

## Environmental Assessment

# Utility Corridor Maintenance For Wildlife Habitat Enhancement

USDA Forest Service  
Southern Region (8)  
National Forests in Mississippi  
Homochitto National Forest  
Adams, Amite, Copiah, Franklin, Jefferson,  
Lincoln, and Wilkinson Counties, Mississippi

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Homochitto National Forest  
National Forests in Mississippi

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# CHAPTER 1

## NEED FOR THE PROPOSAL

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### Introduction

The Homochitto Ranger District is proposing to permit maintenance on power, oil, and gas utility corridors through the use of herbicides to control woody vegetation that interferes with access to and wildlife use of these sites. This project came about through a partnership offer from the National Wild Turkey Federation and Entergy Corporation to enhance wildlife habitat in utility corridors on public lands administered by the Forest Service.

In general, utility corridor maintenance is categorically excluded from documentation. The use of labeled pesticides for uses such as insect and weed control in administrative and recreation areas is also excluded from documentation. However, in his 1989 decision related to Vegetation Management in the Coastal Plain/Piedmont, the Regional Forester directed that projects proposing the use of herbicides in the general forest would require appropriate analysis and be considered against non-herbicide alternatives. While the proposed wildlife improvements are inherently categorically excluded, herbicide applications supporting the improvements required analysis to comply with Regional Forester direction.

This Environmental Assessment documents that analysis and is prepared according to the format established by the Council of Environmental Quality regulations implementing the National Environmental Policy Act (40 CFR 1500-1508). It responds to the Land and Resource Management Plan for National Forests in Mississippi (Forest Plan); the Final Environmental Impact Statement for the Forest Plan; and the Final Environmental Impact Statement for Vegetation Management in the Coastal Plain/Piedmont, Vols. I & II.

This document is organized in the following manner:

- Chapter 1 explains the purpose and need for the “Proposed Action” and discusses the methods and mitigations to be employed for controlling vegetation along the Homochitto’s utility corridor system under the “Proposed Action”. Chapter 1 also lists the issues that were identified during the scoping process.
- Chapter 2 describes the alternatives to the “Proposed Action”, which include the “No Action” alternative. This chapter provides information on how the issues were addressed for the “Proposed Action “ and each alternative.
- Chapter 3 describes the natural and human environments potentially affected by the “Proposed Action” and alternatives, and discloses what potential effects are anticipated.
- The appendices contain the list of preparers, the distribution list, project maps, and references. The appendices also provide additional information on specific aspects of the proposed project and document any public comments received. Additional documentation may be found in the project planning record located at the Homochitto Ranger District in Meadville, Mississippi.

## Location and Duration of Project

All utility corridors located on lands managed by the Homochitto National Forest in Mississippi are included in this project. Project maps showing the locations of known utility corridors are included in Appendix C. The project plan area discussed in this document includes all areas within the rights-of-way of the utility corridors on the Homochitto National Forest. It is possible that all rights-of-way are not identified on the maps included in Appendix C. However, every utility corridor on the District has been mapped and evaluated for the Special-Use Permit involving the right-of-way. Therefore, site-specific knowledge is readily accessible for every existing utility corridor on the District. There is also a possibility that new utility corridors will be required to serve new customers. These new areas would also receive site-specific examination. Unless interdisciplinary team review indicates a variance from conditions described or impacts considered in this environmental document, this Decision will be implemented in these new areas without additional detailed documentation.

Duration of the project is five years from the date of Decision. The decision would be periodically reviewed for consistency as guidelines or conditions change. In the absence of substantial change, the decision may remain valid beyond the projected period.

## Purpose and Need for the Proposal

Right-of-way vegetation management is essential to providing utility transmission and distribution services and safety for utility workers. Trees and other vegetation can cause disruption of electric utilities when they grow into power line rights-of-way. Overgrown utility corridors inhibit access for maintenance and repair of utilities.



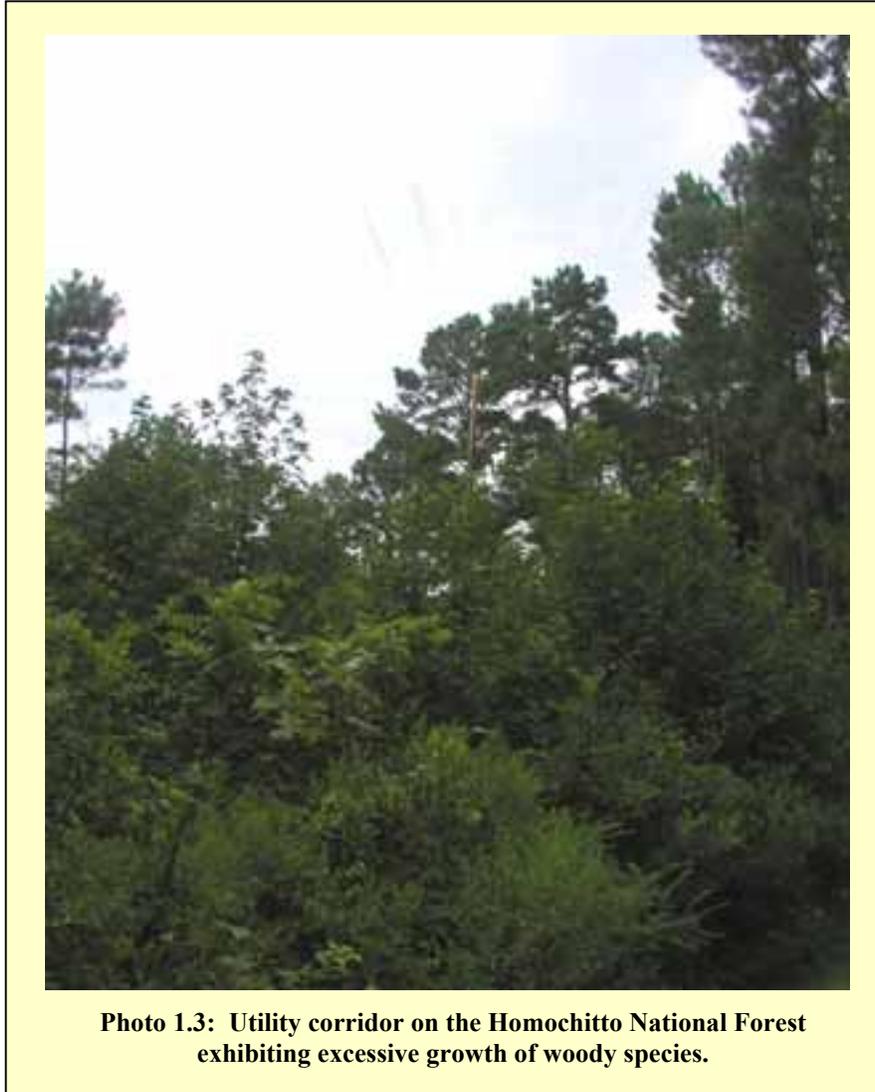
**Photo 1.1: Utility right-of-way showing possible vegetative interference of power transmission.**

The utility corridors located on the Homochitto National Forest collectively comprise roughly 340 miles of linear wildlife habitat corridors. The existing maintenance policy for these areas has promoted a proliferation of woody vegetation that re-grows quickly and interferes with access to and wildlife use of these sites. The perpetual thickets created by current procedures are not a natural occurrence in the ecosystem and are less beneficial to many species of wildlife than an open, grassy site.

Right-of-way maintenance usually involves manual/mechanical cutting and/or the use of herbicides to control vegetation. The existing maintenance strategy for utility corridors on the Homochitto Ranger District utilizes hand tools and mowing/cutting equipment as the primary means of removal or control of vegetation. While these methods may at first seem to be more favorable than the use of herbicides, they involve certain risks and disadvantages. These methods are time-consuming and costly, may cause damage to the soil, and pose inherent health and safety risks to workers involved in utility corridor maintenance operations. Due to re-sprouting, hand tool or mechanical control of undesirable vegetation often requires repeated and more frequent entries for control. Repeated mechanical treatments most often result in dense monoculture thickets that are low in diversity, wildlife food, and nesting potential.



**Photo 1.2: Utility corridor on Sandy Creek WMA exhibiting an over-abundance of sweetgum and other woody species.**



In contrast, herbicides can be used in a controlled manner to concentrate control on undesirable vegetation. Herbicides used for vegetation control generally have low human and animal toxicity. The inclusion of herbicide methods also can result in more desirable wildlife habitats. In most cases, wildlife habitat enhancements such as the creation of food plots are also more easily accomplished through the use of herbicides.

In light of these circumstances, the use of herbicides for vegetative management along these utility corridors is more desirable than existing methods. The proposed actions are necessary to provide the greatest long-term benefit to the public.

Based on the needs outlined above, the purpose of this project is to:

- Allow removal/control of woody sprouts, briars, vines, and other vegetation that interferes with access to and wildlife use of utility corridors in the safest, most cost effective, and least environmentally disturbing manner.
- Enhance wildlife habitat and promote floral and faunal diversity through establishment of native vegetation and wildlife food plots in utility corridors.

## Desired Future Conditions

The long-term desired condition for the Utility Corridor Maintenance Project consists of the following:

- Maintain an environment which is conducive to exploitation by wildlife through the control of vegetation which interferes with wildlife use of utility corridors on the Homochitto Ranger District.
- Maintain natural ecosystem components and promote ecosystem diversity in utility corridors on the Homochitto Ranger District.



**Photo 1.4: Utility corridor on Caston Creek WMA representative of a desirable grass and low shrub cover.**

## The Decision to be Made

Based upon the analysis documented in this environmental assessment, the District Ranger (Responsible Official) will make the following decisions:

- Whether or not to permit herbicides to be utilized in the maintenance of utility corridors of the Homochitto Ranger District as described in this document.
- What methods and actions are appropriate in the use of herbicides for utility corridor maintenance.
- Whether or not to permit establishment of wildlife food plots in utility corridors on the Homochitto Ranger District as described in this document.
- What methods and actions are appropriate in the establishment of wildlife food plots in utility corridors.

## The Proposed Action

The Homochitto Ranger District proposes to permit utility corridor maintenance and wildlife food plot establishment using the following methods and mitigations.

### Herbicide Maintenance

Herbicide will be applied to briars, vines, woody sprouts, and other vegetation that inhibits access to and wildlife use of utility corridors. Application will be by hand methods of directed foliar spray, cut surface spray, or streamline basal spray utilizing backpack sprayers, or by selective mechanical methods using specialized application equipment. This herbicide maintenance option will be added to current maintenance options, which include clearing with hand tools, tractor mowing, and cutting equipment such as powerline cutters.

The use of herbicides will be selective and generally confined to areas with a heavy briar or woody component. Mechanical applications would be utilized on areas where slopes, soil types, and vegetation allow. Mechanical methods will be limited to the use of specialized selective equipment such as the Brown Brush Monitor<sup>®</sup> — which utilizes a mowing deck with an attached herbicide application chamber in which only the cut stubble is treated — for general maintenance or tractor/truck-mounted low volume directed spray for side trimming. Side trimming is selective in that the operator controls rate of application, direction of spray, timing of operation, and system on/off. Hand application methods would be used in areas not accessible to equipment. Directed foliar spray would be applied to shrubs, vines, and other low/leafy vegetation during the growing season. Where taller, woodier vegetation develops, the streamline treatment would be used, primarily in the dormant season. Cut surface or stump treatments would be used when larger woody material ( $\geq 3$  inches diameter) is present.

The proposed herbicides to be used are Garlon 4<sup>®</sup> (triclopyr ester), Garlon 3A<sup>®</sup> (triclopyr amine), Arsenal<sup>®</sup> (imazapyr), Accord<sup>®</sup> (glyphosate), Escort<sup>®</sup> (metsulfuron methyl), and Krenite S<sup>®</sup> (fosamine ammonium). Specific herbicides or combinations of these herbicides would be applied depending upon vegetation and site conditions. Herbicides would be applied at the lowest rate effective in meeting project objectives, and at rates not to exceed “*typical*” as defined

in Table 4-6 of the *Final Environmental Impact Statement, Vegetation Management in the Coastal Plain/Piedmont, Appendices (Volume II)*.

The typical proposed herbicide application mixtures are:

- 2-4% Garlon 4 emulsified in water for foliar spray and 20% Garlon 4 solution in a mineral oil/adjuvant base for streamline
- 1.5 gallon of Krenite mixed with 10 to 40 gallons of water with surfactant added for side trimming
- 2% Accord mixed in water with surfactant as an alternative foliar spray
- A mixture of 5% Krenite,  $\frac{3}{4}$ % Arsenal, and 0.03 ounces Escort with surfactant per gallon of water as an alternative foliar spray
- A mixture of 33% Garlon 3A and 6 ounces of Arsenal Applicator's Concentrate per gallon mixed in water will be used for injection or stump spray
- A foliar/cut surface treatment consisting of 5.0 ounces of Garlon 4 and 0.50 ounces of Arsenal per gallon mixed in water would be applied with specialized mechanical equipment

Approximate typical per acre application rates for the two application methods are:

- Foliar Spray w/Garlon 4
  - 4.0 gal/ac, 4% Garlon 4 @ 4 lbs/gal = 0.64 lbs/acre
- Streamline
  - 2.0 gal/ac, 20% Garlon 4 @ 4 lbs/gal = 1.6 lbs/acre
- Foliar Spray w/ Accord
  - 4.0 gal/ac, 2% Accord @ 5.4 lbs/gal = 0.43 lbs/acre
- Foliar Spray w/ Krenite/Arsenal/Escort
  - 10.0 gal/ac, 5% Krenite @ 4 lbs/gal = 2.0 lbs/acre
  - 10.0 gal/ac,  $\frac{3}{4}$ % Arsenal @ 2 lbs/gal = 0.15 lbs/acre
  - 10.0 gal/ac, 0.001875 lb Accord/gal @ 60% A.I = 0.01125 lbs/acre
- Side trimming w/ Krenite
  - 20 gal/ac, 1.5 gal Krenite @ 4 lbs/gal = 6.0 lbs/acre
- Cut and Stump Spray w/ Garlon/Arsenal Mix
  - .75 gal/ac, 33% Garlon 3A @ 3 lbs/gal = 0.74 lbs/acre
  - .75 gal/ac, 6 oz/gal Arsenal @ 4 lbs/gal = 0.14 lbs/acre
- Injection w/ Garlon/Arsenal Mix
  - .5 gal/ac, 33% Garlon 3A @ 3 lbs/gal = 0.50 lbs/acre
  - .5 gal/ac, 6 oz/gal Arsenal @ 4 lbs/gal = 0.09 lbs/acre
- Mechanical Application w/ Garlon 4/Arsenal Mix
  - 20 gal/ac, 5.0 oz/gal Garlon 4 @ 4 lbs/gal = 3.1 lbs/acre
  - 20 gal/ac, .5 oz/gal Arsenal @ 4 lbs/gal = 0.31 lbs/acre

For further enhancement of wildlife habitat, selected areas will be disked with a light tractor or similar equipment and/or revegetated in accordance with the "Erosion Control and Wildlife Planting Guides for the National Forests in Mississippi" for purposes of wildlife food plot establishment. These areas are identified on the projects maps included in Appendix C.



**Photo 1.5: Existing wildlife food plot on utility corridor in Sandy Creek WMA.**

The basis for these management activities is the National Forest Management Act and the Forest Plan. In addition, the Final Environmental Impact Statement for Vegetation Management in the Coastal Plain/Piedmont provides technical information and parameters for herbicide use. All of these documents are available to the public and can be reviewed at the District Ranger's or Forest Supervisor's Office.

Utility corridor maintenance using herbicides would result in the positive implementation of the following goals set forth in the Forest Plan. (4-1)

1. Provide for safe public use and enjoyment of forest resources.
2. Provide a visually acceptable landscape by maintaining or upgrading the existing visual condition.
3. Provide a spectrum of dispersed and developed recreational opportunities reflective of the demands of the public.
4. Manage the land in a manner that is sensitive to economic efficiency.

## Mitigation Measures

Mitigations are intended to lessen the effects of actions such that they remain within established standards that will not lead to significant direct, indirect, and/or cumulative impacts. The proposed action includes a range of mitigation measures that can be categorized as:

- Standard mitigations to protect soil productivity, water quality, visuals, and other resources in accordance with standards and guides established through forest planning. These include such measures as filter strips along streams.
- Mitigations inherent to the project implementation process, contracts, and related activities. For this project, these include activities such as requiring pre-work conferences to ensure that standards are understood.
- Mitigations associated with project design and management prescriptions. These include Forest Plan or legal direction, and mitigations inherent to the Interdisciplinary Team process, such as locally developed enhancements in excess of Forest Plan standards. Mitigations in this category may be developed in response to scoping issues.
- Site-specific mitigations such as protection of a specific sensitive plant or group of plants. For this project, sensitive plants will be protected if found in the project area.

This project incorporates all applicable legal requirements and adheres to the Forest-wide standards and guidelines established in the Forest Plan. Management requirements necessary for achieving goals and objectives are referred to as standards and guidelines. A detailed listing of the Forest Plan standards and guidelines is inappropriate here, as they are published and established guides. However, mitigations that apply to this project, including those considered in the design and implementation of wildlife food plots, are described in Appendix F of this Environmental Assessment for those unfamiliar with the Forest Plan. These standards meet or exceed environmental protection requirements found in the State of Mississippi Best Management Practices.

Herbicide usage in this project follows all mitigating guidelines as stated in the Final Environmental Impact Statement: Vegetation Management in the Coastal Plain/Piedmont, Volumes I and II. Examples of mitigating activities include:

- No herbicide is aurally applied within 100 horizontal feet, nor ground-applied within 30 horizontal feet, of lakes, wetlands, or perennial or intermittent springs and streams.
- No herbicide is applied within 100 horizontal feet of any public or domestic water source.
- Herbicide mixing, loading, or cleaning areas in the field are not located within 200 feet of private land, open water or wells, or other sensitive areas.

Right-of-way holders will be required to submit a Pesticide-Use Proposal to the Forest Service for approval prior to any herbicide application. Additional standards and guidelines can be found in the Final Environmental Impact Statement: Vegetation Management in the Coastal Plain/Piedmont, Vols. I & II (VMCP/P).

## Monitoring Activities

Monitoring ensures that the appropriate standards and guidelines and mitigation measures are followed to protect water quality, heritage resources, wildlife habitat, and other natural resources, and ensures that the “Proposed Action” or chosen alternative is effective in accomplishing the desired future condition identified for the project. Monitoring activities are divided into several broad categories: Forest Plan monitoring, routine implementation monitoring, validation monitoring, and project-specific effectiveness monitoring.

The National Forest Management Act requires that National Forests monitor and evaluate their forest plans (36 CFR 219.11). The Forest Plan (Chapter 5) includes the monitoring and evaluation activities to be conducted as part of Forest Plan implementation. Monitoring requirements in Chapter 5 of the Forest Plan would be met under all alternatives.

Validation monitoring is considered longer-term research data collection to verify if implementation and effectiveness monitoring assumptions remain valid; no validation monitoring is scheduled for this proposal. However, substantial validation monitoring was incorporated into the Vegetation Management Environmental Impact Statement and the Forest Plan Environmental Impact Statement, which are the basis for the proposed activities of this project.

Routine implementation monitoring is part of the special-use administration process. Trained specialists or technicians ensure that standards and guidelines are being met. Special uses and pesticide use on the District are assessed annually. Trained state and federal wildlife biologists and botanists would accomplish plant and wildlife monitoring. A more detailed discussion of monitoring is provided in Appendix F.

## Public Involvement

An interdisciplinary team process was used to formulate and analyze issues, alternatives, and environmental effects in this environmental assessment. A list of team members is provided in Appendix A. As a cooperating agency, the United States Fish and Wildlife Service was consulted for a review of the “Proposed Actions” and alternatives and the associated Biological Evaluation.

## Scoping

The environmental analysis process was initiated on March 19, 2003, by forwarding a scoping letter to individuals and organizations on the District’s mailing list that have expressed interest in projects concerning herbicide use, utility right-of-ways, and wildlife habitat. A scoping notice was also printed in the Jackson MS *Clarion-Ledger* (paper of record) to inform individuals who may not have been on the mailing list. A copy of the scoping letter and mailing list can be found in Appendix B. Comments received through scoping and responses to those comments can be found in Appendix G of this document.

## Issues and Concerns

The interdisciplinary team and public involvement process discussed above generated a number of issues and concerns related to the project. Issues are generally stated in their effects on or concerns related to the effects on specific resources. Issues are generally divided into two primary categories – significant issues and other issues. Significant issues are those that lead to the formulation of alternatives to the proposed action. Other issues tend to be issues that have bearing on the analysis but are more likely to be addressed through mitigations or project design. They do not inherently lead to or justify the development of an alternative to address the concern or issue. Additionally, some “other issues” raised may be related to broader topics such as the national allocation of resources or appropriateness of policy. These areas may have bearing on, or a relationship to the project, but are addressed by public policy, laws, regulations or Forest Plan level documents, and are “out of the scope” of a project level analysis. Questions may also be raised that have no bearing on the project because there is no cause and effect relationship. The rationale for why analysis of these last two categories is not appropriate at the project level is generally provided.

To be analyzed under NEPA, an issue must have a cause and effect relationship to the human environment. For the purpose of analysis, environmental resource areas have been divided into 12 broad-based resource areas with sub-categories as appropriate to the project. Subsequently, the Homochitto National Forest addresses issues by analyzing the effects of the project on these human environment facets. Since issues and concerns are generally stated in this manner, this provides the interdisciplinary team and interested publics a positive means of tracking issues through the analysis. “**Issues to be Analyzed**” includes these 12 resource areas as well as a discussion of how these resource areas relate to “significant” or “other” issues. Based on the internal and public responses and inputs from scoping, the following issues and concerns were identified:

### *Issues to be Analyzed*

#### **1. Soil Productivity**

Internally raised issue based on the concern that activities of the Forest Service do not reduce the long-term productivity of the forest. (The use of herbicides has raised a national issue with respect to public concerns that herbicides might have a long-term soil productivity and water quality effect, potential for effect on non-target vegetation, and potential effect on human health and wildlife. The Southern Region has determined that it is appropriate to consider a non-herbicide alternative if the use of herbicides is being considered. This issue is considered significant, and is addressed by the “No Action” alternative.)

#### **2. Water Quality**

Internally raised issue based on the concern that activities of the Forest Service do not degrade the quality of water for down-stream uses or negatively impact aquatic habitat. (Significant-see soil productivity above.)

### **3. Air Quality**

Internally raised issue based on the concern that activities of the Forest Service do not negatively impact air quality. (“Other” issue – No cause/effect relationship identified for this project)

### **4. Vegetation**

Internally raised issue based on the concern that the Forest Service provide for diversity of vegetation and protect or increase the quality of renewable resources. (Significant-see soil productivity above.)

### **5. Forest Health**

Internally raised concern that the Forest Service make provisions for forest health protection and enhancement. (“Other” issue – No cause/effect relationship identified for this project)

### **6. Threatened, Endangered, and Sensitive Species**

Internally raised issue based on the concern that activities of the Forest Service do not negatively affect Proposed, Endangered, Threatened, and Sensitive Species. (Significant-see soil productivity above.)

### **7. Management Indicator Species**

Internally raised issue based on the concern that activities of the Forest Service do not alter habitat in such a way as to negatively affect management indicator species. (Significant-see soil productivity above.)

### **8. Economics**

Internally raised issue based on the concern that Forest Service activities are economically efficient. (“Other” issue - Addressed through project design)

### **9. Recreation**

Internally raised issue based on the concern that activities of the Forest Service do not reduce, but enhance, recreational opportunities available on the Forest. (Significant-see soil productivity above.)

### **10. Heritage Resources**

Internally raised issue based on the concern that Forest Service activities do not negatively affect heritage resources on the Forest. (“Other” issue - Addressed through project design and mitigation)

### **11. Public Health and Safety**

Internally raised issue based on the concern that negative influences to public health and safety do not result from activities of the Forest Service, nor do hazards to public health and

safety increase due to lack of action by the Forest Service. (Significant -see soil productivity above.)

## 12. Civil Rights and Environmental Justice

Internally raised issue based on the concern that activities of the Forest Service are not detrimental to civil rights and environmental justice. (“Other” issue - Addressed through project design)

### *Other Issues Not Further Analyzed*

**Economic efficiency:** There was concern that herbicides of least cost to the public be used in the project. The public would not bare the cost of right-of-way maintenance.

This environmental assessment proposes to *permit* the use of herbicides for vegetative management of utility corridors on the Homochitto Ranger District. Utility corridor maintenance using herbicides would allow for enhanced wildlife and public use of the utility corridors of the Homochitto Ranger District, and would correspondingly provide continued support of local businesses through sale of food, fuel, and other items to hunters, hikers, and other recreationists. However, the Forest Service is not intending to perform or to contract any activities related to this project. Other than the cost of preparation of this environmental document, there would be no further direct monetary cost to the public, regardless of the herbicides or alternative chosen. This issue, therefore, is not relevant to the decision to be made.

**Need for project:** There was concern as to the need for the project; *specifically*, with regard to who requested that the project be undertaken.

This project was initiated by the Forest Service to address the problem of species diversity and wildlife use in utility corridors on the Homochitto National Forest. Utility corridors are valuable wildlife areas due to their placement in the landscape, providing needed travel-ways and edge habitat for various wildlife species. These areas are currently maintained through mechanical means only. Repeated mechanical treatments on right-of-ways on the District have resulted in many of these areas becoming heavily stocked with single-species “thickets” of woody sprouts. These areas of perpetual woody brush are not a natural component of the ecosystem and are less diverse and provide less wildlife food and nesting potential than would an open, grassy site. This project would alleviate these concerns to some degree by breaking the cut-sprout cycle by removing the rootstock from which these thickets develop. This issue, therefore, is not relevant to the decision to be made.

**Target wildlife species:** Concern was expressed that wildlife species that would be affected by the project are identified.

The repeated mechanical clearing of utility corridors has resulted in the creation of dense, woody, monoculture thickets on many areas of these rights-of-way. Large root systems allow tremendous rates of woody re-growth after treatment. Such stands have low diversity and offer little wildlife food or nesting potential. The use of herbicides in utility corridors would

increase diversity of plant species in these areas and produce a more open, grassy habitat — a habitat type that is limited on the Homochitto Ranger District. This would, in turn, benefit the bobwhite quail and other species associated with early seral and grassland habitats. Species representative of late seral habitats, such as the wild turkey and screech owl, may also benefit through increase in available foraging habitat. Wildlife food plots would directly benefit herbivores such as the whitetail deer, while providing feeding grounds for turkey and quail and hunting grounds for kestrels and screech owls, and with the additional provision of habitat for certain neotropical migrants and other species which utilize early seral habitats.

Nevertheless, any analysis of the effects of management on terrestrial wildlife species must recognize that it is difficult, if not impossible, to satisfy the needs of all "wildlife" at the same time on the same area. The goal of the manager is to attempt to balance the needs of all, giving special consideration to those species most at risk of extinction/extirpation. The Biological Evaluation for this project identified no potential negative impacts to endangered, threatened, or sensitive species. This concern, therefore, is not relevant to the decision to be made.

**Site specificity:** Concern was expressed that site-specific areas to be treated are identified.

There are roughly 340 miles (or approximately 1200 acres) of utility corridor on the Homochitto National Forest. These areas are important to wildlife as they present essential edge habitat and travel ways. Site-specific evaluation of these areas has been completed for special-use permitting and has been analyzed for this environmental assessment. These areas are documented in the discussion of project *Location* in this chapter and on the maps in Appendix B. Site-specific evaluation is an integral part of National Environmental Policy Act compliance for site or condition specific projects. This project and environmental document, therefore, are inherently site specific and additional discussion of this issue is not required.

**Determination of specific treatment areas:** There was concern as to the determination of specific areas to be treated; *specifically*, pertaining to who determines these areas.

This environmental assessment proposes to *allow* the use of herbicides for vegetative management of utility corridors on the Homochitto Ranger District. The Forest Service is not intending to perform or to contract any activities related to this project. Other than specifying the allowable application rates and methods, detailing areas where mitigating measures are to be undertaken, defining areas requiring the various specific treatments, and delineating the specific treatment areas, this analysis does not specify the areas in which actual treatment will take place. The analysis assumes that treatments would be applied to all available areas, but does not infer any obligation for treatment of any area. In the case of herbicide treatment, the choice of whether or not to treat specific areas will be left to the right-of-way special-use permit holder. In the case of wildlife food plots, the choice will be made by those individuals, groups, or organizations willing to partner with the Forest Service for the promotion of quality wildlife habitat in the public domain. This concern, therefore, is beyond the scope of this analysis.

## **CHAPTER 2**

### **ALTERNATIVES**

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### **Introduction**

This chapter provides descriptions of alternatives to the “Proposed Action” and presents the alternatives in comparative form, defining the issues and providing a clear basis for choice among options by the decision maker and the public (National Forest Management Act, 40 CFR 1502.14). It includes a discussion of how the alternatives were developed, a description of each alternative considered in detail, and a comparison of how these alternatives relate to the significant issues. It also identifies the “Proposed Action” as the preferred alternative.

Some of the information in Chapter 2 is summarized from Chapter 3, “Affected Environment and Environmental Consequences.” Chapter 3 summarizes the scientific basis for establishing base lines and measuring the potential environmental consequences of each of the alternatives. For a full understanding of the effects of the alternatives, readers will need to consult Chapter 3.

### **Development of Alternatives**

While still meeting the stated “Purpose and Need” (see Chapter 1), the “Proposed Action” and each alternative presented in this environmental analysis provide a different response to the significant issues. Each of these alternatives was developed through Interdisciplinary Team evaluation.

The Interdisciplinary Team used information from the analysis of scoping comments in conjunction with resource data from forest personnel, silvicultural prescription plans, and data that is available in the geographic information system (GIS) to formulate different alternative approaches. Preliminary analysis and management direction were used to further refine the alternatives described in this chapter.

### **Alternatives Analyzed in Detail**

#### **The “Proposed Action” – Herbicide Maintenance**

The activities and mitigation included in the “Proposed Action” were described in Chapter 1. Analysis of these activities and an explanation of how they respond to the issues developed for this project are discussed in Chapter 3.

#### **“No Action” Alternative**

Alternative 1, “No Action”, was developed to address the issue of the effects of pesticide use on the terrestrial and, especially, aquatic environments, as well as to meet legal requirements. The inclusion and full consideration of this alternative is required by the National Forest Management Act and presents an evaluation of what would be expected to occur if no

management activities were implemented. It is intended to act as a benchmark against which other alternatives are compared.

The “No Action” alternative proposes no change in the current methods of utility corridor maintenance. The choice of the “No Action” alternative by the decision maker does not imply that vegetation along the utility corridors will not be controlled or that wildlife food plots will not be constructed, but only excludes the use of herbicides to accomplish vegetative management objectives. These objectives would be accomplished through existing methods, which utilize hand tools and/or mowing/cutting equipment.

Analysis of this alternative and an explanation of how it responds to the issues developed for this project can be found in Chapter 3.

## Comparison of Alternatives

This section compares outputs, objectives, and effects of the alternatives in terms of the significant issues for the Utility Corridor Maintenance Project. The discussions of effects are summarized from Chapter 3. The following table provides an overview comparison of information from the alternative descriptions.

**Table 2.1: Comparison of Activities by Alternative**

Activity	Measure	Proposed Action	Alternative 1 No Action
<b>Mechanical Maintenance</b>			
Mowing/Cutting Equipment	Acres	Equipment Accessible	Equipment Accessible
Hand Tools	Acres	By Site*	Majority of Area
<b>Pesticide Maintenance</b>			
Selective Mechanized	Acres	Equipment Accessible**	None
Hand-directed	Acres	By Site**	None
<b>Wildlife Food Plots</b>			
Disking/Planting	Acres	Selected Areas***	Selected Areas***

\* No herbicide use will be allowed in riparian areas

\*\* Herbicides will generally be confined to areas where past management has resulted in a heavy woody component

\*\*\* Affiliated partners would determine the total number of acres

## Issues to be Analyzed: Summary of Impacts

### 1. Soil Productivity

Neither of the alternatives would result in any measurable impacts to soil productivity. Further discussion of soil productivity can be found in Chapter 3 of this environmental assessment.

## ***2. Water Quality***

No impacts to water quality would result from the “No Action” alternative, since no pesticides would be used. The potential for impacts upon water quality do exist for the “Proposed Action. These impacts, however, would be minimal due to mitigation measures discussed in Appendix F, Chapter 1, and Chapter 3 of this environmental assessment.

## ***3. Air Quality***

There would be no impacts to air quality resulting from either of the alternatives

## ***4. Vegetation***

The “No Action” alternative would retain the current vegetative condition. The “Proposed Action” could result in a more diverse plant community. Major impacts to vegetation are not likely under either of the alternatives. Impacts related to the various alternatives are presented in Chapter 3 of this document.

## ***5. Forest Health***

No impacts to forest health would be related to either of the alternatives.

## ***6. Threatened, Endangered, and Sensitive Species***

The “No Action” alternative would not affect TES species. The “Proposed Action” may have minimal impact to some TES species. Further explanation of the impacts to threatened, endangered, and sensitive species are addressed in Chapter 3.

## ***7. Management Indicator Species***

Some Management Indicator Species would benefit slightly from the floristic diversity and food plots created by the “Proposed Action”. No Management Indicator Species would be negatively affected by either alternative considered. Chapter 3 further discusses the impacts of the alternatives upon management indicator species.

## ***8. Economics***

The cost of implementation would be incurred by the special-use permit holder or, in the case of food plots, the partners involved, and not by the Forest Service. Therefore, the selection of either the “Proposed Action” or “No Action” alternative would impart no economic consequences. Economics is further discussed in Chapter 3 of this document.

## ***9. Recreation***

No substantial impacts to recreational concerns would result from either alternative. However, the “Proposed Action” better addresses recreation through more effective removal of undesirable vegetation that decreases sight distances along the corridor and the possibility of increased hunting opportunity in these areas. Further discussion of the impacts to recreation can be found in Chapter 3.

## ***10. Heritage Resources***

Neither of the alternatives would impact heritage resources. Heritage resources are further discussed in Chapter 3 of this document.

## ***11. Public Health and Safety***

Public Health and Safety issues in land management mostly concern the use of pesticides. Due to the exclusion of pesticides, no impacts would result from pesticide use in the “No Action” alternative. Higher worker safety risks, however, would result from implementation of “No Action”. An explanation of the concerns and mitigation measures which would result in protection of public health and safety for the “Proposed Action” is discussed in Chapter 3 and Appendix G of this environmental assessment.

## ***12. Civil Rights and Environmental Justice***

The United States Department of Agriculture, Forest Service is a diverse organization committed to equal opportunity in employment and program delivery. The United States Department of Agriculture prohibits discrimination on the basis of race, color, national origin, sex, religion, age, disability, political affiliation and familial status. Civil rights and environmental justice would be upheld and protected in both the “Proposed Action” and the “No Action” alternative. Further explanation of the impacts to civil rights and environmental justice can be found in Chapter 3 of this environmental assessment.

## ***Issues to be Analyzed: Summary of Impacts***

The following table compares alternatives and how they address the identified significant issues and other concerns.

**Table 2.2: Comparison of Effects**

<b>Issue</b>	<b>Measure</b>	<b>Proposed Action</b>	<b>Alternative 1 No Action</b>
<b>Soil Productivity</b>	Reduction in soil productivity	Not measurable	Not applicable
<b>Water Quality</b>	Effect on aquatic life and public health	Below all recognized thresholds with prescribed application	None
<b>Air Quality</b>	Reduction in air quality	Not applicable	Not applicable
<b>Vegetation</b>	Reduction in diversity	None	None
<b>Forest Health</b>	Decrease in forest health	None	None
<b>Threatened, Endangered, and Sensitive Species</b>	Negative impact to TES species	Minimal	None
<b>Management Indicator Species</b>	Impact to MIS habitat	Slightly beneficial	None
<b>Economics</b>	Cost to public	Not applicable	Not applicable
<b>Recreation</b>	Enhancement of preferred conditions	High	Low
<b>Heritage Resources</b>	Amount of modification	None	None
<b>Public Health and Safety</b>	Effect on public health and safety	No adverse effect with mitigation	Higher risk to workers
<b>Civil Rights and Environmental Justice</b>	Effect on civil rights of surrounding population	None	None

**Table 2.3: Other Relevant Relationships**

<b>Issue</b>	<b>Proposed Action</b>	<b>Alternative 1 No Action</b>
<b>Consistent with Forest Plan</b>	Yes	Yes
<b>Consistent with NFMA</b>	Yes	Yes
<b>Consistent with VMEIS</b>	Yes	Yes

## Alternatives Not Analyzed in Detail

The following alternatives were considered by the interdisciplinary team but were not developed in detail due to the reasons stated.

### The “Proposed Action” Without Wildlife Plots

An alternative that did not include wildlife food plot construction was considered. Although the construction of wildlife food plots could be performed as a Categorical Exclusion and, therefore, not included in the Environmental Assessment, the Interdisciplinary team determined that food plots could be more effectively constructed and maintained through removal of competing root stock with herbicides. For that reason, it was determined by the Interdisciplinary Team that incorporation of wildlife food plots as a similar and connected action in the environmental analysis would enhance public understanding of the wildlife enhancement portion of the project. This alternative, therefore, was not pursued further.

### The “Proposed Action” Utilizing Other Herbicides

An alternative that considered the use of herbicides other than those detailed in the “Proposed Action” was considered. Other herbicides considered for use in utility corridor maintenance include 2,4-D, picloram, dicamba, and hexazinone.

The herbicides selected for use do not move readily within the soil, have very low toxicity, and have relatively short half-lives. They are effective against most woody plants. They do not adversely affect water quality and fish at the low concentrations required to control undesirable vegetation.

Other herbicides were eliminated from consideration for use in utility corridor maintenance for various reasons. They either do not effectively control the target vegetation, relocate easily within the soil, are more costly, pose higher safety risks, or are considered generally less environment-friendly. These factors or a combination of these factors made other herbicides less desirable than those selected for the accomplishment of project objectives.

This alternative did not meet the stated purpose and need to accomplish objectives in the safest, most cost effective, and least environmentally disturbing manner; therefore, it was not considered further.

## CHAPTER 3

# ENVIRONMENTAL IMPACTS

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### Introduction

This chapter provides information concerning the existing environment and the potential consequences to the environment associated with the alternatives listed in Chapter 2. It also presents the scientific and analytical basis for the comparison of the alternatives. Following each resource description is a discussion of the potential effects to the resources associated with the implementation of each alternative. All significant or potentially significant effects, including direct, indirect, and cumulative effects, are disclosed. Effects are quantified where possible, and qualitative discussions are also included.

The proposed herbicides to be used are Garlon 4<sup>®</sup> (triclopyr ester), Garlon 3A<sup>®</sup> (triclopyr amine), Arsenal<sup>®</sup> (imazapyr), Accord<sup>®</sup> (glyphosate), Escort<sup>®</sup> (metsulfuron methyl), and Krenite S<sup>®</sup> (fosamine ammonium). These herbicides do not move readily within the soil, have very low toxicity, and have relatively short half-lives. They are effective against most woody plants. They do not adversely affect water quality and fish at the low concentrations required to control undesirable vegetation.

### Physical Factors

Physical factors are the environmental consequences of the alternatives on soil, water, and air resources. Sites evaluated by these factors are widely distributed across the District and vary from broad ridges to steep side slopes and drains.

### Soil Productivity (Issue 1)

#### *Current Situation*

An extensive soil resource inventory for the Homochitto National Forest was completed in 1984 (Soil Resource Inventory Report, Homochitto National Forest 1984). This survey identified the different soil types and associated soil map units along with their locations. Important characteristics of these soil types along with the implications for management were also presented as part of this report. The interpretation of the soil map units provides the limitations and capabilities of the soils to anticipated impacts related to management. Factors that may determine the level of impacts to soils include the soil type, topography, ground cover, weather, type of equipment and the intensity of the activities.

Soils on the Homochitto National Forest generally fall within the ridge, steep side-slope, or side-slope categories. The Lorman and Smithdale soil series predominate. Very limited acres fall within the floodplain classification. All of the soils have moderate to high erosion hazard and seasonal restrictions. Although some sites may have a high sand content, most areas have dense soils, and the sandy sites have some fine soil particles mixed in. The steep side-slopes are not conducive to the use of mechanized equipment. Due to the fragile nature and erosion hazard of

most soils in this forest, excessive rutting and compaction would occur if heavy mechanized equipment were used when the soils are wet. For this reason, mechanized activities may be restricted during the wet season (November 30 through March 1). Further restrictions might be needed if rainfall is excessive during the dry season.

### ***Environmental Consequences***

The effects of the proposed herbicides on soil productivity were addressed in the Final Environmental Impact Statement: Vegetation Management in the Coastal Plain/Piedmont (FEIS VMCP/P). The proposed herbicides were found to have no known effect on soil physical and chemical properties. The proposed application rates are well below the threshold where adverse effects to soil biota were observed. These herbicides are formulated strictly to affect the more complex metabolic processes of higher plants that are absent in microflora. The selective herbicide treatments proposed in this analysis do not expose soil. The proposed herbicides do not inherently disturb soil, so treated areas would have intact litter and duff that maintain erosion at low levels. Nutrient leaching would be limited to minimal nitrogen losses due to suppression of vegetative uptake. Nitrogen budgets should experience long-term buildup from growth of new vegetation and deposition of adjacent timber litter. Losses of other, less mobile nutrients would be negligible. The FEIS VMCC/P states that overall risk to soil productivity from herbicides is minimal. It is therefore highly unlikely that use of the proposed herbicides at the proposed rates would have any measurable effect to soil productivity.

Soil compaction is caused by the weight of machinery on the ground, which increases bulk density and decreases aeration porosity. Disking restores bulk density and aeration porosity in the topsoil and should eliminate the shallow compaction caused by equipment use. Disking can cause soil erosion by exposing and tilling soil. The impact of disking would be minimized, however, due to mitigations such as prompt revegetation of the sites in accordance with “Erosion Control and Wildlife Planting Guides for the National Forests in Mississippi”. Mitigations for food plot construction also include disking only on slopes of less than 20%, tillage along the landform contours, avoiding disturbance of soils with high clay content near the surface, avoiding wetlands, partitioning of larger areas with un-disked strips, and the use of “no-till” planting techniques where practicable. Losses of nitrogen and other nutrients due to disking would also be negligible. The FEIS VMCC/P indicates that overall risks to soil productivity from disking are minimal. Therefore, it is unlikely that any measurable effect on soil productivity from constructing and maintaining wildlife food plots would be realized.

## **Water Quality (Issue 2)**

### ***Current Situation***

The water-related resources of the Homochitto National Forest include floodplains, riparian areas (including rivers, streams, and ponds) and wetlands. Floodplains are those portions of the river valley, adjacent to the river channel, which is covered with water when the river overflows its banks at flood stages. Riparian areas are adjacent to streams, lakes and ponds and are sites that are influenced by groundwater from the water body or where ground-disturbing activities can have a direct influence on the water quality of the water body. Wetlands are defined as

"those areas that are inundated or saturated by surface or groundwater with a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated soil conditions" (40 CFR 230.41 (a)(1).

"Frequency and duration" of a groundwater table sufficient to support a prevalence of hydrophytic plants can include areas where the groundwater table is 12 inches below the soil surface for as little as two weeks during the growing season.

Standards and guidelines have been established to address forest management activities in wetlands, floodplains, and riparian areas (also known as streamside management zones). Buffer zones are designated adjacent to all lakes, perennial or intermittent springs and streams, wetlands, or seeps for the express purpose of protecting water quality. Streamside zone protection measures include prohibiting the use of herbicides within 30 linear feet of the stream or water body. Vegetation is retained within buffer zones, which helps to retain channel stability and maintain water temperature.

Precipitation averages 50-70 inches per year for the Homochitto National Forest. Runoff for the Homochitto National Forest averages about 18-20 inches per year with 36 to 40 inches of water per year released to the atmosphere through evapotranspiration (Soil Resource Inventory Report, Homochitto National Forest). The highest potential for precipitation and associated runoff and flooding occurs in the winter and early spring. Winter rains are usually widespread and prolonged while much of the summer rains are localized thunderstorms of short duration.

Water quality on the Homochitto National Forest is generally good, although some local problems do exist. Channelization of the Homochitto River has lowered the normal water level and increases the rate of flow in the river and associated tributaries, resulting in stream bank cutting. Local problems may be the result of erosion and sedimentation from Loess soils, head cutting of streams, or infrequently from oil and gas operations. Since much of the watershed drainage originates on private lands, primary negative impacts on water quality come from private agricultural (farming and cattle), small woodlot, and residential uses. Erosion and sediment are impacts from these activities that may have a direct negative impact on water quality. In addition, some streams may be locally impaired from fecal coliform associated with the lack of or improperly functioning private on-site septic treatment systems, livestock runoff from private land, and natural sources such as wild animals.

Aquatic health is an essential aspect of the water resource and is included in the term "water resource." The measure of an adverse affect upon water quality would be that the project changes water quality to the extent that the cost of down-stream uses increases, or the quality of the aquatic habitat decreases as measured by a decline in the presence of aquatic management indicator species.

Since the Forest Plan was initiated in 1985, the District has periodically inventoried six representative streams. Each inventory has identified ichthyo-management indicator species to be present in streams. Typically five or six of the eight species are represented, but some streams have all eight species. Since habitat varies according to seasonal rain patterns and individual stream characteristics, there is no expectation that all indicators would be present in all streams.

The purpose of multiple management indicator species is to have representatives for the full range of streams that occur across the Forest.

The Homochitto National Forest was purchased during the mid-1930's. Since that time, it has undergone continuous management activities, which include herbicide usage. Since 1968, 41% of the forest has been harvested and regenerated, typically facilitated by the use of herbicides, and much of the remaining acres have been thinned. Stream monitoring captures the effect of that activity upon aquatic habitat. Neither the direct, indirect or cumulative effects have eliminated appropriate indicator species from the aquatic habitat. Streams have maintained healthy environments.

### ***Environmental Consequences***

Typical soils on the Homochitto have a high concentration of fine particles that minimize leaching and lateral movement. Soils in the project area are sufficiently dense to hold the proposed herbicides on site and are in the range of the analysis done for the Vegetation Management in the Coastal Plain/Piedmont, Final Environmental Impact Statement. Analysis of these risk assessments reveals little, if any negative effects on water quality from the use of the proposed herbicides with the proposed application rates and methods.

A site-specific examination of the sites and knowledge of soils in the project area shows that the vegetative components on the site can be controlled by the proposed herbicides, and that the density of the soils is sufficient to fix the herbicide on the site. Employing herbicides to obtain undesirable vegetation control would introduce slightly toxic chemicals to target sites. However, concentrations are such that, with the dense soils of the Homochitto, there is little or no movement of herbicides.

An evaluation of the estimated application rates indicates that the rates applied per acre will be less than the typical rate prescribed in the Final Environmental Impact Statement for Vegetative Management in the Coastal Plain/Piedmont (FEIS VMCP/P). Impacts and risks associated with the typical rates were considered insignificant in the evaluation completed for the Environmental Impact Statement.

The proposed herbicides are Class "A" chemicals, and the methods of applications are addressed in the FEIS VMCP/P (pp. II-41, 42). Research and technical data reviewed in preparation for the above Environmental Impact Statement and the Material Safety Data Sheets for these herbicides indicate that they have a relatively short half-life and biodegrade through microbial action. Therefore, they do not build up between successive treatments. Riparian buffer zones would prevent herbicides from entering streams, resulting in no measurable effects to water quality and aquatic species.

Detailed herbicide risk assessments, including surface and subsurface off-site movements, may be found in Appendix A, Section 4 of the FEIS VMCP/P. Mitigating measures are discussed in Appendix F of this document. Mitigations include no herbicide application within 30 linear feet of streams, seeps, ponds, and other water bodies.

Wetlands, floodplains, and riparian areas are addressed in the Forest Plan, in Amendment 6 to the Forest Plan; in the Final Environmental Impact Statement, Vegetation Management in the Coastal Plain/Piedmont; and in Executive Orders 11988 (floodplains) and 11990 (wetlands). Mitigation measures for protecting these areas are based on the National Forests in Mississippi's "Management Guidelines for Streamside Areas" and are discussed in Appendix F of this document.

As previously described, disking exposes soil and increases the risk of erosion. However, the location of food plot sites away from streams, the prompt revegetation of these sites, and the implementation of riparian buffer zones would decrease potential impacts to a non-measurable status.

No effects to water quality would be realized from herbicide use in the "No Action" alternative. Construction of wildlife food plots would have the same effects as described for the "Proposed Action". Since the use of herbicides was determined to be below the application rates as evaluated by the Final Environmental Impact Statement for Vegetative Management in the Coastal Plain/Piedmont, this alternative does not represent an improvement in the quality of the human environment over the "Proposed Action". In fact, the over-all impact is considered to be the same.

## Air Quality (Issue 3)

### *Current Situation*

The air quality objective for the National Forests in Mississippi is Class II (as described in the amended Clean Air Act). The present air quality is better than the National Ambient Air Quality Standards.

### *Environmental Consequences*

The Final Environmental Impact Statement for Vegetative Management in the Coastal Plain/Piedmont, Volumes I and II, analyzed the effects of herbicide application on air quality. Because this is not an aerial application project, neither the "Proposed Action" nor "No Action" alternative would have any measurable direct, indirect, or cumulative impacts on air quality.

## Cumulative Physical Effects (Issues 1, 2, and 3)

The President's Council on Environmental Quality (CEQ) publication, *Considering Cumulative Effects Under the National Environmental Policy Act* states, "Evidence is increasing that the most devastating environmental effects may result not from the direct effects of a particular action, but from the combination of individually minor effects of multiple actions over time." (p 1) Cumulative impacts must be analyzed for effects over both area and time; however, the CEQ makes it clear that it is unproductive to analyze the cumulative effects of an action on the universe. The purpose of cumulative effects analysis is described as an aid to the decision maker and information for interested parties. To meet this objective, analyzed effects must be "meaningful" to the proposed action and alternatives. (p 8) The CEQ cautions against an analysis of a laundry list of all possible issues that may have "little relevance to the effects of the proposed action..." and directs the analysis to "count what counts". For example, Item 8, Table 1-3 (p 8) of the referenced document describes the characteristic of a trigger or threshold as causing "fundamental changes in system behavior or structure." An example of a secondary effect (Item 7) is commercial development following highway construction. Vegetation is the most visible forest component, however, highly visible changes such as harvest and reforestation of a mature stand is not necessarily cumulative.

Land use practices within the Homochitto River watershed include the clear-cut harvest, thinning, midstory removal, chemical release, prescribed burning, road maintenance, grazing, farming and private residences. These examples include only a partial representation of the activities on private lands that can potentially share cumulative effects

The proposed actions are expected to take place over a period of about 5 years. Other vegetative management activities on other Homochitto National Forest lands within which are currently being planned for implementation are summarized in Table 3.1 on the following page. The three-year period was chosen because the Final EIS for the Forest Plan confirmed that, with mitigation, the potential for soil and water impacts diminished rapidly over the first year after implementation and returned to normal base levels by the end of the third year.

**Table 3.1: Known Management Activities Currently Being Planned/Implemented**

Analysis Name	Year Actions Planned / Implemented	Regeneration Acres	Thinning Acres	Total Analysis Unit Acres (FS only)
AU 1	2003 $\mu$	605 $\lambda$	720	5,697
AU 2 $\xi$	2006 $\mu$	318	1,240	4,645
AU 4 $\psi$	2004 $\mu$	131	1,111	4,609
AU 5 $\psi$	2004 $\mu$	295	850	3,800
AU 7	2003 $\mu$	502	915	7,290
AU 12	2003 $\mu$	273	1,140	3,760
AU 14	2000	172	3,151	5,569
AU 16 $\xi$	2006 $\mu$	291	953	4,040
AU 17	2001	719 $\lambda$	2,594	6,028
AU 20	2003 $\mu$	351	1,645	5,097
AU 22 $\psi$	2004 $\mu$	294	518	3,300
AU 23 $\xi$	2006 $\mu$	360	1,328	5,230
AU 24 $\xi$	2005 $\mu$	140	522	2,096
AU 27 $\xi$	2005 $\mu$	294	1,174	5,872
AU 30 $\xi$	2005 $\mu$	206	768	3,084
AU 32 $\xi$	2006 $\mu$	245	938	4,097
AU 36 $\xi$	2006 $\mu$	226	905	4,526
AU 37 $\xi$	2006 $\mu$	214	1,062	3,773
AU 38 $\psi$	2004 $\mu$	233	782	3,973
AU 39 $\psi$	2004 $\mu$	278	856	5,886
1st Thinning 2	2000 - 2003 $\mu$	0	2,578	2,578
1st Thinning 3 $\psi$	2005 $\mu$	0	2,740	2,740
2002 SPB Spots $f$	2002	378	0	378
<b>TOTALS:</b>		<b>6,525</b>	<b>28,490</b>	<b>98,068</b>

$\psi$  - Acres projected based on stand review.  $\xi$  - Acres projected based on long-term averages.

$\mu$  - Projected implementation date.  $f$  - Not planned harvest. Includes spots greater than 5 acres.

$\lambda$  - Includes only regeneration openings in uneven-age management areas. Acres between these small openings are included with "thinning acres".

In determining significance, NEPA directs that we look at impacts rather than acres or other factors. As a result, cumulative effects determination must relate to the scale of the treated and untreated lands and the amount of actual vegetative change taking place in the natural and/or managed system. The total herbicide project area is roughly 1200 acres, which are distributed along the approximately 340-mile utility corridor system. It is not likely that all of this acreage would be treated. However, if all acreage was treated, the additional treatment acreage is only slightly more than *one percent* of the acres available for vegetative management in the projected period. The total acreage apportioned for wildlife food plots is roughly 80 acres, or *8 hundredths of a percent* of the available acreage.

Many comments the district has received over the past several years seem to presuppose that if we did not manage the forest resource through harvesting, etc., the forest would remain intact and unchanged. This is not the case. In looking at some natural loss rates, in 1995, more than 5000 acres of mature forest were lost to southern pine beetle infestations. This represents approximately 2½% of the forest base in one year – more than four times the estimated planned harvest rate shown above. Since that time we have had four major windstorms that resulted in large numbers of sub-acre gaps in the forest, and a tornado that cleared approximately 400 acres. Pine beetle activity is now increasing in accordance with its predictable cycle. It would be difficult to establish a cumulative effect for planned management activities taking place at less than the normal loss rate expected over the next five-to-six entry cycles.

The herbicide that was evaluated for site-specific use does not bio-accumulate and was determined not to have a significant cumulative impact at the rates and total quantities to be used by the Final Environmental Impact Statement for Vegetative Management in the Coastal Plain/Piedmont. Because of the short half-life, it would not build up on the site or be additive to other herbicide treatments across the district.

Equipment use may cause slight compaction. Compaction reduces transpiration and may cause a short-term increase in water yields and sediment production. Increased surface runoff could cause erosion where soils are exposed and water is channeled. However, the ground pressure produced by small tractors is very low; therefore, the effects of soil compaction from the proposed small equipment are incidental to that of compaction originating from larger equipment or even foot traffic. There would be sufficient uncompacted acres surrounding the corridor to absorb any increased run-off and not result in an increase in water yields or erosion within the watershed. Subsequently, no cumulative impacts would occur.

As a result of the proposed action, there will be minor impacts to physical resources. These impacts would be mitigated through strict control of activities, implementation of riparian buffer zones, and observance of herbicide use restrictions. With mitigation, these impacts would not be additive to other projects in future operating seasons. There appear to be no physical effects that are not mitigated to the extent that they are not cumulative.

There would be no direct or indirect cumulative impacts on the physical environment for the “No Action” alternative. Since the use of pesticides as prescribed in this project was found to have no cumulative effect, the prohibition of pesticides would have no cumulative impact advantage over the “Proposed Action”.

## **Biological Factors**

Biological factors are the environmental consequences of the alternatives on vegetation, forest health, threatened/endangered/sensitive species, and management indicator species.

## Vegetation (Issue 4)

### ***Current Situation***

It has been Forest Service Policy to look at the most appropriate management in the most natural manner. In Native American and early settlement times, most of the proclaimed Homochitto National Forest showed substantial influence of fire. The historical forest was a mosaic involving a longleaf pine-shortleaf pine dominated ridge community with loblolly pine occurring more frequently on lower slopes and within drainages. Fire controlled midstory vegetation and encouraged open stands with a grass and low shrub understory. Hardwoods species were found in mesic drains and creek bottoms where the microhabitat conditions prevented frequent occurrence of fire. (Holmes, J.S. and J.H. Foster, 1908).

The Homochitto National Forest represents a limited resource in southwest Mississippi. Part of the associated obligation is the avoidance of placing species of special concern at risk. There are no Threatened and Endangered plant species confirmed to occur on the Homochitto National Forest. A detailed discussion of potential project impacts on Sensitive plant species is found in the Biological Evaluation (Appendix D). The conclusions reached in this document with respect to plant species of local concern are summarized here.

Botanical Species of Local Concern that could occur in the project area include the silky camellia (*Stewartia malacodendron*), single-headed pussytoes (*Antennaria solitaria*), Florida Keys hempweed (*Mikania cordifolia*), swamp hickory (*Carya leiodermis*), appendaged lobelia (*Lobelia appendiculata*), Allegheny spurge (*Pachysandra procumbens*), ginseng (*Panax quinquefolium*), and crested fringed orchid (*Platanthera cristata*). Although not designated by the Region 8 Regional Forester as sensitive species for the National Forests in Mississippi, these species have a Mississippi Natural Heritage Program state rank of S1, S2, or S3.

The silky camellia can most commonly be found on north facing bluffs and in deep ravines where it is nearly always associated with small trees of witch hazel. It seldom grows in areas that have repeated or frequent fires. The single-headed pussytoe seems to be more restricted to rich mesic woods habitat than the common headed pussytoes. The habitat for this species on the Homochitto seems to be disturbed patches of bare soil where the topsoil has eroded or slipped in rich mesic woods (well drained with good organic and mineral content) and wooded slopes (usually on upper to mid slope). Florida Key's hempweed occurs in rich hardwood slopes and ravines, mixed pine-hardwood slopes, and hardwood bottomland forests and thickets. Swamp hickory and the crested fringed orchid may occur in swamps or in the margins of swamps. The orchid occurs in shaded mucky wetlands along streams and lower slope seepages over organic soil. This is a woodland species growing with or near the green rein orchid – both occurring on streamside hummocks and in swampy woods that have abundant wet soil. Appendaged lobelia is associated with grasslands. Grass dominated understories can be found in openings and in pine stands that have been thinned and prescribed burned. While not specifically documented on the Homochitto National Forest, the likelihood exists that further survey efforts will locate this species in open, burned, thinned pine stands. Allegheny spurge and ginseng are associated with deep moist drainages with dense canopies near perennial and large intermittent streams. To date,

ginseng has not been documented on the Forest and Allegheny spurge has been documented at only two locations on the Forest.

### ***Environmental Consequences***

Herbicides, sites, and vegetation fall within the range evaluated in the Final Environmental Impact Statement for Vegetation Management in the Coastal Plain/Piedmont. Prescribed rates for this project are lower than those rates determined to have no significant impact on plant communities evaluated in that document. The lack of substantial off-site movement results in no measurable effects outside of the treatment zone.

According to Mississippi Natural Heritage Program records, and with the exception of appendaged lobelia, plant species of local concern are more likely to occur in the mature, mesic hardwood and pine-hardwood forest components of the Homochitto National Forest than in the open, brushy habitat of utility corridors. Due to habitat preferences, the likelihood of conflict between these sensitive plant species and maintenance operations is minimal. The grassland-associated appendaged lobelia would possibly benefit from management actions through creation of suitable habitat. Some individual plants may be negatively impacted by herbicide application, but impacts should be minimal for each species. Herbicide use limitations imposed in riparian habitats should reduce impacts to these species. Individuals may be lost, but overall habitat should remain intact.

Floristic composition and structure would be altered and floristic diversity would be increased in utility corridors through the use of herbicides. Herbicides would effectively remove the dense, woody, monoculture thickets now present on many parts of the treatment area. Grass and herbaceous species that were effectively shaded out by the brush would increase, and these areas would more closely approximate an open, grassland or prairie habitat.

Vegetative effects of the “No Action” alternative would be a continuation of the current conditions, which is less diverse and less beneficial to wildlife than would be a more open, grassy site.

## **Forest Health (Issue 5)**

### ***Current Situation and Environmental Consequences***

Forest Health concerns are addressed by neither the “Proposed Action” nor the “No Action” alternative. The same vegetative management outcomes would result from both alternatives; therefore, any effects on forest health would remain the same regardless of the alternative chosen. Forest Health, therefore, is not pertinent to the Decision to be made.

## **Threatened, Endangered, and Sensitive Species (Issue 6)**

### ***Current Situation***

Section 7 of the Endangered Species Act obligates all federal agencies to ensure that any action carried out is not likely to jeopardize the continued existence of any threatened, endangered, or

sensitive flora or fauna. As a part of this analysis, the current threatened and endangered species lists (USDA, 2002) were reviewed. The Regional Forester’s list of sensitive species (dated August 7, 2001) and State Species of Local Concern were also included in this review.

### ***Environmental Consequences***

A Biological Evaluation was prepared for Threatened, Endangered and Sensitive (TES) species. This document is included as Appendix D of this Environmental Assessment. The effects and impacts of each alternative are summarized below. A detailed discussion of each species can be found in the Biological Evaluation.

#### **Threatened or Endangered species**

From the information and sighting records available to the District and based on field surveys conducted, no threatened or endangered species will be affected. There is a “No Effect” determination for all TES species for all alternatives, except for a “Not Likely To Adversely Affect” determination for the Louisiana black bear under the “Proposed Action”.

**Table 3.2: Threatened and Endangered Summary of Conclusions of Effects**

Species	Occurrence on the Homochitto	Proposed Action	No Action Alt 1
Red-cockaded woodpecker	Confirmed	NE	NE
Louisiana black bear	Confirmed	NLAA	NE
Bald eagle	Confirmed	NE	NE

NE = No Effect, NLAA = Not Likely To Adversely Affect, LAA = Likely To Adversely Affect

Potential effects to Threatened and Endangered Species including the RCW, Louisiana black bear, and bald eagle are discussed in detail in the Biological Evaluation.

#### **Sensitive Species**

The Biological Evaluation (Appendix D) explains in detail determinations made for the Homochitto Ranger District’s Sensitive species. The reader is referred to this document for details concerning how determinations of impact were made.

No impacts resulting from any of the alternatives discussed were found for the Alabama shad, rayed creekshell, crystal darter, broadstripe topminnow, cypress-knee sedge, Small’s woodfern, pearl blackwater crayfish, Natchez stonefly, chukcho stonefly, Bachman’s sparrow, Rafinesque’s big-eared bat, arogos skipper, or Trachyxiphium moss. The Alabama shad is a catadromous fish, which means in the spring it migrates to fresh water from salt water. Due to fish barriers (i.e. dams) these species have not been found recently in the Homochitto River. The crystal darter and broadstripe topminnow are large river fish that have been documented in the Homochitto River. It was determined that forest management activities would have no impact on these species due to the unlikelihood of the effects of management activities reaching the Homochitto River. The Rayed creekshell will not be impacted by activities due to its location and habitat. This species is found within the larger creeks of the Amite River watershed, of which only minuscule headwater portions are found on the Homochitto Ranger District and where riparian

buffers will mitigate effects. The cypress-knee sedge and the Small's woodfern are located in wet swampy areas, in which herbicides are excluded, and therefore will not be impacted. The pearl blackwater crayfish and both stoneflies (Natchez and chukcho) would not be affected due to the lack of effect on their habitat in streams. Bachman's sparrow and Rafinesque's big-eared bat would also not be impacted due to no adverse effect upon their habitat. The Argos skipper has not been found on the District, therefore, it would not be impacted. No impact to the spring seep habitat of Trachyxiphium moss also results in no impact to this species.

No potential impacts were found for Webster's salamander, bay starvine, and fetid trillium as a result of the "No Action" alternative.

Webster's salamander, bay starvine, and fetid trillium were found to have potential impacts associated with vegetative management activities of the "Proposed Action". However, these impacts were minimal and would not lead to the loss of viability or listing of these species. Webster's salamander, although it has not been found on this District, could be directly impacted by management activities if individuals were found to be present. Herbicide usage could impact individuals of bay starvine and fetid trillium, but due to the habitat of these species (riparian habitats, hardwood bottoms and ravines) the impacts on these species should be minimal.

**Table 3.3: Sensitive Species Summary of Conclusions of Effects**

Species	Occurrence on the Homochitto	Proposed Action	No Action Alt 1
Webster's salamander	Possible	MII	NI
Bachman's sparrow	Confirmed	NI	NI
Pearl blackwater crayfish	Confirmed	NI	NI
Alabama shad	Unlikely	NI	NI
Crystal darter	Unlikely	NI	NI
Broadstripe topminnow	Unlikely	NI	NI
Natchez stonefly	Confirmed	NI	NI
Chukcho stonefly	Confirmed	NI	NI
Rafinesque's big-eared bat	Confirmed	NI	NI
Rayed creekshell	Unlikely	NI	NI
Argos skipper	Possible	NI	NI
Trachyxiphium moss	Confirmed	NI	NI
Cypress-knee sedge	Confirmed	NI	NI
Small's woodfern	Confirmed	NI	NI
Bay starvine	Confirmed	MII	NI
Fetid trillium	Confirmed	MII	NI

NI = "no impact"

MII = "may impact individuals but not likely to cause a trend to federal listing or a loss of viability"

L = "likely to result in a trend to federal listing or a loss of viability"

BI = "beneficial impact"

The "Proposed Action" would have the greatest impact to sensitive species. However, as stated in the Biological Evaluation, impacts would not result in a trend towards federal listing or a loss of

viability. Most of the Forest Service Sensitive species are located in or adjacent to riparian habitats or wetlands. These types of habitat are maintained by prohibiting herbicides within filter strips adjacent to streams.

### **State Species of Local Concern**

One State species of local concern that has potential for occurring in the project area is the hoary bat (*Lasiurus cinereus*). Hoary bats roost in the foliage of a variety of trees and therefore have a wide distribution. In general, the high densities of insects that can be found around bodies of water, such as streams and ponds, makes this very important foraging habitat. Surveys for this bat have not been conducted, however, the Forest is known to contain habitat preferred by this bat species.

The hoary bat's foraging habitat would remain undisturbed by management activities through the maintenance of SMZs. Therefore, there would be no adverse effects to State Species of Local Concern under any alternative.

## **Management Indicator Species (Issue 7)**

### ***Current Situation***

Under the National Forest Management Act (1976), the Forest Service is charged with managing National Forests to provide for a diversity of plant and animal communities consistent with multiple-use objectives. Management Indicator Species are one tool used to accomplish this objective as they and their habitat needs are used to set management objectives and minimum management requirements to focus effects analysis, and to monitor effects of plan implementation. MIS were selected in the 1985 Land and Resource Management Plan to serve three major functions: 1) represent issues of hunting demand, 2) consider species for which population viability may be a concern, and 3) species which serve as ecological indicators of certain communities or habitats. In this analysis, MIS affected by the project are used to focus analysis of effects of this project on these issues.

Available Management Indicator Species information has been compiled and consolidated to provide as clear a picture as possible of how indicator species have responded to management activities or the absence of such activities. The current report is available to the public on the National Forests in Mississippi web site (<http://www.southernregion.fs.fed.us/mississippi/>). Information from this report, along with additional information available to the Interdisciplinary Team, is summarized below and used to assist the responsible official in reaching a decision.

NFMA intends use of management indicator species, in part, to ensure that national forests are managed to "maintain viable populations of existing native and desirable non-native vertebrate species." Because indicator species cannot adequately represent all species (Landres et others 1988), new strategies are emerging for accomplishing this goal. One strategy is the coarse and fine filter approach (Nature Conservancy 1982, Noss 1987, Hunter 1990). This strategy assumes that most species can be maintained at viable levels by providing a diversity of habitat conditions across a landscape. Providing a diversity of habitat types serves as the coarse filter. However, some species with narrow habitat requirements or for which viability is of concern require

special attention (or a fine filter) to ensure viability. This analysis uses habitat availability for management indicator species as the coarse filter for ensuring that a mix of habitat types is provided across the landscape. The Biological Evaluation serves as the fine filter to ensure that those species most at risk of losing viability (threatened, endangered, and sensitive species) are not negatively affected. This combination of approaches ensures that all species on the Homochitto National Forest are maintained, or are moving toward, viable population levels.

Management Indicator Species (MIS) were selected as provided in Section 6, 219.12(g)(2) of the National Forest Management Act (1976), planning regulations. The species and the habitats represented by them are presented in the following tables.

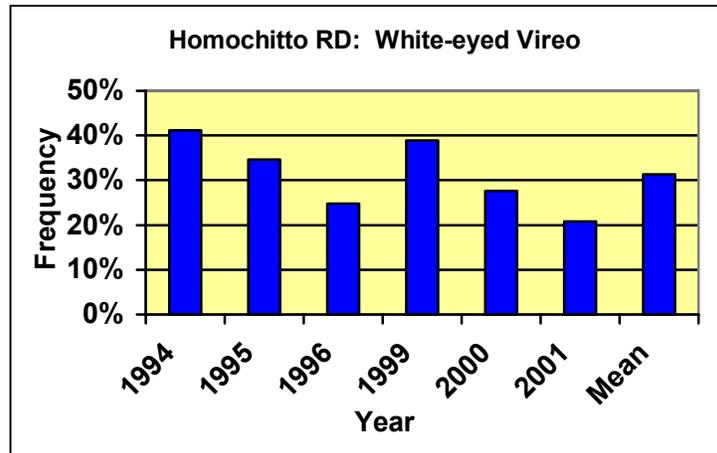
**Table 3.4 Terrestrial Management Indicator Species**

MIS	Habitats Represented On Homochitto National Forest
White-tailed deer	0-10 years, all forest types
Bachman's sparrow	0-10 years, longleaf*/mod. yield slash pine
Bobwhite quail	0-10 years, longleaf*/yellow pine
Eastern meadowlark	0-10 years, yellow pine
American kestrel	0-10 years, pine/hardwood
Rufous-sided towhee	0-10 years, hardwood
Eastern wild turkey	40+ years, all forest types
Pileated woodpecker	40+ years, all forest types
Red-cockaded woodpecker	40+ years, all pine forests except slash
Fox squirrel	40+ years, longleaf* pine
Pine warbler	40+ years, yellow pine
Eastern gray squirrel	40+ years, pine/hardwood and hardwood
Hooded warbler	40+ years, hardwood
Screech owl	40+ years, pine/hardwood

\* The original Forest Plan did not acknowledge the presence of Longleaf Pine on the Homochitto. Longleaf occurs on the Homochitto primarily in mixed stands with shortleaf and loblolly. The MIS indicators for Longleaf forest are used here to represent these mixed pine stands which are the functional equivalent of Longleaf forest elsewhere.

While not selected Management Indicator Species, a number of other birds share early-seral yellow pine habitats. Looking at population information available for these species can provide additional insight into the effects of management activities. One such species is the white-eyed vireo. The Homochitto National Forest's breeding bird surveys have collected data for the white-eyed vireo since 1994. It utilizes a shrubby type of habitat, which more closely represents early-seral yellow pine conditions, as opposed to the northern bobwhite, which represents the grassier end of the spectrum, and the eastern meadowlark, which utilizes prairie or grassland conditions. Because the breeding bird survey data for the white-eyed vireo is not available in the Forest's Management Indicator Species analysis, the following graph provides frequency of occurrence population information for this species.

**Figure 3.1: Frequency of Occurrence of the White Eyed Vireo**

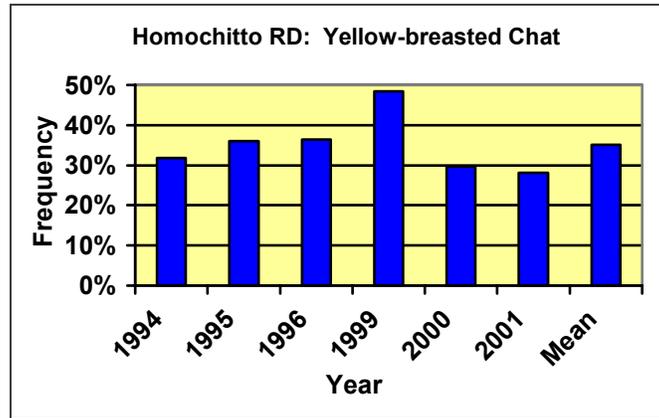


As with all early seral habitat species, preferred habitat has declined for the white-eyed vireo. Early seral yellow pine is currently at only about 50% of that available in 1981. In contrast, populations of the vireo have fluctuated in a pattern more typically associated with normal, short-term breeding cycle responses dependent on weather and disease. There appears to be a slight downward trend, but not to the extent that preferred habitat has diminished. Like quail and a number of ground and shrub-nesting Neotropical migrants, populations seem to be increasing or stable as these birds take advantage of the early seral vegetation relationships which develop in the understory of stands that are burned and/or managed for the red-cockaded woodpecker.

The American kestrel was selected for early age (0-10 year old) pine - hardwood forests. Data on populations of American kestrel on the National Forest in Mississippi are sparse, despite considerable effort expended on point counts. As regional data indicate a stable population trend, it would appear that this species either is not an adequate indicator for early-age pine-hardwood habitat or a different monitoring protocol is needed. In the spring of 2002, the Homochitto Ranger District began a process to establish new sampling protocols. Implementing the new protocols in the summer of 2002 resulted in a frequency of occurrence of 16% for the kestrel. These preliminary data indicate that the new protocols are effective and that the kestrel population is greater than previously recorded.

The yellow-breasted chat is an example of a species that can also be found in the 0-10 year old pine-hardwood habitat represented by the American kestrel. Breeding bird survey data demonstrates that the yellow-breasted chat is an exceptional indicator for this habitat. Because the breeding bird survey data for this species is not available in the Forest's Management Indicator Species analysis, the following graph provides frequency of occurrence population information for this species. These data show that this species is well represented on the Homochitto National Forest.

**Figure 3.2: Frequency of Occurrence of the Yellow Breasted Chat**



Acres of available suitable habitat have decreased for all inhabitants of this type due to reduced regeneration activities in this forest type. Overall, this habitat type has declined since adoption of the Forest Plan, but has recently nearly reached pre-Plan levels. As with other early successional habitats, current availability is below that anticipated by the Plan, but such habitats are not rare on national forests or surrounding private lands.

**Table 3.5 Aquatic Management Indicator Species**

MIS	Habitats Represented On Homochitto National Forest
Southwest stream fish (8 species listed)	Streams south of Interstate 20 and west of Highway 49
Lake and pond fish (8 species listed)	Lakes and ponds

Streams on the Homochitto National Forest are, for the most part restricted to the Homochitto River drainage, with relatively small acreages in the Amite, Bayou Pierre, and Buffalo drainages. Streams on the Homochitto National Forest are characteristically slow flowing, clear, warm, sand-gravel bottom, 1st - 3rd order streams. These streams are moderately shaded, wide and shallow with low conductivity and with an acid pH. The species of fish selected as Management Indicator Species for Southwest Mississippi Streams represent an assemblage of fish from all trophic levels. Lampreys, darters, and madtoms require very good water quality and low turbidity and are rarely found in degraded habitats. Spotted bass are the major carnivore in the system and with the longear sunfish comprise the major game species. The blacktail redhorse, longnose shiner, and bluntface shiner are significant forage species in the system. In contrast to terrestrial MIS, which were to represent changes in habitat (the conversion of acres of late seral forest into early seral forest), the aquatic MIS serve to indicate changes in water quality, not quantity of habitat.

**Table 3.6: Southwest Stream Management Indicator Species**

Common Name	Scientific Name
spotted bass	<i>Micropterus punctulatus</i>

banded darter	<i>Etheostoma zonale (Etheostoma lynceum)</i>
rainbow darter	<i>Etheostoma caeruleum</i>
brindled madtom	<i>Noturus miurus</i>
longnose shiner	<i>Notropis longirostris</i>
bluntnose shiner	<i>Notropis camurus (Cyprinella camura)</i>
blacktail redhorse	<i>Moxostoma poecilurum</i>
southern brook lamprey	<i>Ichthyomyzon gagei</i>

Fish are sampled by seining or electro-shocking short segments of streams. Fish species are highly sensitive to flow rates and water temperature, with respect to their seasonal locations within streams. Because of differences in size and flow rates, not all streams have habitat to support the full range of management indicator fish species. The expectation is highly variable samples over time, with multiple surveys required to establish the full range of species inhabiting a stream.

The fish fauna of the Homochitto National Forest are reasonably well known considering the general state of knowledge of stream fishes in southwest Mississippi. Douglas (1975) reported on rare fishes of the Homochitto. He considered the bluntnose shiner, northern studfish, rainbow darter, and northern hogsucker to be fishes of significance due to their geographic isolation from more northern populations. Danny Ebert, fisheries biologist with the U.S. Forest Service, conducted an intensive survey of the fishes of the Homochitto River drainage over a six-year period, which included 96 fish collections representing 81 fish species (Ebert, *et. al.* 1985).

Additional sampling was conducted on selected streams during 1996 as part of an on-going Forest Service study of the fish fauna of the Homochitto National Forest. Both diversity and species richness were reported as high and the Index of Biotic Integrity (IBI) characterized the streams of the forest as generally "good" to "excellent" (Johnston and McWhirter, 1996). It was confirmed by both studies that all eight of the aquatic Management Indicator Species occurred on the Homochitto National Forest.

During surveys conducted by Mel Warren, Research Biologist with the Forest Service Southern Research Station (2000 – 2002), many species of fish and crayfish were collected throughout the Homochitto National Forest stream systems. This data was summarized and analyzed in the Management Indicator Species Supplement: Lotic Fish Data (1980-2002). Preliminary trend data show fluctuations in numbers. We considered that these changes could be tied to timber management, however, when examining four different watersheds, three outside of harvesting activities, these fluctuations seem to be widespread (MIS Supplement: Lotic Fish (1980-2002)). When looking at presence-absence data (1980-2002), MIS fish species were found in more streams sampled during 2000-02 than during 1980-84 (MIS Supplement: Lotic Fish (1980-2002)). Again, although the variables mentioned previously make it difficult to assess anthropogenic impacts, we could not draw the conclusion that these changes were tied to timber management activities on the Homochitto National Forest.

## ***Environmental Consequences***

Any analysis of the effects of management on terrestrial wildlife species must recognize that actions benefiting species utilizing early seral stages will ultimately be done at the expense of those species utilizing older forest stands. On the same area, it is difficult, if not impossible, to satisfy the needs of all "wildlife" at the same time. The goal of the manager is to attempt to balance the needs of all, giving special consideration to those species most at risk of extinction/extirpation.

Open, grassland-type habitats are rare on the Homochitto Ranger District. The use of herbicides for the reduction of the profuse woody monoculture conditions that prevail on many acres of the utility corridors of the Homochitto National Forest would increase diversity of plant species in these areas and produce a more open, grassy habitat. This would, in turn, benefit the eastern meadowlark and other species associated with early seral and grassland habitats. Species representative of late seral habitats, such as the wild turkey and screech owl, may also benefit through increase in available foraging habitat. Any reduction in escape cover provided by the woody thickets would be more than offset through the creation of feeding habitat.

Wildlife food plots would directly benefit herbivores such as the whitetail deer, while providing feeding grounds for turkey and quail and hunting grounds for kestrels and screech owls, and with the additional provision of habitat for certain neotropical migrants and other species which utilize early seral habitats.

The risks associated with the proposed herbicides were evaluated in the Final Environmental Impact Statement for Vegetative Management in the Coastal Plain/Piedmont. By applying the rates using application methods and safety considerations specified in the "Record of Decision" for that document, no significant risk to terrestrial or aquatic wildlife was found.

The considered range of alternatives will impact the same number of acres of habitat in essentially the same way, with the exception of the resultant species diversity and floristic structure. With the "No Action" alternative, no herbicides would be used to decrease the dense, woody monoculture habitat conditions, and no wildlife food plots would be constructed. Any benefits to management Indicator Species, therefore, would be sacrificed if the "No Action" alternative were selected.

## **Cumulative Biological Effects (Issues 4, 5, 6, and 7)**

Cumulative effects are effects from multiple projects that over time or area become additive. In their cumulative effects analysis manual "*Considering Cumulative Effects Under the National Environmental Policy Act*", The President's Council on Environmental Quality clearly states that cumulative effects analysis is applied to a "project impact zone", which is an area within which the effects can be measured. The council further states, "Not all potential cumulative effects issues identified during scoping need to be included in an EA or an EIS. Some may be irrelevant or inconsequential to decisions about the proposed actions and alternatives. Cumulative effects analysis should "count what counts"...." This places the benchmark for

cumulative effects as effects that can be measured and have a real and consequential relationship to the decision when viewed over time and/or area.

On sites without herbicide restrictions, the “Proposed Action” includes the use of herbicides. Studies documented in the Final Environmental Impact Statement for Vegetative Management in the Coastal Plain/Piedmont indicate that when used at approved rates and with required safety precautions, the herbicides evaluated for this project do not bioaccumulate and do not have significant adverse impacts on populations of non-target plants and animals. No direct cumulative impacts were identified.

Cumulative effects analysis is based on the effects of planned actions. The same impacts to forest health would result regardless of the choice of actions of the Forest Service. Therefore, it is inappropriate to discuss the cumulative effects of planned actions on forest health.

With the use of herbicides over time, the overall vegetative characteristics of utility corridors would change from an area with many impenetrable, monoculture thickets that have little benefit to management indicator species to a more open, grassier area which provides habitat for early seral management indicator species as well as other species, including many neotropical migrants. This effect is short term, however, and the FEIS Vegetation Management in the Coastal Plain/Piedmont found no evidence that repeated typical applications of herbicides in right-of-way settings causes permanent effects on plant succession. The area to be treated is quite small relative to the general forest area. Therefore, there would be no cumulative effects to vegetation or management indicator species.

A Biological Evaluation (BE) has been prepared and documents the determination of effects for Threatened or Endangered species. The US Fish and Wildlife Service has provided concurrence for the Biological Evaluation. The Biological Evaluation will be included in the project file and is attached as Appendix D. It was determined that the Forest Service action alternative would not contribute to other unconnected action that would result in the loss of viability of any listed threatened or endangered species.

The Biological Evaluation (Appendix D) made a determination on project effects to Sensitive Species. It was determined that the Forest Service action alternative does not contribute to the loss of viability of any Sensitive Species. Most species are associated with mesic conditions along drainages. Any populations located along the project area will be protected, even though a few individuals may suffer damage. By maintaining critical habitats, and protecting populations, the potential for cumulative effects appears to be remote.

Habitat for state species of local concern should remain intact by maintaining streamside management zones. Cumulative effects of combined projects, therefore, would not occur.

## **Socio-Economic Factors**

Socio-economic factors are the environmental consequences of the alternatives on economics, recreation and visual quality, heritage resources, public health and safety, and civil rights and environmental justice.

## Economics (Issue 8)

### *Current Situation*

Mississippi's primary source of revenue is based on agricultural production, which includes timber. Timber harvesting on Forest Service lands provides a 25% return to the counties directly related to the value of the timber sold. This money is distributed to the counties for support of local schools and roads.

Additional revenues to local communities as a result of the Homochitto Ranger District comes in the form of support of local businesses through sale of food, fuel, and other personal needs of hunters, campers, hikers, mountain bikers, horse riders, and other recreationists. Trends in recreational use of the National Forest System reflect increased demand for both developed and dispersed recreation.

### *Environmental Consequences*

Utility corridor maintenance using herbicides would allow for enhanced wildlife and public use of the utility corridors of the Homochitto Ranger District and would correspondingly provide continued support of local businesses through sale of food, fuel, and other items to hunters, hikers, and other recreationists.

“The Proposed Action” and the “No Action” are similar in that both would incorporate maintenance activity and have the same eventual impacts. Other than the cost already incurred from this environmental analysis, no direct, indirect, or cumulative costs to the public would be realized through the implementation of either alternative. The use of herbicide treatments, however, could reduce the frequency and cost of maintenance of the utility corridors. The possibility exists that these savings could be passed from the utility companies to local residents.

The following table gives the most recent per acre cost estimates for a single treatment for each type of maintenance activity.

**Table 3.7: Average Per Acre Maintenance Costs of a Single Treatment**

<b>Right-Of-Way Vegetation Maintenance Activity</b>	<b>Per Acre Cost of Single Treatment</b>
<b>Backpack Herbicide Application</b>	<b>\$71</b>
<b>Mechanical Herbicide Application</b>	<b>\$72</b>
<b>Disking/Planting Food Plots</b>	<b>\$114</b>
<b>Hand Tools (includes chainsaw)</b>	<b>\$71</b>
<b>Mechanical Cutting</b>	<b>\$54</b>
<b>Tractor Mowing</b>	<b>\$44</b>

Herbicide and hand tool treatment costs are essentially the same for a single treatment. Labor costs for hand treatments are much higher and offset the expenditure in herbicide cost. However, hand-tool treatments are less effective, due to re-sprouting of vegetation, and generally require repeated entries for the same amount of vegetative control. Mowing and mechanical cutting treatments are less expensive than either herbicides or hand tools, but equipment access is limited in many areas of the utility corridor and, like hand-tool treatments, re-sprouting results in the need for repeated entries for control. Food plots are an additional cost in the “Proposed Action”, but would be financed by willing project partners (not the Forest Service). The small relative area to be treated in this manner negates any overall economic shortcoming derived from the high cost of food plot construction.

## Recreation (Issue 9)

### *Current Situation*

Demand for dispersed recreation activities such as hiking, biking, and horse riding have all increased by more than 50% in last 5 years in Southern Region National Forests, and is expected to increase above current levels in the future (Southern Resource Assessment).

Hunting is the largest single dispersed recreational use of the Homochitto National Forest and driving for pleasure is secondary in dispersed recreation use. Hiking, bird watching, and canoeing are approximately equal (Final Environmental Impact Statement-Forest Plan 1985, page 3-15). In general, recreation use during the summer declines because of the associated heat and humidity. Recreation use is high during the fall, winter, and spring when hunting seasons and weather conditions promote outdoor activities.

Goals stated in the Forest Plan (pages 4-1 and 4-2) include:

- “Manage the land in a manner that recognizes the values of all resources, both renewable and nonrenewable.”
- “Provide for safe public use and enjoyment of forest resources.”
- “Provide a spectrum of dispersed and developed recreational opportunities reflective of the demands of the public. The spectrum of dispersed recreation represents such activities as hunting, hiking, fishing, canoeing, horseback riding, etc., and developed recreation is represented by such activities as swimming, camping, picnicking, etc.”

## ***Environmental Consequences***

Utility corridor maintenance using herbicides would provide for better enjoyment of forest resources by public users of the Homochitto National Forest by allowing better access to and through these areas and providing better opportunities for wildlife viewing. Hunting opportunities could be increased through the construction and maintenance of wildlife food plots.

These increases, however, would be relatively small, resulting in little difference between outcomes by choice of alternative. Therefore, both alternatives would provide essentially the same recreation conditions. Recreation, therefore, is not considered to be relevant to the Decision to be made.

## **Visual Quality (Issue 9)**

### ***Current Situation***

The visual quality objective of the foreground along the major travel routes is partial retention. Secondary paved and high standard, frequently used gravel roads have a foreground visual quality objective of modification. The less frequently used improved gravel roads, closed Level D roads, and general forest area have a visual quality objective of maximum modification. Most utility corridor sections fall within the general forest area, but many of these corridors cross major roads or are in otherwise highly-visible areas.

## ***Environmental Consequences***

The primary visual impact of utility corridor maintenance is associated with the “browning” of vegetation after treatment, and would occur regardless of the alternative chosen. However, the removal of vegetation that obscures the view far out-weighs these impacts.

Both herbicide and hand tool/mowing treatments would brown vegetation when performed during the growing season. However, grasses and forbs present on the site or those that develop rapidly would screen the smaller vegetation as it browns after treatment. The selective use of herbicides would promote the growth of grasses and forbs, while re-sprouting of mechanically removed vegetation would inhibit growth of grasses. Herbicide treatments during the fall or winter would result in no noticeable browning of vegetation; the foliage simply would not re-grow the following spring. The primary effects of either the herbicidal or mechanical / manual treatment would not be visible within one year, which meets the duration requirement for partial retention and exceeds the requirement for areas with lesser visual quality objectives.

Utility corridor maintenance results in the removal of vegetation that decreases sight distances. The net result would be an improved visual environment after a very short period following treatment. See pages IV 115-116 of the Final Environmental Impact Statement for Vegetative Management in the Coastal Plain/Piedmont, Volume 1, for further discussion of effects on visual quality.

## Heritage Resources (Issue 10)

### ***Current Situation***

Field surveys by qualified archaeological technicians were performed in the project area prior to the construction of the utility corridors. No cultural resources were recorded in the survey. The “No Heritage Resource Form” completed for this project by the District Archaeologist is included in Appendix E.

### ***Environmental Consequences***

Herbicide usage does not require ground-disturbing activity and, correspondingly, would not impact heritage resources in any way. These sites are already disturbed, so shallow disking for food plot construction should not impact undiscovered heritage resources, and mitigations would prevent destruction of heritage resources discovered during operations. Therefore, neither the “Proposed Action” nor the “No Action” alternative would impact heritage resources.

## Public Health And Safety (Issue 11)

### ***Current Situation***

The Final Environmental Impact Statement for Vegetation Management in the Coastal Plain/Piedmont addressed the effect of herbicide use on human health as a significant issue and identified that many people feel herbicides may have serious effects on human health (Vegetation Management in the Coastal Plain/Piedmont, Volume 1, Page V).

### ***Environmental Consequences***

The “Proposed Action” proposes the use of herbicides for utility corridor maintenance. The chemicals proposed for use are Garlon 4<sup>®</sup>, Garlon 3A<sup>®</sup>, Arsenal<sup>®</sup>, Accord<sup>®</sup>, Escort<sup>®</sup>, and Krenite S<sup>®</sup>. The respective active chemical ingredients in these herbicides are triclopyr (ester), triclopyr (amine), imazapyr, glyphosate, metsulfuron methyl, and fosamine ammonium.

Hand-tool application by backpack sprayer and specialized mechanical application utilizing the Brown Brush Monitor<sup>®</sup> (or equivalent machinery) or selective, low-volume spray are the proposed application methods. During any of the proposed treatments, the target vegetation absorbs almost all of the herbicide.

The risks associated with the herbicides proposed for use have been evaluated in the Final Environmental Impact Statement for Vegetative Management in the Coastal Plain/Piedmont. By applying the rates and using the application methods and safety considerations specified in the “Record of Decision” for this document, no significant risk to the human environment, wildlife, or non-target vegetation was found. Risks for all proposed herbicides, except Krenite, were also analyzed in documents prepared for the Forest Service by Syracuse Environmental Research Associates, Inc. and Syracuse Research Corporation (SERA TR 95-22-02-02a, SERA TR 98-21-14-01b, SERA TR 96-22-02-01c, SERA TR 01-43-08-04a, SERA TR 99-21-21-01f). These

documents also noted no apparent risk to the human environment from typical Forest Service herbicide applications.

Herbicides would be used in a manner consistent with the direction identified in the Final Environmental Impact Statement for Vegetation Management in the Coastal Plain Piedmont. The Pesticide Safety Plan on file at the Homochitto Ranger District office would be followed.

These herbicides are Class "A" herbicides with low toxicity in compliance with the Record of Decision for the Vegetative Management Environmental Impact Statement for the Coastal Plain/Piedmont. The proposed herbicides have low toxicity and short persistence in the environment. Class A herbicides are generally not measurable a year after application. Application of recommended rates of Class A Herbicides have not been shown to cause cancer, mutations or birth defects or to accumulate in the food chain or the bodies of humans or animals (Record of Decision FEIS Vegetation Management in The Coastal Plain Piedmont Page 10).

The proposed herbicides have not been shown to have a significant effect on human health. None of the proposed herbicides have not been identified as carcinogenic or mutagenic. The lowest LD<sub>50</sub> exposure rates for any proposed herbicide are >2000 mg/kg dermal and 1338 mg/kg oral. Toxicity data for each proposed herbicide is listed in the following table.

**Table 3.8: Toxicity Data for Proposed Herbicides**

Herbicide	Active Ingredient	Formulation	Oral LD-50	Dermal LD-50
Garlon 4	Triclopyr (ester)	4 lb AI/gal	1338 mg/kg	> 2000 mg/kg
Garlon 3A	Triclopyr (amine)	3 lb AI/gal	1847 mg/kg	> 5000 mg/kg
Arsenal	Imazapyr	4 lb AI/gal	> 5000 mg/kg	> 5000 mg/kg
Accord	Glyphosate	5.4 lb AI/gal	> 5000 mg/kg	> 5000 mg/kg
Escort	Metsulfuron Methyl	60% AI/lb	> 5000 mg/kg	> 2000 mg/kg
Krenite	Fosamine Ammonium	4 lb AI/gal	> 5000 mg/kg	> 5000 mg/kg

The term "LD-50" is used to describe the toxicity of a chemical. Simply put, the LD-50 is the dose of a substance that would be lethal to 50% of the organisms in a specific test situation when ingested (oral) or absorbed through the skin (dermal). It is expressed in weight of the chemical (mg) per unit of body weight (kg). As an example of the minimal toxicity of these chemicals when used in a manner consistent with their labeling, a 160-pound herbicide applicator would have to ingest more than 3 pints of undiluted Garlon 4 in order to reach the minimum oral LD-50 for Triclopyr. Once the herbicide is mixed and ready for application, that worker would have to ingest nearly 10 gallons of the mixture to reach the 2000 mg/kg minimum LD-50. When compared to ingesting common food and household goods such as table salt or borax, the herbicide proposed for use is very low in toxicity.

If label directions are not followed properly, Garlon 4, Escort, and Krenite can cause eye, skin, and upper respiratory irritations to workers; and Arsenal may cause mild skin irritation. The only chemical proposed for use that has been shown to have a significant effect on human health is Garlon 3A, which causes severe eye irritation with possible corneal injury that may result in permanent impairment of vision. Dow Chemical Company states that, "goggles are

recommended during handling or use of Garlon 3A before dilution." (Ag. Handbook 633, pg. T-15). This safety measure is incorporated into the Pesticide Safety Plan and would be used when mixing Garlon 3A. For a typical application, however, the use of these chemicals poses a low risk to safety. Under the conditions of typical public exposure to any herbicide being proposed for use, no member of the public would be affected (Final Environmental Impact Statement for Vegetation Management in the Coastal Plain/Piedmont, Volume 1, page IV-14).

The proposed herbicides are soluble and do not accumulate in human or animal tissue. Human and animal exposure and risk studies conducted for, or cited in the VMCP/P indicate that cumulative buildup effects on human health do not occur when these herbicides are used at prescribed rates with appropriate application methods. Garlon 4 is highly toxic to aquatic organisms; but application methods, rates, and mitigations insure that herbicide will not negatively impact fish or other aquatic organisms.

Mixed with the pesticidal chemical to produce the marketed products are other chemicals known as inert ingredients. The herbicide producer for various reasons adds these to the active herbicide chemical. Several of the LD-50 toxicity tests cited above were performed with the registered product as well as with the herbicide itself. These numbers, therefore, take into account any inert ingredients in the formulation. In addition to previously cited research, risk assessments were performed for the VMCP/P EIS that analyzed forest workers using these herbicides. No human health effect was found for the inert ingredients in the herbicide formulation proposed for use.

No herbicide application is proposed under the "No Action" alternative. Subsequently, there would be no effect to human health from herbicide use under this alternative. As a consequence of not using herbicides for utility corridor maintenance, vegetation management along the corridor would require more intensive efforts with the use of hand tools and mechanized equipment.

There are trade-off risks associated with hand treatments. Woods workers experience one of the highest industrial accident rates, and hand tools, such as axes, machetes, and chainsaws, are very dangerous. Hand tools expose workers to briars, poison ivy, yellow jackets, and other hazards. While herbicide treatments produce low human health and safety risks, increased hand-tool work results in a high rate of accidental lacerations from chainsaws and cutting tools (Final Environmental Impact Statement for Vegetation Management in the Coastal Plain/Piedmont, IV-130). Annually, deaths occur from chainsaw injuries and from falling cut vegetation. The incidence of allergic reaction to bites and stings is much higher than health risks associated with herbicide use. Heat and related injury and health concerns increase for hand-cutting methods.

Mechanical equipment such as tractors are safer than hand tools, but require wider clearance and can cause damage to the trail and soils, which must then be repaired requiring further worker exposure to risks.

## Civil Rights and Environmental Justice (Issue 12)

### *Current Situation*

Based on information available in 1997, statistics for counties within the proclamation boundary of the Homochitto National Forest are as follows:

**Table 3.9: County Statistics**

County	Total NF Acres	% Pop below Poverty Level	Per Capita Income	% of National Average PCI	10-year Average Unemployment
Adams	14,310	30.5%	15,791	73%	9.98%
Amite	35,642	30.9%	11,281	52%	8.39%
Copiah	7,305	32%	12,490	58%	10.47%
Franklin	95,572	33.3%	11,911	55%	9.5%
Jefferson	8,003	46.9%	9,767	45%	20.97%
Lincoln	4,936	23.6%	14,069	64%	9.77%
Wilkinson	22,803	42.2%	11,701	54%	12.43%

**Table 3.10: County Population and Minority Status**

County	1998 est. Population	1996 Minority %
Adams	34,225	50.5%
Amite	13,644	46.9%
Copiah	28,883	52.2%
Franklin	8,319	38.1%
Jefferson	8,427	86.7%
Lincoln	31,771	31.6%
Wilkinson	9,223	68.8%

All documents and notices related to this proposed project were readily accessible to all segments of the public. See Appendix A for a list of people contacted. Also, notices were placed in the Jackson, Mississippi Clarion-Ledger, the paper of record, detailing proposed activities. The United States Department of Agriculture Forest Service is a diverse organization committed to equal opportunity in employment and program delivery. The United States Department of Agriculture prohibits discrimination on the basis of race, color, national origin, sex religion, age, disability, political affiliation, and familial status.

### *Environmental Consequences*

A Civil Rights Impact Analysis is not needed as a separate document in an environmental analysis. This analysis is a component of the EA process and is discussed in length in our ID team meetings. Through these meetings and other information sources, it is determined that this project does not have disproportionately high and adverse human health or environmental effects on minority populations and low-income populations. This project is most likely to improve

economic and health conditions for the surrounding populations. During our public comment period no issues or impacts were identified. During this time, we scoped a wide range of people including businesses, governments, and landowners through paper mailings as well as the general public through legal advertisements in the Clarion Ledger, our paper of record. No civil rights issues associated with this project have come to our attention.

## Cumulative SocioEconomic Effects (Issues 8, 9, 10, 11, and 12)

There would be no cumulative effects resulting from either the “Proposed Action” or “No Action”. The annual influx of recreational users is expected to remain about the same. Subsequently, community income from recreational users is also expected to remain about the same.

The primary adverse visual impact is the presence of brown vegetation, which would occur regardless of the alternative chosen. Visuals would be improved in the long-term as a result of this project; therefore, cumulative impacts would not occur.

The No Heritage Resource finding precludes any significant adverse effect of the historical record; therefore, cumulative impacts would not occur.

The proposed herbicides are soluble and do not accumulate in human or animal tissue, so no significant negative cumulative impacts occur. Human and animal exposure and risk studies conducted for or sited in the Final Environmental Impact Statement for Vegetation Management in the Coastal Plain/Piedmont indicate that cumulative of buildup effects on human health do not occur when used at prescribed rates with appropriate application methods. Due to the speed at which they degrade and the typical time period between treatments, use of these herbicides would have no cumulative effects on the human environment.

As noted above, the Final Environmental Impact Statement for Vegetative Management in the Coastal Plain/Piedmont did determine that the potential for human injury was much higher for hand-cutting techniques. However, because of the small area being treated and the relatively low risk, this would not be cumulative on the county, state, or national scale.

It is determined that this project does not have disproportionately high and adverse human health or environmental effects on minority populations and low income populations. This project is most likely to improve economic and health conditions for the surrounding populations. Therefore, no cumulative effects are expected.

## Irreversible and Irretrievable Commitment of Resources (All Issues)

An irreversible commitment of resources refers to resources that are renewable only after a long period of time (such as soil productivity) or non-renewable resources (such as heritage or cultural resources). There would be no irreversible commitment of resources under any of the alternatives in this analysis.

An irretrievable commitment of resources refers to losses of productivity or losses in the use of renewable resources. This represents opportunities foregone for a period of time that the resource cannot be used. There would be no irretrievable commitment of resources under any of the alternatives in this analysis.

## **Cumulative Effects (All Issues)**

Cumulative effects are discussed in detail for each alternative by environmental factor. Cumulative effects relate to additive effects of this project and other projects being implemented at the same time. They also relate to additive changes and impacts associated with projects being implemented over time. Soil and water quality impacts would be cumulative where activities in the same watershed are added to a reduction in water quality. Cumulative effects can also develop if the impacts from a completed project have not diminished sufficiently and were added to the impact of a new project.

Activities involving the use of equipment could cause compaction on small, widely dispersed areas surrounded by natural filter strips that would buffer any increased water yields to the extent that they would be difficult to detect above those which occur from existing methods and general public use. Mitigations would prevent herbicides or sediment from reaching streams or other water resources. The result would be to at least maintain current conditions, which are identified in the Forest Plan as better than Mississippi water quality standards. Therefore, the effects on soil and water quality are not accumulating either within areas or over time.

No cumulative effects can be associated with either action or non-action alternatives in the floral and faunal component of the forest.

The proposed herbicides are Class "A" herbicides with low toxicity in compliance with the Record of Decision for the Vegetative Management Environmental Impact Statement for the Coastal Plain/Piedmont. Class A herbicides are generally not measurable a year after application. Application of recommended rates of Class A Herbicides have not been shown to accumulate in the food chain or the bodies of humans or animals (Record of Decision FEIS Vegetation Management in The Coastal Plain Piedmont Page 10). Human and animal exposure and risk studies conducted for, or sited in the VMCP/P indicate that cumulative buildup effects on human health do not occur when used at prescribed rates with appropriate application methods.