

Appendix F

Mitigation and Monitoring



Appendix F

Mitigation and Monitoring

Mitigation Measures

A complete list of standard mitigation is provided in the Forest Plan and its amendments. For most activities, standard mitigations required in the Forest Plan maintain soil, water, visual and other standards. This appendix is intended to provide information on the implementation of management activities and mitigations.

1. Although this project is not a normal “forestry” practice, it complies with State-approved “Best Management Practices” during all activities in order to meet State water quality standards. Actual standards and guides as provided in the Forest Plan as amended exceed these standards. Protection within all streamside management zones is summarized in the specific areas of stream type as follows:

Perennial and Intermittent Streams Prohibitions

- Trees are not felled in stream except as necessary and prescribed for fisheries management.
- Slash is not allowed in streams.
- A filter strip is designated which is a minimum of 30 feet plus 1½ feet times the percent slope. Activities within the filter strip that result in more than 10% soil disturbance are prohibited.
- Rutting – a furrow, groove, or track made in the ground by the passage of a vehicle or vehicles – is not allowed within the filter strip. Wet weather and seasonal restrictions are provided and where damage occurs, rehabilitation is required.
- Mechanized equipment activities within ½ chain of stream bank are limited to designated stream crossings. Necessary crossings are built to standards in Forest service standard Specifications for Construction of Roads and Bridges.
- Filter zones are not prescribed burned. The forest plan does allow low intensity fires to back into these areas and extinguish to avoid unnecessary line construction.

Ephemeral Channels Prohibitions

- Rutting in the channel is prohibited as noted above. Wet weather and seasonal restrictions apply.

Additional Mitigations Associated with Soil and Water

The district may extend streamside management zone protection beyond standard mitigation required in the forest plan, and that shown to be effective in meeting soil and watershed protection standards. Lower impact management and different vegetative objectives may be instituted within approximately two chains (132') of intermittent streams and approximately 3 chains (198') of perennial streams. The primary purpose of this mitigation is to protect

riparian habitats, provide increased protection of special habitats (most sensitive plants on the Homochitto Ranger District are associated with shaded riparian zones), and to retain habitat for riparian dependent fauna. Additional watershed protection is derived as an associated benefit.

Implementation of this mitigation is by prescribing a separate management prescription for streamside zones. Management prescriptions are established prior to any commitment of resources within a project area. Streamside management zone boundaries are designated and are readily visible.

To limit soil compaction, no mechanical equipment is used on plastic soils when the water table is within 12 inches of the surface, or when soil moisture exceeds the plastic limit. Soil moisture exceeds the plastic limit if the soil can be rolled to pencil size without breaking or crumbling.

Mitigation efforts for food plots would include efforts to minimize the potential for erosion and transport of sediment to streams. Mitigations considered in the design and implementation of wildlife food plots include:

- Prohibit plots in wetlands
- Prohibit plots on high clay content soils where clay is near the surface
- Prohibit plots on slopes greater than 20%
- Avoid areas where ridge tops converge with side slopes
- Minimize plot size where possible, break larger plots with areas of undisturbed native cover, and decrease disturbed area as slope increases
- Use multiple strips of intact native cover between disturbed areas on slopes over 12% and longer than 50 feet
- Tillage practices should follow landform contours
- Consider “No-Till” planting techniques where applicable
- Planting of wildlife crops will be done in accordance with the Mississippi Erosion Control and Wildlife Planting Guide.

Herbicide usage 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 aerially 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.

Implementation Monitoring of Soil and Water Mitigations

The above standards are met through a combination special use permit specifications and administration. Herbicide usage is documented in the project Pesticide-Use Proposal and Annual Pesticide Use Report. Specific language requiring mitigation measures is included in special use permits as needed. A site specific plan for implementation (prescription) is provided to the permit holder. These requirements are reviewed with the permittee during the required pre-entry meeting for each treatment area. Special use areas are checked annually to ensure that mitigations are correctly applied as part of the documented administration process. In the case of vegetative management other than harvesting, qualified technicians may perform this task.

2. Visually sensitive areas may require special care to reduce the visual impacts of vegetation removal. In most cases this would be accomplished by cutting vegetation to lie on the ground. All actions would adhere to the Visual Resource Management Coordination Requirements shown in Table 4-1 of the Forest Plan (Forest Plan 4-3).

Scenic resource assessment and recommendations are performed during site-specific analysis for proposed actions. The Scenic Resource Management Matrix is consulted for guidance during site-specific analysis for management actions that affect the visual resource.

The prescription contains specific language requiring measures as needed. These requirements are reviewed with the permittee during the required pre-entry meeting. Implementation monitoring is through special use administration to insure compliance, and documented on inspection reports.

3. Historic Resources: This project qualifies for pre-survey exclusion under the terms of the “Memorandum of Understanding” with the State Historic Preservation Officer (SHPO). The basis for this exclusion is the widely dispersed, low impact nature of the treatment. Sites to be treated may have documented surveys. Otherwise, surveys are conducted prior to soil disturbance activities. If sites are found the district archaeologist specifies the protection required. The “Memorandum of Understanding” allows post reporting at the end of the project.

If previously undocumented archaeological or historical resources are encountered during project activities, all work in that area should cease until the full nature and extent of the resources can be evaluated and consultation with SHPO can be completed. The special use permit prescription will contain a clause to this effect, and the special use permit administrator will ensure compliance.

4. Revegetation of disturbed sites is implemented as soon as possible after soil disturbing activities. The special use permit prescription will contain a clause to this effect, and the special use permit administrator will ensure compliance.
5. Roads, trails, ditches, and other improvements in the project area are maintained free of debris. Any damage is promptly repaired. Protection of improvement is provided under the special use permit. The special use permit administrator will ensure compliance

6. Concerns related to roads do not apply to this project.
7. Potential effects on threatened, endangered, and sensitive species are assessed in the Biological Evaluation. A Wildlife Biologist inspects all areas where mitigations concerning TES species may be required.

The Forest Service Wildlife Habitat Management Handbook (FSH 2609.23R) specifies mitigation for activities which occur in or near red-cockaded woodpecker colonies.

In or near active colonies, consultation with a Forest Service Wildlife Biologist is required prior to treatment. No herbicides will be used inside or within 60 feet of red-cockaded woodpecker colonies.

In accordance with the recovery plan, interim guidelines, and the RCW Environmental Impact Statement, there will be no mechanized activity within the clusters during the nesting season (the breeding period until the young are fledged).

This project has no effect on cavity trees, trees within the cluster, or forage trees. RCW populations are monitored by individual cluster, annually. Fledglings are banded and tracked to the extent possible. All potential habitat is inventoried on an approximately 10-year interval to determine if other undiscovered clusters are present.

8. The District Geographic Information System was employed to prepare maps that were utilized in the preparation of this Environmental Assessment. As a result, the estimated total acreage and locations over which activities will occur may not be completely accurate.

Several factors affect the accuracy of acreage and location estimates.

- **Mitigation acres:** Coordination such as streamside management zones is included within the total acres. Adjustments in treated acres could have a 5% error. Streamside zones are applied, not just based upon stream characteristics, but also on terrain and vegetative conditions. The final determination of acreage committed to streamside zones is established during project layout and is not a map exercise.
- **Topological displacement:** There is considerable displacement of features such as streams and ridges, when photos are compared to the base layer data from the United States Geological Survey topographical map. Until orthographic photos or other technology is available and implemented on the District, the base layers are the only means of passing information to personnel or the public. An example of the magnitude of this error is provided by analysis of a large lake currently under construction. The District Computed acreage of the lake using topographical elevations from our GIS layers (USGS Topography). The shoreline analysis indicated a lake acreage of approximately 1200 acres. A controlled cadastral survey was performed to identify the exact shoreline location for clearing the lakebed. The acreage calculated from this controlled survey was just under 1000 acres. Therefore, an error of + or – 20% would be within the expected range.

- **Man made feature displacement:** When compared to photographs, there is considerable displacement of man-made or drawn features such as roads (and rights-of-way). The primary basis for this is that the topographical maps show roads down centers of ridges. Topographical line displacement as noted above adds error. Also, features with substantial on-the-ground curvature are relatively straight on the maps, and a pencil line width is approximately 66 feet or one chain.

The benefit of using topographical features is that even though there may be displacement between the map and ground, roads, streams, well-defined ridges, and drainages can all be easily and reliably be identified on the ground. Both managers and the public can use the maps to locate the actual treatment area.

9. Wildlife habitat will be enhanced through the following mitigations:
 - Wildlife food plots will be revegetated in accordance with the “Erosion Control and Wildlife Planting Guides for the National Forests in Mississippi”.
10. Herbicides are applied according to labeling information and the site-specific analysis prescription done for projects. This labeling and analysis are used to choose the herbicide, rate, and application methods for the site. They are also used to select measures to protect human and wildlife health, non-target vegetation, water, soil, and threatened, endangered, proposed, and sensitive species. Site conditions may require stricter constraints than those on the label, but labeling standards are never relaxed.

Only herbicide formulations (active and inert ingredients) and additives registered by the Environmental Protection Agency and approved by the Forest Service are applied. Herbicides and application methods are chosen to minimize risk to human and wildlife health and the environment.

Herbicides are applied at the lowest rate effective in meeting project objectives and according to guidelines for protecting human (Nuclear Regulatory Commission, 1983) and wildlife health (Environmental Protection Agency, 1986a). Application rate and work time must not exceed typical levels (Appendix A, tables 4-4 to 4-6) unless a supplementary risk assessment shows that proposed rates do not increase risk to human or wildlife health or the environment beyond standards discussed in Chapter IV. Typical application rates (lb/ac) of active ingredient are displayed in the following table:

Table F.1: Typical Application Rates (lb/ac) of Active Ingredient

Chemical/ Treatment	AL	AG	ML	MG	HG	HF	HB	HS	HC
2,4-D/amine	2.0		2.55			2.0			2.0
2,4-D/ester	2.5		4.0			2.0			
2,4-DP	3.0		4.0			1.0	1.7		
Dicamba	6.0		2.0			2.0	1.2		1.5
Fosamine	1.5		7.8						
Glyphosate		4.0	1.5	4.0	4.0	1.0		4.0	1.3
Hexazinone	4.0		4.0			4.0			
Imazapyr	0.75		0.75			0.75			0.75
Triclopyr/amine	4.0		4.0			2.0			1.0
Triclopyr/ester	4.0		4.0			2.0	4.0		
Picloram	0.5		0.7			0.4			0.3
Sulfometuron methyl	0.13	1.0	0.17	1.0		0.06		4.0	
Tebuthiuron	1.0		1.0			4.0			
Fuel oil	0.5		2.0			1.5	1.0		
Limonene	0.9		0.9			0.9	0.9		

AL = aerial liquid treatment
 AG = aerial granular treatment
 ML = mechanical liquid treatment
 MG = mechanical granular treatment
 HG = manual (hand) granular treatment

HF = manual foliar broadcast treatment
 HB = manual basal treatment
 HS = manual soil-spot treatment
 HC = manual cut-surface treatment

Method and timing of application are chosen to achieve project objectives while minimizing effects on non-target vegetation and other environmental elements. Selective treatment is preferred over broadcast treatment. Public safety during such uses as viewing, hiking, berry picking, and fuel wood gathering is a priority concern.

Application methods from most to least selective are:

- a. Cut surface treatments
- b. Basal stem treatments
- c. Directed foliar treatments
- d. Soil spot (spot around) treatments
- e. Soil spot (spot grid) treatments
- f. Manual granular treatments
- g. Manual/mechanical broadcast treatments
- h. Helicopter treatments

Areas are not prescribed burned for at least 3 days after herbicide treatment.

Weather is monitored, and the project is suspended if temperature, humidity, or wind becomes unfavorable as follows:

Table F.2: Weather Restrictions for Herbicidal Application

Ground Application Method	Temperature Higher Than	Humidity Less Than	Wind (At Target) Greater Than
Hand (cut surface)	Not Available	Not Available	Not Available
Hand (other)	98°F	20%	15 mph
Mechanical (liquid)	95°F	30%	10 mph
Mechanical (granular)	Not Available	Not Available	10 mph

A certified pesticide applicator supervises each application crew in personal safety, proper handling and application of herbicides, and proper disposal of empty containers. Forest Service inspectors are trained in herbicide use, handling, and application. Permittees ensure that their workers use proper protective clothing and safety equipment required by labeling for the herbicide and application method. Supervisors must ensure that monitoring is adequate to prevent adverse health effects.

Notice signs (FSH 7109.11) are clearly posted, with special care taken in areas of anticipated visitor use.

Monitoring Measures During and After Activities Proposed

A “Monitoring Plan” outlines the monitoring procedures, by resource area, for the incident. The plan is specific to implementation and effectiveness monitoring during the duration actions described in this project. The objective of this plan is to determine how well the forest is meeting project and Forest Plan objectives, and to identify any need to change practices.

Validation monitoring is not being identified for this project at this time. Should issues arise during review of the environmental assessment or if concerns arise at a later date that would be recognized as a need for long-term research, this type of monitoring may be considered.

Monitoring actions that will be developed within this project are to gauge the success of implementation actions and identify the effectiveness the actions and mitigation that is completed. Most activity will be documented during the administration of the special use by the special use administrator and inspectors.

Annually, the District Soil Scientist visits a large number of representative projects and reports on the condition of and impact to the soils. Observations include percent-soil disturbance and observed soil loss and siltation.

In 1999, a series of more intensive soil impact monitoring sites were established as an ongoing program. A small sub-watershed is identified, and a silt dam constructed across the

outlet. Slope, aspect, dispersed disturbance, and compaction are measured and recorded before and after treatment. Soil leaving the site is caught in a silt dam and measured. This type of monitoring could be applied to wildlife food plots.

The District has a number of representative streams that have been sampled for biotic diversity and aquatic habitat health twice in the past decade. Additional sampling is being scheduled to determine if impacts from District activities, including southern pine beetle suppression and restoration, are impacting resource quality. Management intensity and activity have been similar or higher over the past 30 years. With the exception of one stream with high saline content, these streams typically have high biotic diversity and provide quality aquatic habitats, as indicated by the presence of multiple management indicator species. The high salinity of the single stream is not related to vegetation management or southern pine beetle activity, but to approved saltwater disposal methods which applied to oil production activities prior to 1960. These representative streams provide a broad-based barometer of the full range of district activities on the health of our aquatic systems. They demonstrate that standard best management practices and mitigations in the Forest Plan and related documents are appropriate to protect water quality.

Avian management indicator species are monitored annually through a series of breeding bird survey listening points. The total number of listening points is approximately 260 for the District. In a typical year, 160 to 180 points are surveyed. Points are representative of all habitat types and are well distributed across the District. The District conducts an annual turkey brood survey by recording employee sightings. Records are maintained on the district. Northern bobwhite and Eastern wild turkey research is ongoing on the District. Discussions related to bird indicator species and past and present research are summarized as a basis for the “Management Indicator Species” section in Chapter 3. Information is analyzed for trends that might lead to declines or listing. Annual surveys represent implementation monitoring. Substantial information is also available from breeding bird survey routes in the vicinity of the Homochitto National Forest.

A continuous monitoring record is maintained for each RCW cluster. This continuous monitoring program represents implementation monitoring. Annual monitoring records are maintained and the results reported in the annual Monitoring and Evaluation Report for the National Forests in Mississippi. This is a published document made available to the public upon request.

To effectively implement and track the mitigations listed above, most of which are associated with permit requirements, the permit contains specific language requiring protection as noted above as well as other measures as needed. These requirements are reviewed with the permittee during the required pre-entry meeting prior to treatment. Implementation monitoring is through special use administration to insure compliance, and documented on inspection reports.