

Decision Notice & Finding of No Significant Impact

for the

Elk River Watershed Improvement Environmental Assessment

Rock Vanes and Bank Stabilization

**USDA Forest Service
Appalachian Ranger District, Pisgah National Forest
Avery County, North Carolina**

Decision and Reasons for the Decision _____

Background

In September 2004, Western North Carolina experienced flooding effects from the remnants of three hurricanes. There was extensive damage to infrastructure on National Forest Lands, including roads, trails, and the stability of some streams. On two sections of the Elk River, the flood waters removed in-stream large woody debris and boulders, and removed soil-holding vegetation exposing the underlying soil. The exposed soil is no longer protected from future high flow events.

Decision

I have decided to implement Alternative 2 (the Selected Alternative), which takes action to stabilize the unstable reaches of the Elk River within this analysis area. When compared to the No Action Alternative, this alternative is most responsive to the Purpose and Need section of the EA since it meets the Land and Resource Management Plan Nantahala and Pisgah National Forests (LRMP) desired conditions by providing structural aquatic habitat, improving fisheries habitat by reducing sedimentation and protects stream channels.

The Selected Alternative best serves the public's need for clean water, excellent fisheries, and restores the aquatic ecosystem within and around the project areas. Non-environmental issues considered include social and economic factors; however, these were determined to be non-significant in relation to the proposed action. My decision to take action is most sensitive towards the issues discussed in the Environmental Assessment (EA): 1) sedimentation and 2) aquatic habitat. My decision will address sediment sources and improve the aquatic habitat in the project area by contouring the banks to a more stable slope, directing water current towards the middle of the stream, planting soil holding/shade-producing woody vegetation, adding in-stream large wood and boulders for aquatic habitat and soil protection, and building fence to control access to the river bank.

My decision is sensitive towards spawning trout by not allowing work equal to or below the normal high water mark between October 15 and April 15. This decision incorporates any mitigation included in the State of North Carolina's Water Quality Certification and Erosion and Sedimentation Control Plan, and Army Corp of Engineer

permits, which will be on file at the National Forests of North Carolina Supervisor's Office prior to project implementation.

To protect the cultural resources of the area, no ground disturbance, including parking of vehicles or equipment, will be allowed above Forest Service Road (FSR) 190 within the Elk River Recreation Site from the Forest Service boundary to the gate. Equipment will be parked on FSR 190 behind the gate at the end of the recreation site or below FSR 190.

To protect shade producing vegetation next to the stream and potential nesting trees of the Acadian flycatcher, trees to be harvested for use as large wood within the river (root wads attached) will be located at least 50 feet from the stream bank.

Other Alternatives Considered

In addition to the Selected Alternative, I considered the No Action Alternative. The EA provides a discussion of the environmental effects if this alternative was chosen. My concern is that the No Action Alternative would deliver much more sediment to Elk River over a longer period than the Selected Alternative and selection of the No Action Alternative would not be responsible.

Public Involvement

The public was informed about this project through the National Forests of North Carolina Schedule of Proposed Actions (SOPA) and the EA scoping and comment period which began on February 25, 2006. As described in the Background section of the EA, the need for this action arose in the aftermath of the 2004 storm events. The proposal for action on the Elk River was listed in the July and October 2005 and January 2006 Schedule of Proposed Actions.

Comments received from internal and public scoping were used by the interdisciplinary team to identify several issues. Two significant issues were used within the EA to develop alternatives and evaluate the impacts of these alternatives. These issues were sedimentation and aquatic habitat. Five members of the public provided comments during the 30 day scoping and comment period. The following provided input:

- Chrys Baggett, Environmental Policy Act Coordinator, North Carolina Department of Administration
- Joe DeLoach, Appalachian Trail Committee Chair, Tennessee Eastman Hiking Club
- Powell Foster
- Ron Linville, North Carolina Wildlife Resources Commission
- Earl Rayburn

The following are the comments received and the agency response to these comments.

Letter - Ron Linville, Regional Coordinator, North Carolina Wildlife Resources Commission

Comment

“NCWRC biologists concur that these repairs are needed and appropriate. We do not plan to recommend a trout moratorium for this work during the US Army Corp of Engineers Clean Water Act 404 permitting process since trout reproduction in this specific area is not significant.

If the USFS wishes to avoid the moratorium to reduce trout impacts or to ensure satisfactory revegetation, our typical moratorium for work in the channel and the 25 foot wide buffer zone is October 15-April 15

After reviewing the proposed bank and restoration figures provided with the document, we support placement of bioengineering or natural channel design structures along the river. Prior to construction, the USFS should consider whether or not additional j-hook structures in the river bend could improve bank stability better than the proposed placement of trees.”

Agency Response

Thank you for your support of the project. Your comment regarding trout moratorium is noted; however, project implementation will not occur until after April 15 (EA, page 12)

During the design of this project, j-hook structures and woody debris complex locations were considered to provide maximum protection of the bank while at the same time incorporate large wood to mimic natural woody debris recruitment. The proposed locations of the structures and large wood will meet that objective. However, if during implementation of this project perceptions change as to the exact location of the vanes and wood, an adjustment would be made, and permitting agencies will be consulted. These comments are non-significant (non-key) and do not require the development of an alternative.

Letter – Joe DeLoach, Appalachian Trail (AT) Committee Chair, Tennessee Eastman Hiking Club

Comment

“I am writing on behalf of the Tennessee Eastman Hiking Club to express our support for the proposed watershed improvements along the Elk River. Although sections that are mentioned in the letter and maps are not along the Appalachian Trail (AT), which is in Tennessee, where it runs along the Elk River, the proposed improvements should benefit the river and streambank downstream where the trail does run near it. This section is

becoming known as a quite scenic portion of the AT and we are in favor of actions to preserve and enhance the scenery along that section.”

Agency Response

Thank you for your support of the project. This comment is non-significant and does not require development of an alternative.

Letter (emailed comment) - Powell Foster

Comment

“In your 02-23-06 communication, you discuss rock vanes, which are boulders 3 feet in diameter intended to stabilize the bank and protect trees planted from site. Rip-rap has been proven not to work in such situations. If vegetation can be held in place being backed by boulders, this might be a significant advance. Where has this concept been used before under similar circumstances, or is this an unproven research project?”

Research indicates the 1994 hurricane probably occurred during a lull period of hurricanes which started in 1969 (see my notes below from a recent seminar). Year 2005 was the start of another intensive hurricane period, which may last until 2020-2030. Has research been performed on the possible exacerbation of the effects of flooding which have resulted from intensive logging in the watershed?”

Agency Response

Thank you for your response to our proposal. The use of rock vanes is an accepted method in the state of North Carolina and nationally to protect stream banks from erosion during flood events. Rock vanes are in-stream structures made popular by the work of Dave Rosgen of Wildland Hydrology, Inc. and are a viable alternative to rip-rap, which is the placement of a variety of material on stream banks to reduce erosion. Rock vanes are designed to turn flow energy from the bank, reduce potential erosion and thus the need for rip-rap. These structures allow natural stream side vegetation to establish on the bank. The rock vane structures proposed at this site are an improved method to rip-rap in promoting bank stability, since the natural characteristics of the bank are maintained. For further reference: Rosgen, Dave. *Applied River Morphology*. 1996. Wildland Hydrology, Pagosa Springs, CO.

No site specific research has been conducted for the Elk River watershed. Research that has correlated changes in flooding to logging, such as in the Coweeta Experimental Watershed in North Carolina, shows a relationship between logging activities (including roads and timber removal) and changes in water yield to stream channels. Studies show that since trees remove large amounts of water from the soil during the growing season, more water would be available for runoff to streams when those trees are removed. When the area is allowed to revegetate, this change in water yield is temporary, lasting about five years. Areas in a watershed that are compacted by roads and landings can increase water yield to streams when drainage from these areas is connected to streams. Therefore logging can have an affect on water yield and flooding when it occurs over much of a

watershed; however, this is not the case in the proposed project area and/or adjacent private lands. Other activities in the Elk River watershed area associated with private lands would have the potential to impact water yield, water quality and aquatic habitat, since these activities are not expected to decrease in the future.

These comments are non-significant and do not require development of an alternative.

Letter - Chrys Baggett, North Carolina Dept. of Administration, EPA Coordinator

“The NC State Clearinghouse has received the above project for intergovernmental review. This project has been assigned State Application Number 06-E-0000-0260. Please use this number with all inquiries or correspondence with this office.”

Agency Response

Thank you for your response to the proposal. This comment is non-significant and does not require development of an alternative.

Letter - Earl Rayburn

Comment

“I agree with these storm recovery projects on Elk River and Jones Branch area.”

Agency Response

Thank you for your support of this project. This comment is non-significant and does not require development of an alternative.

Finding of No Significant Impact _____

After considering the environmental effects described in the EA, I have determined that the actions I have chosen will not have a significant effect on the quality of the human environment considering the context and intensity of impacts (40 CFR 1508.27). Thus, an environmental impact statement will not be prepared. I base my finding on the following:

1. My finding of no significant environmental effects is not biased by the beneficial effects of the action. The beneficial effects are reduced sedimentation and improved aquatic habitat (EA-Environmental Consequences).
2. There will be no significant effects on public health and safety because of the remote location of the project and the small size of the project area (EA-Environmental Consequences Section pages 14-25).
3. There will be no significant effects on unique characteristics of the area because of the small geographical extent of the project and its restoration nature (EA-Environmental Consequences Section pages 14-25).

4. The effects on the quality of the human environment are not likely to be highly controversial because there is no known scientific controversy over the impacts of the project (EA-Environmental Consequences Section pages 14-25).
5. We have considerable experience with the types of activities to be implemented. The effects analysis shows the effects are not uncertain and do not involve unique or unknown risk (EA-Environmental Consequences Section pages 14-25).
6. The action is not likely to establish a precedent for future actions with significant effects because the purpose and need for the project will be met by the selected alternative (EA – Need for Proposal Section pages 2-5).
7. The cumulative impacts are not significant (EA-Environmental Consequences Section pages 14-25).
8. The action will have no significant adverse effect on districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places. A Cultural Resource Specialist has surveyed the project area and did not observe cultural resources within any areas that will be disturbed (EA-Environmental Consequences Section page 23).
9. The action will not adversely affect any Endangered and Threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973. A survey has been conducted by a Forest Biologist in the project areas and the results are documented in a project specific biological evaluation (EA-Environmental Consequences Section pages 17-23).
10. The action will not violate Federal, State, and local laws or requirements for the protection of the environment. Applicable laws and regulations were considered in the EA. The action is consistent with the LRMP (EA-Background Section pages 1 and 2).

Findings Required by Other Laws and Regulations _____

This decision to stabilize segments of the Elk River is consistent with the intent of the LRMP long term goals and objectives listed on pages III-1 and III-2 of Amendment 5. The project was designed in conformance with land and resource management plan standards and incorporates appropriate land and resource management plan guidelines for the appropriate management areas.

National Forest Management Act

All project alternatives fully comply with the LRMP as amended. This project incorporates all applicable Forest Plan forest-wide standards, guidelines and management area prescriptions, as they apply to the project area, and complies with Forest Plan goals and objectives. All required interagency reviews and coordination have been accomplished; new or revised measures resulting from these reviews have been

incorporated. The Forest Plan complies with all resource integration and management requirements of 36 CFR 219 (219.14 through 219.27). Application of Forest Plan direction for the project ensures compliance at the project level. With the inclusion of Plan direction, this proposed project will move the existing condition towards the proposed desired condition.

Endangered Species Act

The project area was surveyed for Threatened and Endangered species and none were observed. A biological evaluation was prepared and can be found in the project file.

National Historic Preservation Act

Cultural resource surveys have been conducted, following inventory protocols approved by the State Historic Preservation Officer. Native American communities were contacted and public comment encouraged. Please refer to the Cultural Resource Report for these projects to see the results of the Cultural Resources Survey.

Clean Water Act

The design of project activities is in accordance with LRMP's standards and guidelines, Best Management Practices (North Carolina (NC) Department of Environment and Natural Resources and NC Division of Forest Resources – *Forestry BMP Manual*, 2006) and applicable Forest Service Manual and Handbook direction. Monitoring and evaluation of the implementation and effectiveness of LRMP's standards and guidelines and BMPs will occur. Project activities are expected to meet all applicable State water quality standards. Permits would be needed before the proposed project begins.

Clean Water Executive Order 11988

This project is consistent with this executive direction.

Executive Order on Invasive Species (No. 13112, signed Feb. 3, 1999)

Implementation of either alternative "is not anticipated to cause or promote the introduction or spread of invasive species..."

Executive Order on Migratory Birds (No. 13186 signed January 11, 2001)

Management objectives of this executive order will be met. No impacts upon these species are expected.

Executive Order 12898 (Environmental Justice)

Federal actions to address Environmental Justice in minority population and low-income populations and Departmental Regulation 5600-2 direct Federal agencies to integrate environmental justice considerations into Federal programs and activities. Environmental justice means that to the greatest extent practicable and permitted by law, all populations are provided the opportunity to comment before decisions are rendered on, are allowed to share in the benefits of, are not excluded from, and are not affected in a disproportionately high and adverse manner by, government programs and activities affecting human health or the environment.

Implementation of any project alternative is not anticipated to cause disproportionate adverse human health or environmental effects to minority or low-income populations.

Administrative Review or Appeal Opportunities _____

This decision is subject to appeal pursuant to 36 CFR 215.11. A written appeal, including attachments, must be postmarked or received within 45 days after the date this notice is published in *The Asheville Citizen-Times*. The Appeal shall be sent to National Forests in North Carolina, ATTN: Appeals Deciding Officer, 160-A Zillicoa Street, Asheville, North Carolina, 28801. Appeals may be faxed to (828) 257-4263. Hand-delivered appeals must be received within normal business hours of 8:00 a.m. to 4:30 p.m. Appeals may also be mailed electronically in a common digital format to:

appeals-southern-north-carolina@fs.fed.us

Those who meet requirements of 36 CFR 215.13 may appeal this decision. Appeals must meet content requirements of 36 CFR 215.14. For further information on this decision, please contact Brady Dodd, Project Leader, at 828-257-4214 or Michael Hutchins, Pisgah National Forest NEPA Coordinator at 828-682-6146.

Implementation Date _____

As per 36 CFR 215.9, if no appeal is received, implementation of this decision may occur on, but not before, the 5th business day following the close of the appeal-filing period (36 CFR 215.15). If an appeal is filed, implementation may occur on, but not before the 15th business day following the date of appeal disposition (36 CFR 215.2).

Contact

For additional information concerning this decision or the Forest Service appeal process, contact:

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mailroom_r8_north_carolina@fs.fed.us

/s/ Paul L. Bradley _____

PAUL L. BRADLEY
Appalachian District Ranger
Pisgah National Forest

April 6, 2006 _____

Date

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United States
Department of
Agriculture

Forest
Service

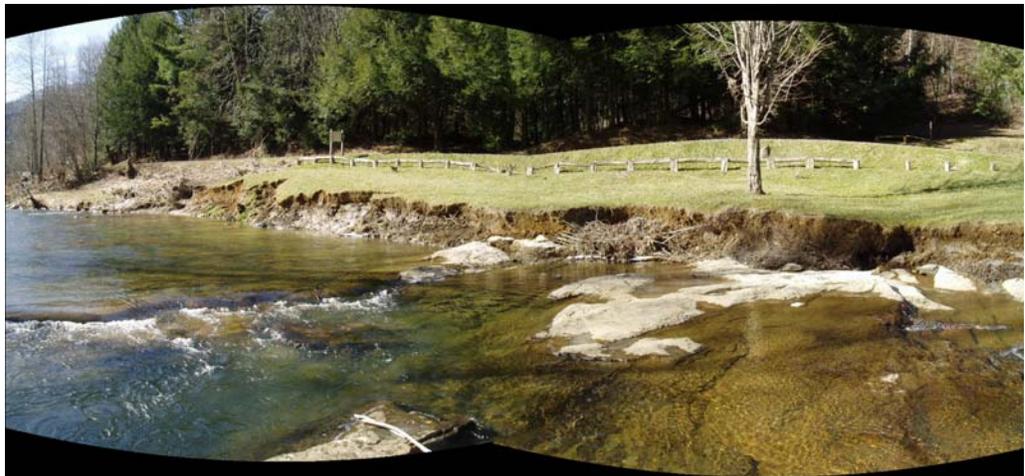
February 2006



Environmental Assessment

Elk River Watershed Improvement *Rock Vanes and Bank Stabilization*

Appalachian Ranger District, Pisgah National Forest
Avery County, North Carolina



Elk River Recreation Area looking up river from above Elk River Falls.



Elk River looking up river from Jones Branch towards the ford.

Lead Agency: USDA Forest Service

Responsible Official: Paul Bradley, Appalachian District Ranger, Pisgah National Forest

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BACKGROUND

In September 2004, western North Carolina experienced flooding effects from the remnants of three hurricanes. Extensive damage to some infrastructure and natural resources on National Forest Land occurred, including roads, trails and stream stability. On two National Forest sections of Elk River, the flood waters cut into the banks removing soil holding vegetation. This exposed soil is no longer protected from future high flow events. The Pisgah National Forest proposes to repair the damage that occurred on these sections of Elk River. One site is located at the Elk River Recreation Area just above the falls, while the other site is down stream from the river ford for Forest System Road (FSR) 190.

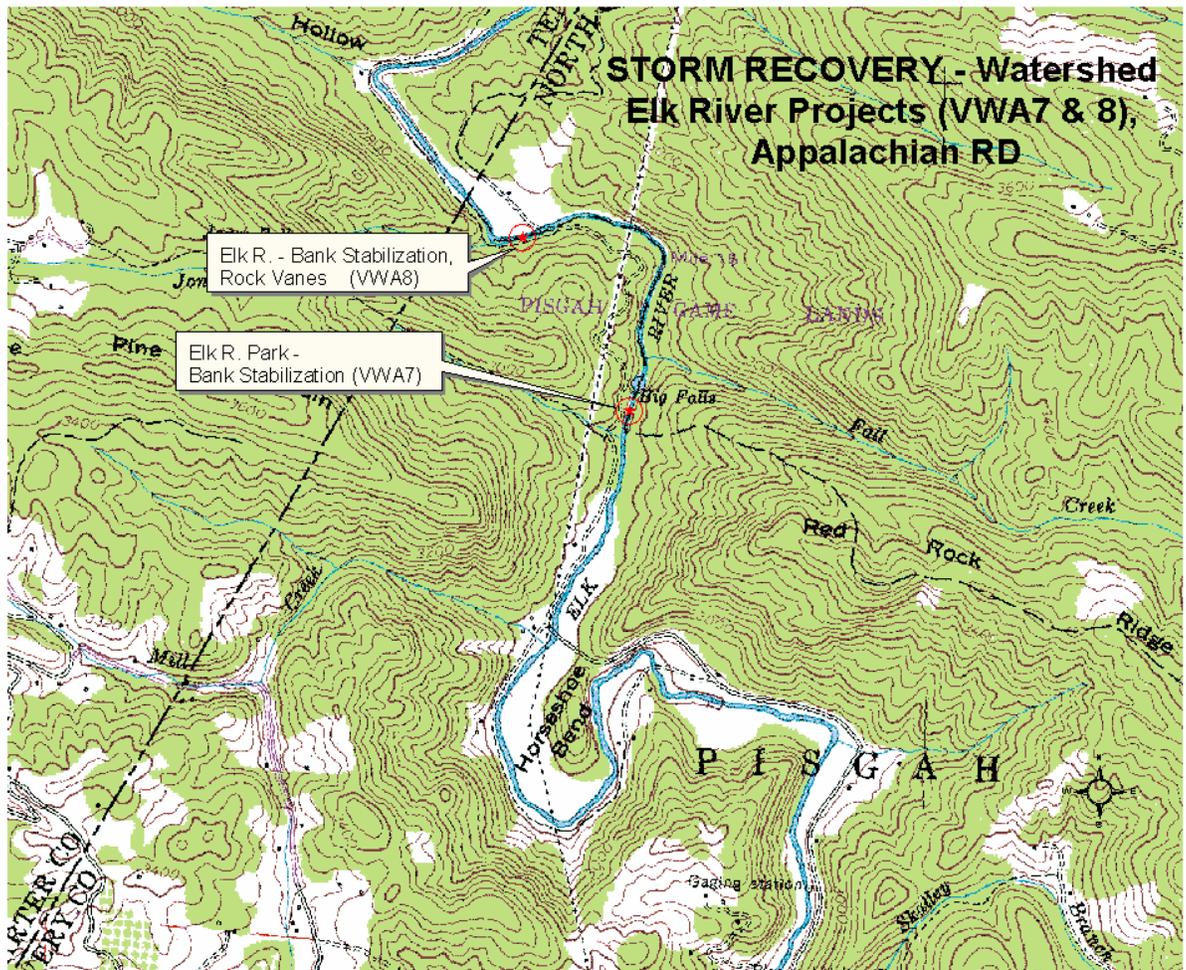


Figure 1. Location map of Elk River projects

The Forest Service has prepared this Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA), the Nantahala and Pisgah National Forests Land and Resource Management Plan – Amendment 5 (Forest Plan) and other relevant federal and state laws and regulations. Both alternatives will adhere to all required federal laws and executive orders

and requirements for project-specific findings or other disclosures. This EA discloses the direct, indirect, and cumulative environmental effects of implementing the proposed action and the no action. Based upon these effects the responsible official will decide which alternative best meets the objectives of this proposal.

Additional documentation may be found in the project planning record located at the Appalachian District Office in Burnsville, North Carolina.

NEED FOR THE PROPOSAL

The Forest Service is proposing this project in order to reduce sediment delivery, improve channel stability and improve aquatic habitat within the Elk River.

Existing Condition

At Elk River Recreation Area (see Figures 1, 2, 3 and 4), the western river bank is devoid of natural riparian vegetation and receives heavy foot traffic from people accessing the river. High water from the flooding of 2004 has eroded much of the 900 feet of bank leaving a steep slope prone to additional erosion and sediment delivery to the river. Elk River Recreation Area is a popular spot that is heavily used by the public because of Elk River waterfall and its large plunge pool. Forest users to this site include swimmers, picnickers and anglers.

The second site is along the western river bank between the ford on FSR 190 and the confluence with Jones Branch (see Figures 1, 6, 7 and 8). This 550 foot section of river bank was damaged during the floods. Soil holding trees and other vegetation were removed leaving a steep slope prone to further erosion and sediment delivery to Elk River.

Elk River is a hatchery supported trout waters stream. The biological communities for these areas include riparian forests and coldwater streams.



Figure 2. Current condition river bank and riparian area restoration at Elk River Recreation Area.

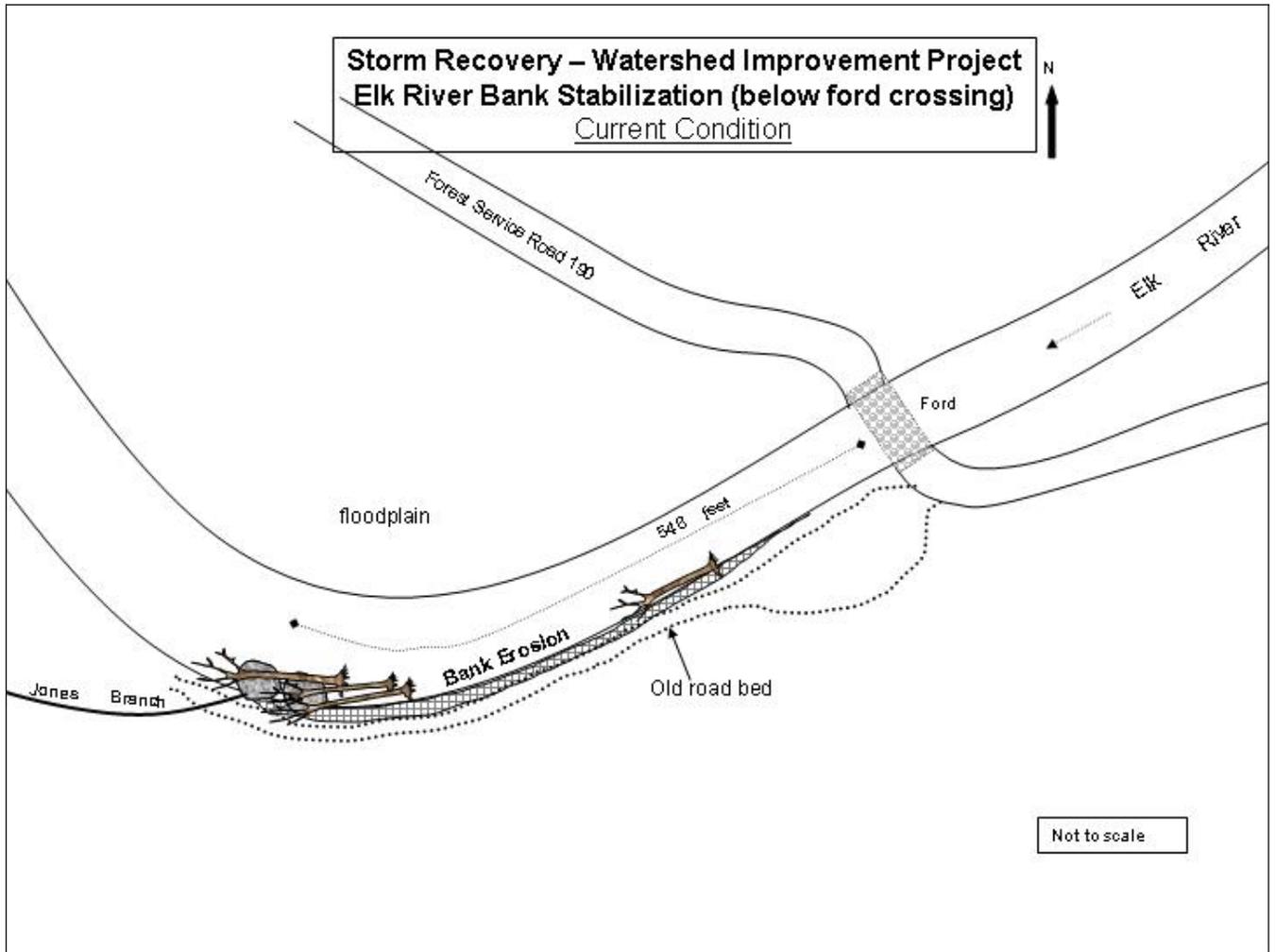


Figure 3. Current condition of river bank and riparian area at Elk River below ford crossing

Desired Condition

The desired condition of the Elk River watershed would include: conditions that are not conducive for sediment delivery in the river from exposed river banks; river banks covered with soil holding vegetation or material such as rocks or logs; a river current that is directed away from river banks; and controlled public access to the river.

Public Involvement

Public input was conducted through scoping in the National Forests in North Carolina Schedule of Proposed Actions (SOPA). This project was posted under the project name “Appalachian RD Tropical Storm Stream Rehabilitation Projects” (in the July and October 2005 SOPAs). No responses were received. The public is also informed about this project through this environmental assessment scoping and comment period.

Purpose and Need for Action

The need for the proposed action in the Elk River Watershed Improvement Project Area is based on the Forest Plan and the difference between the existing and desired conditions in the project area. This area is within the 3B and MA18 Management Area (MA) which emphasize sustainable supply of timber with few open roads and limited disturbance associated with motorized vehicles (Forest Plan pages III-71 to III-76) and areas managed to protect and enhance resource values and characteristics dependent on or associated with aquatic and riparian ecosystems and closely related plant and animal communities (Forest Plan page III-179 to III-189), respectively. It responds to the goals and objectives outlined in the Forest Plan and helps move the project area towards the desired conditions as described in the Forest Plan (Forest-wide Management Requirements pages III-24, 25, and 40) and highlighted here:

- Provide structural habitat improvements. Give priority to use of native materials and mimic naturally occurring structures.
- Protect and improve fisheries habitat for self-sustaining fish populations.
- Emphasize the protection of stream channels.

Proposed Action

The actions proposed by the Forest Service to meet the purpose and need are as follows:

1 – At the Elk River Falls Recreation Site, 900 feet of the stream bank will be stabilized by contouring the slope to a 1 foot rise and 2 feet run. Large boulder size rocks (approximately 4'x3'x3' in dimension) will be placed against the bank to divert the flow away from the bank thus protecting the soil from the eroding water current. Woody vegetation will be planted on the banks to help hold the soil in place and provide shade for the stream. A fence, with several hardened access points to the river, will be constructed to control access to the river while providing protection to the banks. Potential native shrubs, as available from commercial sources, to stabilize the banks include Virginia sweetspire (*Itea virginica*), dog hobble (*Leucothoe fontansiana*), mountain sweet pepperbush (*Clethra acuminata*), silky dogwood (*Cornus amomum*), and ninebark (*Physocarpus opulifolius*). Appropriate native tree species include eastern hemlock (*Tsuga canadensis*), black birch (*Betula lenta*), and sycamore (*Platanus occidentalis*). (See Figures 2, 3 & 4).

2 – At the Elk River site, between the FSR 190 river crossing and the confluence of Jones Branch with the Elk River, 500 feet of the steam bank will be stabilized by installing three in stream structures (single-arm vanes) and a tree with root wad attached to redirect stream flow away from the bank and back into the center of the stream. River banks in this section will be stabilized by contouring them and placing large wood against the bank. To help hold the soil and provide shade to the river, woody vegetation will be planted on the bank for the entire length of this section. Five trees would be used in the channel. These trees would be tulip poplar or eastern hemlock species and larger than 12 inches in diameter. They would be pushed over with an excavator to retain the root wad. (See Figures 6, 7 & 8).

Implementation of these actions will begin in 2006 with most of the work being accomplished between April 15 and October 15 to avoid impacts to naturally reproducing populations of game fish (see *Project Design Feature Common to All Alternatives* later in this document).

Issue Resolution

Through internal and external scoping, the Forest Service determined significant and non-significant issues associated with this project. Significant issues are those directly or indirectly created by implementation of the proposed action. Non-significant issues are those: 1) outside the scope of the proposed action; 2) already decided by law, regulation, Forest Plan, or other higher level decision; 3) irrelevant to the decision to be made; or 4) conjectural and not supported by scientific or factual evidence. The Council on Environmental Quality (CEQ) NEPA regulations (Sec. 1501.7) requires the EA to, "...identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review (Sec. 1506.3)...". (See the "Non-significant Issues Eliminated From Detailed Study" section later in this EA.)

Two significant issues were identified during scoping. The issues are:

Issue 1: Sedimentation

The eroding river banks within this project are sediment sources to Elk River and downstream waters, likely producing about 100 cubic yards of sediment annually. Actions designed to address the source of sedimentation have the potential to increase sediment delivery to the river over the short term but decrease sediment delivery over the long term. Fine sediment within the river can fill the interstitial spaces in gravel, affecting the reproductive success and hiding places of fish and other aquatic organisms.

Issue 2: Aquatic Habitat

Aquatic habitat has been impacted within the project area because large wood and boulders were washed downstream and shade producing vegetation was removed, river substrate composition is slowly changing from one with more gravel to one with more silt and sand, and water depth is shallower with a wider stream channel. The proposed action has the potential to cause additional impacts to aquatic habitat over the short term (within a year of the project, until vegetation becomes established), primarily when heavy equipment enters the riparian area and stream channel. Over the long term (greater than 1-year) the proposed projects would enhance aquatic habitat.

Decision Framework

Given the purpose and need, the deciding official, the Appalachian District Ranger, reviews the potential effects of the proposed action and the no action alternative in order to determine which alternative would be more environmentally sound and best accomplish the purpose and need.

Federal and State Permits, Licenses and Certifications

To proceed with the proposed projects as addressed in this EA, a permit will be required from the U.S. Army Corps of Engineers for the approval of discharge of dredged or fill material into waters of the United States (Section 404 of the Clean Water Act of 1977, as amended). Additionally, a Water Quality Certification, Erosion and Sedimentation Control Plan, and Trout Buffer Variance will be requested from the state of North Carolina.

Applicable Laws and Executive Orders

Disclosures and findings required by Federal laws and executive orders pertaining to project-specific planning and environmental analysis on Federal lands are contained later in this document.

COMPARISON OF ALTERNATIVES, INCLUDING THE PROPOSED ACTION

This section describes and compares the alternatives considered for the Elk River Watershed Improvement Projects. It includes a description and map of each alternative considered. This section also presents the alternatives in comparative form, defining the differences between each alternative and providing a clear basis for choice among options by the decision maker and the public. The information used to compare the alternatives is based upon the issues identified through the scoping and planning process.

Alternative 1 - No Action

The No Action alternative provides a baseline for comparison of environmental consequences of the proposed action to the existing condition and is a management option that could be selected by the responsible official. The results of taking no action would be the current condition as it changes over time due to natural forces.

Under the No Action alternative, current management plans would continue to guide management of the project area. Within the project area, river bank erosion would not be addressed, associated sedimentation would continue, boulders and large wood would not be placed, streambed substrate composition would remain the same or worsen, river channel would widen, water depth would become shallower, and stream shade will have little change.



Figure 4. Bank erosion on the western bank at Elk River Recreation Area. Looking down stream towards Elk River Falls.

Alternative 2 - The Proposed Action

This alternative addresses the project purpose and need for action.

Elk River Recreation Site (See Figures 5, 6, 7 & 8)

- Contour about 900 feet of the slope of the western river bank to a 1 foot rise and 2 feet run.
- Place large boulder size rocks against this bank.
- Plant woody vegetation on the western river bank.
- Install a fence with hardened access points along the river bank.

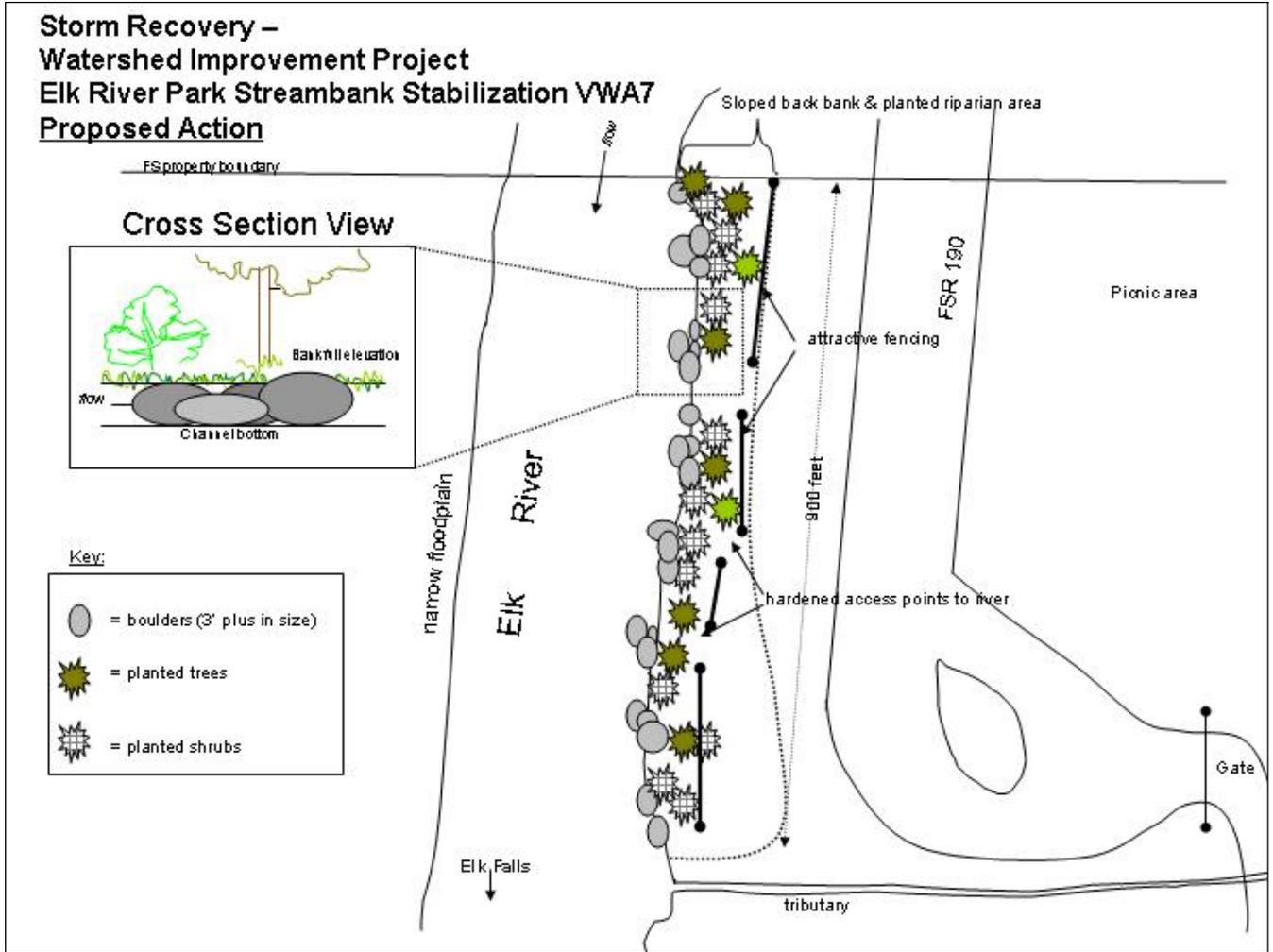


Figure 5. Proposed Action river bank and riparian area restoration at Elk River Recreation Area.



Figure 6. Elk River Falls. Just down stream from Elk River Park.

Elk River site between the FSR 190 ford and Jones Branch
(see figures 6, 7 & 8)

- Construct three in stream structures (single arm rock vanes).
- Place one of the harvested trees with root wad against the bank between the first and second rock vane.
- Contour the eroding slope of the western river bank of this section, redistribute existing wood with root wads and place 4 more harvested trees with root wads against the bank.
- Plant woody vegetation on the western river bank.
- Use 5 trees from near the site by pushing the trees over to retain the root wads. These trees will be used to stabilize the bank (see Figure 7).

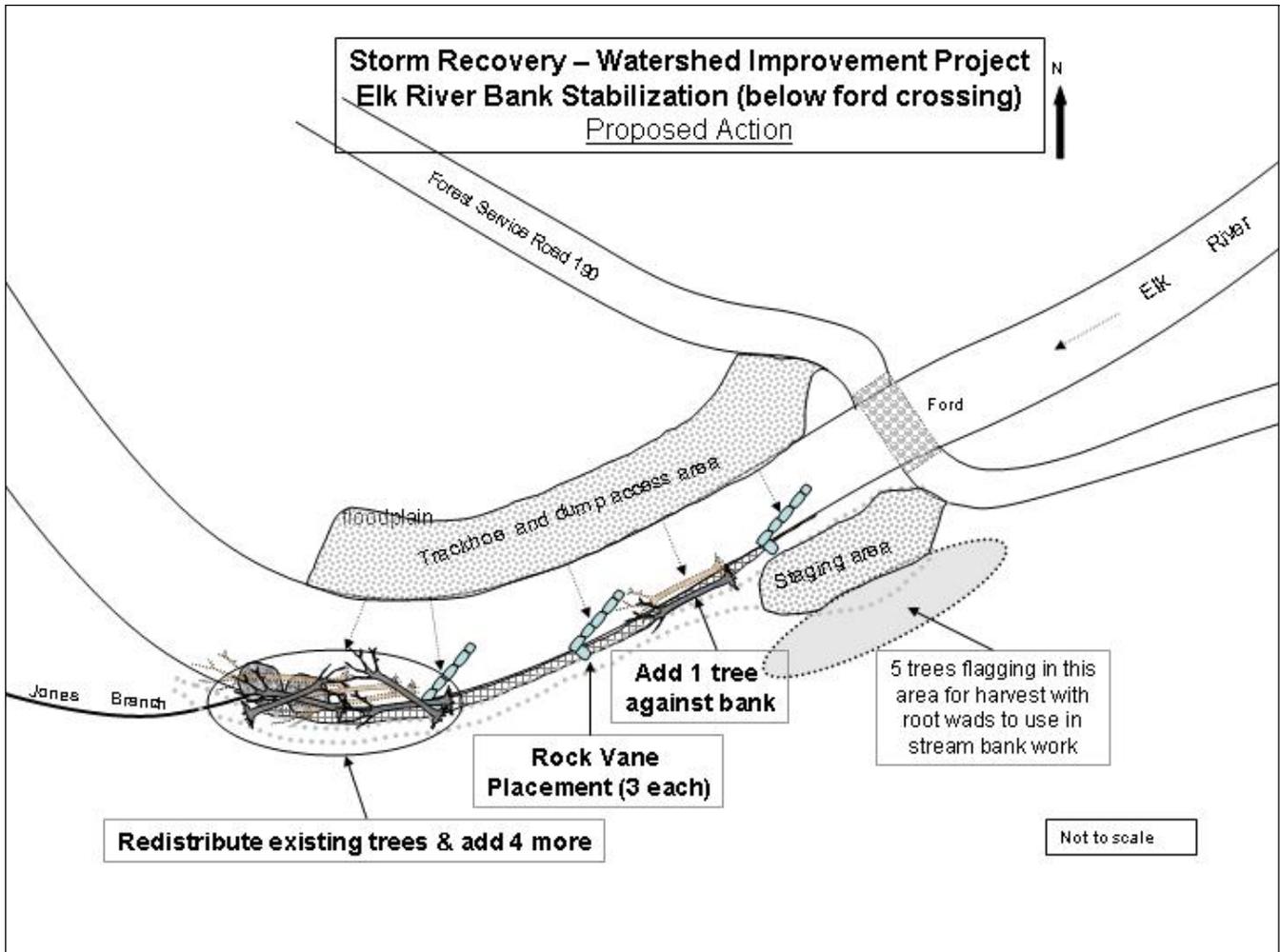


Figure 7. Proposed river bank and riparian area restoration at Elk River below ford crossing



Figure 8. Elk River looking upstream from Jones Branch to the FSR 190 ford crossing. Bank at the right side of the photo recommended for rehabilitation.

Project Design Features for the Action Alternative

Based upon the response to comments, project design features were developed to ease some of the potential impacts from the Proposed Action Alternative.

- Work equal to or below the normal high water mark will be prohibited from October 15 through April 15. This condition is a requirement of the State of North Carolina to avoid impacts to naturally reproducing populations of game fish. They will be incorporated into the 404 permit issued by the Army Corp of Engineers. These dates may change but are usually those listed above.
- Incorporate any mitigation included in the State of North Carolina's Water Quality Certification and Erosion and Sedimentation Control Plan, and Army Corp of Engineer permits.
- To protect the cultural resources of the area, no ground disturbance including parking of vehicles or equipment will be allowed above FSR 190 within the Elk River Recreation Site from the Forest Service boundary to the gate. Equipment can park on FSR 190 behind the gate at the end of the recreation site or below FSR 190.
- To protect shade producing vegetation next to the stream and potential nesting trees of the Acadian flycatcher, trees to be harvested for use as large wood within the river (root wads attached) will be located at least 50 feet from the stream bank.

COMPARISON OF ALTERNATIVES

This section provides a summary of the effects of implementing each alternative. Information in the table is focused on activities and effects where different levels of effects or outputs can be distinguished quantitatively or qualitatively among alternatives.

Table A. Comparison of Alternatives.

	Alternative 1: No Action	Alternative 2: Proposed Action
Issue 1: Sedimentation	Continued sedimentation both short term and long term from the 1400 feet of eroding river channel and banks.	There may be some sediment delivery during implementation, but sedimentation will be significantly reduced over the long term by reducing the amount of eroding river banks by 1400 feet.
Issue 2: Aquatic Habitat	Continued simplification of aquatic habitat from past impacts and continued delivery of sediment. The frequency of large wood and boulders will remain similar. The river channel will continue to widen and become shallower. There will be less shading of the water.	Improvement of aquatic habitat with the implementation of the project by providing additional shade, large wood and boulders, improving the substrate composition, reducing channel width, and increasing water depth.

ENVIRONMENTAL CONSEQUENCES

This section summarizes the physical, biological, social and economic environments of the affected project area and the potential changes to those environments due to implementation of the alternatives. It also presents the scientific and analytical basis for comparison of alternatives presented in Table E.

Issue 1: Sedimentation

The river banks in the Elk River project area are a source of sediment to waters in and downstream of the project area, affecting aquatic habitat and water quality. Approximately 1,400 feet of the western river bank has a vertical surface that is bare of vegetation. These areas have become unstable and will continue to erode into the river during high flows. Fine sediment within the river can fill the interstitial spaces in gravel, affecting the reproductive success and hiding places of fish and other aquatic organisms. The amount of surface area of exposed soil within the riparian area of the Elk River will be used to measure the differences between alternatives.

Issue 2: Aquatic Habitat

Aquatic habitat within the project area of the Elk River has been affected by the flooding events of 2004. Large wood and boulders have been washed out of the river channel, deposited on the banks or transported downstream. Erosion of the river banks will slowly change the river substrate composition from one with more gravel to one with more silt and sand, resulting in a wider/shallower river channel, and move shade/cover producing vegetation further from the water. The condition of the aquatic habitat (including the frequency of large wood and boulders within the river), river channel width and depth, and frequency of shading will be used to measure the differences between alternatives.

Effects

- Direct effects are those occurring at the same time and place as the project.
- Indirect effects are those caused by the action, which occur after the activity has taken place or occur at a distance from the action area.
- Cumulative effects are those resulting from incremental impacts of the action when added to other past, present and reasonably foreseeable future actions. Cumulative effects can result from individually minor, but collectively significant actions that take place over a period of time.

Sedimentation

Alternative 1: No Action Alternative

Direct/Indirect Effects

Without contouring the river banks, the Elk River project area would continue to be a source of sediment, particularly during high water events. The majority of this sediment would be moved down river while some would remain in the channel near the project sites, particularly in the margins of the river below the eroding stream banks. This sediment has the potential to affect

water clarity and substrate composition which could impact available hiding habitat for aquatic organisms and fish reproductive success.

Cumulative Effects

The cumulative effects analysis area is the Elk River watershed. This accounts for all other effects to watershed integrity upstream of the project area and accounts (to a reasonable degree) for effects downstream of the project area. Past, present, and reasonably foreseeable actions within the watershed include maintenance and repair of FSR 190 including the ford, other road building/maintenance/use and relocation and repair to the Elk River Recreation Site (includes the road, parking and trail). Other potential effects include wildfires, fire suppression, vegetation management, hiking, camping, Christmas tree farmers, agriculture, and ranching. Each of these activities/events has the potential to increase sediment loading to the stream channel. The largest sources of sediment are typically derived from agricultural and ranching operations and occur on private lands. With the selection of the No Action Alternative, the eroding banks of the Elk River on federal lands within the project area will continue to be a sediment source for the stream, adding to the other sediment sources within the watershed.

If Alternative 1 is implemented, sedimentation will remain similar or slightly increase. Without contouring the river banks, sediment would continue to enter the Elk River from the river banks during high flows. This sediment adds to that already in the river substrate from other management activities but would not be expected to increase significantly from the current rate of sedimentation. Maintenance and repair of FSR 190 (storm project UID# 848) is being designed and will include grading and shaping, adding aggregate/drainage dips/culverts and improving the approaches to the river at the ford. The maintenance and repair to Elk River Recreation Site (storm project UID# 279) is being designed and will include grading and new aggregate for the road and parking area, reconstruction of the trail to the falls, and possibly new parking sites. These projects will reduce sediment entry into the river by reducing the amount of soil movement off of FSR 190 and the parking areas, moving the parking away from the tributary to Elk River, and hardening the trail to the falls.

Alternative 2: Proposed Action

Direct/Indirect Effects

The Proposed Action Alternative addresses the sedimentation generated from the erosion in the Elk River. Because the Proposed Action Alternative includes the installation of rock vanes, excavation of stream banks to reduce them to a stable angle of repose, and placement of large wood and boulders, some short term (within a year of the project, until vegetation becomes established) sedimentation at both sites is likely. This short term sedimentation would likely be low in quantity and be dispersed by moving downstream during high flows. However, over the long term (greater than 1 year) the effects on sedimentation would be reduced as compared to the No Action Alternative. The long term benefits of a reduced amount of sediment entering into the river from the treated sites is much greater than the short term sedimentation that may occur during the actual project implementation or from not treating it at all.

Cumulative Effects

The cumulative effects analysis area is the same as what was described under the No Action Alternative. Implementation of this alternative may generate some sediment, but it will be minimized through mitigation in the state Best Management Practices (BMP) and Forest Plan

standards. With the maintenance and repair of FSR 190, the amount of sediment entering the river will be reduced. When you combine the repair of the river bank with the work on FSR 190 and the Elk River Recreation Site, the cumulative effects on sedimentation would be greatly reduced. No significant cumulative effects related to sedimentation are expected.

Aquatic Habitat

Alternative 1: No Action

Direct/Indirect Effects

With the selection of the No Action Alternative, aquatic habitat in the Elk River will remain in its current condition. Eventually, after further bank erosion, the river channel will become wider, water will become shallower and warmer, potentially large wood debris and shade (trees/shrubs on the river bank) would be further from the waters edge, and river substrate composition will become more silt and sand than gravel.

Cumulative Effects

The cumulative effects analysis area is the same as what was described under the sedimentation No Action Alternative. Past, present and reasonably foreseeable management actions are also the same as what was stated above. The selection of the No Action Alternative would maintain the existing and future impacts to aquatic habitat, resulting in a decrease in the aquatic habitat.

Alternative 2: Proposed Action

Direct/Indirect Effects

The implementation of the proposed action will immediately result in a net increase in quality and quantity of aquatic habitat. The eroded river banks would be contoured reducing the amount of sediment going into the river over an extended time period, large wood and boulders would be placed in the river to provide aquatic cover and river bank protection, woody vegetation would be planted on the banks to help hold the soil and provide shade, and rock vanes would be constructed to direct the current towards the center of the channel, thus, creating deeper water and directing the current away from the banks.

Cumulative Effects

The cumulative effects analysis area is the same as the cumulative effects discussions above. Aquatic habitat would improve because of the project. With the maintenance and repair of FSR 190 and Elk River Recreation Site, the amount of sediment entering the river will be reduced from federal land. Other activities in the area, associated with private lands would continue to have an impact on the quality of aquatic habitat since sediment loading rates are not expected to decrease from private lands, especially with the growth in land development.

Non-significant Issues Eliminated From Detailed Study

The following resources are important in the analysis area but the projects effects on them have been mitigated through the proposed action. Disclosure of effects on these resources, however, is required by law, regulation, and policy.

Alternative 1: No Action and Alternative 2: Proposed Action

1. Threatened Endangered and Regional Forester's Sensitive Species (TES)

Federal agencies are mandated to analyze effects of proposed projects on TES species according to the Endangered Species Act of 1973. To meet this requirement, a BE for species known to occur or which may occur in the analysis area has been prepared by a Forest Service biologist. Currently, 230 TES species are known to occur or could occur on the Nantahala and Pisgah National Forest and were initially considered for this analysis. To focus on those species with the greatest likelihood of occurrence within the activity area at the northern boundary of the Pisgah National Forest, the North Carolina Natural Heritage Program Biotic Database element occurrence records were queried for species within a 4-mile radius of the Elk River watershed improvement project (Table A). One federally endangered mammal and a single sensitive gastropod species have previously been documented within 4 miles of the activity area.

Table B. Analysis for Threatened, Endangered and Regional Forester's Sensitive species known to occur within 4 miles of the project area.

Species	Type	Habitat	Analysis
Federally-Listed			
<i>Corynorhinus town. Virginianus</i> , VA big-eared bat	Mammal	Roosts in mines and caves typically near water	Excluded since there is no roosting habitat of abandoned buildings or mines within the project activity area, no affect to foraging habitat
Sensitive			
<i>Ventridens coelaxis</i> , Bidentate dome	Gastropod	Acidic or Rich Cove Forest	Excluded since no cove forest community would be affected by proposed project

Both of these species were eliminated from further analysis since there was no suitable habitat for either within the analysis area. No further TES plant, aquatic or animal species are known to occur within the activity area of the Elk River watershed project. Surveys by the wildlife biologist, botanist, and fisheries biologist during the recent review for the NC Department of Transportation paving project on Avery County SR 1305 resulted in no TES species or their habitat being found.

Since no TES species or their habitat were located within the activity area or will be affected by the proposed projects, the no action and proposed action alternatives will not result in a change to any TES species or their habitat.

Determination and Summary

The Elk River watershed project will not affect any threatened, endangered, or proposed terrestrial, botanical, or aquatic species, nor will suitable habitat be affected. Consultation with the U.S. D. I. Fish and Wildlife Service is not required.

No Regional Forester's sensitive species will be impacted by this proposed watershed project.

2. Forest Concern Species

The Forest Service is required to analyze the effects of the proposed projects on the Nantahala and Pisgah National Forests list of Forest Concern species. This list includes 262 plants, 56

terrestrial animals, and 87 aquatic animals. These species are either known or could occur on the Forests. All of these species were initially considered for this analysis. To focus on those 405 Forest Concern species with the greatest likelihood of occurrence within the activity area at the northern boundary of the Pisgah National Forest, the North Carolina Natural Heritage Program Biotics Database element occurrence records were queried for these species within a 4-mile radius of the Elk River watershed improvement project (Table B). Five Forest Concern vascular plants have previously been documented within the project area. They include *Carex leptonevia*, *Chaemerion platyphyllum*, *Geum aleppicum*, *Geum laciniatum* var. *trichocarpum*, and *Liparis loeselii*. One snail species, *Glyphalinia vanattai*, has been documented within 4 miles of the activity area. One forest concern aquatic fish, the banded sculpin (*Cottus carolinae*), was identified in 1996 within Elk River and Little Elk Creek near the activity area. A recent analysis of the specimens collected in 1996 indicates this occurrence is the more common mottled sculpin (NC Heritage Biotics database). Since both of these sculpin species are known to co-occur (Sheryl Bryan, National Forests in NC fisheries biologist, personal communication), the following analysis will conservatively analyze the effects to banded sculpin as if it were present. The other six species in Table B were eliminated from further analysis since there was no suitable habitat for them within the activity area

Table C. Analysis for Forest Concern species known to occur within 4 miles of the project area.

Species	Type	Habitat	Analysis
<i>Carex leptonevia</i> , A Wood Sedge	Vascular Plant	Rich Cove Forest, Northern Hardwood Forest	Exclude since no rich cove or northern hardwood habitat
<i>Chaemerion platyphyllum</i> Fireweed	Vascular Plant	High Elevation Bald or opening	Exclude since no high elevation open habitat
<i>Geum aleppicum</i> , Yellow Avens	Vascular Plant	Southern Appalachian Bog, Seep	Exclude since negative surveys for suitable habitat
<i>Geum laciniatum</i> var. <i>trichocarpum</i> , Rough Avens	Vascular Plant	Southern Appalachian Bog	Exclude since negative surveys for suitable habitat
<i>Liparis loeselii</i> , Fen orchid	Vascular Plant	Southern Appalachian Bog, Seep	Exclude since negative surveys for suitable habitat
<i>Glyphalinia vanattai</i> , Honey glyph	Gastropod	Acidic Cove Forest	Exclude since no cove forest community affected by the proposed project
<i>Cottus carolinae</i> , Banded Sculpin	Fish	Rivers and Streams in French Broad & Toe drainages	May be beneficially impacted with reduction in current sediment loading

No additional Forest Concern plant, aquatic or animal species are known to occur within the activity area of the Elk River watershed project. Surveys by the wildlife biologist, botanist, and fisheries biologists during the recent review for the NC Department of Transportation paving project on Avery County SR 1305 located no other Forest Concern species or their habitat.

Direct/Indirect Effects

Storm repair including trail construction and reconstruction could potentially affect rare species either directly through trampling animals or uprooting and crushing plants. Repair activities could directly affect aquatic organisms by increasing turbidity. Indirect effects from the storm repair include habitat changes such as changing microhabitat conditions (shading, temperature, moisture).

No Action Alternative

With the no action alternative, there will be no activities to stabilize the existing stream banks that are currently contributing sediments into the Elk River. Given the lack of any stream bank restoration, *Cottus carolinae*, if it occurs within the Elk River, could continue to be directly impacted by the increased sedimentation following rain events. The maintenance and repair work scheduled for FSR 190 and Elk River Recreation Area would control current road sediment inputs into Elk River; however, the existing stream banks will continue to provide a source of sediments which may eventually severely impact and eliminate *Cottus carolinae* from this area within the Elk River. The species is known to occur in three basins, French Broad, Spring Creek, and Big Laurel in Madison County that have USFS lands that drain into it.

Action Alternative

Cottus carolinae could be directly negatively impacted as a result of increased sedimentation with project implementation. However, with implementation of proper erosion control measures along Elk River, the risk of runoff will be greatly reduced and negative impacts are expected to be negligible particularly since the banded sculpin has the ability to move during sediment inputs. In the long term, there should be a positive indirect impact on *Cottus carolinae* since the placement of large wood/boulders and the planted woody vegetation will stabilize the current erosion problem. Cumulatively, *Cottus carolinae* has been negatively impacted by the increased silt and sedimentation resulting from the hurricane storm events in September and October of 2004. The FSR 190 road and Elk River Recreation Area projects should result in an indirect positive impact to *Cottus carolinae* as sediment from these sources will be reduced. Therefore, the overall impact to this species will be positive. Individuals may be impacted by the proposed watershed improvement project but this will not cause a trend to federal listing or a loss of viability.

Cumulative Effects

Forest System Road 190 and Elk River Recreation Area are scheduled to be maintained and repaired within the year. The amount of sediment entering the river from these areas will be reduced because of this work.

Determination and Summary

The Elk River watershed project will not negatively impact any forest concern species, including *Cottus carolinae*, nor will suitable habitat be impacted. This project as well as the FSR 190 and Elk River Recreation Area projects will beneficially impact *Cottus carolinae*.

3. Management Indicator Species (MIS) and Migratory Birds

Based on the biological communities associated with this area the pertinent Management Indicator Species (MIS) for this project area include: the Acadian flycatcher for riparian forests; and brook trout, brown trout, rainbow trout, and blacknose dace for coldwater streams. The effects of this project upon pertinent management indicator species have been analyzed and are disclosed in this

document. Management Indicator Species (MIS) serve as the procedure to monitor the implementation of the Forest Plan, as well as its effects on diversity and the population viability of all native and desirable non-native plants and animals. MIS were selected to represent all biological communities and special habitats on the Nantahala/Pisgah National Forests (see Tables C and D below; see also Appendix L, FEIS of Amendment 5).

Table D. Biological communities, associated MIS, and why species were chosen or eliminated from analysis.

Biological Community	MIS	Analyzed Further/ Evaluation Criteria*
Fir dominated high elevation forests	Fraser fir	No/1
Northern hardwood forests	Ramps	No/1
Carolina hemlock bluff forests	Carolina hemlock	No/1
Rich Cove forests	Ginseng	No/1
Xeric yellow pine forests	Pine warbler	No/1
Reservoirs	Largemouth bass	No/1
Riparian forests	Acadian flycatcher	Yes
Coldwater streams	Brook, brown, and rainbow trout; blacknose dace	Yes
Coolwater streams	Smallmouth bass	No/1
Warmwater streams	Smallmouth bass	No/1

*1 Biological Community and its represented species do not occur within the project area; therefore, this biological community will not be affected. Given no effects to the community, this project will not cause changes to forest-wide trends or changes in population trends of species associated with this community.

Table E. Habitats components, associated MIS and why species chosen or eliminated from analysis.

Habitat Components	MIS	Analyzed Further/ Evaluation Criteria*
Old Forest Communities (100+ years old)	Black bear	No/1
Early successional (0-10 years old)	Rufous-sided (eastern) towhee	No/1
Early successional (11-20)	Ruffed grouse	No/1
Soft mast producing species	Ruffed grouse	No/1
Hard mast-producing species (>40 yrs)	Black bear	No/1
Large contiguous areas with low levels of human disturbance	Black bear	No/1
Large contiguous areas of mature deciduous forest	Ovenbird	No/1
Permanent grass/forb openings	White-tailed deer	No/1
Downed woody debris	Ruffed Grouse	No/1
Snags	Pileated woodpecker	No/1

**1 Habitat and its represented species do not occur within the project area; therefore, this special habitat will not be affected by the project proposal. Given no effects to the habitat, this project will not cause changes to forest-wide trends or changes in population trends of species associated with this habitat.*

For the Elk River project, 5 separate species were selected to represent the two habitats that potentially could be impacted. Acadian Flycatchers will represent riparian forests while brook trout, brown trout, rainbow trout, and blacknose dace represent the coldwater stream component (Tables C and D).

Riparian Forests

Acadian Flycatcher

Changes in the presence and absence of Acadian flycatchers are being used to indicate the effectiveness of management of riparian forests across the Nantahala and Pisgah National Forests. The preferred habitat for Acadian flycatcher is moist, deciduous forests with a moderate understory, most commonly near streams. Nests are built on down-hanging branches of deciduous trees, usually over a stream. The flycatcher forages on flying insects 10-40 feet above the ground. The Breeding Bird Survey (BBS) trend data for this region shows a downward trend in the population. However, the majority of BBS survey routes are along private land on roads. The R8 bird surveys completed on the Nantahala and Pisgah National Forests for the past 5+ years indicate a static population trend for the Acadian Flycatcher (Table E).

Table F. MIS species, estimated population trend, and biological community or special habitat indicated by the species

Species	Estimated population trend	Biological Community and/or special habitat
Black Bear	Increasing	Old forest communities, hard mast-producing species, contiguous areas with low disturbance
White Tailed Deer	Static to decreasing	Permanent grass-forb
Pileated Woodpecker	Increasing	Snags
Ovenbird	Decreasing	Large contiguous areas of mature deciduous forest
Rufous-Sided (Eastern) Towhee	Decreasing	Early-successional (0-10)
Pine Warbler	Static	Xeric yellow-pine forests
Ruffed Grouse	Static	Early successional (11-20), soft mast producing species, downed woody debris
Acadian Flycatcher	Static	Riparian
Wild Brook, Brown and Rainbow Trout	Static	Coldwater streams
Largemouth Bass	Static	Reservoirs
Blacknose Dace	Static	Coldwater streams
Smallmouth Bass	Static	Coolwater and Warmwater streams
Fraser Fir	Static	Fraser fir forests
Carolina Hemlock	Decreasing	Carolina hemlock bluff forests
Ginseng	Decreasing	Rich cove forests
Ramps	Static	Northern hardwoods

Five trees will be utilized, roots and all, by pushing them over with an excavator. The loss of these trees could have an impact on the nesting habitat for the Acadian flycatcher, however, Project Design Measures discussed earlier eliminate this concern by requiring the trees to be over 50 feet from the river. This project proposal is to revegetate the portions of the river bank where excavation of the banks is proposed. Eventually, this will result in improved nesting habitat, once the trees grow to a sufficient size. Foreseeable future actions include the maintenance/repair work on FSR 190 and Elk River Recreation Area. This proposed project involves the cutting of several hazard trees. These trees are located away from the river, so there will be no direct or indirect cumulative impacts to Acadian flycatchers as a result of this future road project.

The Elk River Watershed Improvement project will have no direct, indirect, or cumulative effects to the Acadian flycatcher. It will not alter the current trend for Acadian flycatchers across the Nantahala and Pisgah National Forests.

Coldwater Streams

Brook Trout, Brown Trout, Rainbow Trout, and Blacknose Dace

Changes in the presence and absence of brook trout, brown trout, rainbow trout, and blacknose dace are being used to indicate the effectiveness of management of coldwater streams across the

Nantahala and Pisgah National Forests. These four species are sensitive to subtle changes within water quality. Of these four species, blacknose dace could be affected by project activities. This species is known to occur within the Elk River, while there are no viable reproducing populations of any of the three trout species. Rainbow trout are stocked within the Elk River but young reproducing individuals are not prevalent (Sheryl Bryan, personal communication). Management activities most likely to impact coldwater habitat would be removal of shade producing vegetation and ground disturbing activities that have potential to add additional sediment to the river.

Currently, there is periodic sediment input into Elk River from the existing unvegetated eroding banks. The proposed project to recontour, vegetate and armor the banks as well as build rock vanes will result in short term increases in sediment into the river. These inputs potentially could directly negatively impact MIS coldwater stream species. Indirectly, these species could be affected if the interstitial space within the substrate used for spawning and rearing areas is covered with sediments. Implementation of proper erosion control measures along the Elk River, adjacent to the activity area, should reduce the risk of runoff and short term sediment input.

There may be a cumulative negative effect on these rare aquatic organisms since they may also have been negatively impacted by the increased sedimentation from the heavy rains and high winds associated with the floods that impacted the Elk River. As mentioned above, it is anticipated that FSR 190 and Elk River Recreation Area will be maintained and improved in the next year. These projects are not expected to have any negative impacts on these species as erosion control standards will be utilized and implemented. Long term, both the watershed improvement project and the road and recreation projects should greatly reduce any sediment loading into Elk River by revegetating bare banks, improving drainage and adding gravel to the road. These projects should result in a positive long term impact to these four fish species.

The Elk River Watershed Improvement project will have some short term negative direct and indirect impacts to brook trout, brown trout, rainbow trout, and blacknose dace. These impacts will be somewhat mitigated by the prohibition on in stream work from October 15 through April 15 to avoid impacts to naturally reproducing game fish. Cumulative long term impacts from this project, FSR 190 work and Elk River Recreation Area project should benefit these four species. Given that the Elk River constitutes a very small amount of the available coldwater streams across the Nantahala and Pisgah National Forests, this storm repair project is not anticipated to alter the static population trend for these four species across the Forest.

4. Heritage Resources

Under the National Historic Preservation Act (NHPA), a significant, or adverse effect is one which may diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or associations (36 CFR 800.9[b]). The project area was surveyed for cultural resources. No sites were located in the proximity to the proposed project area. All rehabilitation work at the Elk River Falls Recreation Site will be between the road and the river. Thus, the cultural sites will not be impacted unless these areas were used for parking vehicles and equipment. Implementation of the mitigation measures will protect these sites, thus, there will be no impact to cultural resources within the area.

5. Non-native Invasive Plant Species

Exotic plants are species that have been introduced into an ecosystem outside their natural range as a result of direct or indirect actions of humans. Typically exotic plants come from other countries or continents, although they can be from another state or region within the United States. Once introduced, an exotic plant may remain noninvasive for a number of years until some unknown environmental factor triggers a change. Exotic species are known to be a problem throughout the southern Appalachians (Bowen 1996), the southeast (Miller 1997), and a major ecological problem worldwide (Williamson 1996). They are considered a major threat to the integrity of native communities (White and Bratton 1980). Over 180 non-native species have been recorded in an ongoing inventory of the Pisgah and Nantahala National Forests (NP) (Danley & Kauffman 2002). This represents more than 12% of the recorded flora. However, only a few of these species have been found to be highly invasive within western North Carolina. A systematic exotic plant survey was conducted across the NP in 2002 and 2003 to determine those species that currently have dense invasions and exotic species area hotspots. The following list of invasive species are known to pose the greatest risk of infestations across the NP.

Scientific Species	Common Name
<i>Ailanthus altissima</i>	Tree-of-heaven
<i>Albizia julbrissin</i>	Silk Tree
<i>Celastrus orbiculata</i>	Oriental Bittersweet
<i>Dioscorea oppositifolia</i>	Chinese Yam
<i>Glechoma hederacea</i>	Gill-over-the-ground
<i>Ligustrum sinense</i>	Privet
<i>Lonicera japonica</i>	Japanese Honeysuckle
<i>Microstegium vimineum</i>	Japanese Stilt Grass
<i>Miscanthus sinensis</i>	Chinese Silver Grass
<i>Paulownia tomentosa</i>	Princess Tree
<i>Polygonum cuspidatum</i>	Japanese Knotweed
<i>Pueraria montana</i>	Kudzu
<i>Rosa multiflora</i>	Multiflora Rose
<i>Rumex acetosella</i>	Sheep Sorrel
<i>Spiraea japonica</i>	Japanese Meadowsweet

Within the Elk River area, two species are known to be prevalent along the roadside and within the forested edge; *Microstegium vimineum* and *Lonicera japonica*.

Alternative 1: No Action

Direct/Indirect Effects

River bank erosion would not be addressed with the No Action Alternative. As a result, the currently eroding areas would be susceptible to invasion by the two prevalent invasive plant species. *Microstegium vimineum* poses the greatest likelihood of spread since it prefers moist or saturated soils as would be found near the rivers edge. The selection of the No Action Alternative may increase the likelihood of increase for both species.

Cumulative Effects

The cumulative effects analysis area is the same as described under the sedimentation No Action Alternative. Past, present and reasonably foreseeable management actions are also the same. All of the land disturbing activities have the potential to increase the spread of the two dominant invasive species. The existing spread of these two species on private lands within the cumulative effects analysis area is unknown. The selection of the No Action Alternative increases the likelihood of the spread of both *Lonicera japonica* and *Microstegium vimineum* within the project area, which might add to possible other outbreaks on adjacent private lands in the analysis area.

Alternative 2: Proposed Action

Direct/Indirect Effects

The proposed alternative reduces the risk of invasion from exotic plant species on the eroding river banks by revegetating the banks with native shrubs and trees. There is still some risk of spread of invasive non-native species while the native woody plants are becoming established, however the potential area of spread is less than half the area if the No Action Alternative was selected. The risk of invasion will be greatest in the short-term (less than 1 year) while the native plantings are getting established. After the woody species completely shade (5-10 years) the revegetated slope, there will be low likelihood of invasion of invasive plant species as well as persistence of any previously established species.

Cumulative Effects

The cumulative effects analysis area and the past, present and reasonably foreseeable management actions are the same for this alternative as the No Action Alternative. As previously discussed, it is unknown how extensive outbreaks of non-native invasive plant species are present on adjacent private lands in the analysis area. The selection of this action alternative does not completely eliminate the risk of invasion from non-native invasive exotic species. However, the risk is less in comparison to the No Action Alternative and therefore would not contribute in the long term to possible existing outbreaks on adjacent private lands in the analysis area.

CONSULTATION AND COORDINATION

The Forest Service consulted the following individuals, Federal, State, and local agencies, tribes and non-Forest Service persons during the development of this environmental assessment:

ID Team Members

William Schiffer	NEPA Writer
Brady Dodd	Forest Hydrologist
Sheryl Bryan	Forest Fisheries Biologist
Gary Kauffman	Forest Botanist
Rodney Snedeker	Forest Cultural Resource Specialist
Paul Bradley	Appalachian District Ranger
Sandy Burnet	District Wildlife Biologist
Michael Hutchins	Zone NEPA Coordinator
Bobby Kitchens	Storm Team Incident Commander

Federal, State and Local Agencies

US Fish and Wildlife Service

North Carolina Wildlife Resource Commission

Others Providing Input

The public was informed about this project through the SOPA and this environmental assessment scoping and comment period and the following individuals provided input: