservation Service, and Environmental Protection Agency

a. Indicators

Attendance at these 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 2006-2007.

c. Budget

Table 9.2 Projected Costs for Field Days.

Item	Units	Cost	Total Cost
Event Flyers	200	.60/each	$120.00
Mailing/Delivery	200	.39/each	$78.00
Miscellaneous (facilities, supplies)	2	$5,067.50	$10,135.00
Total			**$10,333.00**

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, Rankin 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 on all tons of soil saved and the correct number of BMPs installed.

c. Budget

Table 9.3 Projected Costs for Fact Sheets.

Item	Unit	Cost	Total Cost
Printing	1,000	1.00/each	$1,000.00
Total			**$1,000.00**

4. 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 for the workshop will be documented. Also, the number of participants that move forward with the stream stewardship project will be documented.

b. Schedule

This workshop will take place before August 2008.

c. Budget

Table 9.4 Projected Costs for Adopt-A-Stream Workshop.

Item	Unit	Cost	Total Cost
Adopt A Stream Workshop	1 day workshop	$1,500.00	$1,500.00
Total			**$1,500.00**

5. Project Learning Tree

Project Learning Tree (PLT) is an award winning education program designed for teachers and other educators, parents, and community leaders working with youth from pre-K to 8th grade. PLT activity guides and modules are not sold, but are earned by educators who attend a six-hour workshop. The PLT activity guide is a 400 page book containing 96 activities written in the form of lesson plans. PLT's

goal is to “teach students HOW to think, not WHAT to think about environmental issues.”

Primary Partners- Mississippi Department of Environmental Quality and Mississippi Forestry Commission.

a. Indicators

The number of participants for the workshop will be documented.

b. Schedule

This workshop will take place before August 2008.

c. Budget

Table 9.5 Projected Costs for Project Learning Tree.

Item	Unit	Cost	Total Cost
PLT Workshop	1 workshop	$1,350.00	$1,350.00
Total			**$1,350.00**

6. 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 2008.

c. Budget

Table 9.6 Projected Costs for Watershed Harmony Puppet Show

Item	Unit	Cost	Total Cost
Watershed Harmony Puppet Show	1 show	$500.00	$500.00
Total			**$500.00**

7. Total Projected Cost of Education/Outreach Activities

Table 9.7 Total Projected Education Budget

Item	Unit	Cost	Total Cost
Signage			$2,000.00
Field Days			$10,333.00
Fact Sheets			$1,000.00
Adopt-A-Stream			$1,500.00
Project Learning Tree			$1,350.00
Watershed Harmony Puppet Show			$500.00
Total			$16,683.00

8. Total Budget for Fannegusha Watershed Implementation Plan

Table 9.8 Fannegusha Watershed Implementation Plan Total Budget

Item	Cost
BMPs	$674,980
Contractual Services for BMP Design	$11,667
Technical Assistance	$25,000
Education/Outreach	$16,683
Total	**$728,330**

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 Fannegusha Creek 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 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 collect stream samples for sediment at the conclusion of the project to determine the pollutant reductions achieved by the application of Best Management Practices in the watershed. Also, the monitoring plan USGS is working on will be added once completed.

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 Fannegusha Creek 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 Fannegusha Creek watershed will be revised based on the knowledge that has been gained since 2005.

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, MDEQ will reproduce the plan and 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. 2004. Biological Impairment due to Sediment TMDL for Fannegusha Creek Watershed including Red Cane Creek and Hurricane Creek, Pearl River Basin, Rankin and Scott Counties, Mississippi, Mississippi Department of Environmental Quality. Jackson, Mississippi.

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Appendix A

Plant and Animal Species of Special Concern

Animals of Special Concern in Rankin County

Scientific Name	Common Name	Threatened	Endangered
ACIPENSER OXYRINCHUS DESOTOI	GULF STURGEON		
AIMOPHILA AESTIVALIS	BACHMAN'S SPARROW		
ALOSA ALABAMAE	ALABAMA SHAD		
ATHENE CUNICULARIA	BURROWING OWL		
GRAPTEMYS OCULIFERA	RINGED MAP TURTLE		
HALIAEETUS LEUCOCEPHALUS	BALD EAGLE		
MACROCHELYS TEMMINCKII	ALLIGATOR SNAPPING TURTLE		
OBOVARIA JACKSONIANA	SOUTHERN HICKORYNUT		
PANDION HALIAETUS	OSPREY		
PLEUROBEMA BEADLEIANUM	MISSISSIPPI PIGTOE		
POLYODON SPATHULA	PADDLEFISH		
PROCAMBARUS BARBIGER	JACKSON PRAIRIE CRAYFISH		
TYRANNUS FORFICATUS	SCISSOR-TAILED FLYCATCHER		
UNIOMERUS DECLIVIS	TAPERED PONDHORN		

Plants of Special Concern in Rankin County

Scientific Name	Common Name	Threatened	Endangered
ANTENNARIA SOLITARIA	SINGLE-HEADED PUSSYTOES		
CAREX DECOMPOSITA	CYPRESS-KNEE SEDGE		
CARYA LEIODERMIS	SWAMP HICKORY		
CHEILANTHES LANOSA	HAIRY LIPFERN		
ECHINACEA PURPUREA	EASTERN PURPLE CONEFLOWER		
ILEX MONTANA	MOUNTAIN HOLLY		
JUGLANS CINEREA	WHITE WALNUT		
MATELEA CAROLINENSIS	CAROLINA ANGLEPOD		
MELANTHIUM VIRGINICUM	VIRGINIA BUNCHFLOWER		
MIKANIA CORDIFOLIA	FLORIDA KEYS HEMPVINE		
PANAX QUINQUEFOLIUS	AMERICAN GINSENG		
PLATANTHERA CRISTATA	CRESTED FRINGED ORCHID		
RHAPIDOPHYLLUM HYSTRIX	NEEDLE PALM		
SCHISANDRA GLABRA	SCARLET WOODBINE		
STEWARTIA MALACODENDRON	SILKY CAMELLIA		
TRIPHORA TRIANTHOPHORA			

Animals of Special Concern in Scott County

Scientific Name	Common Name	Threatened	Endangered
GRAPTEMYS OCULIFERA	RINGED MAP TURTLE		
PICOIDES BOREALIS	RED-COCKADED WOODPECKER		
PLEUROBEMA BEADLEIANUM	MISSISSIPPI PIGTOE		
PROCAMBARUS BARBIGER	JACKSON PRAIRIE CRAYFISH		
URSUS AMERICANUS LUTEOLUS	LOUISIANA BLACK BEAR		

Plants of Special Concern in Scott County

Scientific Name	Common Name	Threatened	Endangered
ASCLEPIAS HIRTELLA	PRAIRIE MILKWEED		
CAREX MEADII	MEAD'S SEDGE		
CRATAEGUS ASHEI	ASHE HAWTHORN		
CRATAEGUS TRIFLORA	THREE-FLOWERED HAWTHORN		
ECHINACEA PURPUREA	EASTERN PURPLE CONEFLOWER		
ISOETES MELANOPODA	BLACKFOOT QUILLWORT		
LOBELIA APPENDICULATA	APPENDAGED LOBELIA		
PINUS VIRGINIANA	VIRGINIA PINE		
PLATANTHERA CRISTATA	CRESTED FRINGED ORCHID		
PLATANTHERA PERAMOENA	PURPLE FRINGELESS ORCHID		
PRENANTHES ASPERA	ROUGH RATTLESNAKE-ROOT		
QUERCUS MISSISSIPPIENSIS	DELTA POST OAK		
QUERCUS OGLETHORPENSIS	OGLETHORPE OAK		
SPIRANTHES MAGNICAMPORUM	GREAT PLAINS LADIES'-TRESSES		
SPIRANTHES OVALIS	LESSER LADIES'-TRESSES		

Appendix B

Funded 319 Project Proposal

PROJECT TITLE:
Fannegusha Creek Watershed Nonpoint Source Pollution Project

PROJECT ABSTRACT:
This project will be located in the north portion of Rankin County and the northwestern portion of Scott 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 pasture land and cropland in the project area so as to reach the desired outcome of reduced runoff and sedimentation to streams in the Fannegusha Creek Watershed.

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

The project cost is $724,980. Of this amount, $434,988 in 319 funds are requested with the balance of $289,992 to be supplied as match.

LEAD ORGANIZATION:

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COOPERATING AGENCIES AND ORGANIZATIONS:

Rankin County Soil and Water Conservation District; USDA Natural Resources Conservation Service; Mississippi Department of Environmental Quality; United States Geological Survey; Farm Services Agency; Mississippi State Cooperative Extension Service

GRANT ADMINISTRATOR:

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MS Soil & Water Conservation Commission
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PROJECT LOCATION:

Fannegusha Creek Watershed (031800020105, 031800020104) (includes Fannegusha, Red Cane and Hurricane Creeks)
(see attachment 1 for a map depicting the targeted areas of the project)

PROJECT OBJECTIVE:

The water quality impairment to be addressed by this project is sediment. The Mississippi Department of Environmental Quality (MDEQ) has determined through monitoring that segment MS151FE of Fannegusha Creek, segment MS151FM2 of Red Cane Creek and segment MS151FM1 of Hurricane Creek are impaired and have been placed on the Mississippi 2002 Section 303(d) List of Waterbodies for biological impairment. These water bodies were all sampled during the winter of 2001. Benthic macroinvertebrate data collected from Fannegusha Creek and Red Cane Creek summarized as metrics were scored and combined into the regionally calibrated Mississippi Benthic Index of Stream Quality (M-BISQ). Based on the M-BISQ scores, Fannegusha Creek and Red Cane Creek were determined to be impaired. No benthic macroinvertebrate data could be colleted from Hurricane Creek during the winter of 2001 due to numerous beaver dams within the creek which essentially made the creek a series of ponds. Therefore, no M-BISQ score could be determined. Screening level biology data for Hurricane Creek from earlier sampling events in 1993 indicated impairment and thus were the basis of its original listing on the 1996 303(d) List of Waterbodies.

A stressor identification study was completed for the Fannegusha Creek watershed. The analysis identified sediment as the most probable stressor of the water body. The State's 303(d) list of monitored water bodies lists the designated use of Fannegusha Creek, including Red Cane Creek and Hurricane Creek, as aquatic life support. A TMDL has been developed for the impairment by MDEQ and it has been targeted for implementation by the Pearl River/South Independent Streams Basin Group management team. The TMDL recommends that "the Fannegusha Creek watershed be considered a priority for streambank and riparian buffer zone restoration and any sediment reduction BMPs, especially for the road crossings, agricultural activities, and

construction activities. The implementation of these BMP activities should reduce the sediment load entering Fannegusha Creek, Red Cane Creek, and Hurricane Creek. The reduction of the sediment load in the Fannegusha Creek watershed to equal that of a relatively stable stream will allow the streams to approach stable conditions, which would provide improved habitat for the support of aquatic life." (a copy of the TMDL is attached) **(No agencies or organizations have been identified that have funding available for stream bank and riparian zone restoration in the watershed. NRCS does have a stream bank and shoreline protection practice available through the EQIP program. However, landowners wishing to install this practice would have to rank out in the program in order to be approved for this practice)**

PROJECT DESCRIPTION:

The primary objective of this project will be to implement selected Best Management Practices (BMPs) on targeted areas in the Fannegusha Creek Watershed that will result in reduced sediment loadings from agricultural nonpoint sources. Of primary concern is sedimentation from crop land and pasture land in the watershed. Soils in the watershed are very erosive, with sheet and gully erosion occurring on sloping crop land and pasture land. Erosion is occurring from crop land and pastureland land in the project area at the rate of 8 tons per acre per year. Sediment contained in runoff is entering Fannegusha Creek, Red Cane Creek, and Hurricane Creek 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 current land uses in the Fannegusha Creek Watershed include 21,700 acres of agricultural lands (the majority of which is cropland), 16,854 acres of timber land, and 8,389 acres of wetlands.

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 Natural Resources Conservation Service, Mississippi Cooperative Extension Service, United States Geological Survey, and the Rankin County Soil and Water Conservation District 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 trough it's 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:
50 acres of critical area planting
20 grade stabilization structures
200 acres of pasture & hayland planting
3,000 acres of nutrient management
52,800 feet of fencing
10 stream crossings
15,000 ft. of diversions
40 acres of grassed waterways
200,000 feet of terraces

At the present time, there are 70 acres of pasture planting scheduled to be implemented under the Environmental Quality Incentives Program (EQIP) in the watershed. Efforts are underway by the Natural Resources Conservation Service to inform landowners in the watershed about additional practices available to them under the EQIP program as well as the Conservation Reserve Program (CRP) and the Continuous CRP program.

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.

The MSWCC has agreed to take the lead in developing a Watershed Implementation Plan for the Fannegusha Creek Watershed. This project will address the agricultural portion of that plan.

MILESTONES:

Sign grant contract with MS Department of Environmental Quality. (Month 0)

1. Determine priority areas that are contributing significant pollutant loads in the watershed. This will be carried out with assistance from the Fannegusha Creek WIT. (Month 1)

2. Issue policies and procedures for implementing the project to the SWCD office. (Month 1)

3. Meet with the board of SWCD commissioners to get their understanding of their responsibilities and participation. (Month 2)

4. Provide training to district staff. (Month 2-3)

5. 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)

6. Conduct a landowner meeting to inform potential participants about the project. (Month 3)

7. Secure commitments from several landowners and operators who are willing to participate in the project. (Month 3-4)

8. Assist participants in developing a conservation plan and applying best management practices (Month 4-12)

9. Establish at least one demonstration farm (Month 4-12)

10. Document pre-existing site conditions. (Month 2-12) (Before and after photo documentation will be conducted).

11. Accelerate conservation planning and application assistance. Special effort will be made to complete conservation plans during this time frame. (Month 13-24)

12. Conduct at least one informational field day/tour to inform the public about the project . (Month 13-24)

13. Establish at least one demonstration farm. (Month 13-24)

14. As requested, assist DEQ with evaluations. (Month 0-36)

15. Collect GPS coordinates and other data required by MDEQ on all BMPs installed in the project. (Month 0-36)

16. Assemble data on the amount of soil saved. (Month 0-36)

17. Erect project roadside signs which designate where water quality practices are in progress or have been completed. (Month 4-36)

18. Provide continued conservation planning and application assistance to participants. (Month 25-36)

19. Review the status of applying best management practices to reach the objectives of the project. (Month 25)

20. Based upon the needs and finding of milestone 18, assistance in planning and/or application will be redirected and/or accelerated. (Month 25-36)

21. Publish at least four articles about the project. (Month 0-36)

22. Publicity of the project will be increased; at least one field day/tour will be conducted and at least 1,000 fact sheets will be developed and distributed. (Month 25-36)

23. Bi-annual reports will be made to MDEQ. (Month 0-36)

24. Make Final report to MDEQ. (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 Fannegusha Creek, Red Cane Creek and Hurricane Creek. 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 project area.

PROJECT PERIOD

The length of this project will be 3 years.

Appendix C

Stressors

Table 2
Stressor Summary Table

Concern	Link/Immediate Cause	Stressor	Description of Stressor	Location/Extent
Sediment Loading From Agricultural Lands	Landuse runoff and inchannel sediment processes	Sediment	A stressor identification study was completed for Fannegusha Creek Watershed. This analysis identified sediment as the most probable stressor of the waterbody. Certain contaminants may be associated with sediment such as pesticides and nutrients. However, these contaminants would also be controlled by the same best management practices (BMPs) that control sediment coming from fields.	See figure 3.1 for the locations of cropland along streams. There are approximately 21,700 acres of agriculture land in the watershed. The majority of this land is cropland. All the lands referred to above are in HUC 03180002.

Appendix D

Checklist of Watershed Implementation Elements

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

Required WIP Elements for 319 Grant	Location in Watershed Implementation Plan
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
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