

United  
States  
Department  
of  
Agriculture

Forest  
Service

April 2009



# **Draft Environmental Impact Statement**

## **Upper Greys Vegetation Management Project**

**Greys River Ranger District, Bridger-Teton National Forest  
Lincoln County, Wyoming**

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**Abstract:** The Greys River Ranger District proposes to conduct timber harvest on 362 acres in the upper Greys River watershed. The proposed activities are anticipated to take place over a 3 to 10-year period and include harvesting 92 acres using partial-cut methods, 270 acres using clear-cut methods, reconstructing 3 miles of road, and constructing 3.15 miles of temporary road, which will be rehabilitated after use. Approximately 0.5 miles of closed roads would be opened for log hauling but would be rehabilitated following use. Culvert replacement and stream-crossing improvement work on timber haul roads would improve the condition of roads, and all harvesting would be conducted via ground-based logging systems.

Reviewers should provide the Forest Service with their comments during the review period of the Draft Environmental Impact Statement. This will enable the Forest Service to analyze and respond to the comments at one time and to use information acquired in the preparation of the Final Environmental Impact Statement, thus avoiding undue delay in the decision making process. Reviewers have an obligation to structure their participation in the National Environmental Policy Act process so that it is meaningful and alerts the agency to the reviewers' position and contentions. (Vermont Yankee Nuclear Power Corp. v. NRDC, 435 U.S. 519, 553, 1978) Environmental objections that could have been raised at the draft stage may be waived if not raised until after completion of the Final Environmental Impact Statement. City of Angoon v. Hodel (9<sup>th</sup> Circuit, 1986) and Wisconsin Heritages, Inc. v. Harris, 490 F. Supp. 1334, 1338 (E.D. Wis. 1980). Comments on the Draft Environmental Impact Statement should be specific and should address the adequacy of the statements and the merits of the alternatives discussed (40 CFR 1503.3).

**Send Comments to:**

[comments-intermtn-bridger-teton-greys-river@fs.fed.us](mailto:comments-intermtn-bridger-teton-greys-river@fs.fed.us) (subject line should specify Upper Greys Vegetation Management Project)

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**Date Comments Must Be Received: 45 days after publication of the Notice of Availability in the Federal Register**

# CHAPTER 1 . PURPOSE OF AND NEED FOR ACTION

## Document Structure

The Forest Service has prepared this Draft Environmental Impact Statement (DEIS) for the proposed Upper Greys Vegetation Management Project in compliance with the National Environmental Policy Act (NEPA) and other relevant federal and state laws and regulations. This DEIS discloses the direct, indirect, and cumulative environmental impacts that would result from the proposed action and alternatives. This document is organized into six chapters as follows, with appendices:

- *Chapter 1, Purpose of and Need for Action.* This chapter includes information on the history of the project proposal, the purpose of and need for the project, and the Forest Service's proposal for achieving that purpose and need. This chapter also details how the Forest Service informed the public of the proposal, how the public responded, and lists applicable laws and regulations.
- *Chapter 2, Alternatives, Including the Proposed Action.* This chapter provides a more detailed description of the agency's proposed action as well as alternative methods for achieving the stated purpose. These alternatives were developed based on significant issues raised by the public, other agencies, and the Forest Service's Interdisciplinary Team (IDT). This discussion also includes mitigation measures. Finally, this chapter provides a summary table of the environmental consequences associated with each alternative.
- *Chapter 3, Affected Environment and Environmental Effects.* This chapter describes the human and natural environments in the analysis area and the environmental effects of implementing the proposed action and other alternatives. This analysis is organized by resource area.
- *Chapter 4, Consultation and Coordination.* This chapter provides a summary of the public involvement measures used to consult with and inform the public. A list of preparers, as well as agencies consulted during the development of the DEIS, are included. Tribal consultations are also discussed.
- *Literature Cited.* This section lists references used in preparing the DEIS.
- *Appendices.* The appendices provide more detailed information to support the analyses presented in the body of the DEIS.
- *Summary.* A summary is located at the front of this DEIS.

Additional documentation, including more detailed analyses of project-area resources, may be found in the project planning record located at the Greys River Ranger District office, Bridger-Teton National Forest (BTNF) in Afton, Wyoming.

## 1.2 Background

This DEIS was prepared to evaluate and disclose the environmental impacts of alternative vegetation management strategies to manage vegetation resources in the Upper Greys River drainage including the tributaries of Kinney, Lookout, Shale, Boco, and East Fork drainages on the Greys River Ranger District, BTNF.

The Upper Greys watershed is approximately 20 miles southeast of Afton, Wyoming on the west slope of the Wyoming Range in the Snake River drainage. The analysis area is approximately 11,885 acres in the Greys River watershed between Wyoming Peak to the east and the Greys River to the west and includes the tributary creeks of Kinney, Lookout, Shale, Boco and East Fork. The project area is in T30N, R116W - Sections 3, 4, 8, 9, 10, 15, 16, 17, 20, 21, 22, 27, 28, 29, 32, 33, and 34 and T29N, R116W - Sections 3, 4, 5, and 6 (see Figure 1.1).

The main tree species present is lodgepole pine, with significant amounts of subalpine fir and lesser amounts of Engelmann spruce, whitebark and limber pine and minor amounts of Douglas-fir and aspen. The average age of the lodgepole pine to be treated exceeds 175 years old. Approximately 70% of the area is forested and 30% is sagebrush/grasslands.

The Greys River Ranger District is proposing to implement vegetation management in the Upper Greys River drainage over the next 3 to 10 years. The need for vegetation management in this area has previously been identified and studied in the *Bridger-Teton Land and Resource Management Plan (Forest Plan)* implemented in 1990, and in the *Greys River Landscape Scale Assessment (2004) (LSA)*. Each effort included extensive public and Forest Service interdisciplinary input, as well as use of the best data and science available on forest resources. Management opportunities, practices, standards and guidelines, and mitigation have been developed to help achieve desired resource conditions. These efforts will provide a basis for further site specific analysis of effects.

In addition, analysis and public involvement for vegetation management activities in the Upper Greys area occurred prior to the LSA during 1996 to 1999. As a result of this earlier interdisciplinary analysis and public scoping effort an Environmental Assessment for the area was prepared, which proposed harvest treatments on 990 acres. The *Decision Notice and Finding of No Significant Impacts (FONSI)* for the project (8/26/1998) was appealed and no projects were implemented. Following this earlier analysis, the LSA was initiated and completed in 2004.

Scoping for the current proposal in March 2007, reflected a modification of the earlier proposal in order to address public concerns, incorporate updated science, respond to changes in management direction and regulations arising since the previous analysis, implement the Forest Plan, incorporate direction in the LSA and meet the purpose and need. The new proposal, as detailed in the public scoping notice and *Notice of Intent (NOI)*, had 591 acres planned for timber harvest (399 acres fewer than the previous proposal) and no new specified road construction compared with 1 mile planned previously. Temporary roads and re-opened spur roads consist of approximately 6.0 miles in the earlier proposal as well as the proposal scoped in March 2007. Following the March 2007 scoping, the proposed action was further modified to reduce timber harvest areas by an additional 230 acres to a total of 362 acres, and reduce temporary and spur roads by 2.5 miles in response to public concerns and to comply with the Forest Plan Amendment for Canada Lynx.

Existing and past uses of this area are detailed in the LSA and other studies. The area is accessed by the Greys River Road (Forest Road 10138) and Forest Roads 10126, 10385, 10386 and 10171. There are approximately 28.5 miles of open roads identified on the Travel Plan in the analysis area. Approximately 5.5 additional miles of old roads have been closed under the Travel Plan decision and are in various stages of rehabilitation. The area is used for dispersed camping, hunting, snowmobiling, and other recreational pursuits.

There have been approximately 1,374 acres of timber harvest in the last 50 years. This includes 1,107 acres of clearcuts and 267 acres of partial cuts. No harvest has occurred within the last 15 years. The harvest areas are currently in various stages of forest re-growth, with young trees beginning to restore a forested appearance and wildlife hiding cover. All past harvest areas have achieved sufficient regeneration and tree growth to be considered wildlife cover under Forest Plan standards.

Permitted and regulated grazing of sheep and cattle occurs on 2 grazing allotments located throughout the area. Habitat for elk, deer, moose and many other species of wildlife as well as Snake River cutthroat trout is present and utilized.

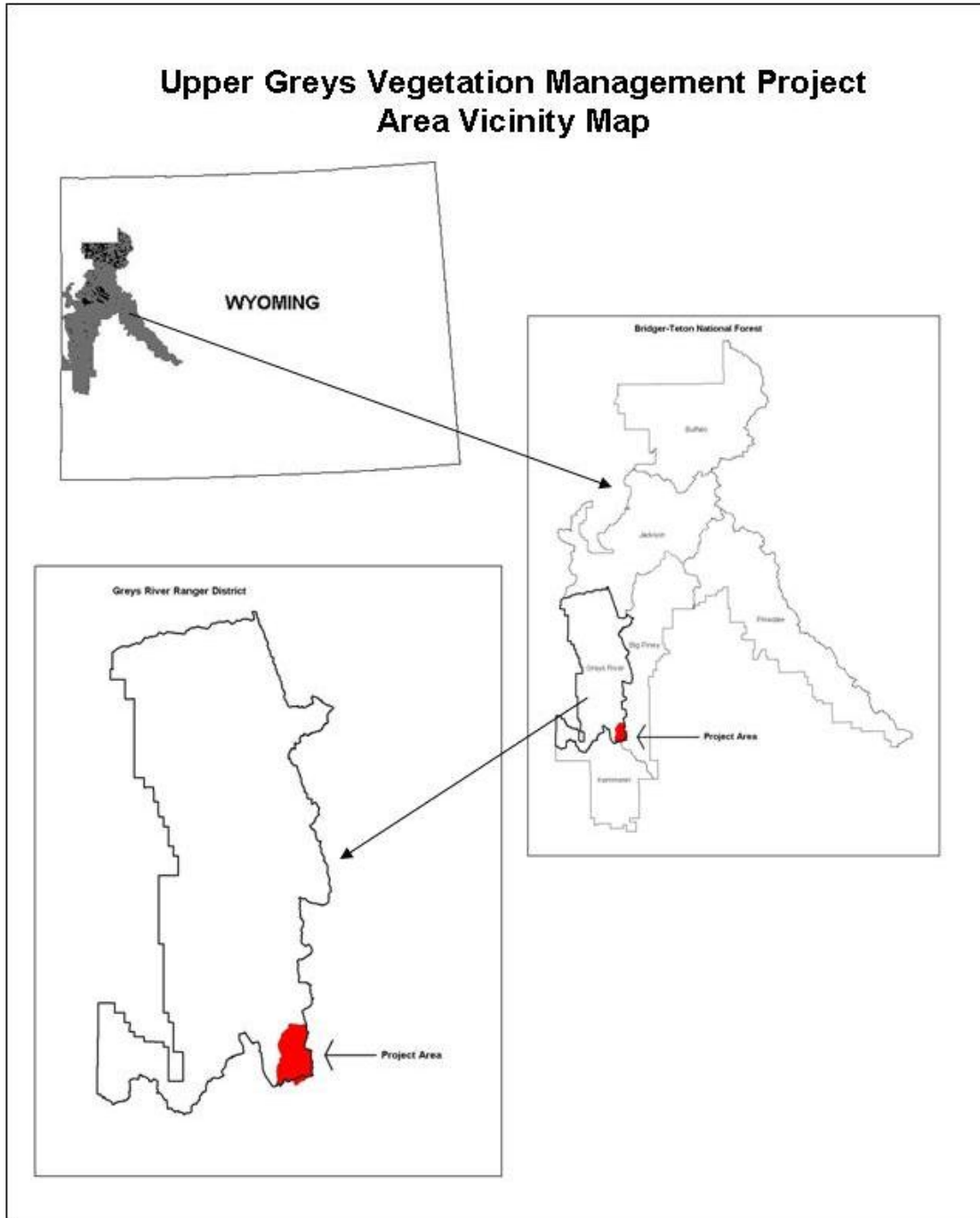


Figure 1.1: Project Vicinity Map



## **1.3 Purpose of and Need for Action**

The purpose of the proposed action is to improve the health and vigor of selected mature timber stands, attain desired vegetation conditions including increased diversity of tree age and size classes, and reduce the risk of catastrophic fire through timber harvest. The proposed action will also implement the Forest Plan and achieve Forest Plan goals in the Upper Greys area. The Forest Plan and the LSA have identified opportunities for vegetation treatments to help improve resource conditions. The LSA found that the lodgepole pine and mixed conifer vegetation in the Greys River drainage falls outside the range of properly functioning condition (LSA, p 74) and identified an opportunity to treat over 7,000 acres by 2010 (LSA, p.171 and Appendix E, xvii). In the Upper Greys analysis area, conditions are also outside the range of properly functioning condition, reflecting the LSA finding. The grass/forb stage of forested stands is under-represented and the mature and old forest is over-represented.

Desired conditions were identified in the LSA (p.75). A desired state of forest health is a condition where biotic and abiotic influences on the forest (i.e. insects, diseases, fire, atmospheric deposition, silvicultural treatments) do not threaten management objectives for a given Forest or analysis area (USDA Forest Service 1993). A forest in good health is a fully functioning community of plants and animals and their physical environment (Monning & Byler 1992). In the broadest sense, a healthy forest is a description of a productive, resilient and diverse forest ecosystem; a forest with a future (Wilson 1991).

For lodgepole pine stands the balanced range of structure for properly functioning condition (as identified in the LSA, p.75) would include:

- Approximately 10% in grass/forb stage
- Approximately 10% in seedling/sapling stage
- Approximately 20% in young forest
- Approximately 20% in mid aged forest
- Approximately 20% in mature forest
- Approximately 20% in old forest

To meet the properly functioning condition criteria, the timber stand structural classes must be diverse or balanced for sustainability or recovery and insect populations and disease must remain at endemic levels. The proposed action would treat 362 acres of conifer stands in the Kinney, Lookout, Shale, Boco and East Fork Creek drainages.

## **1.4 Proposed Action**

This proposal was developed in response to issues from previous public scoping, changes in resource demand, and recently identified resource issues and is designed to implement the Forest Plan and improve Forest resource conditions as identified in the LSA.

The scoping letter of March 2007 and Notice of Intent in October 2007 for the Upper Greys River Vegetation Management Project described the proposal to treat approximately 591

acres within the analysis area in the Upper Greys River drainage. A majority of mature stands would remain un-treated, maintaining habitat as well as options for future treatments. The proposed action would take place over the next 3 to 10 years starting in approximately 2010. The proposed action as scoped was modified by reducing down to 362 acres of treatment, to respond to public concerns as well as comply with the 2007 Forest Plan Amendment to conserve Canada Lynx. Treatment areas and roads were reduced from those areas as scoped. No new treatment areas were added. The new proposed action is as follows:

- 270 acres of conifer regeneration (March 2007 Scoping had 436 acres) using clearcut with reserves methods. Reforestation of these areas would occur through either natural or artificial means depending on the size of treatment area and suitable adjacent seed source.
- 92 acres of partial cuts (March 2007 Scoping had 155 acres) to remove dead and dying trees and trees competing with desired leave trees, while retaining 40 to 70% of healthy trees in the stand.
- Approximately 3.15 miles of temporary road (March 2007 Scoping had 4.5 miles). These roads would be closed and rehabilitated after use.
- Approximately .5 miles of existing closed roads to be re-opened (March 2007 Scoping had 1.5 miles) for timber hauling and closed after use.
- Provide commercial utilization of wood resources in the form of house logs, saw timber, posts and biomass derived through implementation of the stand treatments. Approximately 10,000 CCF (hundred cubic feet) of forest products could be provided by the treatments.
- Improve water quality by identifying segments of existing logging roads and trails that are eroding or have the potential to erode, particularly those segments that are delivering, or have the potential to deliver, sediment to stream channels and other water bodies. Restore identified areas to *Elimination Class 3 and 4* (as defined in the Forest Plan) through timber sale contracts where the roads are used for hauling or through other receipts during and immediately following harvest activities.
- Segments of the designated road system would be reconstructed to improve drainage, reduce sediments and provide improved public safety before log hauling could occur.
- Improve visual quality by decreasing stand contrast created by past treatments.
- Improve big game habitat by providing structural diversity while maintaining a majority of stands as essential hiding cover.
- Reduce fuel loading to acceptable levels while maintaining woody material for long term productivity.

All treatments are planned within Forest Plan DFC 1B areas. Refer to Chapter 2, Alternative B, Proposed Action Revised, for more details on the project.

## 1.5 Decision Framework

This *Upper Greys Vegetation Management DEIS* is the specific decision-making tool for proposed vegetation management activities in the Upper Greys River drainage. The DEIS provides the linkage between the Forest Plan, vegetation management activities, and

requirements established by NEPA to consider and inform when making decisions on federal actions.

The analysis will identify specific vegetation treatments at specific project locations, best management practices (BMPs), and project design features to be used to manage vegetation or improve road conditions. The responsible BTNF official will use this information to make decisions for managing vegetation in the Upper Greys River Drainage.

## **1.6 Management Direction and Relationship to Other Plans and Documents**

### **The Land and Resource Management Plan for the BTNF (Forest Plan)**

The Forest Plan was approved in 1990. The goals and objectives of the Forest Plan guide all management on the BTNF and this analysis tiers to the Forest Plan and Forest Plan EIS. This analysis area is in Management Area (MA) 35, Upper Greys River, in the Forest Plan. The proposed projects identified here are consistent with standards and guidelines and management direction in the Forest Plan. See Appendix A for more detail on Forest Plan Standards and Guides and direction. The Forest was mapped into Desired Future Condition (DFC) areas to guide management of Forest resources. The following DFC areas are in the analysis area:

- **DFC 1B:** Approximately 8,891 acres (75% of the analysis area); an area managed for substantial commodity resource development with moderate accommodation of other resources. "Management emphasis is on scheduled wood-fiber production and use, on livestock production, and on other commodity outputs" (USFS 1990 p.155). All treatments proposed are within DFC 1B.
- **DFC 12:** Approximately 2,964 acres (25% of the analysis area); back-country big game hunting, dispersed recreation and wildlife security areas. An area managed for high quality wildlife habitat and escape cover; big game hunting opportunities, and dispersed recreation opportunities. No treatments are proposed within these areas.

### **Greys River Landscape Scale Assessment (LSA)**

The LSA was completed in 2004 by a core interdisciplinary team, with additional information supplied by an extended team of resource specialists. Public input and best available science were used in the process. It provides a characterization of existing and reference conditions, including the historic range of natural variation. Integrated management proposals and opportunities were developed that would implement the Forest Plan and will restore, maintain, and enhance the watershed's ability to be resilient in the face of continual disturbance, both natural and human-caused.

Desired conditions were identified for all forest and vegetation types including lodgepole pine (LSA pp 12, 76, 143). The Bridger-Teton NF Properly Functioning Condition Assessment (1997) was used to help identify desired forest conditions. The proposed action would help achieve desired resource conditions in this area and respond to identified management opportunities (LSA pp171-172).

The LSA is not a decision document, but it is intended to provide an interdisciplinary view of the larger watershed area, in order to set the stage for future, site-specific projects. Prior to implementing any proposal, individual projects must go through the process outlined in the National Environmental Policy Act (NEPA). The LSA is meant to be a dynamic document.

## **La Barge Creek (Cattle) and Mink Creek (Sheep and Goat) Allotment Management Plans**

These plans set direction for improving rangelands in the area and managing grazing use in the analysis area. The Mink Creek Allotment is 19,500 acres in the Upper Greys River drainage. A portion of the the LaBarge Allotment is within the analysis area. The total allotment is 49,571 acres in the Labarge Creek and Upper Greys River drainages.

## **The Bridger West Travel Plan**

The travel plan sets direction for road management and use in the area. An environmental analysis was completed for this plan in 1991. Watershed restoration projects involving roads closed with the travel plan will be considered under this current analysis.

# **1.7 Decision to be Made**

Following a public review of the DEIS, the Greys River District Ranger will issue a Final EIS (FEIS) and a Record of Decision (ROD). The ROD will document what actions, if any, should be taken to manage vegetation in the Upper Greys river drainage on the BTNF, where vegetation management treatments should be applied, when vegetation treatments will occur, and what associated road improvements will be included. These decisions will be based on the purpose of and need for the proposed project, a review of the proposed action and alternatives, and consideration of the environmental consequences, both beneficial and adverse, associated with each.

# **1.8 Public Involvement**

Public scoping for this Upper Greys project began in March, 2007. An initial scoping letter, describing proposed actions in the Upper Greys area was sent to the Greys River District mailing list of 52 individuals, groups, organizations, local governments and agencies on March 9, 2007. Twelve letters or responses from individuals or groups were received.

Scoping was furthered by publishing a Notice of Intent (NOI) in the Federal Register on October 16, 2007, (Vol. 72, No. 199) to prepare an EIS. The NOI asked for public comment on the proposal until November 15, 2007. A news release was issued at the same time. A letter was also sent to the mailing list explaining that comments on the scoping letter would be accepted as public comments to be considered in developing issues and alternatives. Four additional responses from individuals or groups were received. A list of those notified can be found in Chapter 4 as well as the project file.

A public open house was held at the Greys River Ranger District on October 16, 2009 to review the project.

Public input was used to develop issues and alternatives to the proposed action to be carried forward into the analysis. A comment analysis was developed and is in the project record.

Public comments received during the previous scoping for the analysis of proposed vegetation management projects in the Upper Greys conducted from 1996 to 1999 as well as input received during the previous appeal process was considered in developing the new proposed action and in the analysis of effects.

The Forest Service Interdisciplinary Team developed the following list of issues from resource specialist concerns and the comment analysis to address.

## 1.9 Issues

The *Upper Greys Vegetation Management EIS Scoping Report—Content Analysis* (Forest Service 2008) lists and discusses all comments provided during scoping.

Some comments from scoping raised issues that were not significant, were statements of opinion, had no concerns, or were beyond the scope of the project (for example, those dealing with grazing management and off-road vehicle management). Other comments concerned Forest Plan direction or standards or guidelines, best management practices, law/regulation or policy which will be incorporated as requirements in all alternatives of the analysis (for example, compliance with cultural resource regulations, Forest Plan Standards and Guidelines, and conducting required wildlife assessments). Some comments will be included as issues used in the analysis to disclose effects and formulate alternatives or addressed in design of an alternative. A few comments will be dealt with by applying mitigation measures or project design criteria to all alternatives.

The mitigation measures are described in the alternatives section of this document beginning on page 2-20. Effects that would remain even after the application of mitigation measures are detailed in the effects section under each resource in Chapter 3.

Issues to be considered were defined as a point of discussion, debate, or dispute about environmental effects that are directly or indirectly caused by implementing the proposed action. Issues are used to formulate alternatives to the proposed action, prescribe mitigation measures, or analyze site-specific environmental effects. Indicators are measures used to track the effects of alternatives on the issues and are identified in each resource section of Chapter 3. The main issues are summarized below.

### Issues to be Considered

- 1) Effect on Wildlife habitat
  - a. Lynx habitat
  - b. Elk hiding and security
  - c. Habitat fragmentation and connectivity
  - d. Diversity of structural stages and ages
- 2) Effect on Snake River Cutthroat habitat and water quality
  - a. Effects from roads and harvesting activities on sedimentation and fish passage
  - b. Riparian effects
- 3) Effect on recreation values in the area and wild and scenic river corridors
- 4) Effect on “Forest Health”

- a. Effect on vegetative vigor and productivity over the landscape
  - b. Impacts of dwarf mistletoe
  - c. Effect of treatments on insect infestations
  - d. Moving toward desired vegetation conditions
  - e. Project's effect on long-term forest health and forest mosaic
- 5) Effect on the availability of wood products to local markets

Additional resource concerns as required by law, policy or Forest Plan direction will be discussed and analyzed in Chapter 3 as well.

## **1.10 Supporting Documents and Past Analysis**

This DEIS also adheres to the federal legal requirements described below.

### **The National Environmental Policy Act (NEPA) of 1969 (P.L. 91-190)**

The purposes of this Act are “To declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation; and to establish a Council on Environmental Quality” (42 U.S.C. Sec. 4321). NEPA establishes the format and content requirements for environmental analyses and documentation. The entire process of preparing an EIS was undertaken to comply with NEPA.

### **The National Forest Management Act (NFMA) of 1976 (P.L. 4-588)**

This Act guides development and revision of National Forest Land Management Plans and contains regulations that prescribe how land and resource management planning is to be conducted on National Forest System lands to protect National Forest resources. The different alternatives for this project were developed to comply with the NFMA, and represent varying degrees of resource protection.

### **The Endangered Species Act (ESA) of 1973, as Amended**

The purpose of this Act is to provide for the conservation of threatened and endangered species and their habitats. The BTNF is required by the ESA to ensure that any actions it approves will not jeopardize the continued existence of threatened and endangered species or result in the destruction or adverse modification of critical habitat. The U.S. Fish and Wildlife Service (USFWS) and National Oceanic and Atmospheric Administration (NOAA) Fisheries share authority to list endangered species, determine critical habitat, and develop species' recovery plans (USFWS 2004a).

Consultation with the USFWS is required under the ESA for this proposed project and will be completed prior to any decisions made as a result of this analysis.

## **The Migratory Bird Treaty Act of 1918**

The purpose of this Act is to establish an international framework for the protection and conservation of migratory birds. Additional information on the Migratory Bird Treaty Act can be found in Section 3.2, *Wildlife and Vegetation Resources*.

## **The Federal Water Pollution Control Act of 1972 (P.L. 92-500) as amended in 1977 (P.L. 95-217) and 1987 (P.L. 100-4), also known as the Clean Water Act (CWA)**

The primary objective of this Act is to restore and maintain the integrity of the Nation's waters by: 1) eliminating the discharge of pollutants into the Nation's waters; and 2) achieving water quality levels that are fishable and swimmable. This Act establishes a non-degradation policy for all federally proposed projects to be accomplished through planning, application, and monitoring of best management practices (BMPs). Identification of BMPs is mandated by Section 319 of the Water Quality Act of 1987 (also referred to as the Clean Water Act), that states, "It is national policy that programs for the control of non-point sources of pollution be developed and implemented."

## **The National Historic Preservation Act (NHPA)**

This Act requires federal agencies to consult with state and local groups before nonrenewable cultural resources, such as archaeological sites and historic structures, are damaged or destroyed. Section 106 of this Act requires federal agencies to review the effects that project proposals may have on the cultural resources in the project area. It requires agencies to consider the effects of undertakings on properties eligible to or listed in the National Register of Historic Places (NRHP) by following the regulatory process specified in 36 CFR 800.

## **The Archaeological Resources Protection Act (ARPA)**

This Act makes it illegal to excavate or remove any archaeological resources from federal or Indian lands without a permit. It also provides for criminal penalties for the vandalism, alteration, or destruction of historic and prehistoric sites on federal and Indian lands, as well as for the sale, purchase, exchange, transport, or receipt of any archaeological resource if that resource was excavated or removed from federal or Indian lands or in violation of state or local law.

## **The American Indian Religious Freedom Act (AIRFA)**

The AIRFA seeks to protect and preserve traditional Native American spiritual beliefs and practices by providing access to sites and providing for the use and possession of sacred objects.

## **Consumers, Civil Rights, Minorities, and Women**

All Forest Service actions have the potential to produce some form of impacts, positive or negative, on the civil rights of individuals or groups, including minorities and women. The need to conduct an analysis of this potential impact is required by Forest Service Manual and Forest Service Handbook direction (see Section 3.9, *Heritage Resources*).

## Environmental Justice

On February 11, 1994, President Clinton signed Executive Order 12898. This order directs each federal agency to make environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations. The President also signed a memorandum on the same day emphasizing the need to consider these types of effects during NEPA analysis. To meet this direction, the USDA requires, where proposals have the potential to disproportionately adversely affect minority or low-income populations, these effects must be considered and disclosed (and mitigated to the degree possible) through the NEPA analysis and documentation. Additional information is provided in Section 3.15, *Required Disclosures*.

## Bridger-Teton National Forest Responsibility to Federally Recognized Tribes

American Indian Tribes are afforded special rights under various federal statutes that include: the NHPA of 1966 (as amended); the NFMA of 1976; the *Archaeological Resources Protection Act* of 1979 and Regulations 43 CFR Part 7; the *Native American Graves Protection and Repatriation Act* (NAGPRA) of 1990 and Regulations 43 CFR Part 10; the *Religious Freedom Restoration Act* of 1993 (P.L. 103-141); and the *American Indian Religious Freedom Act* (AIRFA) of 1978. Federal guidelines direct federal agencies to consult with modern American Indian Tribal representatives who may have concerns about federal actions that may affect religious practices, other traditional cultural uses, as well as cultural resource sites and remains associated with American Indian ancestors. Any tribe whose aboriginal territory occurs within a project area is afforded the opportunity to voice concerns for issues governed by NHPA, NAGPRA, or AIRFA.

Federal responsibilities to consult with American Indian Tribes are included in the NFMA, Interior Secretarial Order 3175 of 1993 and Executive Orders 12875, 13007, 12866, and 13084. Executive Order 12875 calls for regular consultation with tribal governments; and Executive Order 13007 requires consultation with American Indian Tribes and religious representatives on the access, use, and protection of American Indian sacred sites. Executive Order 12866 requires that federal agencies seek views of tribal officials before imposing regulatory requirements that might affect them; and Executive Order 13084 provides direction regarding consultation and coordination with American Indian Tribes relative to fee waivers. Another Executive Order that pertains to American Indian Tribes is Executive Order 12898, which directs federal agencies to focus on the human health and environmental conditions in minority and low-income communities, especially in instances where decisions may adversely impact these populations (see the “Environmental Justice” discussion above). The 40 CFR 1500-1508 regulations of NEPA invite American Indian Tribes to participate in Forest Service management projects and activities that may affect them.



## 1.11 Other Agencies Having Permit or Review Authority

### U.S. Fish and Wildlife Service (USFWS)

The USFWS has responsibilities under the *Fish and Wildlife Coordination Act* (1934), the *Endangered Species Act* (ESA) (1973), and *Bald Eagle Protection Act* (1940). Responsibilities under the *Fish and Wildlife Coordination Act* require federal agencies issuing permits (for example, Corps of Engineers § 404 Permit) to consult with the USFWS to prevent the loss of or damage to fish and wildlife resources where “waters of any stream or other body of water are proposed...to be impounded, diverted...or otherwise controlled or modified.”

The Forest Service must prepare a Biological Assessment (BA) to comply with the ESA. A BA evaluates potential effects on threatened and endangered species that may be present in the project area. The USFWS decides if implementation of the selected alternative would jeopardize the continued existence of any species listed or proposed as threatened or endangered under the ESA. This decision is issued as a Biological Opinion (BO). The BO includes terms and conditions that must be complied with in order to be exempt from the prohibitions of Article 9 of that Act. The BO may include conservation recommendations, which are suggestions regarding discretionary activities to minimize or avoid adverse effects of the proposed action on listed species or critical habitat. If it is determined that the alternative would jeopardize the continued existence of a listed species, the agency must offer a reasonable and prudent alternative that would, if implemented, preclude jeopardy. The USFWS has 60 days from initiation of formal consultation to issue a BO. If the USFWS decides that implementation would not jeopardize the continued existence of any listed species, a letter of concurrence will be issued after a 30-day informal consultation period. Additional information is provided in *Section 3.2, Forested Vegetation Resources, Section 3.4, Wildlife Resources, and Section 3.7, Fisheries.*

### U.S. Army Corps of Engineers (COE)

The Army Corp of Engineers is the permitting authority for the discharge of dredged or fill materials into wetland and non-wetland waters of the United States (Waters). Any activity that would result in disposal of dredged or fill materials into wetlands or Waters would require a “404 permit” under § 404 of the *Clean Water Act*. No needs for permits are anticipated.

### U.S. Environmental Protection Agency (EPA)

EPA has oversight responsibility for federal *Clean Water Act* programs. EPA may also intervene to resolve interstate disputes where discharges of pollutants in an upstream state may affect water quality in a downstream state. EPA reviews 404 dredge and fill permit applications and provides comments to the COE. EPA has veto authority under the federal Clean Water Act for decisions made by the COE on 404 permit applications. EPA also has responsibilities under NEPA and the federal Clean Air Act to cooperate in the preparation of an EIS and evaluates the adequacy of information in the EIS, the overall environmental impact of the proposed action, and various alternatives.

## **Wyoming State Historic Preservation Office (SHPO)**

A cultural resources survey has been conducted for this proposal. No historic or prehistoric sites were found during this survey. A report detailing the results of this survey has been submitted to the Wyoming State Historic Preservation Office (SHPO) for their review. Based on the results of the survey, SHPO has determined that there would be no effect to cultural resources as a result of this project. No further cultural resource surveys are required. Because there would be no effect to cultural resources, this effect is not analyzed in detail in this DEIS. In addition, if any cultural materials were discovered during activities, work in the area would halt immediately, and Forest Service staff and SHPO staff would be contacted.

Actions that are permitted, approved, or initiated by the Forest Service and that may affect cultural resources must comply with provisions of the NHPA of 1966, as amended, and as implemented by federal guidelines 36 CFR 800. Section 106 of the NHPA requires a federal agency to take into account the effects of the agency's undertaking on properties listed on, or eligible for listing on, the NRHP. Before any federal undertaking begins, cultural resources eligible for listing on the NRHP must be identified and documented. Cultural resources recorded in the project area are evaluated in consultation with SHPO or the Federal Advisory Council on Historic Preservation (ACHP).

## **Wyoming State Engineers Office (WSEO)**

WSEO administers water rights in the State of Wyoming. The Wyoming Constitution defines all natural waters within the boundaries of the state as the property of the state. The Wyoming State Engineer's Office is charged with the regulation and administration of the water resources in Wyoming.

Water rights can be issued to anyone who plans to make beneficial use of the water. Recognized beneficial uses include: irrigation, municipal, industrial, power generation, recreational, stock, domestic, pollution control, instream flows, and miscellaneous. Water rights holders are limited to withdrawals necessary for the purpose.

## **Wyoming Department of Environmental Quality (WDEQ)**

WDEQ is responsible for implementing environmental protection laws and programs for the State of Wyoming. WDEQ administers water quality monitoring for compliance with Wyoming water quality standards.

## CHAPTER 2 . ALTERNATIVES, INCLUDING THE PROPOSED ACTION

### 2.1 Introduction

This chapter describes and compares the alternatives considered for the proposed Upper Greys Vegetation Management Project. It includes a description of each alternative considered and maps of the project area. This chapter also presents the alternatives in comparative form, defining the differences in features and effects among alternatives.

### 2.2 Desired Future Conditions (DFC)

The BTNF has been mapped into DFC areas to guide management of Forest resources. Two DFCs are mapped within the analysis area: DFC 1B and DFC 12. The analysis area lies within Management Area 35 (see Section 1.6 *The Land and Resource Management Plan for the BTNF*). Each DFC has a theme and management prescription that ties the DFC to specific Forest Plan goals. All treatment units are located within DFC 1B. Forest Plan goals applicable to DFC 1B are described in Appendix A.

Desired future resource conditions are also addressed for individual forest resources in Chapter 3.

#### **DFC 1B - Substantial Commodity Resource Development with Moderate Accommodation of Other Resources**

**Theme:** An area managed for timber harvest, oil and gas, and other commercial activities with many roads and moderate to occasionally substantial emphasis on other resources.

**Management Emphasis:** Management emphasis is on scheduled wood-fiber production and use, on livestock production, and other commodity outputs.

**Forest Plan Goals Addressed (see Appendix A):** 1.1(a-d, h, i), 1.2(a-f), 1.4(a), 2.1(a-b), 2.4(a,b), 2.5(a-c), and 4.2(a-c).

Alternative B, the Proposed Action Revised, has vegetation treatments on 362 acres of DFC 1B designation.

### 2.3 Alternatives Considered but Eliminated from Detailed Study

Federal agencies are required by NEPA to explore and evaluate all reasonable alternatives and to briefly discuss the reasons for eliminating any alternatives that were not developed in detail (40 CFR 1502.14).

Public comments to scoping suggested several specific alternatives. These alternatives are listed here with discussion of how they were treated in the analysis.

1) An alternative with no new roads: A separate alternative will not be analyzed in detail. However, the No Action Alternative includes no new roads. Alternative B includes no new permanent roads; limited temporary roads (3.15 miles); and limited closed roads that would be opened (0.5 miles). These roads will be closed following use.

2) An alternative with no timber harvest, but with prescribed burning used to treat some stands: A separate alternative will not be analyzed in detail. However, the No Action Alternative does not include timber harvest. Even though prescribed burning in areas with suitable timber available would partially meet purpose and need of achieving a diversity of age classes, it would not be in compliance with the Forest Plan goal of producing lumber. Conifer stands in the grass/forb stage would be created, however there would be no utilization of productive forest to meet Forest Plan goals and desired conditions, particularly DFC 1B. Resource opportunities identified in the LSA would be foregone.

One objective of the burning would be aspen regeneration, but there are only 15 acres of aspen that would benefit from burning treatments in the analysis area.

3) An alternative that includes no clear-cutting, but all partial cut harvest. A separate alternative will not be analyzed in detail. However, the No Action Alternative involves no clear-cutting. Alternative B includes 25% of the harvest acres as partial cutting in appropriate forest types, which will be analyzed in detail. Also, clear-cut areas will have up to 10% of trees retained. Optimality of clear-cutting will be displayed in the analysis. Harvesting by partial cut methods on all acres will not meet the purpose and need of the project. The purpose of the proposed action is to improve the health and vigor of selected mature timber stands, attain desired vegetation conditions including increased diversity of tree age and size classes, and reduce the risk of catastrophic fire through timber harvest. For additional information on how the proposed treatments meet the purpose and need, see the Forested Vegetation section of Chapter 3. The Forest Plan recognizes that clear-cutting and shelterwood will be the primary methods used, as specified for future managed stands. (Forest Plan P.156)

4) Alternatives with higher levels of timber harvest: Several responders to scoping requested greater timber harvest levels. Harvesting all the opportunity areas identified in the LSA would result in much higher levels of timber harvest. The public respondents pointed to forest health problems, advanced age of timber stands, meeting desired future vegetation conditions and harvest rotations stated in the Forest Plan, and meeting age class and vegetative diversity goals, as reasons to implement this alternative and apply treatments to a greater area of vegetation. Alternatives that included higher levels of timber harvest to meet land management objectives were proposed under environmental analysis conducted in 1998, as well as the proposal originally scoped in March 2007 and Notice of Intent in October 2007.

Timber harvest levels proposed in the alternatives carried forward for detailed analysis (and described below) are well below the timber harvest levels identified in the LSA and in the previous proposals.

- While the Greys River LSA did identify greater areas of opportunity for timber harvest, the timeframe envisioned for implementing the opportunities was longer than the 3- to 10-year duration anticipated for projects in this analysis. Future harvest entries would be needed to fully implement the LSA, which would involve further detailed, site-specific analysis.

- Implementing all identified harvest opportunity areas in a short time period could result in exceeding created opening standards in the Forest Plan.
- The Canada Lynx Forest Plan amendment would preclude harvest of every opportunity area identified in the LSA. Only those with lesser amounts of horizontal cover are suitable for harvest activities.

5) Transportation alternatives studied but dismissed from inclusion in the proposed action include the following.

- Replacing Phase I and Phase II access to Greys River Road using the south end of Shale Creek/Kinney Creek Road with a new route from East Fork Loop Road over the East Fork of the Greys River: This route could open the opportunity to eliminate an access to Greys River Road, but would involve a large creek crossing in a valley with a wide riparian area.
- Using both the north end and south end of the East Fork Loop as access to timber units: The north end access was eliminated from consideration because of the condition of the road in this area.

## 2.4 Alternatives Considered in Detail

The *BTNF Forest Plan* establishes Forest-wide standards and guidelines for management of vegetation and for vegetation management specific to Management Area 35, Upper Greys River.

To follow the Forest Plan's direction in vegetation management, as revised by the Lynx Amendment, the Forest Service developed 2 alternatives in response to issues raised during public and internal scoping for the proposed project that are considered in detail in this Draft EIS:

- **Alternative A.** No Action Alternative (no vegetation management or road improvements)
- **Alternative B.** Proposed Action Revised (The proposed action was modified to comply with the Lynx Amendment and issues from public scoping.)
- Each of these alternatives is described in the following text.

### **Alternative A - No Action Alternative (No Vegetation Management or Road Improvements)**

Under the No Action Alternative, no vegetation management activities would occur in the Upper Greys River drainage. There would be neither road improvements nor sediment reduction work on roads. It would likely not be possible under the No Action Alternative to comply with Forest Plan direction relative to vegetation management in Management Area 35, Upper Greys River. Desired future conditions, as described in the Forest Plan and shown above, would not be attained.

Under the No Action Alternative, routine maintenance of existing roads would continue, as would suppression of fire and District-wide Christmas tree and firewood sales. Outfitting and

range management covered by other site-specific decision documents would also continue to occur.

## Alternative B - Proposed Action Revised

The proposed action was developed in response to issues from public scoping and recently identified resource issues. It is also designed to improve Forest resource conditions as identified in the LSA. Table 2.1 shows vegetation treatments by treatment area that would occur under the proposed action and Tables 2.2a-2.2c show the locations of the treatment areas within the analysis area. Table 2.3 shows the acreage and percent of each treatment area to be affected by vegetation treatments.

In comparison to the proposed action that was scoped in March 2007, Alternative B reduces the number of acres where vegetation management is achieved through harvesting from 591 to 362 acres. The number of acres harvested through clear-cutting is reduced from 436 to 270 acres. Alternative B also reduces the number of temporary roads and re-opened roads needed for the treatments from 4.50 to 3.15 miles. The revised proposed action reduces the number of treatment units from the 33 that were scoped to 17 in the revised Alternative B.

**Table 2.1: Vegetation Treatment Areas, Methods, and Extent under the Proposed Action**

Treatment Area	Total Acres	Clear-cut Acres	Partial Cut Acres	Open Closed Roads (Miles)	Temp Road (Miles)
Area 1	46	46	0	0	0.45
Area 2	154	154	0	0	1.20
Area 3	162	70	92	0.5	1.50
<b>TOTALS</b>	<b>362</b>	<b>270</b>	<b>92</b>	<b>0.5</b>	<b>3.15</b>

Proposed action activities are anticipated to take place over a 3- to 10-year period and include the following:

- 92 acres of partial-cut harvest
- 270 acres of clear-cut harvest
- 3 miles of road reconstruction
- 3.15 miles of temporary road construction and 0.5 miles of opening of closed roads to be rehabilitated following use.
- Culvert replacement and stream-crossing improvement work on timber haul roads
- All harvest done via ground-based logging systems

These activities are described in greater detail in the following table and text:

Table 2.2a: Detailed Treatment Unit List; Area 1

Unit	Acres	Treatment	Open Closed Roads (Miles)	Temp Road (Miles)
1.3	18	Clear-cut	0	0.25
1.5	12	Clear-cut	0	0.1
1.14	16	Clear-cut	0	0.1
<b>Sub-Total</b>	<b>46</b>		<b>0</b>	<b>0.45</b>

Table 2.2b Detailed Treatment Unit List; Area 2

Unit	Acres	Treatment	Open Closed Roads (Miles)	Temp Road (Miles)
2.6	33	Clear-cut	0	0.1
2.9	32	Clear-cut	0	0.3
2.12	33	Clear-cut	0	0.3
2.13	38	Clear-cut	0	0.5
2.15	18	Clear-cut	0	0
<b>Sub-Total</b>	<b>154</b>		<b>0</b>	<b>1.2</b>

Table 2.2c Detailed Treatment Unit List; Area 3

Unit	Acres	Treatment	Open Closed Roads (Miles)	Temp Road (Miles)
3.1	18	Clear-cut	0	0
3.3	25	Clear-cut	0.5	0.3
3-4	15	Clear-cut	0	0.1
3-5	12	Clear-cut	0	0.2
3-12	5	Partial-Cut	0	0
3-13	11	Partial-Cut	0	0.2
3-14	25	Partial-Cut	0	0.3
3.16	42	Partial-Cut	0	0.4
3.18	9	Partial-Cut	0	0
<b>Sub-Total</b>	<b>162</b>		<b>0.5</b>	<b>1.5</b>
<b>Total for All Areas</b>	<b>362</b>	<b>270 Clear-cut 92 Partial Cut</b>	<b>0.5</b>	<b>3.15</b>

## **Clear-cut with Reserve Tree Harvest**

Clear-cutting with reserves is a regeneration method by which almost all trees are cut to produce a fully exposed microclimate for the development of a new age class. A varying number of reserve trees are not harvested in order to attain other goals (Helms, 1998). This harvest method is being used in declining lodgepole pine and mixed conifer stands to enhance age class diversity and improve forest health and tree vigor. Individuals and groups of healthy whitebark pine trees would be retained as biological legacy trees, up to 10 trees per acre. Regeneration of healthy new stands would be accomplished by planting with lodgepole pine or Englemann spruce, or by providing for natural regeneration, depending on site conditions. Openings created through harvest would range in size from 10 to 38 acres. Age class diversity created through harvesting is important to reduce losses caused by insects and disease and would be designed to reflect historically occurring conditions.

The clear-cut with reserves tree harvest entails the following:

- Retaining 0-10 whitebark pine trees per acre in the overstory
- Removing all other merchantable trees
- Removing all dead trees, except those retained as snags
- Felling sub-merchantable trees
- Disposal of slash by whole-tree yarding or broadcast burning

## **Partial-Cut Tree Harvest**

Partial-cut tree harvesting is the removal of only part of the stand for purposes other than regenerating a new age class. This treatment is proposed to reduce tree density in overstocked conifer forests while maintaining a forested appearance. The objective is to leave the healthiest trees of diverse species while reducing losses caused by insects and disease and allowing for the removal of wood products. The trees remaining after harvest would have greater resources available to support tree growth, while still providing habitat for forest-dependent wildlife species. Partial-cutting would be utilized where overstocked stand conditions occur and insect and disease damage has begun to occur. Lower tree density would promote resistance to bark beetle attack.

The partial-cut tree harvest entails the following:

- Retaining 25-50 trees per acres in the overstory
- Retaining 45-80 ft<sup>2</sup> basal area per acre in the overstory
- Removing dead trees, except those retained as snags
- Removing insect infested and diseased trees
- Disposal of slash by whole-tree yarding or piling and burning

## **Road Maintenance, Reconstruction and Temporary Roads:**

Road reconstruction activities would take place on: the 10126 Road into areas 1 and 2 from Shale Creek; the 10386 Road into area 2; and the 10171 Road into area 3 from Tri-basin Divide. The 10171 Road portion near Poison Meadows would not be used due to watershed concerns. Reconstruction would provide safe access for log trucks, livestock haulers, and



recreation traffic and improve watershed conditions. Activities would be limited to culvert replacement, spot surfacing with gravel or pit run material and placement of fabric to reduce rutting and drainage problems. Reconstruction would not change the maintenance level of the roads. Drainage improvements, surfacing, and ditching would occur on approximately 3 miles of existing road.

Approximately 19.3 miles of existing roads would be bladed to establish the designed 12 foot wide road prism for a single lane road and a 24 foot wide prism for the Greys River road. Turnouts would be added as necessary for safety and drainage would be added or improved with culverts or drivable dips.

Approximately 3.15 miles of temporary roads in addition to some skid roads within units would be constructed, over a several year period, to carry out silvicultural activities. Roads would only be constructed as needed to access a treatment unit and then closed immediately after treatment. The amount of temporary roads open in any given year is not expected to exceed the Forest Plan road density standards. However, if the situation occurs where the length of open temporary roads does exceed the Forest Plan standard while they are open, the roads would be gated and locked. This would meet the intent of the Forest Plan standard to protect wildlife habitat from disturbance. The temporary roads would be closed, obliterated, and the habitat restored immediately after they are no longer required. No new permanent roads would be constructed.

### **Culvert Replacement and Stream-Crossing Improvement**

Some culverts would be replaced and existing stream crossings improved to reduce sediment and improve road safety.

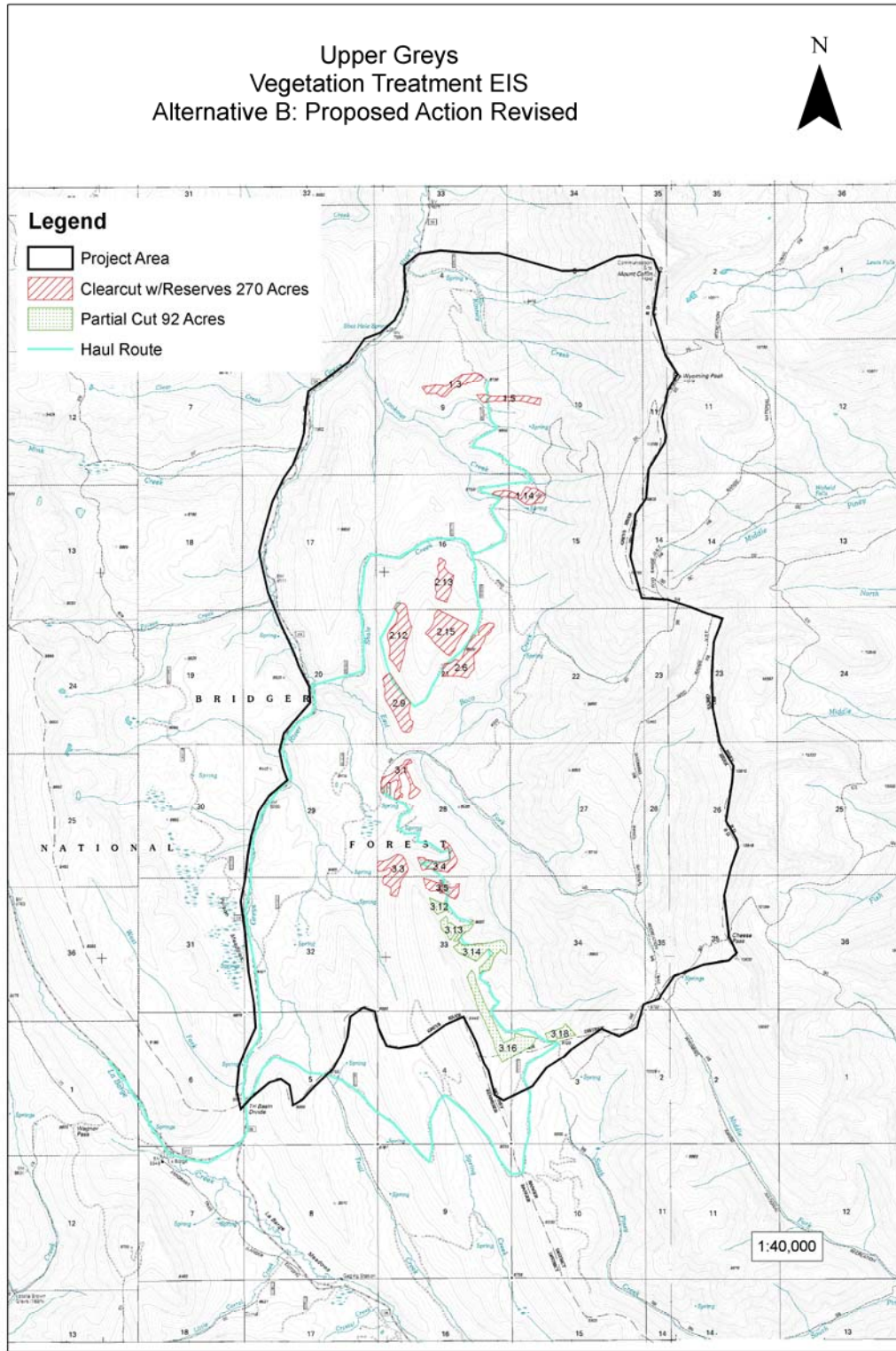


Figure 2-1: Alternative B – Proposed Action Revised

## 2.5 Comparison of Alternatives and Summary of Effects

### Comparison of Alternatives

**Table 2.3 Comparison of the Proposed Action (Alternative B) and the No Action Alternative (Alternative A) on Identified Issues**

	Alternative A (No Action)	Alternative B (Proposed Action Revised)
<p>Vegetation Issues:            Effect on "Forest Health": Effect on vegetative vigor and productivity over the landscape; Impacts of dwarf mistletoe; Effect of treatments on insect infestations; Moving toward desired vegetation conditions; Project's effect on long-term forest health and forest mosaic.            Effect on the availability of wood products to local markets.</p>		
Distribution of tree species and structural and age classes in the analysis area and on the Greys River Ranger District	Forest age structure would not change until wildfires occur. Wildlife habitat associated with old forest stand structure would continue to benefit. Wildlife habitat associated with stand initiation or young forest growing toward desired conditions would not develop.	Stands harvested with clear-cutting methods will change mature and old forest to grass forb stage over 3.3% of the analysis area. Wildlife habitat associated with old forest stand structure would decline on 270 acres. Wildlife habitat associated with stand initiation or young forest growing toward desired conditions would increase by 270 acres.
Projected growth of residual and regenerated trees following treatments and expected mortality.	There would be no regeneration created or residual trees. Mortality from insects and disease increase on all acres. Previous harvested areas will continue to advance into pole and post size stands and young forest.	Tree regeneration would occur on 270 acres. Regenerated stands increase in productivity until culmination, the point where growth rates peak. Mortality from insects and disease decrease on 362 acres.
Projected levels of dwarf mistletoe in future treated stands and in adjacent untreated stands.	Dwarf mistletoe occurrence and spread will increase in all stands.	Clear-cutting in 270 acres of dwarf mistletoe infested lodgepole pine will reduce the spread of the infection to younger stands. Trees with high dwarf mistletoe infection would be removed on 92 acres of partial cuts, reducing occurrence and spread.
Effect of treatments on mountain pine beetle and other insect infestation risk	The condition and health of the lodgepole pine component of the Forest would continue to decline. Mountain pine beetle and other insects would increase.	The clear-cut treatment units would remove all dead trees, those infected with disease, and those with insect infestations. Hazard from bark beetle attacks would be reduced on 92 acres of partial cuts.
Extent to which the	No vegetation is moved	Stands harvested with clear-cutting

alternatives move vegetation toward desired age class distribution on the Greys River Ranger District	toward desired age classes.	methods will change mature and old forest to grass forb stage over 3.3% of the analysis area, moving toward desired conditions.
Projected effect of treatments over the next 50 years on vegetation and site productivity	There would be increased mortality and reduced growth throughout the area	Stand productivity in the clear-cuts treatment units would increase over the next 50 years after harvest and a new stand has been established.
Compliance with Forest plan Goal 1.1 and DFC 1B	No harvest occurs to meet these goals.	Harvest occurs on 362 acres to help meet these goals and conditions.
Potential amount of wood products supplied to markets	No wood products are supplied, except limited firewood cutting along roads.	Approximate removal of 4.0 to 5.0 MMBF (10,000 CCF) of wood products for local or regional markets.
<b>Wildlife and Sensitive Species Issue:</b> Effect on Wildlife habitat: Lynx habitat; Elk hiding and security; Habitat fragmentation and connectivity; Diversity of structural stages and ages		
Late seral and old-forest characteristics. Amount of disturbed habitat in LAU.	Wildlife habitat associated with old forest stand structure would continue to benefit. There would be no disturbed lynx habitat, until wildfire occurs.	Wildlife habitat associated with old forest stand structure would decline on 270 acres. The harvest units would affect about 1% of designated lynx habitat in the LAU.
Change in the relative proportion of conifer forestlands in late succession	Over time, however, the percent of forestland in late succession would continue to increase in the absence of fire.	Wildlife habitat associated with old forest stand structure would decline on 270 acres.
Change in the relative proportion of conifer forestlands in early succession	Wildlife habitat associated with stand initiation or young forest growing toward desired conditions would not develop.	The amount of forestland in early succession would increase by 6-8% (in the vicinity of the harvest units), 4-5% (analysis area), 2.5-3% (upper Greys River watershed above Crow Creek), and 0.1-0.2% (Greys River watershed).
Changes in the density (and locations) of roads designated as open to the public.	No change in roads.	Adjusted road density would temporarily increase from about 1.4 miles of road per square mile to about 1.5 miles of road per square mile of land.
Changes in the extent to which motorized vehicle use of designated roads and trails has potential to increase.	No potential change in use.	Timber harvest activities could result in an expansion of user-created roads and motorized trails. If temporary roads and skid trails were to be obliterated there is a reasonable likelihood they would not be used by motorists. The clear-cuts would likely be open enough to allow the creation of some user-created roads and motorized trails.
Changes in the timing and intensity of mechanized	No changes in activity and disturbance. Road	Log truck use (approximately 900 trucks) would occur over 1 to 3

<p>activity and associated human disturbance and motorized vehicle use along major road in any given area.</p>	<p>improvements would not occur.</p>	<p>years during summer months on haul roads in the project area (19.3 miles) and portions of the LaBarge and Smith's Fork road systems (25 miles). There would be an estimated short-term reduction in elk use of 45-60% in vicinity of roads and units.</p>
<p>Are forested corridors available for a variety of species of wildlife?</p>	<p>Existing corridors of older forests remain, until wildfire occurs.</p>	<p>Some harvesting will occur in corridors of older forest. Connectivity within and between LAUs will not be affected. Forested corridors will remain throughout the area after the project.</p>
<p>Distribution of tree species structural and age classes for each alternative in the analysis area and on the Greys River Ranger District?</p>	<p>No changes would occur until wildfire occurs.</p>	<p>The proposed action would bring the mix of forest age classes slightly more into line with what had naturally occurred.</p>
<p><b>Fisheries Issue: Effect on Snake River Cutthroat habitat and water quality: Effects from roads and harvesting activities on sedimentation and fish passage; riparian effects</b></p>		
<p>Direct and indirect effects of vegetation management on riparian and Snake River cutthroat trout habitat</p>	<p>No vegetation management occurs. No measurable direct effect on fish or fish habitat. There would be an increase in the likelihood of a large fire that could impair water quality and riparian vegetation with negative direct and indirect effects to fish populations in the project area. No road improvements that reduce sediment occur. On the Shale Creek road, sediment production and delivery to Shale Creek would be highest under the no action alternative. There is no (or very little) probability of runoff, soil erosion, and sediment delivery to stream channels. 2% of HUC as ECA.</p>	<p>The proposed action is unlikely to have any direct effect on fish or fish habitat as a result of harvesting upland tree species and not entering riparian vegetation. Effect for finespotted Snake River cutthroat trout is "<b>May impact individuals but not likely to cause a trend to federal listing or a loss of viability</b>". There may be a negative short term effect to individual fish from sediment entering streams as a result of the timber harvest and increased heavy truck traffic. The proposed project will have no long-term effects to fish or fish habitat after the project is completed. Road sections that run through wet areas and contribute to sedimentation would have some pit run surfacing applied to reduce sediment. Drainage improvements, surfacing, and ditching would occur on approximately 3 miles of existing road. Road reconstruction under the proposed action would reduce sediment production and delivery to Shale Creek. There is a higher probability of sediment being eroded than there is of it being delivered to a stream channel (the sediment would be</p>

		<p>deposited before reaching the stream channel). The probabilities for runoff and sediment delivery are highest for proposed unit 2.12. There would be a short-term increase in road densities (and potential stream channel impacts) during project implementation, and long-term there would be no difference between the no action and the proposed action alternatives.</p> <p>3% of HUC as ECA.</p> <p>Indirect impacts to lower East Fork Greys River could result from timber harvest in units 2.9, 3.1, and from associated roads. The probability of sediment delivery is approximately 2%.</p>
<p><b>Recreation Issue:</b> Effect on recreation values in the area and wild and scenic river corridors</p>		
<p>The extent recreation opportunities are impacted by proposed project activities and do proposed activities affect the wild and scenic character of the Greys River.</p>	<p>Continued degradation of the road system for recreation users can be expected. There would be no other direct impact on existing recreation opportunities or wild and scenic character.</p>	<p>Approximately 19.3 miles of existing roads would be bladed to improve travel safety. Turnouts would be added as necessary for safety. Some short-term disruption of summer and fall recreation opportunities and recreation use in the immediate treatment area would occur due to logging and road improvement operations and presence of equipment. The trail to Wyoming Peak may have short-term impacts, but would remain open. Project activities are a ½ mile or greater from the Greys River and not visible from the river.</p>

## Summary of Effects

### *Forested Vegetation*

Under the No Action Alternative there would be no vegetative treatments in the area except for occasional removal of dead trees along roads for firewood under personal use permits. Older conifer stands would continue to change from lodgepole pine dominated stands toward forests dominated by subalpine fir with high fuel loadings. The Forest Plan would not be implemented. The area would no longer be managed under Desired Future Condition 1B, which emphasizes commodity production and stands maintained in a condition of forest health that meets this objective. Opportunities to utilize forest resources as wood products to benefit local communities and public consumers would be foregone. Opportunities to

improve forest health by removing trees affected by insects and disease and replanting healthy trees would also be foregone.

Manipulation of vegetation on 362 acres under the proposed action (Alternative B) would help bring conditions closer to desired conditions in the three treatment areas. Stand productivity would be increased in most areas. Treatments would reduce bark beetle hazards and dwarf mistletoe infection rates and will result in more vigorous forests across treated landscapes. Fuel loading in treated stands would be reduced and fuel breaks provided, modifying future fire behavior in these areas. Some wood fiber production and use would occur in accordance with DFC 1B, helping to meet Forest Plan Goal 1.1a (see Appendix A).

The construction of temporary roads and skid trails would result in the temporary loss of forest productivity and habitat on approximately 5 acres for 5 to 10 years.

## ***Wildlife***

### **Alternative A: No Action:**

The net effect of Alternative A would be a continuation of benefits to late-seral conifer forestland habitat and ongoing detriments to early-seral and mid-seral habitats in the analysis area and upper Greys River watershed.

Alternative A would have **no impact** on common loons, trumpeter swans, bald eagles and harlequin ducks and no additional effects on amphibians and Brewer's sparrows than are already occurring. There would be no effect on Canada lynx, wolves or yellow-billed cuckoos.

The No Action Alternative would have no additional effects on elk, mule deer and moose than are already occurring. Alternative A would not impact elk, except that inaction would allow the amount and proportion of late-seral conifer forestland to continue increasing which has been cumulatively negatively affecting elk, deer and moose.

Alternative A would be more beneficial than Alternative B to pine marten, goshawks, great gray owls, boreal owls, and three-toed woodpeckers, at least in the short term, because it would allow the beneficial late-seral species to continue accruing. Alternative A would have **no impact** on fishers and flammulated owls and either no measurable effect on their habitat (flammulated owls) or at most negligible effects on potential habitat (fishers).

Alternative A would have **no impact** (or short-term beneficial impacts) on northern goshawks, great gray owls, boreal owls, and northern three-toed woodpeckers.

Alternative A would have **no impact** (or short-term beneficial impacts) on pine marten, peregrine falcons, spotted bats, and western big-eared bats and no apparent effects on grizzly bears and wolverines.

Alternative A would not result in any direct adverse impacts to Payson's milkvetch, but it also would forego an opportunity to possibly offset a long period of low level of disturbances (e.g., fire) in the upper Greys River, which may historically have sustained larger numbers of this sensitive plant species.

Under this alternative, there would be no immediate change in habitat conditions for bird species associated with late-seral conifer forestland. Over a longer period of time, the amount of late-seral conifer forestland would continue to increase, along with associated benefits.

Bird species associated with early and mid-seral forestland would continue to be underrepresented in the analysis area, upper Greys River watershed, and Greys River watershed as a whole.

### **Alternative B: Proposed Action Revised**

Alternative B would have **no impact** on common loons, trumpeter swans, harlequin ducks, greater sage grouse, fishers, flammulated owls, peregrine falcons, spotted bats, western big-eared bats, and yellow-billed cuckoos.

The proposed action **may impact** individual Payson's milkvetch plants or their habitat, but would likely not contribute to a trend toward federal listing or loss of viability. If any are found in project areas, they would be avoided.

Under Alternative B, the amount of forestland in early succession would increase by 6-8% (in the vicinity of the harvest units), 4-5% (analysis area), 2.5-3% (upper Greys River watershed above Crow Creek), and 0.1-0.2% (Greys River watershed) and a slight reduction in benefits to late-seral conifer forestland habitat. Structural diversity and associated habitat would decline

Under Alternative B, adjusted road density would temporarily increase from about 1.4 miles of road per square mile of land in the analysis area to about 1.5 miles per square mile. It is possible that timber harvest activities, particularly clearcutting and skid trails, would result in an expansion of user-created roads and motorized trails.

Alternative B, including mitigation measures, **may impact** individual bald eagles or minor parts of their habitat, but would likely not contribute to a trend toward federal listing or loss of viability

Alternative B, including the identified mitigation measures, **may impact** individual spotted frogs or minor parts of their habitat, but would likely not contribute to a trend toward federal listing.

Alternative B **may impact** individual Brewer's sparrows or small part of their habitat, but will likely not contribute to a loss of viability of populations or the species.

Alternative B would have negligible effects on elk use of the upper Greys River watershed and the population size of the Afton elk herd unit. There would be a slight reduction in the quality of hiding cover. There may be a slight increase in forage production, for a benefit to elk, mule deer and moose. Alternative B, in combination with mitigation measures identified below, may impact individual elk or a small part of their habitat, but would likely not contribute to a loss of viability of populations or the species.

The increase in the amount of habitat in early succession would be beneficial to mule deer and moose. The activities associated with logging and logging truck traffic would temporarily displace mule deer. Alternative B, in combination with mitigation measures, **may impact** individual mule deer and moose, or a small part of their habitat, but will likely not contribute to a loss of viability of populations or the species.

Harvest sites currently being used by pine marten, goshawks, great gray owls, boreal owls, and three-toed woodpeckers would no longer be used by these species, except for perching (retention trees) and foraging habitat for goshawks and great gray owls. There are potential, negligible short-term adverse effects on a small number of individual pine martens, goshawks, great gray owls, boreal owls, and/or northern three-toed woodpeckers. There



would be a net improvement over existing conditions for goshawks because Alternative B would move the area closer to the desired mix of early, mid, and late succession forest. Alternative B would likely not contribute to a trend toward federal listing or loss of viability for these species if identified mitigation measures are implemented.

This alternative would have no more than negligible effects on grizzly bears and wolverines. Alternative B **may impact** individual grizzly bears and wolverines or minor parts of their habitat, but would likely not contribute to a trend toward federal listing or loss of viability

Direct and indirect effects of Alternative B on migratory birds associated with late-seral conifer forestland would reduce bird diversity in this limited area compared to existing conditions. At the scale of the analysis area, bird diversity would only be reduced by a minor amount compared to existing conditions. With a small increase in early-seral plant communities, this alternative would contribute to a slight restoration in bird species associated with or that use these communities. Alternative B may impact individual migratory birds or parts of their habitat, but will likely not contribute to a loss of viability of populations or any species

The proposed action will likely not result in any measurable increases in displacement and disturbance to Canada lynx due to timber harvest activities, as compared to existing conditions. In recognition of there being some potential for negligible effects on snowshoe hare habitat in the Lynx Analysis Unit and for potential for incidental displacement of individual lynx during timber harvest activities, the determination of effect for Canada lynx is “**May Affect – Not Likely to Adversely Affect**”.

There are no effects to grey wolves from the proposed project that will be detectable at the population level. Potential for incidental positive or negative effects on individuals are too slight to assess. Due to the very limited exposure to risk, the determination of effect for the grey wolf is “**Not Likely to Jeopardize**”.

## ***Fire***

Under the No Action Alternative there would be no reduction in fuels loading and no reduction in resulting fire intensity. Fuel loadings of heavy dead and down woody debris would continue to build (from the current 13-45 tons per acre), increasing the future potential of large uncontrolled, high intensity wildfires within the project area. This will increase suppression cost and increase the exposure of fire-fighters to a hazardous condition. The Forest Plan would not be implemented. The area would no longer be managed under Desired Future Condition 1B, which states that fire management emphasizes preservation and enhancement of timber and range values scheduled for current use.

Under Alternative B, there would be a reduction in fuel loading within the 362 acres of treated stands, which will directly affect the surrounding stands by creating a break in fuels densities, thereby reducing suppression cost, minimizing risk to fire-fighters and reducing disease and insect infestations. The area would be managed under Desired Future Condition 1B for fuels reduction and fire protection. Prescribed fire would be used to reduce fuel loading, improve livestock forage conditions on primary ranges, and improve site conditions to increase wood fiber production.

## ***Soils***

Under the No Action Alternative there are no direct effects to soils. Gradual improvement in hydrologic integrity and watershed function would be expected as trees in plantations continue to grow. Chronic sediment production from roads would continue. Sediment production from the area, stream channel network function, and sediment storage within the stream channel would likely remain unchanged. Large-scale disturbance (i.e., fire and debris flows) will likely result in episodic increases in sediment and water yield from which the watershed has a moderate recovery potential.

Under Alternative B, some soil rutting, erosion and site productivity reduction will occur within the 362 acres of treated areas and temporary roads. The extent of disturbed soils would be within Forest Plan and Regional guidelines. Design features, best management practices and mitigation measures will be incorporated to minimize effects.

## ***Hydrology***

Stream temperatures are meeting water quality standards and would continue to meet standards under the No Action Alternative. Buffers on stream channels under the proposed action would be sufficient to avoid increased water temperatures that could be associated with riparian canopy removal.

There would be no increase in the amount of road within 300 feet of channels under the no action alternative or the proposed action, including temporary roads.

There are currently a total of 58 stream crossings in the Greys River – Spring Creek HUC, leading to a road crossing density of 1.03 crossings per square mile of HUC. Road crossings are currently a possible source of measurable quantities of sediment (or of other effects associated with stream crossings—e.g., channel confinement) to streams in the analysis area. There are no proposed stream crossings by temporary roads, so the number of crossings would remain unchanged under the proposed action.

No measurable change in sediment production or delivery to channels would occur between the No Action Alternative and the proposed action on the Greys River-LaBarge Road segment, because existing use levels would continue, and road conditions and maintenance would not change. Greys River would experience no change from current conditions and trends under either alternative. On the Shale Creek Road, sediment production and delivery to Shale Creek would be highest under the No Action Alternative. Road reconstruction activities under the proposed action would consist of culvert replacement, spot surfacing, and placement of geotextiles to reduce rutting and drainage problems. Road reconstruction and log haul would produce short-term increases in sediment production and delivery due to ground disturbance and increased traffic levels, but sediment production and delivery to Shale Creek would decrease below existing levels in the long-term, resulting in fewer negative impacts to the channel than currently exist.

There would be a short-term increase in road densities and potential impacts during project implementation, from 1.41 per sq mile to 1.48 (on a 6<sup>th</sup> field HUC basis). However, these additional roads are temporary and would be rehabilitated following project activities; thus long-term there would be no difference between the No Action and the Proposed Action Revised alternatives.

Under all scenarios for all units, there is no (or very little) probability of runoff, soil erosion, and sediment delivery to stream channels under the no action alternative. There is a higher probability of sediment erosion under the proposed action but most sediment would be deposited before reaching stream channels. The probabilities for runoff and sediment delivery to channels are highest for proposed unit 2.12.

Two percent of the Greys River – Spring Creek HUC is currently in an Equivalent Clear-cut condition which meets current Forest Plan direction and would not be expected to cause a change in hydrologic conditions in the HUC. Under the proposed action, including all past, present, and foreseeable activities, total Equivalent Clear-cut Area for the HUC would be three percent, which is well below the limit of 30 percent stated in the Forest Plan. The proposed action would meet Forest Plan direction, and would not be expected to cause a change in hydrologic conditions.

### ***Fisheries***

Under the No Action Alternative, no measurable direct effect to fish or fish habitat would occur. The no treatment alternative will ensure a continued supply of large wood into area streams that will contribute to improved fish habitat in area streams in the long term. The No Action Alternative will also increase the likelihood of a large fire that could impair water quality and riparian vegetation with direct and indirect effects to fish populations in the project area.

The proposed action is unlikely to have any direct effect to fish or fish habitat as a result of harvesting upland tree species and not entering riparian vegetation. Standards and Guides and State best management practices for logging and roads will be used to minimize direct effects to riparian vegetation and fish habitat.

Implementation of Alternative B using Forest Service Standards and Guidelines and following State Best Management Practices (BMPs) for logging will result in no measurable direct impacts to riparian areas, Snake River cutthroat trout populations, rainbow trout populations, habitat, or fish passage. Forest Service Standards and Guidelines and Wyoming BMPs for timber harvesting and road construction will minimize or eliminate potential effects to fish or fish habitat from sediment generated as a consequence of timber harvesting.

There may be a negative short term effect to individual fish from sediment entering streams as a result of Alternative B timber harvest and increased heavy truck traffic. The proposed project would have no long term effects to fish or fish habitat after the project is completed. The project **“May impact individuals but is not likely to cause a trend to Federal listing or a loss of viability”** to designated BTNF sensitive and management indicator fish species based on the absence of substantially additive effects from past, present, and reasonable foreseeable actions in the analysis area.

### ***Transportation***

No impacts to roadless area character would occur. No permanent roads would be constructed under any alternative.

The transportation system would not change with implementation of Alternative A (No Action). Road grading and drainage improvements would likely occur annually on the Greys River Road but would be infrequent on the level 2 side roads. Maintenance activities keep

sedimentation to a minimum by keeping road crossings effective, improving surfacing where needed, removing material from cut-banks if needed, etc. Road closures that are not effective would likely not be improved and unauthorized travel on non-motorized routes would continue. Use of existing roads by Forest users would continue to deteriorate the road prism over time.

Under Alternative B (Proposed Action Revised) timber activity would require road maintenance and reconstruction such as blading, adding or replacing culverts, spot surfacing, and clearing on 19.3 miles of roads including portions of the Greys River Road, Shale Creek to Kinney Creek loop, and East Fork and Upper East Fork loops. Road sections that run through wet areas and contribute to sedimentation would likely have some pit run surfacing applied to harden the running surface. Drainage improvements, surfacing, and ditching would occur on approximately 3 miles of existing road. In addition, portions of the Smith's Fork Road to Highway 89 would be maintained when used as haul route. Approximately 3.5 miles of temporary roads would be used and closed and rehabilitated after use.

Under Alternative B It is likely that the illegal use of closed roads would decrease after the sale because more effective closures can be constructed. Sediment production from roads would increase during harvest and hauling activities. Road improvements, such as surfacing, ditching, and culvert installation, would, however, reduce sediment production in the long term.

### ***Heritage Resources***

There is no potential for direct, indirect or cumulative impacts on heritage resources under Alternative A (No Action Alternative). There are no prehistoric or historic sites identified in the project areas. Cultural resource sites would continue to be located, recorded, and protected from loss of integrity and physical damage primarily in reaction to ongoing resource management activities.

There is no potential for direct, indirect or cumulative impacts on heritage resources under Alternative B (Proposed Action Revised). There are no prehistoric or historic sites identified in the project areas. Any cultural resource sites discovered during the course of project implementation would be recorded, and protected from loss of integrity and physical damage.

### ***Environmental Justice***

Neither of the alternatives would cause disproportionate adverse human health or environmental direct, indirect, or cumulative effects to minority or low-income populations. During implementation of Alternative B, there is the potential for employment of members of minority groups. Minority groups would not be disrupted by project implementation under Alternative B, because implementation would occur in a completely rural setting where there are no permanent human residents and the population in adjacent areas is very dispersed.

### ***Recreation***

Implementation of Alternative A (No Action) would not change existing recreation opportunities. However, without any changes in current management of the travel system on this south end of the Greys River Road, continued degradation of the recreation access can be expected. Ongoing increases in motorized vehicle use for recreational experiences would

lead one to expect further rutting and braiding of both roads and motorized trails. As the designated system degenerates, motorized users often create their own routes across areas that are not open to that use.

Under Alternative B (Proposed Action Revised) there would be some short-term disruption of spring, summer, and fall recreation opportunities and use in the treatment area. The trailhead for Wyoming Peak Trail and the first ½ mile of trail may be impacted in the short term by nearby logging activities. Any system trail resources that are negatively impacted during commodity production activities would be rehabilitated. Some safety concerns may be present with log truck traffic on these peripheral road systems. Logging traffic would not be allowed during heaviest recreation-use time periods on holidays and hunting seasons. A long-term reduction in potential for large-scale wildfire in the area is expected as a result of implementation of Alternative B, which would be a benefit to recreationists.

### ***Visual Resources***

Under the No Action Alternative no management of forested resources would occur. However, existing plantations would continue to mature, leading to a reduction of contrast between treated and untreated vegetation. Mistletoe will continue to spread, causing further deterioration of mature lodgepole, as well as infecting some of the younger age classes contained in existing plantations. The resulting mosaic of vegetation will contain a larger component of standing dead trees. This would also result in increased chances of a stand-replacing fire.

Vegetation management under Alternative B (Proposed Action Revised) would result in some visual impact, particularly where the regeneration harvests are visible. The proposed treatments will not be visible from the Greys River corridor. However, much of the logging activity in this project area will likely be visible along a portion of the Wyoming Range National Recreation Trail. Cut units and occasional logging activity have been visible across viewsheds here for many years. By designing units to create openings that incorporate previous treatment blocks, the resulting openings will better mimic the shape and size of natural openings. Views from higher elevations can reflect a more natural-appearing mosaic across the landscape by reducing the existing fragmented pattern of vegetation.

### ***Range***

Under no action, the rate of introduction and spread of noxious weeds would continue as it has in the past 5-10 years.

Under Alternative B, the potential for noxious weed introduction and spread would increase as a consequence of heavy equipment and timber harvest activities in the harvest units and logging trucks along roads. Mitigation measures would prevent or control weeds.

### ***Economics***

Under the No Action Alternative, no timber would be harvested. No jobs would be supported locally, nor would this alternative provide any monies to the county to supplement school and road budgets.

Alternative B would harvest an estimated 9,000 CCF (hundred cubic feet) (4,230 MBF [thousand board feet]) of timber and generate an estimated appraised value of \$266,000.00.

Approximately 54 jobs supported by this alternative would directly and indirectly benefit local and regional economies.

## 2.6 Mitigation in the Action Alternative

Mitigation measures are designed to prevent adverse impacts or to contain non-significant impacts within acceptable limits during project implementation. Following are project design elements and mitigation measures that would accompany selection of any action alternative. These mitigations are specific to the proposed project and the project area. Standard contract provisions to protect other resources—including those that allow termination of contracts to prevent unforeseen environmental impacts—will be used for any timber sale project. Site-specific modifications to these mitigations may occur during project implementation if deemed necessary by the District Ranger through field reviews by an interdisciplinary team (IDT). Application of best management practices (BMPs) and adherence to Forest Plan standards and current laws, policies, and regulations is assumed for all action alternatives. BMPs are found in:

- *Silviculture Best Management Practices, Wyoming Non-point Source Management Plan, March, 1997, and Wyoming Forestry Best Management Practices brochure.*
- *Soil and Water Conservation Practices Handbook (FSH 2509.22).*
- *Forest Service Specifications for Construction of Roads and Bridges (Forest Service 1996a).*

The effectiveness of silvicultural BMPs is documented in forestry audits conducted periodically by multidisciplinary teams of resource professionals on private, state, and federal lands. Audits are coordinated by Wyoming DEQ and the Wyoming State Forestry Division. Results from the most recent audit (2007) are available online at <http://slf-web.state.wy.us/forestry/adobe/2007BMPaudit.pdf>. Implementation and effectiveness of mitigation measures are also evaluated as part of sale administration, when needed corrections to measures are noted and made on the ground.

### Recreation and Scenic Mitigation

- Any disturbance to the Wyoming Peak Trail due to commodity production activities must be reclaimed. This includes re-establishing of trail tread and drainage structures, primarily waterbars.
- Show portion of East Fork Road #10171, from Poison Meadows up into section 28 as “Unsuitable for Haul” on timber sale map.
- If excessive dusting is occurring on roads, dust abatement measures would be used near developed and high use recreation areas, or limit log hauling.
- No log hauling would be allowed on holidays and holiday weekends or opening days or opening weekends of big game hunting seasons.
- Clumps of trees and individual leave trees within the proposed clear-cut units shall be marked and retained.

- When possible, cuts should mimic naturally occurring patterns, such as avalanche path clearings, to minimize visual impact.

## **Heritage Resources Mitigation**

Historic properties or sites determined to be significant or eligible for the National Register of Historic Places will be avoided by project implementation or mitigation measures implemented to prevent potential impacts to those properties.

## **Watershed Mitigation**

- Except when they are on approved roads or on approved temporary crossing structures, ground-based harvest equipment would not be allowed within 100 feet of perennial streams or within 50 feet of intermittent channels and wetlands. Strive to keep ground-based harvest equipment out of swale bottoms (i.e., draws where there is not a defined channel) except to cross them, to avoid accelerated erosion of these features.
- Landings would not be constructed within 100 feet of perennial streams or intermittent channels and wetlands. An exception to this would be provided only if no other alternatives are available within identified economic and resource constraints, and only if impacts could be mitigated.
- No fuel storage or equipment refueling would occur within 150 feet of perennial stream channels or intermittent channels. Where more than five gallons of fuel or other petroleum products are being stored on-site, they would be stored on an impermeable surface to avoid groundwater contamination in the event of a spill.
- All wet swales, wetlands, and spring areas would be identified and flagged during layout and no equipment would be allowed to enter such areas. Layout of the unit and buffers will be conducted when wetlands, channels, and other aquatic features can be identified.
- If riparian vegetation extends further than the defined buffer widths, the buffer would be extended to include all riparian vegetation.
- Install BMPs on high-risk sediment production sites on roads (e.g., lead-in ditches to streams will be mitigated with ditch relief pipes or settling basins), with priority given to areas that drain to stream channels.
- Install slash filter windrows, or provide another means of sediment filtration, where roads, including the toes of fills, are within 100 feet of perennial or 50 feet of intermittent stream channels.
- All new temporary roads would be stabilized (obliterated, recontoured, seeded, and covered—i.e., Elimination Condition 4) within one season of completion of use,

including use for post-harvest activities. This includes removal of crossing structures and re-establishing natural channel form through crossing sites.

- In conducting fuels treatment, the following actions would not take place within 100 feet of perennial streams or within 50 feet of intermittent channels:
  - a. Fireline construction
  - b. Prescribed fire ignition (fire could be allowed to back into these areas where severity could be minimized)
  - c. Machine piling of slash
- Erosion control measures would be inspected by purchaser or sale administrator, and maintained on a recurrent basis by the purchaser until stabilized to ensure their effectiveness. Inspections and maintenance would occur following high rainfall events and prior to fall and spring runoff to ensure effectiveness.
- If the locations of temporary roads change significantly from their proposed locations-- and in particular if they change to be either near streams or to include channel crossings—additional specialist input, and approval by the Forest Service, will be required.
- Bridger-Teton National Forest Best Management Practices (BMPs) for timber harvest—including applicable Forest Plan Standards and Guidelines, and measures from FSH 2509.22, R-1/R-4 Amendment No. 1-- would be implemented. BMPs will meet or exceed Wyoming Silviculture Best Management Practices as described in the Wyoming Nonpoint Source Management Plan (Wyoming DEQ, 2004).
- Buffer widths for harvest along streams will follow guidance provided in the *Wyoming Nonpoint Source Management Plan, Silviculture Best Management Practices*, interpreted as follows:

**Table 2-4: Harvest buffers along streams: actual buffer widths will be the following widths or a width equivalent to the mean height of mature dominant lateral vegetation, whichever is greater.**

Adjacent slope (%)	Minimum buffer width (feet)
0-35	50 (or equal to the height of mature trees)
Greater than 35	100

Buffers along defined intermittent channels (i.e., those having defined bed and banks) will be at least 50 feet in width. Buffers along perennial streams will be at least 100 feet in width.



## Soil Mitigation

The primary purpose of these mitigations is to minimize damage to stream channels and fish habitat, and minimize soil loss and water quality deterioration. The following mitigations reference the *BTNF Land and Resource Management Plan* (USFS 1990) and the *R1/R4 Soil Management Handbook* (Forest Service 1988).

- Maintain 7-15 tons per acre of coarse woody debris. Lop, scatter and broadcast burning of slash is preferred as opposed to piling. Piling should be avoided to reduce the negative effects of soil heating and compaction from equipment.
- Skid trails and landings will be designated on the ground and approved by the Forest Service, avoiding steep slopes and water features.
- Skid trails and landing areas will be ripped to reduce compaction, and slash will be placed on top to reduce erosion. Straight-line skid trails would be used wherever possible, avoiding sharp turns.
- Use ground-based systems only in times of low soil moisture (< 25% measured using field methodology) Or when rutting of greater than 4 inches occurs.
- Monitoring of restoration activities should occur within one year after completion of the project.

## Fisheries Mitigation

Direct and indirect impacts to fish and fish habitat can be minimized using Wyoming Forestry Best Management Practices (BMP) for streamside management and BTNF Standards and Guidelines for timber harvest. Standards and Guidelines include maintaining a minimum of 100 foot riparian buffers on perennial and intermittent streams to conserve aquatic and terrestrial riparian habitat, protect stream channel and banks and promote flood plain stability. Project design includes reclaiming temporary roads, skid trails, and disturbed areas (watershed specialist report) to reduce the potential for sediment entering area streams. Watershed and soils mitigation that prevents or reduces sediment also benefits fisheries.

## Timber Harvest and Forest Vegetation Mitigations

- Logs cut prior to September 1 would be removed by December 31 of the same year. Logs cut after September 1 would be removed by December 31 of the following year.
- Stands adjacent to clear-cuts units should have dwarf mistletoe control in order to reduce spread into newly established stands.
- Mitigation applicable to partial-cut areas:
  - Directional felling of trees--trees should be felled at a 45° angle toward or away from skid trails to reduce skidder maneuvering.
  - Log skid trails first—trees on skid trails should be felled and skidded first.
  - Logging should not occur in spring or early summer when tree sap is flowing and bark is not tight.

- Designate “rub” or “bump” trees—these trees should be harvested last. Rub trees could be protected with rubber tires, plastic culverts sections, or some other material.

## **Fire/Fuels Mitigation**

- Monitor to determine that fuel loadings have been reduced to meet Forest Plan Standards for Desired Future Condition 1B.
- Removal of slash for biomass utilization would be acceptable.
- Sub-merchantable trees that are fuel ladders to residual trees would be cut. Broadcast burns and other slash treatments will treat at least 70% of the unit to provide for adequate planting conditions. Any slash burning will take place at higher fuel moistures.
- Clearcut with reserves and partial-cut units will have pull-back on all critical leave trees to ensure survival.

## **Roads Mitigations**

- Road design, limitation on use, restoration, and maintenance are the primary factors controlling erosion and sedimentation of stream channels.
- Warning signs would be posted during road construction, harvest, and hauling activities at appropriate locations to keep the public informed of the activity in the area.

## **Wildlife including Threatened, Endangered, and Sensitive Species Mitigation**

### **Roads and Trails Mitigation Measures for Wildlife**

- Barricades should be placed along obliterated temporary roads and skid trails to discourage motorized recreational use along these potential routes. Possible barricades include gates, boulders, and large numbers of large logs pulled back into road corridor.

### **Noxious Weeds Mitigation Measures**

- Take action to minimize the chances that any weed seeds picked up by logging equipment, log trucks, and other vehicles are deposited in the analysis area and along National Forest roads (pressure washing). Vehicles should be inspected by a representative of the Forest Service to ensure that any weed material has been removed from the equipment.
- Increase surveillance and noxious weed-control efforts in the analysis area and along National Forest roads used to haul heavy equipment and logs. The latter can be accomplished by additional funds provided to the Lincoln County Weed and Pest District to cover these costs.

- Materials used for rehabilitation and reclamation as part of Alternative B (e.g., mulches, straw, seed) will be certified weed-free and approved by the District Ranger prior to their use.

### **Amphibian Management Indicator Species Mitigation Measures**

- To mitigate potential adverse impacts to amphibians, prohibit road construction within 100 feet of a wetland. No timber harvest activities and no heavy equipment allowed within a 50-foot buffer around wetlands (e.g., springs, pools, small marshes). Trees will be felled away from the wetland and any tree that falls within the 50-foot buffer would need to remain there.
- Log trucks and heavy equipment travel on National Forest System roads will be restricted when roads are wet and damage is occurring.
- Minimize the extent to which shrubs and young trees are damaged.

### **Goshawk and Migratory Bird Mitigation Measures**

- In units 1.3 and 1.5, leave at least one group of 3-6 large trees per acre.
- Retain individual and groups of healthy whitebark pine trees, and up to 2 snags or snag replacement trees per acre.
- Protect any raptor nests that are found.

### **Sensitive Plants Mitigation Measures**

- Locations of the temporary road (if constructed): skid trails, landings, and decks must avoid sites where sensitive plants occur.

### **Big Game Mitigation Measures**

- If an elk wallow complex is found, temporary road construction would not be permitted in the vicinity of the wallow complex.

### **Range/Grazing Mitigation**

- The project area will be monitored for new infestations of noxious weeds and if infestations are discovered the noxious weeds will be eradicated by use of methods consistent with forest and regional noxious weed treatment practices.
- All action alternatives will require grazing permittee coordination with Range Allotment Annual Operating Plans to ensure sheep or cattle do not bed down or are allowed to concentrate in areas where reforestation activities have occurred for at least a 5 year period. Placement of salt blocks, mineral blocks, or other patterns of activity that create concentrations will also be prohibited. Grazing use in the plantations will be monitored throughout the grazing season to ensure that grazing intensity is light and sensitive areas are properly managed.
- Seed mix for disturbed sites will be certified as Noxious Weed Free and meet minimum of 80% Pure Live Seed (PLS). Seed rates will be 25 to 50 PLS / square foot. Species composition will consist of a currently certified and approved mixture.

