

# Dick Creek Timber Sale

## Environmental Assessment

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Shoshone National Forest  
Greybull Ranger District  
Park County, Wyoming

November 2002



Final Document

In order to make changes and additions from the Predecisional EA easier for the reader to find, they are highlighted within this final document.

Large sections of text that have been added are contained in a shaded text box like this.

*Small changes in text will be highlighted with shading and italics like this.*

Minor edits in grammar and spelling are not highlighted.

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<http://www.fs.fed.us/r2/shoshone/forestmgt/nepa/projectinfo.htm>

**Abstract.** This Environmental Assessment (EA) is a public document that will provide evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact. The proposed action is to implement vegetative management to improve forest condition, vegetative diversity, and watershed health, and to provide wood products. There are three alternatives: a no action alternative and two action alternatives. Proposed activities would occur in the Dick Creek drainage, approximately 18 miles southwest of Meeteetse in Park County, Wyoming.

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## Chapter 1 Purpose and Need

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This chapter provides background information on the project, a presentation of the purpose and need for the actions, and a summary of the public issues and concerns with the proposed action.

### 1.1 Background

This environmental assessment (EA) discloses the environmental effects of implementing vegetative management in the Dick Creek watershed. These activities are proposed to improve forest condition, improve vegetative diversity, improve watershed health, and provide wood products. The Shoshone National Forest is initiating this proposal as part of implementing the Shoshone Land and Resource Management Plan (Forest Plan). This is not a decision document. The responsible official will document the decision in a Decision Notice after a 30-day public review of the EA.

Additional information that supports the analysis presented in this document is contained in the project file located at the Wapiti Ranger District Office, 203A Yellowstone Ave., Cody, WY 82414.

An EA was prepared for the Dick Creek Timber Sale in 1996; the associated decision notice was signed in 1997. Because of concerns from the public on the changes that have occurred in the past five years, a new environmental analysis is being completed. This new analysis will consider modifications to the project, the presence of the gray wolf, the listing of the Canada lynx as an endangered species, increased range of the grizzly bear, and the Roadless Area Interim Directive, as well as the issues and concerns addressed in the first EA.

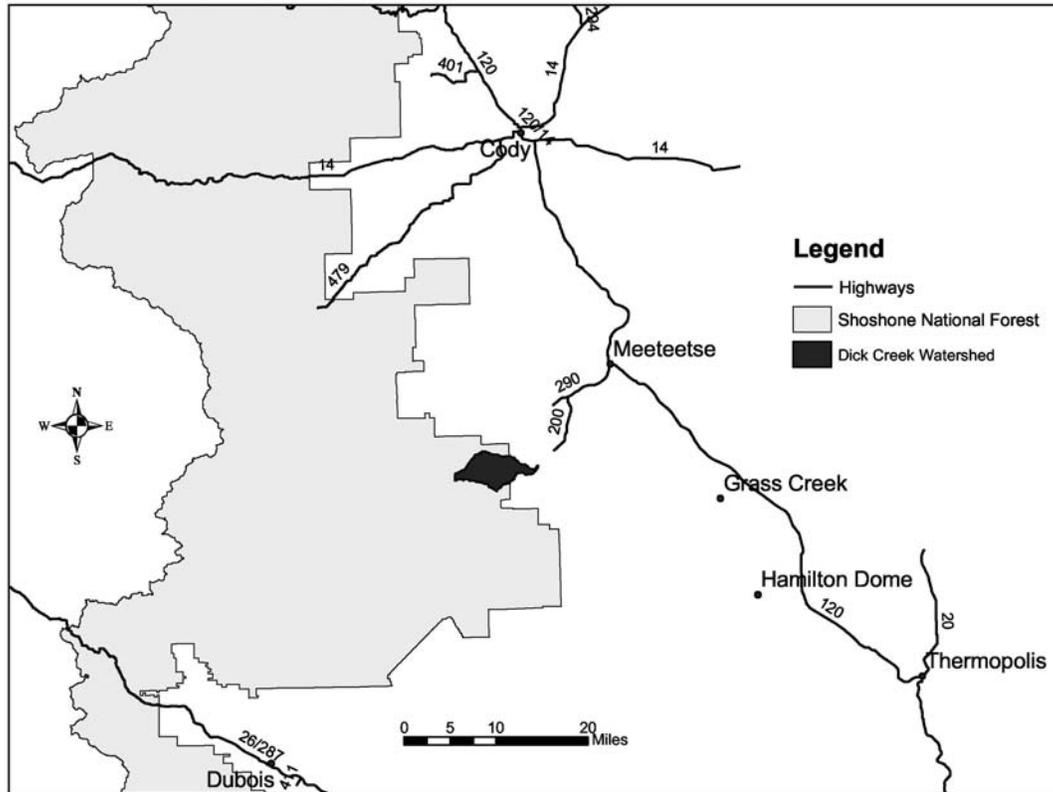
This EA is tiered to the 1986 Land and Resource Management Plan for the Shoshone National Forest (as amended) and the associated environmental analysis and decision documents.

Tiering is in accordance with CEQ regulations (40 CFR 1502.20 and 1508.28), which allow the responsible official to focus on site-specific issues that are within the scope of a broader plan, program, or analysis that is already approved. All documents are incorporated by reference in this document, and can be reviewed upon request at the Wapiti Ranger District or the Supervisor's Office in Cody, Wyoming.

The Shoshone National Forest is implementing the Forest Plan as required by the Forest and Rangeland Renewable Resources Planning Act of 1974 (RPA, P.L. 93-378) and the National Forest Management Act of 1976 (NFMA, P.L. 94-588). The Shoshone Forest Plan establishes management direction for the Shoshone National Forest. This direction is described forest-wide and by management area. Designing and implementation of projects consistent with this direction is the means to move the Forest toward the desired future conditions as described in the Forest Plan. Forest Plan direction established sideboards for the development of alternatives to the proposed action. Within these sideboards, the Interdisciplinary Team (IDT) developed alternatives and mitigation that responded to the issues and concerns. All alternatives and associated mitigation are designed to be consistent with Forest Plan direction unless specifically noted

### 1.2 Location

The proposed activities are located approximately 18 miles southwest of Meeteetse in Park County, Wyoming in the Dick Creek watershed (*see* Figure 1). Dick Creek is a tributary to the Wood River that eventually flows into the Greybull River. The Dick Creek watershed is the analysis area for this project. The project is located on the Greybull Ranger District of the Shoshone National Forest and can be accessed by Forest Service Road (FSR) 203. Proposed treatment activities would occur in portions of T46N, R102W, sections 5 and 8; and T47N, R102W, sections 19, 20, 21, and 32.



*Figure 1. The Dick Creek Timber Sale is located approximately 18 miles southwest of Meeteetse, WY.*

### **1.3 Management Areas**

The Forest Plan assigns a management emphasis to each portion of the Forest to meet multiple-use objectives. For each designated management area, Chapter III of the Forest Plan includes a description of desired future conditions, goals, objectives, and standards and guidelines. The Forest Plan management area designations for the Dick Creek watershed are shown in Figure 3. Portions of the proposed treatment areas occur in each of these management areas.

Management Area Designation	Number of Acres in the Analysis Area
Management Area 2B	4,320 acres
Management Area 3A	5,124 acres
Management Area 4B	774 acres
Management Area 4D	Unmapped <sup>1</sup>
Management Area 9A	Unmapped <sup>2</sup>

**Figure 2. Forest Plan management area designations and acreages for the analysis area.**

### **1.3.1 Management Area 2B**

***Emphasis on Rural and Roaded Natural Recreation Opportunities (III-124-131)***

Management emphasis is for rural and roaded natural recreation opportunities. Motorized and non-motorized recreation activities such as driving for pleasure, viewing scenery, picnicking, fishing, snowmobiling, and cross-country skiing are possible. Conventional use of highway-type vehicles is provided for in design and construction of facilities. Motorized travel may be prohibited or restricted to designated routes to protect physical and biological resources.

Visual resources are managed so that management activities maintain or improve the quality of recreation opportunities. Management activities are not evident or remain visually subordinate along forest arterial and collector roads and primary trails. In other portions of the area, management activities may dominate in foreground and middleground, but harmonize and blend with the natural setting. Landscape rehabilitation is used to restore landscapes to a desirable visual quality. Enhancement aimed at increasing positive elements of the landscape to improve visual variety is also used.

### **1.3.2 Management Area 3A**

***Emphasis is on Semi-primitive Non-motorized Recreation in Roaded or Non-roaded Areas (III-140-144)***

Management emphasis is for semi-primitive, non-motorized recreation in both roaded and unroaded areas. Recreation opportunities such as hiking, horseback riding, hunting, cross-country skiing, etc., are available. Seasonal or permanent restrictions on human use may be applied to provide seclusion for wildlife such as nesting for raptorial birds, big game rearing areas, and mammals (mountain lion, wolverine, etc.) with large home ranges. Visual resources are managed so that management activities are not visually evident or remain visually subordinate.

Investments in compatible resource uses such as livestock grazing, mineral exploration and development, etc., occur, but roads are closed to public use. Commercial and non-commercial tree harvest occurs.

### **1.3.3 Management Area 4B**

***Emphasis is on Habitat for Management Indicator Species (III-145-152)***

Management emphasis is on the habitat needs of one or more Management Indicator Species. Species with compatible habitat needs are selected for an area. The goal is to optimize habitat capability, and thus numbers of the species. The prescription can be applied to emphasize groups of species, such as early succession dependent or late succession dependent, in order to increase species richness or diversity.

<sup>1</sup> Management Area 4D acres were too small and scattered to map at the forest planning map scale (FP III-99). The areas are identified during project planning.

<sup>2</sup> Management Area 9A acres were too small and scattered to map at the forest planning map scale (FP III-99). The areas are identified during project planning.

Vegetation characteristics and human activities are managed to provide optimum habitat for the selected species, or to meet population goals jointly agreed to with the state fish and wildlife agencies. Tree stands are managed for specific size, shape, interspersion, crown closure, age structure, and edge contrast. Grass, forbs, and browse vegetation characteristics are regulated. Rangeland vegetation is managed to provide needed vegetation species composition and interspersed grass, forbs, and shrub sites or variety in age of browse plants. Fish habitat improvement treatments are applied to lakes and streams to enhance habitats and increase fish populations.

Recreation and other human activities are regulated to favor the needs of the designated species. Roaded natural recreation opportunities are provided along forest arterial and collector roads. Local roads and trails are either open or closed to public motorized travel. Semi-primitive, motorized recreation opportunities are provided on those local roads and trails that remain open; semi-primitive, non-motorized opportunities are provided on those that are closed. Management activities may dominate in foreground and middleground, but harmonize and blend with the natural setting.

#### **1.3.4 Management Area 4D**

##### ***Emphasis is on Aspen Management (III-153-157)***

Management emphasis is on maintaining and improving aspen sites. Other tree species, if present, are de-emphasized. Aspen is managed to produce wildlife habitat, wood products, visual quality, and plant and animal diversity. On larger areas, a variety of aspen stand ages, sizes, shapes, and interspersion are maintained. Both commercial and noncommercial treatments are applied. Diversity objectives are achieved by varying the size, age, shape, and interspersion of individual stands. Management activities in foreground and middleground are dominant, but harmonize and blend with the natural setting.

Recreational opportunities available are semi-primitive non-motorized and motorized or roaded natural. Some temporary or seasonal road and area use restrictions are implemented to prevent disturbance of wildlife or improve hunting and fishing quality.

Investments in other compatible resources occur. Livestock grazing can occur, but is subordinate to wildlife habitat needs and required protection of young aspen needed for regeneration.

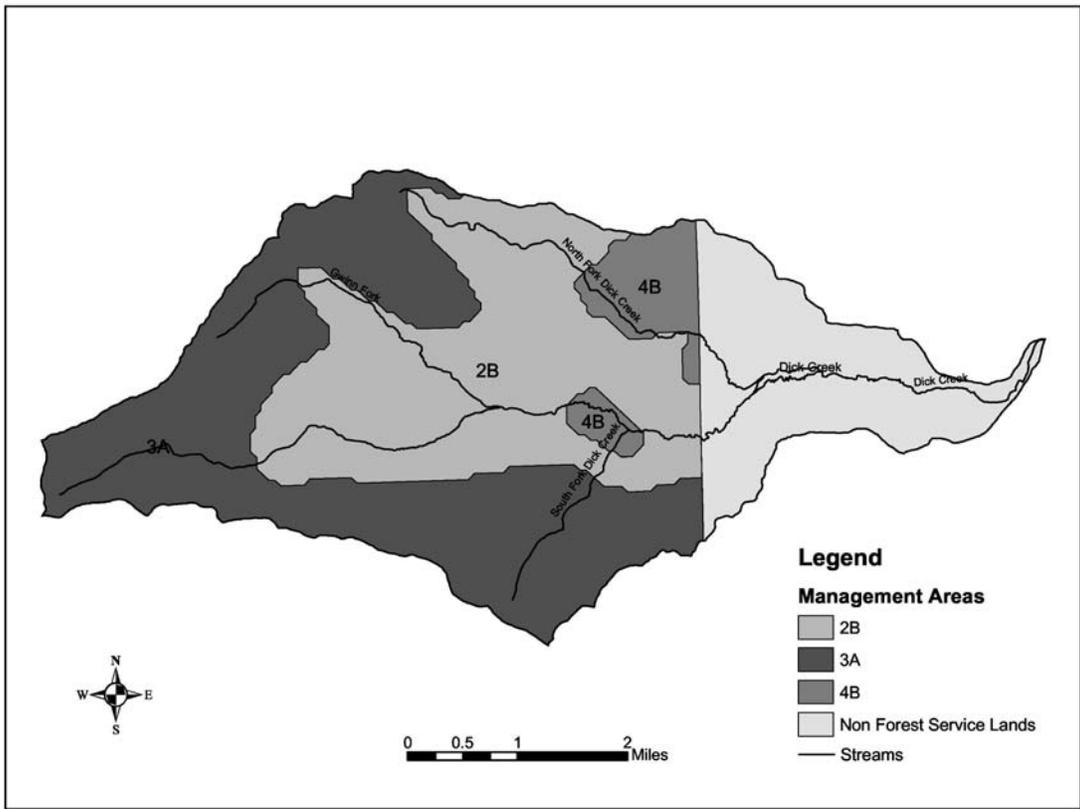
#### **1.3.5 Management Area 9A**

##### ***Emphasis is on Riparian Management (III-207-222)***

Emphasis is on the management of all of the component ecosystems of riparian areas. The goals of management are to provide healthy, self-perpetuating plant communities, meet water quality standards, provide habitats for viable populations of wildlife and fish, and provide stable stream channels and still water body shorelines. The linear nature of streamside riparian areas permits programming of management activities that are not visually evident or are visually subordinate.

Forest riparian ecosystems are treated to improve wildlife and fish habitat diversity through specified silvicultural objectives. Both commercial and non-commercial vegetation treatments are used to achieve multi-resource benefits.

Livestock grazing is at a level that will ensure maintenance of the vigor and regenerative capacity of the riparian plant communities. Vehicular travel is limited on roads and trails at times when the ecosystems would be unacceptably damaged.



*Figure 3. Management Areas designations for the Dick Creek watershed.*

## 1.4 Purpose and Need

### 1.4.1 Need for Action

The Forest Plan, Chapter III, includes direction for management of the Forest. This section compares relevant Forest Plan direction to the conditions that currently exist in the analysis area. The comparisons show where a need or opportunity for action exists.

*Figure 4 . Description of Forest Plan direction, existing conditions, and opportunities for the analysis area.*

Forest Plan Direction	Existing Conditions	Opportunities
<b>Vegetative Diversity</b>		
<p>Improve tree age class and species diversity to benefit forest health, recreation experiences, visual quality, and wildlife habitat (III-8).</p> <p>Maintain and improve aspen sites (III-153).</p> <p>Maintain or improve the quality of habitat in winter range on the Forest (III-8). Maintain aspen clones (III-154).</p>	<p>Conifer trees are encroaching on open meadows and aspen stands, reducing the occurrence of these habitat types in the analysis area. These habitat types provide valuable forage for elk and moose. Exceptions to this condition are the aspen stands in the area that were treated in 1982 that have regenerated into young, well-stocked stands.</p> <p>The majority of the stands in the analysis area are mature. There are several forested stands within the Dick Creek drainage that are at the end of the successional process and consist of mainly mature/over mature Engelmann spruce with an Engelmann spruce and subalpine fir understory.</p>	<p>An opportunity exists to enhance the occurrence of aspen habitat in this area by removing conifer succession in and around remnant aspen patches to allow existing aspen suckers to develop and dominate the site, increasing <i>species diversity and composition</i>.</p> <p>An opportunity exists to improve forage production; the assumption is that aspen, shrub, forbs, and grass species in the area would respond favorably to harvest activities by resprouting and regeneration, resulting in increased diversity and higher quality and quantity big game forage.</p> <p>An opportunity exists to retain conifer species such as lodgepole pine and Douglas fir by reducing stand densities and encouraging regeneration of those species along with spruce/fir.</p>

Forest Plan Direction	Existing Conditions	Opportunities
<p>Improve the health and vigor of vegetation types outside wilderness and selected types in wilderness where necessary (III-6).</p> <p>Reduce damages by insect, disease, and other forest pests to acceptable levels through integrated management of vegetation (III-10).</p>	<p>There is evidence of dwarf mistletoe and commandra blister rust within <i>the overstory of lodgepole stands in the Dick Creek area. Eventually the infected trees will lose vigor and some may die.</i> Both mistletoe and blister rust will eventually spread to healthy regeneration in the understory.</p> <p>Large, older spruce forest stands are the prime target for insect infestation because of their size and age. There is potential for insect mortality in forested stands due to <i>spruce beetle</i> infestation in adjacent stands.</p>	<p>An opportunity exists to treat some of the conifers (primarily spruce/fir and lodgepole pine) to create a mosaic pattern of stands with varying age classes; such a mosaic would improve overall forest health and resiliency. A mosaic pattern of various age classes avoids the situation where the entire analysis area is susceptible to insect/disease infestation at the same time. In addition, healthier stands would result in lower natural fuel levels (<i>Hawksworth et al. 1989, Geils et al. 1983, Lister et al. 2002</i>).</p>
<b>Watershed Condition</b>		
<p>Maintain or improve soil productivity and water quality (III-8).</p> <p>Rehabilitate lands in declining and unsatisfactory watershed condition (III-9).</p>	<p>Watershed condition and stream health were assessed in 1995 and 1996. The assessment indicated certain goals in the Forest Plan were not being met on portions of the North Fork, Gwinn Fork, and Dick Creek proper. Causative factors are historical livestock grazing, current ungulate use, road location/condition, and recreational use of the roads when wet (past petroleum activity and harvesting timber, except for roads, are not causative factors of concern). The result of these factors were areas of poor condition uplands (mostly near riparian areas), poor condition riparian, loss of hydrologic function, and impacts to the aquatic ecosystem</p> <p>Reductions in livestock grazing, rangeland structural and non-structural improvements, road restrictions, road closures, and road maintenance that have been implemented since 1996 have resulted in continuing improvement in watershed condition. Most notable is riparian and stream health within fenced riparian areas is rapidly improving. Additional improvement is expected on unfenced riparian areas as the allotment management plan is implemented.</p>	<p>There is the opportunity to further decrease sediment into streams by disconnecting the road system from streams at stream crossings in association with road reconstruction and maintenance.</p>

Forest Plan Direction	Existing Conditions	Opportunities
<b>Transportation System</b>		
<p>Develop a transportation system that meets land and resource management needs at lowest cost and least disturbance to the environment (III-10).</p> <p>Implement travel management practices, including both seasonal and permanent closures, to protect road and trail investment (III-10).</p> <p>Manage motorized travel on roads, trails, and snow to protect land and resource values at lowest cost and with minimum of regulations (III-10).</p>	<p>Following the first analysis of the Dick Creek Timber Sale a decision was made to close some of the existing roads in the watershed. This decision was documented in a Decision Memo signed in 1997. The purpose of the closure was to improve road conditions and to offset the anticipated road construction planned for the 1997 Dick Creek Timber Sale analysis in order to comply with the no net increase in roads policy on the Shoshone. As a result, the designated road system for the watershed is the minimum needed to provide access for resource management. Recently, maintenance was conducted on the roads in the area to replace culverts and improve drainage. The current road system is in much better shape than the road system that existed in 1996. Portions of the road system that cross streams still need some work.</p> <p>FSRs 202 and 203 are closed from January 1 through April 30 to prevent degradation to the soil and water resources and to prevent harassment of wintering elk herds.</p> <p>The existing road system provides access to some areas of inventoried roadless. A short section of the existing road system is within inventoried roadless (<i>see</i> Figure 20).</p>	<p>Opportunities exist for moving from the existing conditions toward more desirable conditions as stated in the Forest Plan for roads management. There are opportunities to further improve road conditions in the watershed to reduce erosion at stream crossings. Finally, as part of this project proposal, we can verify that the designated road system is what is needed for the watershed.</p> <p>No road construction or reconstruction is needed within inventoried roadless areas.</p>
<b>Forest Products</b>		
<p>Manage the timber resources on lands suitable for timber management to provide sawtimber, roundwood, and firewood to meet resource management objectives (III-8).</p>	<p>Commercial timber types within the identified suited timber base as well as outside suited timber are present. They are at risk due to the insect and disease infestation and will lose economic value over time.</p>	<p>In the process of treating stands to meet other resource objectives, there is an opportunity to provide varied wood products for local economic benefits before merchantable timber value is lost. If timber is infested by insects and allowed to remain in place, it declines in quality every year to the point it is no longer merchantable. The opportunity also exists to provide firewood to the public from this area.</p>

Forest Plan Direction	Existing Conditions	Opportunities
<b>Inventoried Roadless</b>		
<p>This management direction is from the national interim directive on inventoried roadless areas<sup>3</sup>. Inventoried roadless areas contain important environmental values that warrant protection. Accordingly, until a forest-scale roads analysis (FSM 7712.13b) is completed and incorporated into a forest plan, inventoried roadless areas shall, as a rule, be managed to preserve their roadless characteristics. However, where a line officer determines that an exception may be warranted, the decision to approve a road management activity or timber harvest in these areas is reserved to the Chief or the Regional Forester as provided in FSM 1925.04a and 1925.04b.</p>	<p>Portions of the Dick Creek Project fall within an inventoried roadless area. This area had road construction before the moratorium on such construction in 1999. In addition, portions of the proposed treatment area have had past timber treatment. Because of this prior activity, this project falls under one of the exemptions for timber harvest in inventoried roadless.</p> <p><i>The Chief reserves the following:</i></p> <p><i>2. The authority to approve or disapprove proposed timber harvest in inventoried roadless areas, except for the following:</i></p> <p><i>d. The harvest is in a portion of an inventoried roadless area where construction of a classified road and subsequent timber harvest have previously taken place, and the roadless area characteristics have been substantially altered by those activities.</i></p>	<p>Because of past roading and harvest activity in the analysis area, the opportunity and authority exists for the decision maker to conduct additional harvest treatment.</p> <p>This opportunity does not extend to additional roading. The decision to do that still resides with the Chief until a forest level road analysis is completed and the Shoshone Forest Plan is amended to reflect the results of that analysis.</p>

<sup>3</sup> The Forest Service Roadless Area Conservation web site can be found at [www.roadless.fs.fed.us](http://www.roadless.fs.fed.us). Documents, data, maps, comments, and links are available.

## 1.4.2 Purpose for Action

Based on review of the site-specific conditions and needs described above, the decision maker has chosen to focus on the following *management direction from the Forest Plan and other directives*.

- Improve tree age class and species diversity to benefit forest health, recreation experiences, visual quality, and wildlife habitat
- Maintain and improve aspen sites
- Reduce damages by insect, disease, and other forest pests to acceptable levels through integrated management of vegetation
- Manage the timber resources on lands suitable for timber management to provide sawtimber, roundwood, and firewood to meet resource management objectives
- Follow the management direction for inventoried roadless areas, which allows vegetation treatment in this area

In summary, the purpose and need for action in the Dick Creek watershed is to enhance vegetative diversity and wildlife habitat, improve stand conditions, and provide timber products consistent with other resource objectives, *without altering the existing characteristics of the inventoried roadless area*. Other Forest Plan direction such as that associated with water quality and transportation management would be met through the implementation of standards and guidelines.

## 1.5 Proposed Action

A proposed action is defined early in the project-level planning process. This serves as a starting point for the Interdisciplinary Team, and gives the public and other agencies specific information on which to focus comments.

Proposed activities tied to the purpose and need are summarized below. Additional details and other connected activities are discussed in Chapter 2.

- Within the analysis area, approximately 417 acres would be treated.
- Seedcuts would occur on 95 acres of mixed conifer stands to encourage mixed conifer regeneration and contribute to stand diversity in the analysis area.
- To improve stand condition, 202 acres of lodgepole *would be treated. Salvage and sanitation treatments would be used on portions of the stand to control mistletoe and commandra rust. Commercial thinning treatments would be used on portions of the stand with low levels of mistletoe and commandra rust.*
- To encourage aspen regeneration, 120 acres of mixed conifer/aspen stands would be clearcut in patches one to 10 acres in size. Sixty of the 120 acres would have the conifer removed commercially; the remaining 60 acres would be harvested non-commercially.
- The harvest would produce 2.1 million board feet (MMBF) of timber.

Geographical Information Systems and other data and product accuracy may vary; therefore, the acreages used in the description of the proposed action and the alternatives throughout the document may vary by +/- 5%. This possible variance in acreage was considered in the effects analysis.

## 1.6 Public Involvement

The original scoping on the Dick Creek Timber Sale was conducted in the late 1990s. At that time agencies, landowners, and other interested publics were contacted about the proposed project. Comments and concerns identified during that scoping effort that are not represented by the scoping efforts associated with this version of the EA were brought forward and considered. Those concerns are included in Appendix B.

Given the change of concerns that occurred since the first EA, mainly the roadless issue, a new round of scoping was conducted to identify issues and seek input relevant to this proposal and new analysis. On May 21, 2002, a scoping letter describing the project proposal was sent to over 200 individuals, media, groups, private landowners, organizations, and Native American Tribes to notify them of the proposal and to request their comments and concerns. The U.S. Fish and Wildlife Service and Wyoming Game and Fish received a copy and were asked to provide comments. Comments were considered and the results of scoping are documented in Appendix B. Copies of the original comments are available in the project file. Responses to the May 21, 2002 scoping included 16 letters, inquiries, phone calls, and e-mails. The *Cody Enterprise* and *Billings Gazette* wrote articles in response to the scoping statement. The correspondence is retained in the project file. All comments received through scoping and the public involvement processes were considered in developing the issues and alternatives, which directed the analysis process.

## **1.7 Issues**

### **1.7.1 Key Issues**

The key issues represent those issues that the decision maker needs to consider in selecting an alternative. The key issues include significant issues as defined in NEPA regulations (40 CFR 1500.4[1]) that are used in the development of alternatives to the proposed action. The key issues received the most public and internal specialist concern. Guided by the Forest Plan, the IDT developed mitigation measures and alternatives to the proposed action to address the key issues, comments, and concerns identified during scoping (*see* Appendix B). A brief description of the six key issues identified for this project follows:

#### **Roadless**

Roadless was a new issue identified in the latest round of scoping and received much attention. The comments ranged from those who felt that no harvesting and road building should occur in roadless areas to those who felt that such activities should be conducted in roadless areas. Many commentors mentioned the Roadless Area Conservation initiative and the current Interim Roadless Directive from the Chief of the Forest Service. Some commentors felt that it was necessary to treat roadless areas in order to protect those areas from insects and wildfire.

#### **Wildlife**

Threatened, Endangered, and Sensitive species (TES) were one of the more frequently mentioned concerns. Many were concerned with the effects the project would have on TES and wanted to make sure that they were protected. Other comments felt that the project would do little harm to these species and that it was more important to treat the stand to improve habitat and reduce fire risks to maintain quality habitat for these species in the long term. Specific species mentioned most often were the grizzly bear, wolf, and lynx.

Big game animals and associated winter range were also mentioned frequently. Snag habitat and species associated with them were also mentioned.

In addition to the issues and concerns identified by the public, many of the comments received in scoping requested that information on the effects to wildlife and components of wildlife habitat be included in the EA.

#### **Watershed**

Concern for water quality and watersheds were another area that received frequent comments. There was no disagreement over the need to protect watersheds. Specific components mentioned were riparian, wetlands, fisheries, and water quality.

#### **Economics**

There was concern from a few individuals that it was important for the Forest to offer timber for sale in order to help support local communities and industry.

#### **Fuels Reduction**

Some commentors indicated that vegetation treatment was needed in order to reduce the risk of large wildfires in the area and provide long-term protection to the forest and habitat. Some felt that more emphasis should be placed on using prescribed fire and less on using timber harvest to address fuel concerns.

#### ***Insects and Disease***

There is internal concern that treatment needs to occur to manage the level of insect and disease infestations within the treated stands in order to meet Forest Plan direction. There were also a few public comments about the need to treat insect infestations.

### **1.7.2 Other Issues and Concerns**

Other issues and concerns raised by the public were considered by the IDT and are summarized and responded to in Appendix B. Many of these were addressed in the EA through changes or additions to the proposals, mitigation measures, or the display of additional information in the analysis.

### **1.8 Decision To Be Made**

An EA is not a decision document. The purpose of this document is to disclose the effects and consequences of the proposed action and alternatives and to solicit public input. The responsible line officer will make a decision based on consideration of the purpose and need for the project, the effects of the alternatives, and public involvement.

For this project the responsible official, District Ranger Brent Larson, must decide:

- Whether to implement the proposed action, alternatives to the proposed action, or the no action alternative. The decision will be documented in a Decision Notice that will be issued no sooner than 30 days after the EA is distributed for public review and comment.
- Whether to prepare an environmental impact statement. If the environmental analysis indicates to the decision maker that impacts associated with the alternatives are not significant, then he will make a finding (FONSI, 40 CFR 1508.13) that allows the action to proceed without performing an environmental impact statement.

## Chapter 2 Alternatives

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This chapter describes the proposed action and alternatives to that action, including the no action alternative. This chapter also includes a comparative summary of the environmental effects of the alternatives.

### 2.1 Alternatives Considered But Eliminated from Detailed Study

The IDT considered a number of alternatives to the proposed action. Following are brief descriptions of alternatives eliminated from detailed study and the reasons for eliminating them.

**Helicopter logging.** An alternative for logging with helicopters was eliminated from analysis because it was not economically feasible given the small acreage and volume proposed for harvest.

**Proposed action from the original Dick Creek EA.** The proposed action from the original EA proposed harvest of approximately 3.2 MMBF on 605 acres<sup>4</sup>. To harvest this volume, 3.6 miles of new road construction was proposed. This alternative was dropped from further analysis because the new road construction was not compatible with maintaining roadless characteristics per the Chief's Interim Roadless Directive.

**Additional harvest of the suited timber base.** An alternative to commercial harvest the entire suited base in the Dick Creek drainage was eliminated because such harvest would require additional road construction in inventoried roadless areas. The alternative was dropped for the same reasons noted in the previous dropped alternative.

**Treatment by prescribed fire.** This alternative would not meet the purpose and need for treating conifers that are replacing aspen or for improving forest health. Further, it would not provide commercial products, and would result in additional stress to trees, which would make them more susceptible to insect and disease infestations.

**Lower level of roadless harvest.** The IDT discussed creating an alternative that had a lower level of harvest in roadless than the proposed action. The objective was to demonstrate fully that we had reconsidered the roadless issue in alternative development during the analysis. The IDT chose not to develop such an alternative, because they did not feel that it added any information for addressing the roadless issue. The issue is whether to harvest in roadless; it is not how much to harvest in roadless. The existing range of alternatives addresses the issue. An alternative that harvested less in the roadless would not clarify the issue discussion and did not address any other resource concerns.

**Summer harvest.** Consideration was given to an alternative that treated the stands in the summer. In the final analysis that alternative was dropped for a number of reasons. First, it was felt that there would be less evidence of harvest activity in the roadless areas if the harvest were conducted on snow or frozen ground. Additionally, building temporary roads on snow or frozen ground leads to much less ground disturbance. This helps to reduce sediment impacts. Other reasons for winter harvest are that there would be fewer impacts on nesting birds, grizzly bears, and other wildlife species that use the area in the spring and summer but not in the winter. The winter harvest does have some effects on big game winter range, but after discussions with the Wyoming Game and Fish Department (Game and Fish) the IDT and decision maker felt that in the balance those effects were less than the other impacts avoided with a winter operation.

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<sup>4</sup> These numbers do not match those portrayed in the original EA. The numbers were updated to the latest information available. Despite the change in numbers, the intent of the alternative is accurately portrayed in the discussion.

## 2.2 Alternatives Considered and Analyzed in Detail

The action alternatives were formulated by the IDT to be responsive to the issues identified during scoping, and to address the purpose and need identified in Section 1.4.2. The alternatives are designed to be consistent with the Forest Plan and Forest Service law, regulation, and policy.

### 2.2.1 Alternative 1 – No Action

Alternative 1 is the no action alternative. NEPA regulations require the Forest Service to identify the no action alternative and use it as a baseline for comparing the environmental consequences of the other alternatives (40 CFR 1502.14(d), and Forest Service Handbook 1909.15, 14.1).

Current, ongoing management such as fire suppression, grazing administration for commercial livestock, road maintenance and closures, fisheries enhancements, dispersed recreation, and weed control would continue at present levels. This alternative would not address the purpose and need for vegetation diversity, forest condition, and forest products. No silvicultural treatments would occur and no wood products would be offered for sale. No mitigation measures are necessary. Existing roadless characteristics of the area would be maintained.

### 2.2.2 Alternative 2 – Proposed Action

Alternative 2 is the proposed action. The focus is on increasing vegetative diversity, improving forest condition, providing forest products, and protecting roadless characteristics from new road impacts. Treatment units are shown in *Figure 5*.

Project activities associated with this proposed action include:

- Seedcuts would be conducted on 95 acres of mixed conifer stands. The objectives are to encourage regeneration of Douglas fir, lodgepole pine, Engelmann spruce, and subalpine fir in mature stands (*Units A & C*).
- A salvage/sanitation/thin would be conducted on 202 acres of lodgepole stands (*Unit B*). The objectives are to reduce mistletoe and commandra rust infestations and reduce stand density to restrict continued mistletoe spread. *Salvage and sanitation treatments would be used on portions of the stand to control mistletoe and commandra rust. Commercial thinning treatments would be used on portions of the stand with low levels of mistletoe and commandra rust infection.* If necessary, prescribed fire would be used to encourage lodgepole regeneration.
- To encourage aspen regeneration, 120 acres of mixed conifer/aspen stands would be clearcut in patches one to 10 acres in size. Conifer would be removed on all 120 acres. Sixty of the 120 acres occur in the stands being treated commercially. On those sixty acres, all commercial conifer material would be removed during the commercial sale. The remaining non-commercial conifer and standing aspen would be cut after the sale. The remaining 60 acres of mixed aspen/conifer stands would have the conifer and aspen cut.
- Commercial treatments would yield 2.1 MMBF (4,157 ccf) of timber products.
- Activity fuel piles located at seven landings would be burned following sale activities.
- Road reconstruction would occur on 0.24 miles of FSR 202 and 0.12 miles of FSR 223.1. (*All reconstruction would occur outside of inventoried roadless.*)
- Road maintenance would occur on 17.2 miles of FSRs 223, 202, 203, 204, and 208.
- Snowplowing would occur to facilitate winter hauling.
- A gate would be placed where FSR 223.1 is currently physically blocked.

- Three temporary roads will be used on the sale. . Each temporary road would be less than 0.25 miles in length; all temporary roads occur outside inventoried roadless and would be obliterated after sale activities.

1. Temporary road will provide access to the center of Unit B, by leaving FSR 203 and proceeding south across the North Fork Dick Creek.
2. Temporary road will provide access to the east end of Unit B, by leaving FSR 203 and proceeding south across the North Fork Dick Creek.
3. Temporary road will provide access to the portion of Unit C east of South Fork Dick Creek, by leaving FSR 223 and proceeding east across South Fork Dick Creek and a tributary to the South Fork.

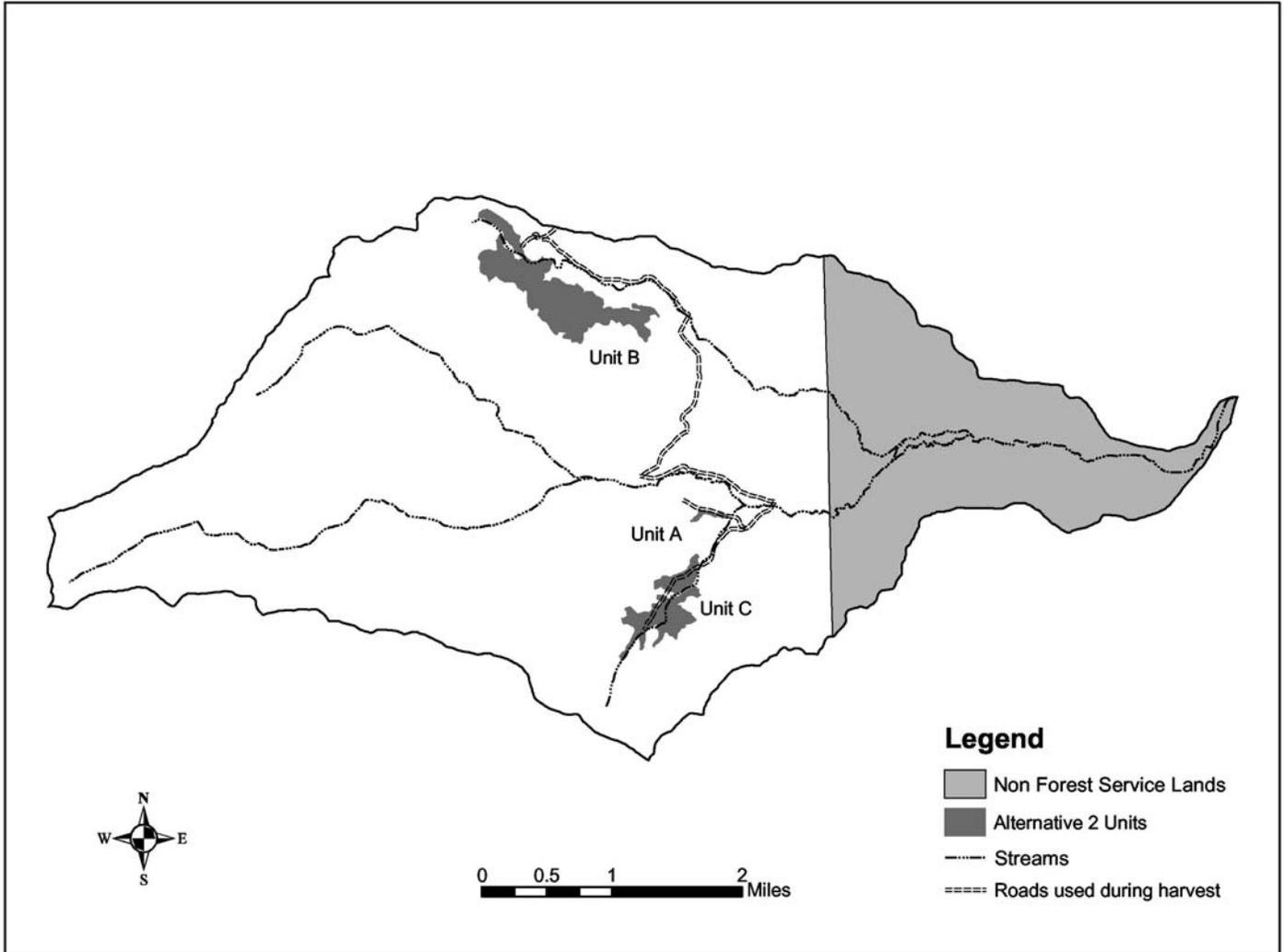
- Post treatment stand surveys would be conducted on all 357 acres of commercial harvest after treatment to assess stand conditions
- The operating season would allow logging and hauling on 12 inches of snow or frozen ground between December 1 and March 31.
- Harvest would occur in Unit B first, then in Units A and C.
- The timber sale contract would be for a period of three years.
- Road reconstruction would occur the summer before the first operating season and would take up to two months; this does not include temporary roads, which would be on snow or frozen ground.

### 2.2.3 Alternative 3

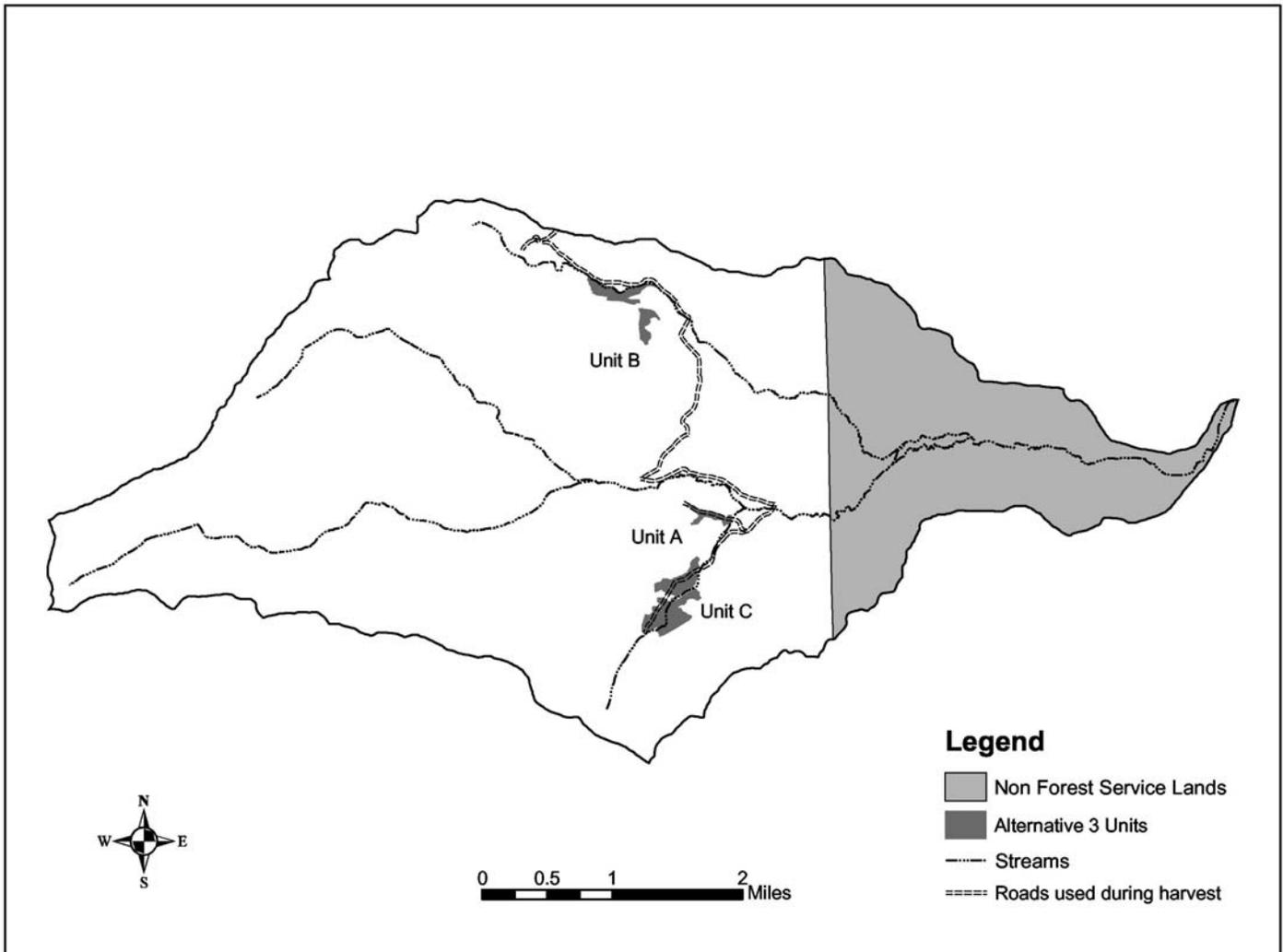
In response to the purpose and need and issues, Alternative 3 is based on an operation where all vegetation treatments would be conducted outside of inventoried roadless areas. Treatment units are shown in *Figure 6*

Project activities associated with this alternative are the same as Alternative 2 except for the following:

- Seedcuts would be conducted on 68 acres of mixed conifer stands (*Units A & C*). The objectives are to encourage regeneration of Douglas fir, lodgepole pine, Engelmann spruce, and subalpine fir in mature stands.
- A salvage/sanitation/thin would be conducted on 30 acres of lodgepole stands (*Unit B*). The objectives are to reduce mistletoe and commandra rust infestations and reduce stand density to restrict continued mistletoe spread. *Salvage and sanitation treatments would be used on portions of the to control mistletoe and commandra rust. Commercial thinning treatments would be used on portions of the stand with low levels of mistletoe and commandra rust infection.* If necessary, prescribed fire would be used to regenerate lodgepole regeneration.
- To encourage aspen regeneration, 67 acres of mixed conifer/aspen stands would be clearcut in patches ranging from one to 10 acres in size. Conifer would be removed on all 67 acres. Seventeen of the 67 acres occur in the stands being treated commercially. On those 17 acres, all commercial conifer material would be removed during the commercial sale. The remaining non-commercial conifer and standing aspen would be cut after the sale. The remaining 50 acres of mixed aspen conifer stands would have the conifer and aspen cut.
- Commercial treatments would yield 0.7 MMBF (1,339 ccf) of timber products.
- Regeneration surveys would be conducted on all 115 acres of commercial harvest after treatment to assess stand conditions.



**Figure 5 Map of Commercial Treatments for Alternative 2**



**Figure 6 Map of Commercial Treatments for Alternative 3.**

### 2.2.4 Mitigation Common to the Action Alternatives

The following mitigation measures are integral to the project. Unless otherwise specified, they would be included for both action alternatives.

#### **Vegetation**

##### **Diversity**

Manage grazing by commercial livestock in treated aspen stands until regeneration is six feet tall. Where there has been manipulation to induce aspen regeneration, do not allow aspen seedlings to be grazed by livestock more than one out of three years (Plan III-155). If overuse of aspen regeneration by livestock becomes a problem, treated areas would be fenced following sale closure. *Based upon past experiences in*

*the project area, it is unlikely that this mitigation would be needed. It is included here as a precaution only.*

Before skidding, lodgepole pine is lopped on site to ensure that serotinous cones remain available in the stand to provide seed for natural regeneration (timber sale contract clause WO-C6.44).

#### **Noxious Weeds**

Prior to initially moving equipment on to the timber sale and between cutting units on the timber sale, the purchaser must clean off-road equipment of all soil, seeds, vegetative matter, or other debris that could contain or hold seed (timber sale contract clause WO-C6.35).

Disturbed sites would be seeded, with native grass species, following timber harvest activities to reduce the chance of noxious weeds becoming established.

Monitoring post harvest would identify follow up actions needed.

#### **Wildlife**

The timber sale contract would include appropriate contract provisions to ensure protection of threatened, endangered, proposed, and Forest Service sensitive species.

Activity would be limited in time by contract (two years, with potential one year extension). Harvest activities would be concentrated in both time and space to the degree possible.

The timber sale contract would include a clause providing temporary cessation of activities, if needed, to resolve potential or existing grizzly/human conflict(s).

Food and garbage storage orders would be adhered to. No logging camps would be allowed within the treatment area. Crews would be required to have available bear proof containers for storage of attractants such as lunches, garbage, and beverages, and would be required to remove attractants from the work area each day.

All crews would be trained in measures to minimize grizzly/human conflicts as well as proper attractant storage, bear behavior, recommended human behavior in conflict situations, and the use of bear repellent spray.

Unless there are specific justified reasons to remove snags, such as safety considerations, all snags would be left because of the diversity they provide for cavity dependent wildlife. It is recognized firewood cutters could remove many snags near roads if roads are left open for a period following the sale.

Protect nesting raptors by disallowing management activities within 300 feet of any occupied raptor nest from May 1 to July 31 (*Plan III-53*).

If any raptor nests are discovered within 0.5 miles of the project activities, the district biologist will contact the USFW office to discuss how to protect the nest.

Public access would be restricted seasonally; the seasonal area/road closure (January 1 to April 30) would be maintained.

#### **Soil and Water**

Best Management Practices (BMPs) for soil and water conservation would be applied. 33 CFR 323.4 lists 15 mandatory BMPs *for forest roads* that must be met in order to claim 404 permit exemption.

Though any of the BMPS may be needed, three in particular apply to this proposed action.

- i) Roads will be held to the minimum needed.
- iii) Road fill will not restrict flood flows.
- vii) Stream crossings shall not restrict movement of aquatic life.

As appropriate, the State of Wyoming Best Management Practices for Silviculture would be implemented.

Though any of the BMPS may be needed, of the 42 practices, the following in particular apply to this proposed action.

- 6) Timber Sale Design
- 7) Skidding Design
- 10) Equipment Limitations in Wetlands, Bogs, and Wet Meadows
- 11) Log Landing Location and Design
- 12) Log Landing Erosion Protection and Control
- 13) Revegetation of Areas Disturbed by Harvest Activities
- 14) Erosion Control on Skid Trails
- 15) Stream Channel Protection
- 23) Permanent Road Drainage
- 27) Controlling In-Channel Excavation
- 29) Stream Crossing on Temporary Roads
- 33) Stream bank Protection
- 34) Treatment of Temporary Roads
- 40) Protection of Soil and Water from Prescribed Burning Effects

USDA Forest Service Timber Sale Contract Division B Standard Provisions and appropriate Division C Supplemental Provisions would be included in the sale contract.

In riparian or wetland areas, operations would be allowed only at locations designated in advance by the Forest Service. Designated riparian and wetlands would include:

- a) All perennial and intermittent waters of Dick Creek, including Dick Creek proper, South Fork Dick Creek, and North Fork Dick Creek
- b) The wetland complex between Gwinn Fork and South Fork Dick Creek and the riparian exclosures in the Dick Creek drainage
- c) The wet meadow in Unit C

Skidding and yarding operations within harvest units would be restricted to minimize the potential for soil compaction. Heavy equipment shall be operated only when the surface is protected by adequate snow depth or frozen soil.

Cross drains would be installed near stream crossings to disperse runoff into filter strips. A watershed specialist and an engineer shall locate specific locations for these cross drains.

The existing fords on Dick Creek and South Dick Creek would be hardened with large gravel to small cobble size material from the crossing to the first drainage structure in either direction.

Roadside disturbed sites would be rehabilitated as soon as possible after the sale closes.

Prescribed burning for lodgepole regeneration would be of light to moderate intensity. Adequate erosion control on fire lines would be provided.

Adequate levels of coarse woody debris would be left within harvest units to maintain soil productivity.

The following seed type and application rates would be used:

<b>Species</b>	<b>Pounds/acre</b>
Mountain brome ( <i>Bromus marginatus</i> )	3.0
Slender wheatgrass ( <i>agropyron trashycaulum</i> )	2.5
Bluebunch wheatgrass ( <i>Agropyron spicatum</i> )	2.5
Sheep fescue ( <i>Festuca ovina</i> )	1.5
Big bluegrass ( <i>Poa ampla</i> )	1.0
TOTAL	10.5

### **Transportation**

All temporary roads would be obliterated, recontoured, and if necessary, seeded following harvest operations (ASQ ROD Appendix A, page 5 and Plan III-88).

FSRs used for timber harvest and haul shall be maintained to current standard and condition by the purchaser.

Increase skid distances, if necessary, rather than constructing any temporary facilities or lengthening any specific roads wherever possible.

To protect the transportation system from excessive damage, use of FSRs 202, 203, and 223 would be allowed only during dry or frozen conditions.

Access to the sale area during the winter operation would be permitted only over the Timber Creek Road to FSR 203. FSR 203 would remain closed to the public by a locked gate and would be open only for the logging operations. Contractors would not be allowed to use FSR 202 for hauling or other access.

Logging traffic/safety signing would be used as appropriate: Signs would be placed on access roads to alert Forest users of harvest operations and logging truck traffic.

### **Roadless**

All activities with motorized equipment occurring in roadless areas would be conducted in the winter on frozen ground or snow.

In roadless areas, prescribed fire control lines would be constructed by hand and not with motorized equipment.

### **Visuals**

Treatment unit edges and boundaries would be kept irregular to maintain natural mosaic patterns. Locate, where possible, harvest boundaries at existing vegetative edges. Create the appearance of a textural edge by feathering and leaving strategic tree clumps (Plan III-27).

Use special foreground slash/stump treatment along the foreground seen area of sensitivity level 1 travel routes and use areas (this applies to FSR 202.1 and the portion of FSR 223.1 that is open to motorized public use). In seen areas, 75 percent of all material eight inches or larger would be disposed, stumps would be cut six inches above the ground, and native grasses would be revegetated within one year (Plan III-28).

Along foreground seen area of sensitivity level 1 travel routes and use areas, root wads and other large debris created by vegetative treatment shall be burned and/or buried or removed from the site (Plan III-28).

Brush piles created by treatment shall be chopped or crushed and randomly spaced in irregular shapes and sizes if they cannot be removed or buried and are not needed for wildlife (Plan III-28).

### **Heritage**

If any cultural materials are discovered during reconstruction, work in the areas would halt immediately and staffs from the Forest Service and the State Historical Preservation Office (SHPO) must be contacted. Work in the area may not resume until the materials have been evaluated and adequate measures for their protection have been implemented.

**Other**

Range improvements such as fences and water developments would be protected from harvest activities.

### **2.3 Monitoring**

During timber sale administration, one watershed management review would occur to monitor project implementation and effects.

Stand condition inventories would be conducted following harvesting.

In addition, the sale administrator would monitor logging activities during the sale for:

- Discovery of unknown cultural resources
- Discovery of previously undetected sensitive, threatened, or endangered plant or animal species
- To ensure that project design measures for visual resource protection are applied
- To ensure protection of water and soil resources
- Timber sale administration and compliance

Effects on compaction, displacement, and organic matter would be monitored during project implementation. If effects were occurring that are either unexpected or more severe than anticipated, the moisture criteria would be altered to limit effects to within soil quality standards (FSH 2509.18 and FSM 2554).

For up to five years after completion of the project, areas would be monitored for the presence of newly invading exotic species and to evaluate the effectiveness of any treatments or protection measures.

## 2.4 Summary Comparison of Alternatives

This section presents a comparative summary among the alternatives for resource elements and activities, environmental effects, and responses to objectives associated with the key issues. The effects are summarized from Chapter 3, which should be consulted for a full understanding of these and other environmental consequences.

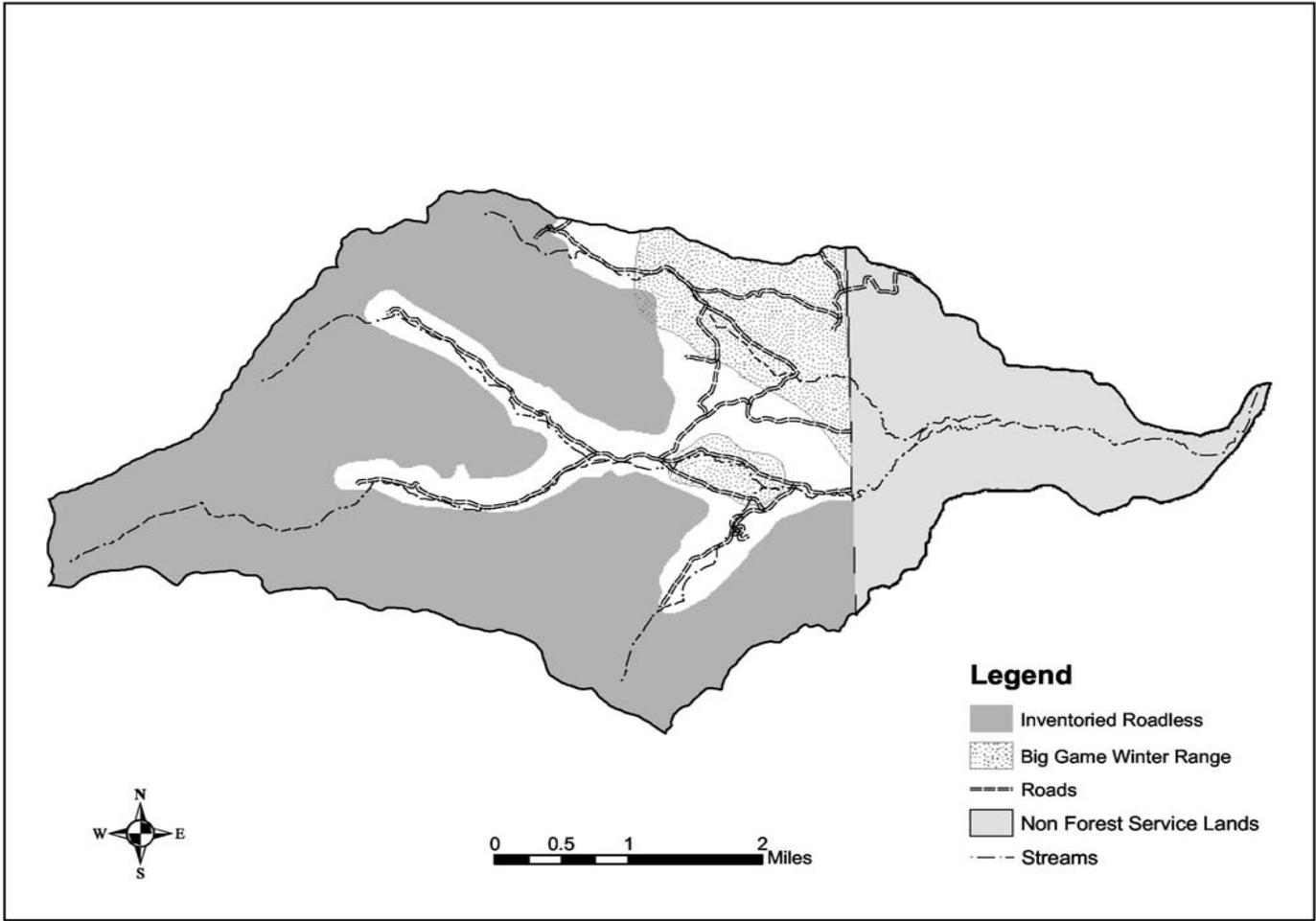
*Figure 7. Comparison of resource elements, activities, and environmental effects among alternatives.*

Comparison Element	Alternative 1 No Action	Alternative 2 Proposed Action	Alternative 3
<b>Roadless</b>			
Activities Within Inventoried Roadless	None	<p>Winter logging is proposed for roadless areas; it would eliminate the need to construct any roads to implement the decision. No new roads would be constructed as part of the proposed action. <i>No reconstruction would occur in inventoried roadless and temporary roads would not be used in inventoried roadless.</i></p> <p>Timber harvest within roadless areas would leave evidence of treatment similar to what is currently found in the same portions of the roadless area. Ground disturbance associated with skidding in roadless would be very limited, since the harvest would be conducted on snow or frozen ground.</p>	None

Comparison Element	Alternative 1 No Action	Alternative 2 Proposed Action	Alternative 3
<b>Wildlife</b>			
Wildlife Winter Range	Long-term loss of forage species	Disturbance would occur from hauling on Timber Creek Road through winter range north of the treated area. Disturbance is limited by avoiding the most heavily used portions of winter range that occur to the east of the treated area and by maintaining the seasonal area closure to the public. Increased forage would occur from opening up canopy and regenerating aspen.	Effects would be the same as in Alternative 2 except disturbance would not last as long since less timber volume would be removed. Forage would not increase as much since fewer acres are being treated.
Effects on Threatened and Endangered Species	None	<p>Alternative 2 is not likely to jeopardize the wolf, or adversely modify proposed critical habitat.</p> <p>Alternative 2 is not likely to adversely affect the grizzly bear or its habitat. The rationale for this determination is that the project design incorporates elements contained in the Grizzly Guidelines and Grizzly Bear Recovery Plan, which were incorporated into the Forest Plan; there would be no new roads, and the winter logging means minimal if any direct effects to the bears.</p> <p>Alternative 2 is not likely to adversely affect the lynx based on the rationale that the project meets the criteria recommended in the Lynx Conservation Assessment and Strategy (LCAS).</p>	<p>Alternative 3 is not likely to jeopardize the wolf, or adversely modify proposed critical habitat.</p> <p>Alternative 3 is not likely to adversely affect the grizzly bear or its habitat. The reasoning for this determination is the same rationale as listed for Alternative 2.</p> <p>Alternative 3 is not likely to adversely affect the lynx based on the rationale that the project meets the criteria recommended in the LCAS.</p>
Aspen Regenerated	None	120 acres	67 acres

Comparison Element	Alternative 1 No Action	Alternative 2 Proposed Action	Alternative 3
<b>Water</b>			
Stream Sedimentation	Existing road system still connected to stream at stream crossings, contributing to fine sedimentation.	Stream crossings would be hardened with rock, and drainage structures near crossings would be placed to reduce runoff from the road into the stream, resulting in a reduction in sedimentation.	Stream crossings would be hardened with rock, and drainage structures near crossings would be placed to reduce runoff from the road into the stream, resulting in a reduction in sedimentation.
<b>Socioeconomic</b>			
Volume of Timber Sold	0	2.1 MMBF	0.7 MMBF
<b>Fuels</b>			
Reduced Fuel Loading	0	417 acres	165 acres
Prescribed Fire <sup>5</sup>	0	100 acres	47 acres
<b>Insects and Disease</b>			
Stand Susceptibility	Under the no action alternative current trends and processes would continue. Dwarf mistletoe and commandra blister rust within lodgepole stands would cause the infected trees to lose vigor and die. Both mistletoe and blister rust would eventually spread to healthy regeneration in the understory. Spruce/fir stands would become more susceptible to insect infestation as they continue to age.	Treatments in lodgepole stands would improve stand conditions by removing overstory dwarf mistletoe infested trees and trees infested with commandra blister rust. This would control the spread of mistletoe and commandra rust in the stand and reduce tree mortality <i>by establishing an understory with less mistletoe infection</i> . Treatments in spruce/fir stands would reduce stocking levels and remove conifers that are the most susceptible to <i>spruce beetles</i> . The potential for epidemic <i>spruce beetle</i> infestations would decrease in these stands.	Effects would be similar to Alternative 2, though reduced to the extent that fewer acres would be treated.

<sup>5</sup> Within the Dick Creek watershed 1,368 acres of prescribed burning is planned. That project was analyzed in a separate NEPA document in October 1998.



*Figure 8. The Dick Creek watershed.*

## Chapter 3 Affected Environment and Environmental Consequences

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Both the affected environment and environmental consequences (effects analysis) are included in this chapter. Only resources determined to be affected are identified and analyzed. The level of detail is commensurate with the amount of information necessary to understand the effects of the actions. The effects discussions presented in this chapter are summaries of information from the IDT resource specialists and their meeting participation and input into the document. The summaries focus on the resource issue and project goals disclosed in Chapter 1.

The effects analysis area for the majority of the resource analysis is the Forest Service land within the 6<sup>th</sup> level Dick Creek HUC (*Hydrologic Unit Code*) (see Figure 8). The Dick Creek Watershed is 12,543 acres in size; 10,218 acres are Forest Service. The remaining acreage, which is located entirely east of the Forest boundary, is private, BLM, and State of Wyoming land. Proposed treatment would occur on 417 acres of National Forest System lands; the entire analysis area is on the Shoshone National Forest.

The period over which effects are projected for the analysis is 10 to 20 years.

### 3.1 Vegetation

#### 3.1.1 Diversity

Past activities helped to shape the existing vegetation composition and structure. Fire and insects/disease are the principal natural sources of disturbance. Vegetation succession, commodity uses (especially timber harvest and commercial grazing), insects and disease, and wildlife use (such as beaver and big game browsing) are processes that have shaped the existing condition. Ecological succession is the dominant process on this landscape, moving vegetation communities toward late seral stages and increased stand density and fuel loading.

National forest lands in the area are composed of stands of non-forested or sparsely forested areas, and forested lands. Figure 9 displays the acres by cover type and structural stage for the Forest Service land in the analysis area.

Figure 9. Acres of existing vegetation conditions within the analysis area. Acres are for Forest Service land only.

Cover Type	Structural Stage <sup>6</sup>									Total Acres
	NA	1	2	3A	3B	3C	4A	4B	4C	
barren	5									5
rock	86									86
grass		1,176								1,176
mountain big sagebrush			752							752
willow			46							46
spruce/fir				33		35	60	522	3,382	4,032
Douglas-fir							8	306	156	470
aspen				12	159	43			32	246
lodgepole pine					282	466	33	131	662	1,575
limber pine				366	706		254	509		1,835
<b>Total Acres</b>	91	1,176	797	410	1,147	544	355	1,468	4,232	10,221 <sup>7</sup>

Twenty percent of the analysis area is comprised of sagebrush, grass, barren ground, and rock. Fifty-eight percent of the analysis area is mature forest, the majority of which is spruce/fir, with some mixed conifer regeneration in the understory. Twenty percent of the analysis area is pole-sized timber, the majority of which is lodgepole and limber pine. Due to past fire activity, the area is characterized by forested communities midway in the successional process.

Since the 1940s, many areas within the Dick Creek drainage were logged. This is evident by the old stumps still left within many stands within the drainage

Over the last 90+ years, fire suppression changed the landscape from one dominated by mature, open park-like stands to one dominated by over mature, overstocked, multi-layered spruce/fir stands in much of the area. Spruce/fir stands occur on half the forested acres within the analysis area. Because of continuous fuels and ladder fuels, these stands have the potential to burn as crown fires if ignited during a dry season with windy conditions. In addition, fire suppression has increased stand density and physiological stress for the conifer stands in this area and reduced stand and landscape diversity.

Aspen (*Populus tremuloides*) is a short-lived, pioneer species commonly replaced by conifers after a period as part of the successional process. It is a minor or sparse cover type in the Absaroka Mountain Range portion of the Shoshone National Forest, generally comprising less than 4 to 5% of the forested vegetation. Within the analysis area, aspen is the principal riparian/deciduous tree component with some mixture of willow. About 246 acres of aspen stands exist in the analysis area. Another 88 acres of stands exist that have conifer as the dominant component, but have aspen as a subcomponent. Numerous remnant aspen stands are scattered through areas dominated by conifer. These aspen stands provide important winter habitat for moose and to a lesser extent for elk. Moose, elk, and domestic livestock graze most of the aspen stands; many of these aspen stands are in a decadent condition due to conifer invasion/encroachment and are in danger of dying out in some areas. Being shade-intolerant, aspen would

<sup>6</sup> Structural stage 1 = grass/forb; structural stage 2 = shrub/seedling; structural stage 3A = small to medium diameter (1 to 9 inches), less than 40% crown closure; structural stage 3B = small to medium diameter, 40 to 70% crown closure; structural stage 3C = small to medium diameter, greater than 70% crown closure; structural stage 4A = large diameter (greater than 9 inches), 40 to 70% crown closure; structural stage 4B = large diameter, 40 to 70% crown closure; structural stage 4C = large diameter, greater than 70% crown closure.

<sup>7</sup> This acreage amount is rounded. The amount does not match the watershed total acreage noted on the previous page due to rounding errors.

not be able to remain on sites dominated by conifers for many more years. Aspen grows best in full sunlight. The easiest way to regenerate an existing aspen stand naturally is to rely on root suckering stimulated by removing the existing overstory in a way that will successfully restock the stand and release the existing regeneration. Aspen stands are best regenerated and released by clearcutting rather than partial cutting (Shepperd 2001). Some aspen regeneration can be expected from removal of conifers within aspen stands. In 1982, 55 acres of aspen in the analysis area were clearcut to remove the conifer and stimulate aspen regeneration. Those acres are now fully regenerated and contain a young, vigorous stand of aspen.

The Forest Plan stresses aspen management for diversity and wildlife (III-153-154). Aspen is extremely important to many wildlife species, including the Forest Management Indicator Species ruffed grouse, woodpeckers and other cavity nesters, and other bird species that are dependent on multi-storied aspen, shrub types, and riparian habitat. In addition to diversity and wildlife, aspen is important for aesthetics and watershed protection.

Conifer trees are encroaching upon some open meadows in the area.

Potential vegetation types (habitat types) are used to designate sites with similar environmental and biotic conditions. They are an expression of the biotic potential of a site, regardless of the current successional vegetation that might be occupying the site. The interactions of the site with the local climate influence the potential vegetation the site can support. The potential climax vegetation for most of the forested portion of the analysis area is Engelmann spruce or subalpine fir.

Four Forest Plan objectives (III-19) that relate directly to vegetative diversity are pertinent to this area and are being addressed in this analysis.

- Maintain or establish a minimum of 20 percent of the forested area within a unit to provide vertical diversity
- Maintain or establish a minimum of 30 percent of the forested area within a unit to provide horizontal diversity
- In forested areas of a unit, maintain at least 5 percent in grass/forb stages
- In forested areas of a unit, maintain at least 10 percent of the conifer potential natural vegetation type in old growth of 30-acre or larger patches

Vertical diversity is the diversity in an area that results from the complexity of the above ground structure of the vegetation; the more tiers of vegetation or the more diverse the species makeup or both, the higher the degree of vertical diversity (Thomas 1979). Many stands in the analysis area provide vertical diversity. Though the total acres of stands that qualify as vertically diverse are not classified here, we do know that almost all the mature spruce/fir stands are vertically diverse. Mature spruce/fir occurs on 50% of the forested acres on Forest Service lands in the analysis area. This is substantially more than the 20% minimum called for in the Forest Plan.

Horizontal diversity is the diversity in an area that results from the number of plant communities or successional stages or both. The greater the number, the greater the horizontal diversity. Additionally, the greater the amount of edge, the higher the degree of horizontal diversity (Thomas 1979). This is true only up to some point, where increasing diversity tends toward homogeneity and tends to become decreasing diversity. Horizontal diversity can be visualized by looking at Figure 11 and Figure 12. Both cover type differences and structural stage differences create horizontal diversity in the analysis area. Figure 10 lists the patch characteristics for cover type and stand structure for the analysis area. Horizontal diversity is higher for structural stage than cover type (structural stage has a smaller patch size). One other aspect of horizontal diversity that can be seen on the maps is that patch size increases as one goes from east to west. This is the result of a number of factors. The two major ones are: 1) There is less access toward the western end of the analysis area and there has been less management activity as a result and 2) cover types move from more of an interspersed tree/grass/shrub cover in the eastern end to tree cover in the western end. The horizontal diversity in the analysis area is greater than 30%.

**Figure 10. Cover type and structural stage patch characteristics for the Dick Creek analysis area (see Figure 11 and Figure 12 for a display of this information).**

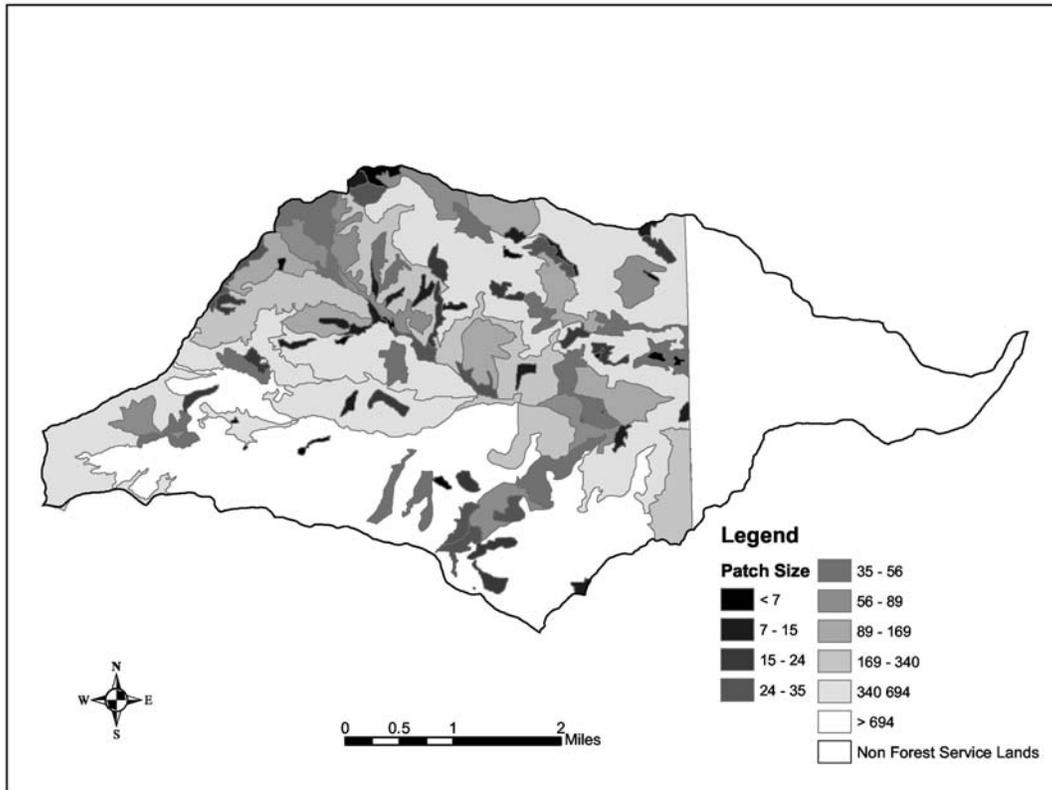
Vegetation Characteristic	Patch Statistics <sup>8</sup>			
	Average (ac.)	Minimum (ac.)	Maximum (ac.)	Number
Cover Type	136	10	2,968	74
Structural Stage	104	10	2,628	96

Grass/forb is an early forest successional stage during which grasses and forbs are the dominant vegetation. The Forest Plan objective for grass/forb is 5% of the forested area. There are no stands within the analysis area that are currently in a grass/forb condition. Such stand conditions would normally result from a clearcut or fire. However, there are numerous smaller inclusions for grass/forb conditions within stands dominated by tree species. The acres of these within stand inclusions amount to 648 acres, which amounts to 7.9 percent of the forested acres.

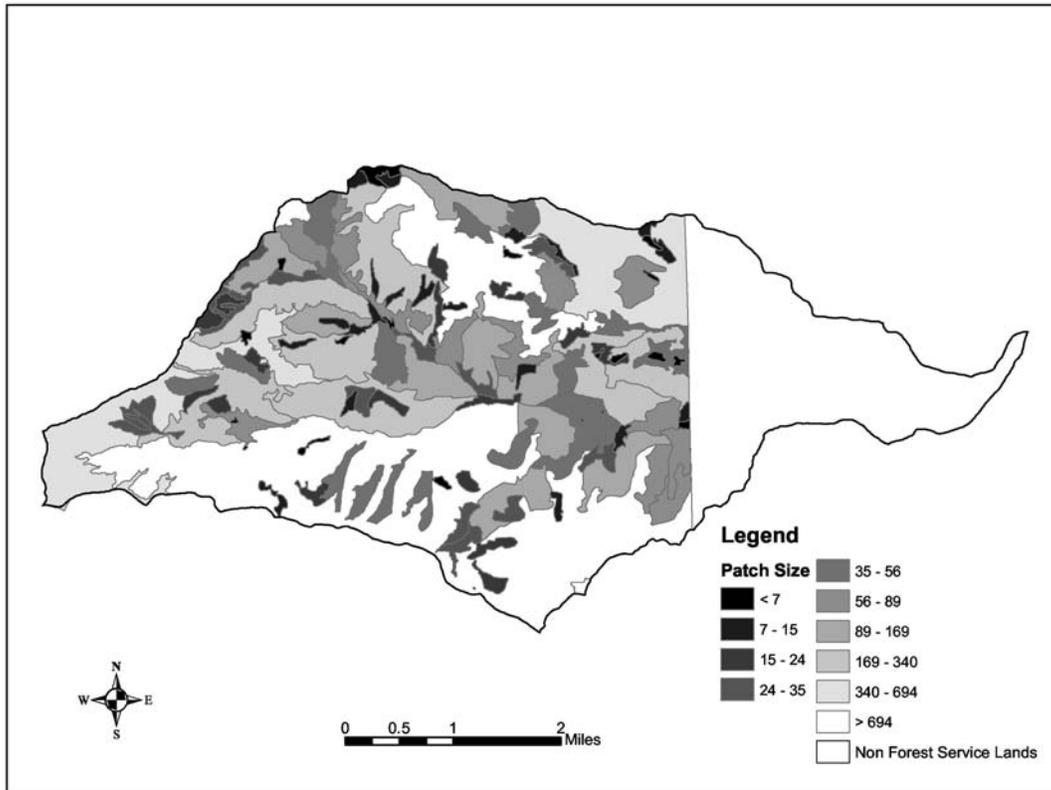
The Forest Plan objective for old growth is 10% of a forested area. For purposes of this analysis, old growth stands were identified based upon the age of trees within stands (200+ years old). The age information was gathered as part of a stand inventory. This information is not available for all forested stands in the analysis area, so it is likely that there is even more old growth than is presented in this discussion. Information was gathered for all proposed harvest areas. All the old growth is located south of Gwinn Fork (see Figure 13). Old growth is well distributed in the southwest half of the analysis area. Total acreage identified is 2,619; with 2,549 acres occurring in stands larger than 30 acres. The 2,549 acres represent 31% of the forested acres. All the stands are classified as a spruce/fir cover type. Ages of trees exceed 400 years in places, while diameters range up to 25 inches.

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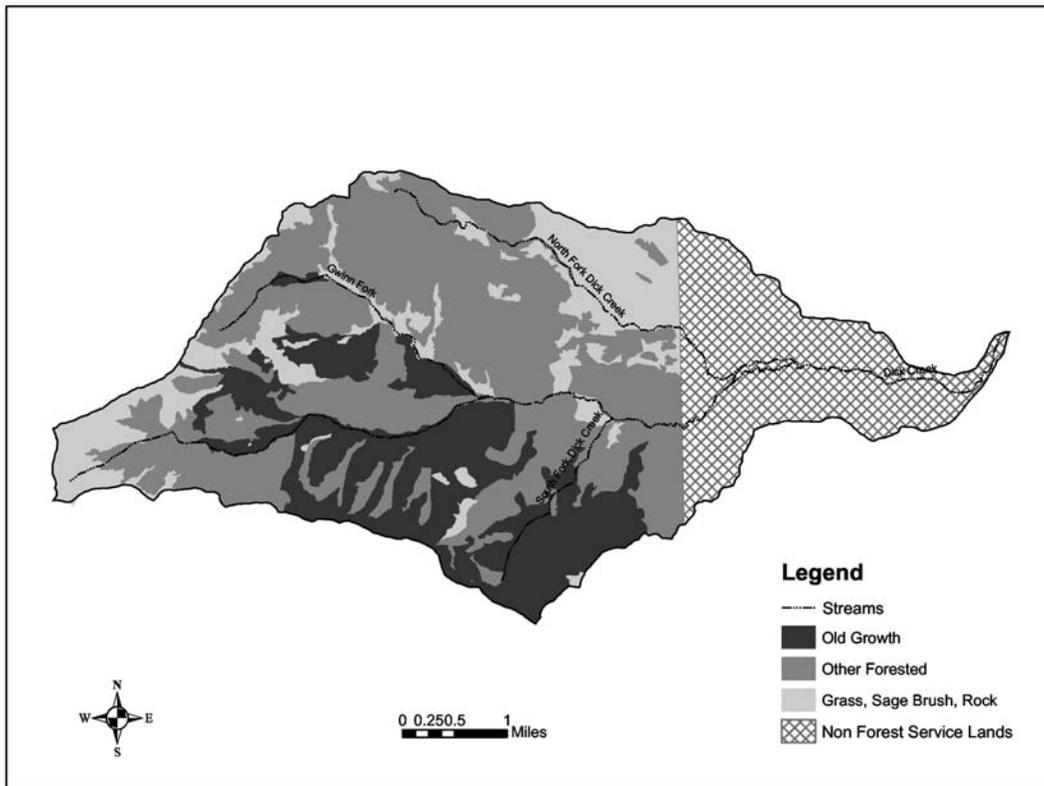
<sup>8</sup> Statistics include only patches greater than 10 acres in size. Patches smaller than that do not provide distinct differences from adjacent units because of their small size. Patches less than 10 acres represent less than 2% of the area for both cover type and structural stage.



*Figure 11. Cover type patches within the Dick Creek watershed.*



*Figure 12. Structural stage patches within the Dick Creek watershed.*



**Figure 13. Stands classified as old growth in the Dick Creek watershed.**

Under Alternative 1, natural successional processes would continue to occur slowly, including changes to age class, structure, aspen, and other diversity components such as meadows and riparian areas.

Aspen would continue to decline as conifers increase. The majority of aspen in the area would be in a mature/old growth form with very little suckering occurring. Stands would continue to deteriorate.

Conifer communities would continue to increase at the expense of rangelands, aspen/shrub habitats, and wildlife forage. Composition of mixed conifer stands would continue to be dominated by spruce/fir. The potential for insect and disease disturbances would continue to increase steadily, as would the potential for more intense wildfire. As insects and disease kill trees, small pockets of regeneration would develop. Most of this within-stand regeneration would be dominated by shade tolerant spruce/fir. These natural processes would increase within stand vertical diversity. Available forage for livestock and other large ungulates would decrease as succession increases conifer cover and forest density. Under the no action alternative horizontal diversity would remain relatively constant. Grass/forb habitat would continue to decline as stands become denser, but would remain above 5% of the forested area for the next 20 years. Old growth would stay relatively constant with a small increase as stands continue to age. Stand replacement disturbance such as wildfire would be the only factor that would cause significant changes in diversity within the next 20 years.

In the action alternatives, treatment would change stand dynamics. Growth rates of existing understory trees should increase with removal of competing overstory trees. Over mature spruce stands would begin to regenerate with removal of competing overstory trees and additional light into these stands. This should also reduce susceptibility to outbreaks of insect and disease agents, thereby acting to create a healthier

stand and increasing vegetative diversity. By creating younger, healthier timber stands; fire risk would be reduced in those stands receiving treatment. Silvicultural treatments would increase the conditions of stand diversity that are currently less abundant in the area.

Shelterwood treatment would provide natural regeneration of spruce, fir, and lodgepole pine. Species diversity within these areas would be maintained by leaving seed trees of several species. Within salvage/sanitation treated areas, early successional structural stages would increase in small openings.

Aspen populations and suckering would increase in some areas being treated due to the removal of conifer vegetation currently competing for moisture, light, and nutrients. There would be an increase in edge in aspen harvest areas and an increase in early successional grass/forb habitat. Foraging for big game would increase in aspen clearcut areas.

In general, vegetation changes would improve habitat for wildlife species preferring more open, less dense stands.

**Figure 14. Changes in cover type and structural type to commercial harvest units for Alternatives 2 and 3.**

Unit	Alternative 2						Alternative 3					
	Before Treatment			After Treatment			Before Treatment			After Treatment		
	Acres	Cover Type	Struct. Stage	Acres	Cover Type	Struct. Stage	Acres	Cover Type	Struct. Stage	Acres	Cover Type	Struct. Stage
A	7	Spruce/fir	4C	7	Spruce/Fir	4B	12	Spruce/fir	4C	12	Spruce/fir	4B
B	255	Lodgepole	4C	202	Lodgepole	4B	40	Lodgepole	4C	30	Lodgepole	4B
				53	Aspen	1				10	Aspen	1
C	95	Spruce/fir	4C	88	Spruce/fir	4A	63	Spruce/fir	4C	56	Spruce/fir	4A
				7	Aspen	1				7	Aspen	1

Alternative 2 would have a greater effect than Alternative 3, because it treats more acres.

Vertical diversity would be decreased by the harvests to Unit C. The proposed harvest would simplify the structure of the stands. As regeneration occurs in the next 20 years, the stands would again become more vertically diverse. The affected acres are 88 in Alternative 2 and 63 acres in Alternative 3. In addition, the proposed aspen clearcuts would reduce vertical diversity in stands where they occur. Aspen harvest occurs on 120 acres in Alternative 2 and 67 acres in Alternative 3. These small acres are insignificant at the analysis area scale and the area would still be well above the minimum Forest Plan requirement for vertical diversity.

Horizontal diversity would remain relatively constant in the action alternatives. Treatments would tend to reinforce differences between stands. This is particularly true for the aspen treatments that would result in small clearcuts. The area would still be above Forest Plan minimums.

Grass/forb habitat would increase under the action alternatives. Most of the aspen treatments would result in grass/forb conditions. Some aspen treated units may go back to a shrub/sapling stage (structural stage 2) due to existing advanced regeneration of aspen. In Alternative 2, grass/forb would increase from 100 to 120 acres. In Alternative 3, increases would range from 47 to 67 acres. Further, small pockets of grass/forb would be created in Unit B, because of sanitation/salvage cuts removing small pockets of disease-infected trees. Combined, these various increases would result in an increase in grass/forb of less than 1% for Alternative 3 and slightly over 1% for Alternative 2.

Some acres of old growth would be treated in the action alternatives. Unit C is classified as old growth. In Alternative 2, 88 acres would be treated and in Alternative 3, 63 acres would be treated. Tree ages in Unit C range up to 290 years; some of these trees would be harvested. This stand has been harvested previously. After harvest, the stand would still provide some old growth characteristics, in that it will still contain trees over 200 years old. These acreages represent less than 1% of the analysis area and represent

3.4% and 2.4% of the identified old growth in Alternatives 2 and 3 respectively. The area would still be above the Forest Plan minimums for old growth.

### 3.1.2 Forest Health

The Forest Plan stresses utilizing principles of integrated pest and vegetation management to prevent or reduce serious, long lasting hazards and damage from pest organisms (III-6, 8, 10, 97). Insects and disease of concern are mountain pine beetle, spruce beetle, Douglas-fir beetle, pine engraver beetle, commandra rust, and dwarf mistletoe.

There is evidence of dwarf mistletoe and commandra blister rust within the *overstory of lodgepole stands in the Dick Creek area. Eventually, the infected trees will lose vigor and some may die.* Both mistletoe and blister rust will eventually spread to healthy regeneration in the understory (*Hawksworth et al. 1989, Geils et al. 1983*). Unit B falls within this stand condition.

Several forested stands within the Dick Creek drainage are at the end of the successional process and consist of mainly mature/over mature Engelmann spruce with an Engelmann spruce and subalpine fir understory. As these stands continue to age, they will become more susceptible to *spruce beetle* infestation (*Lister et al. 2002*). Units A and C fall within this stand condition.

In summary, the analysis area is susceptible to insect and disease infestations, based on the insect infestations at epidemic levels in other parts of the Forest.

Under the no action alternative current trends and processes would continue, most noticeably a continued increase in insect and disease infestation.

For the action alternatives, scheduled silviculture treatments in Unit B should improve stand conditions by removing overstory dwarf mistletoe infested trees and trees infested with commandra blister rust. This would control the spread of mistletoe and commandra rust *to the regeneration* in the stands and reduce tree mortality. The treatments in Units A and C would reduce stocking levels and remove conifers that are the most susceptible to insects. The potential for epidemic insect infestations would decrease in these stands. Management actions would help maintain insect and disease infestations at an endemic level. These effects generally apply only to the treated stands. Some benefit is gained for the analysis area as a whole in that increased stands' vigor and diversity lower the chances of an epidemic occurring within the watershed. This benefit *to the analysis area* is somewhat offset by the large expanses of unmanaged stands that occur to the west of the analysis area.

### 3.1.3 Forest Products

Numerous stands in the analysis area could provide commercial timber products in the form of sawlogs and post and pole material. In addition, there are many opportunities for firewood cutters to gather dead and down material. Some of the standing dead material that could be salvaged for commercial products is slowly losing its value as insects and disease attack it.

The Forest Plan identifies the cutting cycle (length of time between harvest entries) for silvicultural practices. The time between shelterwood seedcut and shelterwood removal cut is determined primarily when minimum stocking is reached. Generally, this time period for stands containing spruce trees is 20 years. Any stands managed under the shelterwood or selection systems may be harvested on a 20-year reentry schedule. Lodgepole pine stands supporting an active dwarf mistletoe infection may be harvested within 10 years after the shelterwood seedcut, to reduce dwarf mistletoe infection in the regeneration.

Alternative 1 does not allow the capture of any commercial products. Current levels of firewood gathering would continue.

Under Alternatives 2 and 3 commercial harvest would occur on 357 and 115 acres respectively. These harvests would include green material and would salvage currently dead and dying material. The harvests would yield 2.1 MMBF and 0.7 MMBF respectively. In addition, slash and cull material left after the harvest would be available to firewood cutters.

### **Suitability for Timber Production**

Stands proposed for harvest treatment in the analysis area were examined for suitability in accordance with 36 CFR 219.13, Timber Resource Land Suitability. They were found to be suitable for timber management based upon the following:

- Meet the definition of forestland as described in 36 CFR 219.3.
- Technological feasibility exists to ensure soil productivity and watershed protection. All sites considered for treatment use established harvesting and site preparation methods. In combination with resource protection standards in the Forest Plan and applicable Best Management Practices, these methods would be sufficient to protect soil and water resource values.
- There is reasonable assurance that lands can be restocked within five years of final harvest.
- None of the stands considered for harvest have been withdrawn from timber production as specified in 36 CFR 219.14(a)(4).

The Shoshone Forest Plan designated some areas unsuitable for timber production for multiple use purposes. Management Areas 4D and 9A fall within that category for this analysis area.

NFMA implementing regulations at 36 CFR 219.27 (C)(1) establish exceptions for harvest of timber from unsuitable lands. All recovery of forest products proposed in this analysis (from unsuitable lands) is designed to meet resource objectives (wildlife habitat, diversity, forage) other than timber production, and is therefore consistent with NFMA established exceptions.

### **Regeneration Within Five Years**

Past timber harvest activity of stands in the Dick Creek area has resulted in acceptable natural regeneration. Engelmann spruce and subalpine fir can regenerate well following shelterwood or selection cutting practices. Douglas fir can also be expected to regenerate naturally following partial cutting. Lodgepole pine is one of the most shade intolerant coniferous species found in the area and it usually regenerates naturally after a disturbance such as fire or clearcutting.

Wind is the primary seed dispersal agent for coniferous tree species present in the area, and the optimum distance for seed dispersal is approximately 500 feet or less. Shelterwood or small clearcuts should provide adequate seed sources for natural regeneration. Lodgepole serotinous cones will remain closed and retain their seeds until the area is opened up enough by harvest or fire to allow heat to build on the forest floor and open the cones.

Adequate stocking of the units after harvesting would be provided through natural regeneration. If needed, prescribed fire would be used to encourage regeneration in lodgepole stands.

### **Optimality of Clearcutting**

NFMA requires that “for clearcutting, it is determined to be the optimum method . . . .to meet the objectives and requirements of the relevant land management plan.” Clearcutting is generally considered the primary option for harvest and regenerating aspen in the Rocky Mountain Region and is consistent with the direction in the Shoshone Forest Plan, which specifies clearcutting for aspen in management areas 3A, 4D, and 9A.

Clearcutting aspen would effectively address a number of concerns, while meeting project goals and Forest Plan direction. It is anticipated to yield the greatest number of seedlings per acre following harvest, maximize growth and vigor of aspen in the new stand, and set back conifer succession processes that could eventually lead to a loss of aspen in this area. This is based on experience with other aspen stands in similar areas treated in this manner in the watershed. In addition, by removing diseased aspen trees, the potential for diseased aspen or defective growing stock to develop in the new area would be minimized.

### **3.1.4 Rangeland**

The Dick Creek Cattle and Horse Allotment encompasses the entire Dick Creek drainage on national forest. Of the drainage’s 10,221 acres, 2,472 acres have been identified as suitable for livestock grazing. The most recent range analysis (Range EA 1996 and Decision Notice 1997) shows that 75% of the

suitable range is meeting desired condition and the remaining 25% is moving toward desired condition. Currently, there is one term permit authorizing the grazing of 286 cow/calf pairs from July 1 to October 15 annually, for 1,346 AUMs (Animal Unit per Month), down from the approximately 2,200 AUMs of livestock use in 1975. The allotment is managed in a six-pasture modified deferred-rotation grazing system that includes two units managed as riparian pastures. Seven water developments are in place to facilitate the management of the allotment.

There would be little or no direct effect to livestock grazing because of timber harvest activities. The amount of transitory range created through the proposed and possible future timber harvests would be so small as to have no effect on stocking capacity or impacts to adjacent forage.

### 3.1.5 Sensitive Plants

Seventeen plant species on the Region 2 sensitive species list are known or suspected to occur on the Forest. A review of the habitat requirements of those species in relation to the habitats in the analysis area is displayed in Figure 15. No impacts would occur because of project activities on these species because they are not found in the areas that the activities would occur<sup>9</sup>.

**Figure 15. Sensitive plants on the Shoshone National Forest.**

Scientific Name	Common Name	Is Habitat Present in the Analysis Area? (Habitat type)
<i>Agoseris lackschewitzii</i>	Pink agoseris	No (wet montane/subalpine meadows)
<i>Amerorchis rotundifolia</i>	Round-leaved orchid	No (known only from the Swamp Lake area in Park County)
<i>Arctostaphylos rubra</i>	Red manzanita	No (known only from the Swamp Lake area in Park County)
<i>Botrychium ascendens</i>	Upward-lobe moonwort	Possible (wet meadows/willow)
<i>Carex livida</i>	Livid sedge	No (floating mats, bogs, and fens)
<i>Descurainia torulosa</i>	Wyoming tansymustard	No (Endemic to Absaroka Mountain Range)
<i>Ipomopsis spicata</i> spp. <i>Robruthii</i>	Kirkpatrick ipomopsis	No (Alpine scree)
<i>Lesquerella fremontii</i>	Fremont bladderpod	No (barren slopes and ridges)
<i>Festuca hallii</i>	Hall's fescue	No (montane grassland)
<i>Muhlenbergia glomerata</i>	Marsh muhly	No (known only from Swamp Lake area in Park County)
<i>Parrya nudicaulis</i>	Naked-stemmed parrya	No (alpine)
<i>Primula equaliksensis</i>	Greenland primrose	No (known only from the Swamp Lake area in Park County)
<i>Pyrrocoma carthamoides</i> var. <i>subsquarrous</i>	Absaroka goldenweed	No (montane meadows, grasslands)
<i>Salix myrtilifolia</i> var. <i>myrtilifolia</i>	Myrtleleaf willow	No (known only from the Swamp Lake area in Park County)
<i>Scirpus rollandii</i>	Rolland bulrush	No (known only from the Swamp Lake area in Park County)
<i>Shoshonea pulvinata</i>	Shoshonea	No (calcareous soils, rock outcrops)
<i>Townsendia condensata</i> var. <i>anomala</i>	North Fork Easter daisy	No (Endemic to Absaroka Mountain Range)

<sup>9</sup> Since it has been over five years since the determination was made on effects to sensitive species, the Forest's sensitive plant specialist reviewed the habitats within the project area and verified that the initial determination is still accurate.

### **3.1.6 Noxious Weeds**

There are existing areas of Canada thistle, hoary cress, and houndstongue. Other threats include scotch thistle, musk thistle, and spotted knapweed on adjacent road rights-of-way. The overall risk of weed spreading is low to moderate.

For Alternative 1, only the current levels of treatments would occur, as funds are available.

For the Alternatives 2 and 3, a slight increase in weeds would occur due to ground disturbance and vehicles. Monitoring of the project would occur with follow-up weed treatment as needed. Treatments would be in accordance with the existing noxious weed EA for the Shoshone. Mitigation measures would be used to reduce the spread of noxious weeds.

## **3.2 Wildlife**

The wildlife resource is addressed in several different categories: threatened and endangered species, regionally designated sensitive species, Forest Management Indicator Species, and Wyoming Priority Bird Species. Habitat conditions described below apply to these categories. The Biological Evaluation for determination of effects to threatened, endangered, proposed, and sensitive species has been completed and is incorporated into this EA.

### **3.2.1 General Habitat Discussion**

#### ***Existing Habitat Conditions***

The vegetation in the Dick Creek area has been described in the vegetation section of this EA (section 3.1). Aquatic and riparian habitats are described in the watershed and aquatics section (section 3.3)

The existing roading situation in this watershed is one of low standard and relatively low (1.1 mi/sq. mile) density. Road density for roads open to the public is 0.8 mi/sq. miles for the national forest portion of the watershed. The road density on the adjacent private land is approximately 2.25 miles per square mile. All Forest roads within the Dick Creek drainage, as well as in the upper Sheep, Pappapau, and Sunshine Creeks are closed to motorized vehicles during the winter period (January 1 to April 30).

#### ***Thermal and Hiding Cover***

Thermal cover is an important habitat condition for big game species. Thermal cover provides habitat that allows game to maintain adequate body temperature, and is identified as forested areas 40 feet in height and with at least 70% canopy cover. For the purposes of this analysis, thermal cover is classified as forested stands that are 4C structural stage. This habitat provides cover for big game species and the Forest Plan states that 20% of the forested stands of an area should provide thermal cover. A total of 52% of the forested portion of the analysis area exists as thermal cover; however, the majority of this is in the southern portion of the area.

Hiding cover is necessary for game to avoid disturbance. It is classified as vegetation capable of hiding 90% of a standing elk from the view of a person 200 feet away. The Forest Plan states that 40% of an analysis area should be in hiding cover. For the purposes of this analysis, hiding cover is classified as spruce/fir in structural stage 4B or 4C, as well as all stages of aspen. This area has 51% of the forested portion classified as hiding cover. Again, this is not as well distributed in the analysis area as is desirable, with most occurring south of Gwinn Creek.

Alternative 1 would have no change in the short term to thermal or hiding cover. In the long term, thermal cover would increase as stands age, but hiding cover would decrease as mid-stories die back in some stands and no early successional stands are created, unless by wildfire.

Alternative 2 would reduce thermal cover by 5%. The remaining thermal cover would be over the minimum required by the Forest Plan. The distribution of thermal cover would still be mostly in the south. Hiding cover would be initially reduced by 2% but, with the regeneration of stands, in the long term, hiding cover would increase, especially in the northern end where it is lacking.

Alternative 3 would reduce thermal cover by 2% and hiding cover by 1%. Long term increases similar to those in Alternative 2 would occur.

### 3.2.2 Threatened and Endangered Species

All proposed, endangered, and threatened species known to occur on or near the Shoshone National Forest were considered in this analysis *as part of complying with the Endangered Species Act*. Effects analysis was completed for any species that occur or could possibly occur within the analysis area. To determine which species could occur within the analysis area, species occurrence records for the area were checked, and the habitat requirements of the species were compared with the habitat present in the analysis area. Any species determined unlikely to occur in the analysis area was not carried into further analysis and given a no effect determination. A Biological Assessment (BA) of effects to threatened, endangered, and proposed species has been developed and submitted to the U. S. Fish and Wildlife Service. The text of the BA is incorporated into this EA.

**Figure 16. Threatened and endangered species occurrence in the analysis area.**

Species	Status	Species Occurrence on Forest	General Habitat	Habitat exists in analysis area	Likelihood of species occurring in area	Carry forward?
Black-footed ferret ( <i>Mustela nigripes</i> )	Endangered MIS	No	Prairie dog towns	No	Unlikely	No
Gray wolf ( <i>Canis lupus</i> )	Endangered, experimental	Yes	Variable	Yes	Likely	<b>Yes</b>
Grizzly bear ( <i>Ursus arctos horribilis</i> )	Threatened	Yes	Variable	Yes	Likely	<b>Yes</b>
Canada lynx ( <i>Lynx Canadensis</i> )	Threatened	Yes but rare	Mature forest	Yes	Likely	<b>Yes</b>
Bald eagle ( <i>Haliaeetus leucocephalus</i> )	Threatened	Yes	Lakes, Rivers	No	No	No
Whooping crane ( <i>Grus Americana</i> )	Endangered	No	Wetlands	No	Unlikely	No
Mountain plover ( <i>Charadrius montanus</i> )	Proposed	No	Prairie wetland	No	Unlikely	No

#### **Gray Wolf**

The gray wolf is formally listed as threatened; it was reclassified as non-essential, experimental in the Yellowstone area with the publication of the Final Rule in the Federal Register (November 22, 1994; Vol. 59, No. 244). The species was reintroduced in the Yellowstone National Park area in 1995, and as a non-essential experimental population is managed as a proposed species. This designation provides greater flexibility in the management of wolves and allows greater accommodation in land use activities.

#### **Habitat and Distribution**

The availability of a stable ungulate prey base is the primary habitat requirement for this species, although smaller animals and carrion are also used as prey. Available prey does exist in and adjacent to the analysis area. The gray wolf does use the analysis area; observations of wolves were reported in the Dick Creek drainage in the summer of 1996. Although there are no documented locations of radio-collared wolves in the Dick Creek area, the newly formed Greybull pack in the Greybull River area is close enough to the analysis area that it is probable these wolves are using this habitat. Wolves have met their recovery criteria and the delisting process for the Yellowstone wolf population has begun.

#### **Effects to Wolves**

Either action alternative would likely displace the wolf during treatment activity, but would be beneficial to the wolf in the long term due to enhancement of conditions for deer and elk, the major prey species. This is a minimal effect as low acreages would be treated but may be enough to influence prey distribution in this area.

According to the Federal Register (Vol. 59, No. 244) “there are no conflicts envisioned with any current or anticipated management actions of the Forest Service.” Since it is an experimental population and six breeding pairs have been established, no land use restrictions may be employed on National Forest System lands, as wolf population growth rates have remained positive toward population recovery levels (50 CFR Part 17.84(xii)(4)).

Therefore, this action is not likely to jeopardize the wolf, or adversely modify proposed critical habitat.

#### **Grizzly Bears**

The grizzly bear is a listed threatened species and was identified during scoping as a species of concern regarding this proposal. The concerns relative to this project and grizzly use relates to dispersal of bears in the analysis area and food sources.

The Dick Creek watershed occurs outside the identified grizzly bear recovery zone. *Neither the Interagency Grizzly Bear Guidelines nor the Grizzly Bear Recovery Plan specified any habitat requirements outside the recovery zone. However, federal agencies are required to conserve such species and not jeopardize their continued existence no matter where they occur.*

To comply with this intent, aspects of project design contained in the Grizzly Bear Guidelines, Grizzly Bear Recovery Plan, the Forest Plan, and closure orders were integrated in the design of this proposal to the extent possible in keeping with project objectives. Opportunities to contribute to the long-term conservation of the grizzly bear by implementing conservation measures as well as minimizing adverse effects to the bear were sought in project development.

Minimizing grizzly/human conflicts is a high priority management consideration throughout the north zone of the Forest even outside of the recovery area. This includes the Dick Creek area, and as such, project design assures that all contracts, permits, and operating plans would contain conditions requiring proper storage of attractants, training relating to working in bear country for all personnel, and temporary cessation of activity if grizzly/human conflicts occur.

#### **Habitat and Distribution**

Although the analysis area is outside the grizzly bear recovery area, the westernmost part of the Greybull Ranger District lies within the identified recovery area (5,915,895 acres) of the Greater Yellowstone Area. Approximately 45,720 acres of grizzly bear recovery area occur on the Greybull Ranger District, within subunit 2 of the South Absaroka Grizzly Bear Management Unit (BMU). This subunit lies approximately 10 miles from the analysis area, is classified as Management Situation 2<sup>10</sup>, and is of known importance for recovery of the species.

Habitat for bears is rated according to relative habitat value and habitat effectiveness. Seasonal habitat values are presently low to moderate within the analysis area. Seasonal habitat effectiveness values are low to moderate in this area, due primarily to human activities associated with adjacent private land activities and the open road. The Dick Creek area provides potential habitat important to bears during the critical spring period due to the early green up of vegetation. Bear distribution is most limited during this period, and protein rich foods are needed in early spring when bears emerge from denning, in order to put on weight and for lactating females with cubs. This analysis area contains succulent vegetation, carrion, and elk calves that provide the major protein sources for bears in spring and early summer. In addition, elk winter and calve not only in this analysis area, but in adjacent areas as well.

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<sup>10</sup> Management Situation 2 areas are not as vital to the recovery of the grizzly bear as Management Situation 1 areas, but still provide some habitat components and grizzlies may be present in these areas (IGBC 1986).

Critical habitat for this species has not been designated; thus, it is not a consideration for this project. However, data accumulated during the past several years has revalidated the importance of much of the area on the north zone of the Forest for the well being of this species. Potential food sources in the form of moth sites, seasonal ungulate concentration sites, and moist/riparian succulent herbaceous vegetation sites all occur on or within a reasonable distance of the analysis area. During the past decade, documented use in habitats formerly void of known use in the recent past has occurred; this is the case for habitat in the Dick Creek watershed.

The first documented observation of a grizzly bear near the Dick Creek watershed occurred in 1996. Between 1996 and 2000, six different radio-collared grizzly bears were located near the analysis area. There were 87 individual locations; two males were located in the analysis area, and three males and one female were located within a 10-mile radius. Data were sufficient to generate home ranges for three of the six bears (one adult male, one sub-adult male, and one adult female). Home ranges of both the males overlapped portions of the Dick Creek watershed, but the females' home range only came as close as the Francs Fork watershed about two miles to the west. However, location data were collected only on the female for a single year (2000) and it is possible that she uses habitat in the analysis area<sup>11</sup>.

In the past decade, three instances of grizzly/livestock conflict situations have developed within 10 miles of the analysis area on private lands; none have occurred in this watershed. There have been eight instances of grizzly bears receiving food rewards and one instance of property damage since 1997 within 10 miles of the analysis area. All occurred on private land outside the Dick Creek watershed and most of the food rewards were bears getting into bird feeders. No known grizzly bear mortalities have been recorded on the Greybull Ranger District during the past decade. However, two adult males were killed on private land east of the district boundary in 2000. One was a chronic cattle killer and was removed from the south fork of Sage Creek by Game and Fish personnel. A property owner in Gooseberry Creek killed the other.

#### **Effects on Grizzly Bears**

Design criteria (described in section 2.2.4) to minimize potential adverse effects on grizzly bears were integrated into design of the project for both action alternatives, and would be included as conditions in any associated contracts and operating plans as necessary and appropriate.

Under Alternative 1, natural processes and disturbances would continue to affect grizzly habitat within the analysis area. The shrub/grass foraging areas and aspen and willow stands would continue to decrease as conifers colonize them. This would reduce the availability of forage for elk and other big game during the wintering and spring birthing periods. This loss of habitat diversity and foraging areas would result in less use by big game, and thus result in a decrease in habitat value due to loss of potential prey.

Under Alternative 2 the analysis area would be available without disturbance to bears during the critical spring period, as the logging activity would occur while they are in winter dens. The timber sale contract period would be three years, and thus the period of sale disturbance is relatively short.

Because conflict prevention and resolution measures are part of the proposal, no acclimation of bears to human food would be expected in the short term, and no mortality of bears would be expected. Additionally, there have been no recorded grizzly bear mortalities in recent times on the Forest that could be attributed to timber harvest operations.

Habitat value for bears would likely increase as younger seral stages are enhanced on the landscape. The thinning and seedcuts would open up the canopy and produce more diverse and productive vegetation types. This would increase early spring foraging opportunities. *Some vegetative cover would decrease but changes in quantity and quality of vegetative cover have not been shown to be detrimental to grizzly bears*

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<sup>11</sup> A previous document that evaluated the grizzly bear use of this area indicated that an adult female's home range overlapped the analysis area. The two locations that put her in the Dick Creek watershed turned out to be incorrectly recorded.

*(This is in contrast to security cover which is defined as an area with limited disturbance).* Habitat effectiveness would remain the same, as there is no increase in roads or road usage.

Alternative 2 is not likely to adversely affect the grizzly bear or its habitat. The rationale for this determination is that the project design incorporates elements contained in the Grizzly Guidelines and Grizzly Bear Recovery Plan, which were incorporated into the Forest Plan. Further, there would be no new roads, and the winter logging means minimal if any direct effects to the bears.

Under Alternative 3, the effects on grizzly bears are very much the same as in Alternative 2, only less acres would be harvested, the activity period is shorter, and there would be less overall habitat change. Alternative 3 treats more elk and moose winter range than Alternative 2, but not to the extent of changing any prey availability for bears.

Alternative 3 is not likely to adversely affect the grizzly bear or its habitat. The reasoning for this determination is the same rationale as listed for Alternative 2.

#### **Canada Lynx**

The lynx (*Lynx canadensis*) is a listed threatened species. The Forest Service is currently working under the Canada Lynx Conservation Agreement, which states that the federal agencies will consider and attempt to follow the recommendations set forth in the Lynx Conservation Assessment and Strategy (LCAS). *The LCAS sets the following standards that apply to this project:*

1. Unless a broad scale assessment has been completed that substantiates different historical levels of suitable habitat, limit disturbance within each LAU as follows: if more than 30 percent of lynx habitat within a LAU is currently in unsuitable condition, no further reductions of suitable conditions shall occur as a result of vegetation management activities;
2. Within an LAU, maintain at least 10 percent of the LAU in denning habitat. Denning habitat patches generally should be larger than 5 acres in size;
3. Vegetative management practices shall not change more than 15 percent of lynx habitat with a LAU to an unsuitable condition within a 10-year period.

#### **Habitat and Distribution**

Primary lynx habitat in the western mountains consists of lodgepole pine, subalpine fir, and Engelmann spruce (Aubry et al. 2000 cited in LCAS). Lynx require both early successional forests with plentiful prey (especially snowshoe hares) for foraging as well as late successional forests that contain cover for kittens and for denning. Intermediate successional stages may serve as travel cover for lynx and provide connectivity within a forest landscape. Denning sites must be in close proximity to foraging habitat and denning and foraging habitats must be interconnected by stands suitable for lynx travel (Koehler and Aubry 1994 cited in LCAS).

As described in section 3.2.1, the analysis area is 58% early to late mature timber; 80% of this is spruce/fir.

Designated habitat for the lynx is termed potential habitat as per the 2000 Lynx Conservation Assessment and Strategy, and was mapped for the Shoshone in 2002. Lynx Analysis Units (LAU) were also delineated as areas to consider project impacts to this species. The Dick Creek analysis area is in LAU #20 which contains over 70,000 acres of potential lynx habitat. *Currently, 147 acres (0.2%) of lynx habitat in this LAU are in an unsuitable condition.*

Lynx surveys have not been completed in this analysis area, although they are ongoing on other parts of the Forest. Potential habitat appears to exist here but we have no documented evidence of lynx or plentiful snowshoe hare in this area.

#### **Effects on Lynx**

Alternative 1 would change no habitat and have no activity period; there would be no change in habitat suitability for lynx. Over time, existing foraging habitat may grow too old for snowshoe hares but denning habitat would increase.

Any direct effects from Alternative 2 would come from the snow packing of the snow temporary roads and landings associated with this sale. This snow compaction would have similar effects to groomed trails, possibly allowing other carnivores to compete with lynx as the packed snow eliminates the competitive edge the lynx has in hunting (Buskirk et al. cited in LCAS 2000), although this would be a short-term effect as the sale period is three years.

This alternative would treat 417 acres of mature, in some cases, dense timbered habitat. Of these acres, 297 would become more open, canopied stands. The remaining 120 acres would become early successional aspen. Nearly all the acres to be treated are currently mapped as lynx habitat, so with this alternative, 0.6% of the lynx habitat in the LAU would be impacted. As past activities (within the last 30 years) have affected 147 acres of lynx habitat, this cumulatively would be a 0.8% change in the LAU, far below the 30% unsuitable threshold set in the LCAS as adversely affecting lynx. *This is also well below the LCAS standard that states not more than 15% of lynx habitat can be made unsuitable in a 10 year period.*

This LAU currently has over 40,000 acres of denning habitat *occurring in patches 30 acres in size and greater*, which is 24% of the area. With Alternative 2 implemented, and removing 297 acres from denning habitat, that percentage falls to 23%. This meets LCAS guidelines, and is only a minor impact on lynx.

The effects of Alternative 3 are very similar to Alternative 2, except the acres of lynx habitat modified are lower: 165 acres, or 0.2% of lynx habitat would be modified, and denning does not decrease enough to measure.

Neither of these action alternatives would be likely to adversely affect the lynx based on the rationale that the project meets the criteria recommended in the LCAS.

### 3.2.3 Sensitive Species

All Regionally designated sensitive species for Region 2 that are known to occur on or near the Shoshone were considered in this analysis. Effects analysis was completed for any species that occur or could possibly occur within the analysis area. Any species determined unlikely to occur in the analysis area was not carried into further analysis. To determine which species could occur within the analysis area, species occurrence records for the area were checked, and the habitat requirements of the species were compared with the habitat present in the analysis area.

Sensitive species that occur, or could occur, in the analysis area have been grouped according to the habitats in which they occur; effects from the project are discussed in that context. Additional limiting factors will be listed if it is helpful in determining effects, or the significance of effects, on the species.

**Figure 17. Sensitive wildlife species occurrence in the analysis area.**

Species	Species Occurrence on Forest	General Habitat	Habitat exists in analysis area	Likelihood of species occurring in area	Carry forward in analysis?
Dwarf shrew ( <i>Sorex nanus</i> )	Yes	Subalpine meadows	Yes	Possible	Yes
Fringe-tailed myotis ( <i>Myotis thysanodes pahasapensis</i> )	Yes	Forested edges near caves or mines	No	Unlikely	No
Allen's thirteen-lined ground squirrel ( <i>Spermophilus tridecemlineatus alleni</i> )	Possibly; not documented	Grasslands, shrublands	No	Unlikely	No
Water vole ( <i>Microtus richardsoni</i> )	Yes	Subalpine riparian	Yes	Possible	Yes

Species	Species Occurrence on Forest	General Habitat	Habitat exists in analysis area	Likelihood of species occurring in area	Carry forward in analysis?
American marten ( <i>Martes Americana</i> )	Yes	Dense coniferous forest	Yes	Likely	<b>Yes</b>
Fisher ( <i>Martes pennanti</i> )	Possibly; not documented	Mature coniferous forest	Yes	Outside known range	No
Wolverine ( <i>Gulo gulo luscus</i> )	Yes	Subalpine coniferous forest	Yes	Possible	<b>Yes</b>
Common loon ( <i>Gavia immer</i> )	Possibly; not documented	Lakes, large ponds	No	Unlikely	No
Trumpeter swan ( <i>Cygnus buccinator</i> )	Yes	Lakes, large ponds	No	Unlikely	No
Northern goshawk ( <i>Accipiter gentilis</i> )	Yes	Old growth conifer mix	Yes	Likely	<b>Yes</b>
Ferruginous hawk ( <i>Buteo regalis</i> )	Yes	Open Prairie	No	Unlikely	No
Osprey ( <i>Pandion haliaetus</i> )	Yes	Lakes and rivers	No	Unlikely	No
Merlin ( <i>Falco columbarius</i> )	Yes	Wooded prairie	No	Unlikely	No
Sandhill crane ( <i>Grus Canadensis tabida</i> )	Yes	Montane valleys; meadows; willow bottoms	No	Unlikely	No
Long-billed curlew ( <i>Numenius americanus</i> )	No	Grasslands	No	Unlikely	No
Upland sandpiper ( <i>Bartramia loicauda</i> )	No	Grasslands	No	Unlikely	No
Black Tern ( <i>Chlidonias niger</i> )	No	Marsh	No	Unlikely	No
Yellow-billed cuckoo ( <i>Coccyzus americanus</i> )	No	Cottonwood riparian	No	Unlikely	No
Burrowing owl ( <i>Athene cunicularis</i> )	No	Grasslands, sagebrush	No	Unlikely	No
Boreal owl ( <i>Aegolius funereus</i> )	Yes	Conifer forests	Yes	Possible	<b>Yes</b>
Lewis' woodpecker ( <i>Melanerpes lewis</i> )	No	Ponderosa pine savannah	No	Unlikely	No
Black-backed woodpecker ( <i>Picoides arcticus</i> )	Yes	Spruce/fir forests	Yes	Possible	<b>Yes</b>
Northern three-toed woodpecker ( <i>Picoides tridactylus</i> )	Yes	Spruce/fir forests	Yes	Possible	<b>Yes</b>
Olive-sided flycatcher ( <i>Contopus borealis</i> )	Yes	Coniferous forests	Yes	Possible	<b>Yes</b>
Pygmy nuthatch ( <i>Sitta pygmaea</i> )	No	Ponderosa forest	No	Unlikely	No
Golden-crowned kinglet ( <i>Regulus satrapa</i> )	Yes	Coniferous and mixed stands	Yes	Possible	<b>Yes</b>
Loggerhead shrike ( <i>Lanius ludovicianus</i> )	No	Open shrub/prairie	No	Unlikely	No

Species	Species Occurrence on Forest	General Habitat	Habitat exists in analysis area	Likelihood of species occurring in area	Carry forward in analysis?
Baird's sparrow ( <i>Ammodramus bairdii</i> )	No	Short grass prairie	No	Unlikely	No
Fox sparrow ( <i>Passerella iliaca</i> )	Yes	Riparian	Yes	Possible	Yes
Tiger salamander ( <i>Ambystoma tigrinum</i> )	Yes	Ponds	Yes	Possible	Yes
Boreal western toad ( <i>Bufo boreas boreas</i> )	Yes	Forested wetlands	Yes	Possible	Yes
Northern leopard frog ( <i>Rana pipiens</i> )	Yes	Aquatic habitats	Yes	Possible	Yes
Spotted frog ( <i>Rana pretiosa</i> )	Yes	Glacial ponds	No	Unlikely	No
Yellowstone cutthroat trout ( <i>Oncorhynchus clarki bouveri</i> )	Yes	Streams	Yes	Known from area	Yes

**Subalpine Meadows Habitat (dwarf shrew)**

There are approximately 1,000 acres of this habitat in the analysis area, and it is potential habitat for the dwarf shrew.

This species is more common and widely distributed than previously thought and has been found to use other habitats such as talus slopes, rock outcrops, and alpine tundra (NatureServe 2001). There are no limiting factors known for the species other than habitat disturbance.

Alternative 1 would allow the habitat of this species to remain undisturbed and have no impact. Both the action alternatives would allow some decking of wood in the meadows; access on frozen ground or snow roads would cross the meadows, which could impact individuals, as they are active year round. Further, the burning of slash piles could impact some individuals.

**Determination**

Implementing either of the action alternatives “may adversely impact individuals, but is not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability range wide.”

**Coniferous Forest Habitat (marten, wolverine, boreal owl, black-backed woodpecker, northern three-toed woodpecker, olive-sided flycatcher, and golden-crowned kinglet)**

Eighty-eight percent of the forested area in this analysis area is conifer forest. There are varying stand characteristics but the majority of the conifer is in the older structural stages. The older age classes, which make up 74% of the conifer stands, have some old growth characteristics, such as available snags and dead and down wood, and as described in the vegetation section, 2,619 acres are old growth. These stands provide the preferred habitat for these species.

For the most part, these species prefer conifer forests in the mature and old growth stages that provide high amounts of snags and dead and down wood, large trees, complex physical structure, and small forest gaps. Habitat loss and/or disturbance are the most significant limiting factors for these species. For wolverine, winter recreation and snow compaction could also be a factor.

The Dick Creek area has not been surveyed for these species, but as potential habitat is available, it is likely that they occur. When a survey was conducted in the winter of 1995-96, marten were found on each snowmobile route on the Forest (233 miles); wolverine have been observed further north on the Forest in the Beartooth area, and goshawk are commonly seen by Forest Service personnel across the Forest in these habitats. For the other bird species, occurrence data is being collected starting in 2002. There is

anecdotal evidence to suggest that marten and goshawk are doing well across the Forest (Oakleaf personal comm. 2002).

In Alternative 1, the entire watershed would move toward old growth conditions and for most of these species, habitat suitability would increase in the long term. This alternative would have a beneficial effect on these species.

In Alternative 2, 417 acres of conifer forest would be treated (including 120 acres of mixed aspen/conifer that would be regenerated to aspen). Two hundred ninety-seven acres would remain mature forest, although the stands would be thinner and more open. This would result in losing future snag recruitment, large trees, and complex structure, although the remainder of the analysis area would remain to grow old and provide increasing amounts of this habitat. This activity would not occur during the nesting period for the birds and young rearing for the mammals, but some denning and winter foraging could be affected. Habitat suitability for most of these species would be reduced slightly as treated stands (4% of the analysis area) *would have some of their old growth characteristics altered. Within the analysis area 5,638 acres of mature stands are not treated of which 2,531 acres are of old growth.*

In Alternative 3, 165 acres would be treated and change characteristics. The effects would be the same as for Alternative 2, only reduced, as fewer acres would be treated.

These sensitive species would be only minimally directly impacted by this action. All these species would be indirectly affected by the decrease in available habitat. The analysis area, however, has an abundant amount of snags that these species can utilize.

#### **Determination**

For marten, wolverine, northern goshawk, boreal owl, black-backed woodpecker, northern three-toed woodpecker, olive-sided flycatcher, and golden-crowned kinglet, either action alternative “may adversely impact individuals, but is not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability range wide.”

Marten and goshawk, as indicators of late successional conifer forest, have been selected as MIS for this project. Both species are considered common on the Forest. *As evidence of the relative abundance of these species, Wyoming Game and Fish does not consider them a high priority to track their populations as they are seen frequently in suitable habitats (Oakleaf personal comm. 2002).* Either of the action alternatives, although they decrease habitat suitability somewhat, would not have a measurable effect on the Forest population of marten or goshawk as the majority of habitat in the watershed is still available.

#### **Riparian/Aquatic Habitat (water vole, fox sparrow, tiger salamander, boreal western toad, northern leopard frog, and Yellowstone cutthroat trout)**

Wetland and stream habitat does exist in the analysis area; these areas are potential habitat for these sensitive species. Habitat impacts are the greatest concern for these species. An additional concern for cutthroat trout is the introduction of non-native fish species into their range and the potential for hybridization.

During 1995, a University of Wyoming graduate student conducted research on Yellowstone cutthroat trout distribution and habitat with the analysis area. The Main Fork of Dick Creek was sampled at two sites: within the riparian enclosure and just upstream of the confluence with the Gwinn Fork. He found siltation occurring at levels higher than in other similar drainages in the Greybull and Wood Rivers. He electro-fished and found mostly cutthroat trout with a few brook trout. The cutthroat trout were a mixture of Yellowstone and fine spotted varieties. He found no fish on the Main Fork upstream of the confluence with the Gwinn Fork and felt that there currently are no fish upstream of the confluence of the Gwinn Fork.

Wyoming Game and Fish and the Shoshone National Forest are currently collecting additional information on detailed cutthroat distribution, current habitat barriers, and potential cutthroat habitat within the Greybull and Wood river drainages. This information will be used to develop an overall coordinated management plan in the next few years.

The other riparian/aquatic species have not been surveyed in the analysis area.

Alternative 1 would have no impact on these species, as the riparian systems would not be impacted.

The action alternatives would not impact any wetland or pond, so there would be no impact on the tiger salamander or boreal toad. Streamside areas would be protected, as the activity would occur when the systems and animals in them are buried in snow. In addition, streams would be crossed only at designated points over snow or frozen ground to minimize ground disturbance. No new roads would be built, but 0.24 miles of road reconstruction would occur.

#### ***Determination***

By not adversely affecting the aquatic habitat during commercial timber harvest and hauling, along with improving the existing road, Yellowstone cutthroat trout populations would not be *appreciably affected in the short term*. In the long term, aquatic habitat would benefit by improving the overall health and condition of riparian and aquatic habitat and help reduce the risk of large scale, intense fires that can have significant adverse effects on riparian and aquatic habitat.

There would be no impact to tiger salamander and boreal toads from implementing either of the action alternatives. Under winter conditions, this project “would impact individuals but is not likely to result in a loss of viability on the planning area nor cause a trend to federal listing or a loss of viability range wide” for the water vole, fox sparrow, northern leopard frog, and Yellowstone cutthroat trout.

### **3.2.4 Management Indicator Species**

Seventeen wildlife species, in addition to game trout, were selected during the forest planning process to be management indicators. The Management Indicators Species (MIS) for the Shoshone include five featured species that are hunted, five recovery species, and seven ecological indicator species. Methods used to select indicator species or groups of species are explained in the planning records for the Forest’s Land and Resource Management Plan. Those MIS (or their habitats) that may be affected by this proposal were evaluated relative to the effects of this action and will be addressed in this document.

Figure 18 shows that elk, mule deer, moose, wolf, grizzly bear, northern goshawk, hairy woodpecker, beaver, and the grouse species were selected for this project based on their habitats being potentially affected by this project. Note that the threatened and endangered (T & E) and sensitive species are analyzed in those respective sections and not in the MIS section.

Management Indicator Species habitat relationships used at the time the Forest Plan was written were revalidated in 2002 (Shoshone National Forest Management Indicator Species (MIS), Version 2.0 November 27, 2002). Forest-wide population trend information for all MIS are documented annually in the Forest's monitoring reports.

Management Area 4B has 774 acres in the analysis area. For this Management Area the Forest Plan states that habitat needs for one or more MIS should be emphasized. The 4B Management Area boundary in this area coincides closely with the mapped moose winter range. That is the MIS species that was chosen to be emphasized. Unit A occurs in Management Area 4B. The treatment in that unit is a seedtree cut that will result in increased browse and increased habitat capability for moose.

**Figure 18. Management Indicator Species occurrence in the analysis area.**

Species	What species represents	Habitat exists in analysis area	Will species be affected by action?	Select species for this project analysis?
Elk ( <i>Cervus elaphus</i> )	Hunted species	Yes	Yes	<b>Yes</b>
Mule deer ( <i>Odocoileus hemionus</i> )	Hunted species	Yes	Yes	<b>Yes</b>
Bighorn sheep ( <i>Ovis Canadensis</i> )	Hunted species	No	No	No
Moose ( <i>Alces alces</i> )	Hunted species	Yes	Yes	<b>Yes</b>
Mountain goat ( <i>Oreamnos americanus</i> )	Hunted species	No	No	No
Bald eagle ( <i>Haliaeetus leucocephalus</i> )	Threatened and endangered species	No	No	No
Peregrine falcon ( <i>Falco peregrinus</i> )	Threatened and endangered species	No	No	No
Black-footed ferret ( <i>Mustela nigripes</i> )	Threatened and endangered species	No	No	No
Gray wolf ( <i>Canis lupus irremotus</i> )	Threatened and endangered species	Yes	Yes	<b>Covered under T&amp;E</b>
Grizzly bear ( <i>Ursus arctos horribilis</i> )	Threatened and endangered species	Yes	Yes	<b>Covered under T&amp;E</b>
Pine marten ( <i>Martes Americana</i> )	Late successional conifer	Yes	Yes	<b>Covered under Sensitive Species</b>
Northern goshawk ( <i>Accipiter gentilis</i> )	Late successional conifer	Yes	Yes	<b>Covered under Sensitive Species</b>
Brewers sparrow ( <i>Spizella breweri</i> )	Sagebrush	No	No	No
Hairy woodpecker ( <i>Picoides villosus</i> )	Late successional and aspen	Yes	Yes	<b>Yes</b>
Beaver ( <i>Caster Canadensis</i> )	Riparian areas	Yes	Yes	<b>Yes</b>
Blue grouse ( <i>Dendragapus obscurus</i> )	Sensitivity to vegetation treatments	Yes	Yes	<b>Yes</b>
Ruffed Grouse ( <i>Bonasa umbellus</i> )	Multistoried aspen	Yes	Yes	<b>Yes</b>
Yellowstone cutthroat trout ( <i>Oncorhynchus clarki virginalis</i> )	Aquatic habitat	Yes	Yes	<b>Covered under Sensitive Species</b>

## **Elk**

### **Habitat**

Elk use alpine pastures, marshy meadows, river flats, aspen parkland, coniferous forests, and brushy edges (NatureServe 2001). The significant elk use that occurs in most of the Dick Creek drainage is during the spring and fall migration periods. Individuals may spend some of the summer in the upper reaches of the Dick Creek drainage but the majority of the summer is spent in higher elevations above and outside the project-affected area. Elk migrating through this area are primarily enroute to and from the Sunshine crucial winter range area. Some winter use usually occurs in the North Fork of Dick Creek as elk feed on lower elevation ridges and slopes and then move into the timber for cover. The amount of use each year is affected to some degree by various factors such as available forage, depth of snow, and severity of the winter. Approximately 1,000 acres of elk crucial winter range occur on national forest lands in the North Fork of Dick Creek adjacent to the Wyoming Game and Fish Department's Sunshine crucial winter range area. In the last few years, the elk have been wintering mostly on the east side of the winter range onto Game and Fish property (Emmerich personal comm. 2002).

### **Trend**

Elk numbers on the Shoshone have been above Game and Fish objectives. Last year's population estimate for the Gooseberry herd, which inhabits the Dick Creek area, was over 3,100. Trend is slightly decreasing as Game and Fish tries to get the herd down to objective levels.

### **Effects**

Alternative 1 would decrease habitat suitability for elk over the long term, as succession would continue. Conifer encroachment upon early successional habitats would reduce the vegetation elk need for foraging.

Alternative 2 would have some negative effects on elk in the short term as activities such as hauling on FSR 203 through winter range could temporarily displace some elk during the critical winter period. Most of the elk have been wintering on the eastern side of the area rather than in the northern portion of the winter range where FSR 203 is located. Using the Timber Creek Road for hauling rather than the Dick Creek Road was requested by Game and Fish to minimize the effects of this activity.

The southern edge (2%) of winter range within this analysis area would be directly impacted by this action. The long-term benefits, however, of opening up the conifer stands and regenerating the aspen, would be the creation of earlier seral stages more preferred by elk. As discussed previously, thermal cover would be reduced but not below Forest Plan standards, and hiding cover in the treated stands would be reduced in the short term, but increased in the long term. More light would hit the forest floor with these treatments, creating more foraging opportunities for elk. The long-term quality of the elk crucial winter range would be maintained by continuing the existing seasonal (January 1 to April 30) closure to public motorized access on roads coming into Dick Creek from both the Wood River and Timber Creek sides during the sale contract period. Burning the slash left over from this sale at the landing would have little effect.

Alternative 3 would have similar effects to those described for Alternative 2, except it impacts slightly more (4%) of winter range within the analysis area, although less overall habitat in the watershed.

Overall, the amount of habitat enhancement in either action alternative would increase forage and therefore habitat suitability for this species, but would not influence forest-wide populations. As with all game animals, a big factor in population size is hunting regulations.

## **Mule Deer**

### **Habitat**

Mule deer use coniferous forests, desert shrub, chaparral, and grasslands and is most often associated with early and mid successional vegetation (Schoen and Kirchoff 1990 cited in NatureServe 2001). This analysis area provides spring, summer, and fall habitat for mule deer. Transition areas or edges between habitat structural stages are preferred use areas. The Dick Creek watershed does not contain any mapped winter range, although some deer do use the area in winter.

#### **Trend**

Deer that use the analysis area are part of the Owl Creek/Meeteetse herd. This herd is under objective by approximately 25%. Liberal hunting regulations in response to private landowner complaints in the early 90s caused the herd decrease. The current trend is slightly increasing.

#### **Effects**

The direct, indirect, and cumulative effects described above for elk would be similar for mule deer, except that mapped mule deer winter range does not occur in the analysis area, and thus is not a consideration. In addition, mule deer are generally more tolerant of open road disturbance than elk, but as indicated above, this is not a serious concern with this project. Overall, as with elk, hunting regulations are the biggest factor influencing populations and this project would have little effect.

#### **Moose**

##### **Habitat**

Moose use vegetation generally associated with riparian and other wetland types such as willow, in conjunction with deciduous types and moist spruce/fir types. Moose use of the analysis area is incidental at present due to the limited amount of riparian and deciduous types, as well as the dry site conditions. Areas within the Dick Creek drainage and adjacent drainages provide yearlong moose habitat. These small willow bottoms and additional adjacent riparian habitat comprise the estimated 200 acres of moose crucial winter range occurring in the analysis area.

##### **Trend**

Population densities throughout the Forest are low. The Gooseberry herd uses the Dick Creek area. This herd unit is slightly below objective with a current number of 170.

##### **Effects**

Alternative 1 would not displace any individuals but also would not add any foraging habitat to the area. Either action alternative could temporarily displace individuals during treatment, but would enhance habitat conditions for moose in the long term by increasing the amount of aspen browse. Due to the minimal amount of use of the analysis area by moose, and the small amount of habitat affected, there would be no measurable effects on moose population trends with any of the alternatives. Alternative 2 would affect 1% of winter range. Alternative 3 would affect 3 % of winter range, but less overall habitat in the watershed. Although this project would create more suitable habitat, it would not be enough to influence local population levels.

#### **Hairy Woodpecker**

##### **Habitat**

Hairy woodpeckers use forest, open woodland, and swamps, and are most abundant in mature woods with large, old trees suitable for cavity nesting (Bushman and Therres cited in NatureServe 2001). Cavities are usually excavated in snags or in live trees with decaying heartrot.

##### **Trend**

Confirmed nesting has been documented in across the Forest. Population trends seem stable (monitoring report 1996).

##### **Effects**

Alternative 1 would be beneficial to the woodpecker as trees in the watershed would continue to mature and die, providing more snags and rotting trees for nesting and foraging. Both action alternatives would reduce the available snags in the future, but in such a slight amount, it would be hardly measurable. The majority of the watershed would continue to increase in maturity. This project would not change enough habitat to have a significant effect to hairy woodpecker populations.

## **Beaver**

### **Habitat**

Beaver use habitat with a permanent, relatively constant flow of water and accessible foods such as willow, aspen, or cottonwoods and a relatively wide valley with low channel gradient. A small population of beaver periodically uses the willow bottom/riparian vegetation complex in Dick Creek. This population is typical of ones found on the Forest, namely small colonies or bank dwellers where habitat is suitable.

### **Trend**

Populations on the Forest seem stable (monitoring report 1996), but are probably below historic levels.

### **Effects**

Alternative 1 would allow habitat suitability to decrease over time, as conifers would continue to encroach the riparian areas. The action alternatives would increase habitat suitability, as the removal of coniferous canopy in close proximity to riparian zones would encourage deciduous shrub growth. The amount treated in this project is too small to be of significant value to beaver populations across the Forest.

## **Blue Grouse**

### **Habitat**

Blue grouse use coniferous forest, especially fir, mostly in open situations with a mix of deciduous trees and shrubs (AOU 1983 cited in NatureServe 2001), as well as edges of mountain meadows during brood foraging. Blue grouse require a mosaic of vegetation types ranging from coniferous forest and deciduous vegetation to riparian habitat during different periods throughout the year.

### **Trend**

This species is known to be common on the Forest; the population trend seems stable.

### **Effects**

Alternative 1 would result in a long-term decrease for this species, as deciduous trees and shrubs would be out-competed by conifers.

Alternatives 2 and 3 would open up stands, creating conditions that are more favorable as well as creating young aspen stands that would provide desirable forage and cover. There may be some disturbance from the activities on wintering individuals but this would be minimal and short term compared to the long-term benefit of habitat enhancement. Treated areas are not a significant portion of the watershed, so population levels are not expected to change.

## **Ruffed Grouse**

### **Habitat**

Ruffed grouse use dense forest with some deciduous trees, in both wet and relatively dry situations, from boreal forest (especially early seral stages dominated by aspen) to northern hardwoods and eastern deciduous forests (AOU 1983 cited in NatureServe 2001). Ruffed grouse are dependent on a mosaic of aspen stands of differing seral stages for food and shelter needs, and are found only where larger acreages of aspen exist. The aspen type is very limited within the analysis area, and the few existing stands are older age classes and most are heavily encroached due to advancing succession. Due to the old age structure of most stands in the analysis area, it is presently poor quality habitat for grouse.

### **Trend**

Although the species has probably never been abundant on the Forest, there has been a continual presence in areas where available habitat exists (monitoring report 1996).

### **Effects**

Alternative 1 would result in long-term loss of aspen until fire creates early successional stages.

Alternative 2 would provide additional habitat by regenerating aspen, although the dense structure of the forest would be lost in the short term in the conifer stands. There may be some direct disturbance by the

logging activities but there would be plenty of retreat areas. Alternative 3 would have the same effects, only in a lesser amount.

### 3.2.5 Wyoming Priority Bird Species

The Wyoming Partners in Flight group rated species in priority order of conservation needs. The highest priority level includes four birds that occur on the Shoshone: Brewer's sparrow, northern goshawk, peregrine falcon, and bald eagle. All of these species are included in other categories considered earlier in this section.

### 3.3 Watershed Resources (Soil and Water)

The analysis area is the Dick Creek watershed. This watershed is tributary to the much larger Wood River drainage. From its confluence with the Wood River, Dick Creek comprises approximately 12% of the area of the Wood River drainage. Consideration of the entire Dick Creek drainage is logical for the following reasons: the proposed activity and alternatives to it are located entirely within the Dick Creek watershed, land management and use (dispersed recreation, grazing, timber harvest, roading) is active throughout the watershed, streamflow from Dick Creek is diverted for irrigation purposes, and any measurable effects of management within Dick Creek are either diluted or masked once stream flow reaches the Wood River.

Named streams include Gwinn Fork Dick Creek, North Fork Dick Creek, South Fork Dick Creek, and Dick Creek proper.

#### **Regulatory Framework**

The Forest Service is directed by five major federal laws, as amended, to protect watersheds through sound management (Ohlander 1996). Other federal laws and regulations complement these five major laws. The Forest Service must also comply with the Wyoming Environmental Quality Act and regulations pursuant to it. *None of the streams in the Dick Creek watershed are water quality limited (i.e. Identified by the State in their 305(b) report or 303(d) list). However, North Fork Dick Creek is on the state monitoring list.*

State-classified water uses, and the water quality they need, must be sustained to comply with antidegradation policy, unless the State decides that vital economic and social development justify impacts. Dick Creek and North Fork Dick Creek are classified by the State of Wyoming as Class 2AB water. South Fork Dick Creek is classified as 3B. Numerous water rights exist, both on and off national forest, which are directly tied to these beneficial uses. They include Forest rights for stock watering (primarily spring developments) and off-Forest rights for domestic and irrigation use and stock watering. Additionally, water is used in the basin by recreation users for human consumption and stock watering.

Certain water quality criteria must be met to protect these beneficial uses. The criteria that could be affected by the proposed action and alternatives to it include the 1) physical parameters of turbidity, settleable solids, and floating and suspended solids, 2) chemical parameters of dissolved oxygen, temperature, and water purity, and 3) biological parameters of aquatic life and TES species (MacDonald et al. 1991).

The objectives of forest watershed conservation are to 1) conserve the ability of watersheds and riparian areas to absorb water, filter sediment, and sustain stream channel integrity, 2) restore and maintain the long-term inherent productive capacity of the soil, and 3) sustain water quality and aquatic habitat in each aquatic ecosystem, unless excepted by law (Ohlander 1996).

It is Forest Service policy to 1) apply watershed conservation practices to sustain healthy ecosystems, 2) adopt a stewardship ethic that treats land and resources as public assets for long-term benefits, and 3) temper land and resource use to conserve limited resources for future generations (Ohlander 1996.)

Forest Plan requirements and Best Management Practices discussed in this document have been monitored and proven effective on other similar projects across the Forest. *Documentation of BMP*

*reviews on timber sales is documented in forest files and summarized in the Forest's Annual Monitoring Reports (1998 through 2001)*

### **Past and Present Management**

The Dick Creek drainage is part of the original Yellowstone Forest Reserve. In the late 1800s, before reservation, livestock began grazing the drainage. Domestic sheep grazing occurred until the 1930s. Both domestic sheep and cattle grazing occurred simultaneously for several years in this period. Commercial livestock grazing (cattle) continues under permit. Timber harvest began in the drainage in the 1880s using portable sawmills (primarily in the South Fork between 1908 and 1950). Additional commercial entries into portions of the drainage have been made since, most recently in the 1980s. Personal firewood gathering is an ongoing activity. Exploratory oil drilling took place at several locations in the drainage in the 1980s. However, production has never occurred. Existing roads provide motorized access through much of the watershed. These roads are used for range and timber management and by the public for recreation (camping, hunting, sightseeing, and fishing).

### **Past Assessments and Reports**

The Final Environmental Impact Statement (EIS) for the Shoshone National Forest Allowable Sale Quantity (ASQ 1994) lists Dick Creek as an "additional watershed of concern." This classification was applied to drainages that may be approaching or have already exceeded an acceptable level of disturbance but have not been field verified, requiring that field observation and data collection take place before new surface disturbing activities proceed.

Pursuant to this, watershed condition and stream health were assessed in 1995 and 1996. The assessment indicated certain goals in the Forest Plan were not being met on portions of the North Fork, Gwinn Fork, and Dick Creek proper. Causative factors were historical livestock grazing, current ungulate use, road location/condition, and recreational use of the roads when wet (past petroleum activity and harvesting timber, except for roads, are not causative factors of concern). The results of these factors were areas of poor condition uplands (mostly near riparian areas), poor condition riparian, loss of hydrologic function, and impacts to the aquatic ecosystem. The Forest has long recognized these cause and effect relations and continues to make management adjustments. Livestock grazing has been reduced from 2,200 AUMs in the 1970s to the present level of 1,300 AUMs. Rangeland structural and non-structural improvements have been made, including sagebrush treatment, riparian fencing, and water developments. The allotment management plan was revised to further address grazing management concerns (Decision Notice 1997). Motorized access is restricted during portions of the year to control road damage and resultant erosion and sedimentation. Approximately 4.7 miles of road have been closed and revegetated. Much of the open road system has received additional maintenance in the last few years, including the addition of drainage and surfacing.

These management changes and practices are resulting in continuing improvement in watershed condition. Most notable is riparian and stream health within fenced riparian areas is rapidly improving. Additional improvement is expected on unfenced riparian areas under the allotment management plan.

### **Watershed Condition and Stream Health**

Primary geologic formations are Aycross and Willwood, which are overlain in areas by Quaternary mass movements and alluvium. Resultant soils are fine loamy, mixed Typic Cryoboralfs in forested areas and fine-loamy, mixed Argic Cryoborolls in rangeland areas. Soil survey interpretations indicate timber management (harvest and roading) may be limited by slope and high clay content. The potential for unsurfaced roads is poor due to clay content and mass movements. Water erosion hazard is moderate due to slope. Reforestation potential is good, while revegetation potential, because of slope, is poor. Windthrow hazard is low. Seedling mortality is slight on north and east aspects but severe on south and west aspects. Compaction from skidding operations is a concern if soils are wet.

Mass movements in the area have been mapped by the Wyoming Geological Survey (Case 1994). Most of the movements are old and relatively stable but care must be exercised in road and skid trail location. Soil and water hazard across the majority of the watershed is moderate to high (Forest Plan 1986). Recreation,

grazing, timber harvest, and *road use* have and continue to occur in these areas. Noticeable effects are 1) topsoil loss due to grazing on some uplands near riparian areas and associated overland flow increases, and 2) isolated cut slope failure on some roads. Existing roading has taken land out of production, while historical overgrazing has reduced soil productivity.

The U.S. Fish and Wildlife Service have mapped wetlands in the area. Riverine system wetlands occur along perennial and intermittent streams. They contribute to hydrologic function and offer wildlife and recreation value. Palustrine (marsh) system wetlands occur in relatively wide valley bottoms along North Fork Dick Creek and Dick Creek proper, at isolated springs on hillsides, and within ponds and lakes associated with mass movements (e.g., Dick Creek Lakes). Valley bottom wetlands are shrub and scrub communities associated primarily with past and present beaver activity. They contribute to hydrologic function and offer important wildlife and recreation value. The springs and ponds also contribute to hydrologic function. They offer wildlife and recreation value.

Predominant stream types are A, B, and E (Rosgen 1996). Segments of North Fork Dick Creek, Gwinn Fork, and Dick Creek proper are not of the expected stream type because of historical overgrazing and delivered sediment from roads directly connected to streams. Access to the floodplain, maintenance of the water table, and transport of sediment have been compromised. Conditions along portions of these segments are rapidly recovering because of reductions in permitted livestock use, range improvements such as fencing riparian areas, control of roads when wet, and recent heavy road maintenance designed to disconnect the roads from streams and wetlands. Remaining segments are recovering, but at a slower rate. Changes in allotment management that occurred in 1997 are accelerating the rate of recovery.

None of the streams in this drainage are considered high quality riparian under the Shoshone stream classification (Hoskins 1979).

### **3.3.1 Aquatic Ecosystems**

The Dick Creek drainage is located in the Absoraka volcanics. As a result, the uplands typically have highly dissected volcanic plateaus characterized by rugged mountainous terrain. The tributary streams have been eroding down to the more resistant rocks. This situation has resulted in highly dissected, steep gradient, high-energy perennial, and intermittent tributary streams carrying heavy bedloads during runoff events. This bedload is deposited as the valley bottom widens and the stream gradient lessens significantly. As a result, the valley bottom streams begin to meander and collect enough flow to provide suitable fish habitat. The lower reaches of the main forks of Dick Creek have wide floodplains with abundant deciduous vegetation.

Watershed assessments from 1995 and 1996 indicated riparian and aquatic habitat were in poor condition, due primarily to livestock grazing and roads. Wildlife use of riparian browse species was also high. This situation resulted in poor fish habitat overall, outside of riparian enclosures. Streams were wide, shallow, with few pools, little undercut banks, little overhanging vegetation, and high instream fine sediment levels.

Since that time, management conditions have reduced fine sediment input to streams. Livestock grazing has been reduced from 2,200 AUMs in the 1970s to the present level of 1,300 AUMs. Rangeland structural and non-structural improvements have been made, including sagebrush treatment, riparian fencing, and water developments. The allotment management plan was revised to further address grazing management concerns (Decision Notice 1997). Motorized access is restricted during portions of the year to control road damage and resultant erosion and sedimentation. Approximately 4.7 miles of road have been closed and revegetated. Much of the open road system has received heavy maintenance in the last few years, including the addition of drainage and surfacing.

Some sections of roads are still connected to the stream network, introducing fine sediment into streams at stream crossings.

For the discussion on Yellowstone cutthroat trout and its habitat, *see* Section 3.2.3, Sensitive Species.

### **Sediment**

*Most sediment delivered to streams comes from a source zone along streams whose width depends on topography, soils, and ground cover. Connected disturbed areas like roads and other disturbed soils near streams can deliver sediment during runoff events. Sediment deposits in streambeds can harm insect populations and fish reproduction.*

Under Alternative 1, current conditions would continue. Sediment is entering streams at stream crossings and in some isolated areas impacted by cattle grazing. Some improvement could be expected in association with road maintenance that is completed, as funds are available.

The effects of both action alternatives on increased sediment delivery would be minor to non-existent. Road reconstruction at stream crossings will disconnect all roads used by the purchaser from streams. These efforts primarily involve armoring stream fords, adding additional drainage structures near the fords, and other mitigation measures. This is not only beneficial for correcting a current concern but it also provides a margin of safety for offsetting effects from this project. *Sedimentation from harvest activities would be limited because of following BMPs and conducting operations on snow and/or frozen ground. The winter operation would limit ground disturbance; mitigation measures to strictly control operations in riparian, wetlands, and along stream banks would limit sedimentation.*

### **Bed/Bank Stability**

*Bed and bank stability can be damaged from vehicle impact or degraded bank vegetation. Streams can be made wider and shallower, pools and overhanging banks can be destroyed, and much sediment can be added to streams.*

Under Alternative 1, there would be no impacts to stream banks by project activities. Without the mitigation measures applied to the existing stream crossings, there would be continued impacts.

Under both action alternatives, the extent of treatment within the water influence zone is small, so the risk of bank vegetation degradation is minimal. Under both action alternatives, stream crossings pose the greatest risk for destabilizing streambeds and banks, and adding fine sediment to the stream. The use of armored fords and winter logging over snow or frozen ground mitigate any concerns to an adequate level.

### **Flow Regimes**

*Flow regimes can be altered by major changes in cover type or ground cover, or dense road networks. Water temperature and chemistry, sediment transport, aquatic habitats, and aquatic life cycles can be degraded.*

There would be no effects under Alternative 1. Under both action alternatives, changes in cover type, ground cover, or soils would be minor. Additionally, roads would be disconnected from streams, thus minimizing stream network extension. Because of this, effects on flow regimes should be minor to non-existent, *assuring state classified uses, including anti-degradation, are protected.*

### **Temperature/Oxygen**

*Summer water temperature is increased, and winter water temperature is decreased, by removing shade or damaging banks so streams are wider and shallower. Dissolved oxygen is usually reduced when summer water temperature is increased. Such impacts impair or destroy the suitability of water bodies for aquatic biota.*

Alternative 1 would not affect water temperature or oxygen. *Silviculture treatments along streams will maintain a forested condition through the use of partial cuts, so neither action alternative should affect water temperature or oxygen. Only Unit C conducts any treatments adjacent to streams (See Figure 5 and Figure 6)*

### **Water Purity**

*Water purity can be degraded by placing concentrated pollutant sources near water bodies or applying harmful chemicals in or near water bodies. Degraded water purity can impair or destroy use of the water by aquatic biota and humans.*

Alternative 1 would have no effect on water purity. The effects of both action alternatives on water purity should be minor given that roads would be disconnected from streams, all contract clauses would be enforced, and other mitigation measures would be implemented.

#### **Aquatic Life**

*Aquatic life can be degraded by migration barriers, changed flow regimes, riparian damage, or big sediment or chemical loads.*

Under Alternative 1 there would be no new activities to increase sedimentation into streams that would affect aquatic life. Levels of existing sedimentation would continue.

For both action alternatives, major concerns associated with the timber sale are the potential to introduce more fine sediment into the stream systems and potential impacts from timber harvest. By following the mitigation, sediment input and riparian disturbance from the actual timber harvest and aspen treatment would be minimal. Logging and hauling on snow or frozen ground would minimize any road damage, erosion, and associated sedimentation. The condition of existing roads used for commercial hauling would be improved, thereby reducing sediment. Armored ford stream crossings would help minimize fine sediment input into streams and ensure no migration barriers would be created.

### **3.3.2 Soil Productivity**

#### **Soil Erosion**

*Severe erosion can impair long-term soil productivity if soils are heavily disturbed on shallow or highly erodible soils.*

Alternative 1 would not result in any increases in erosion. The effects of both action alternatives on soil erosion would be minor given that all contract clauses would be enforced, other mitigation measures would be implemented, and logging would occur on snow or frozen ground.

#### **Soil Compaction**

*Soil compaction can be caused by excess weight of vehicles and/or repeated trampling by animals. It impairs infiltration, root growth, and soil biota.*

Alternative 1 would not increase soil compaction. The effects of both action alternatives on soil compaction would be minor by restricting activities to when soil moisture is below the plastic limit and by winter logging.

#### **Nutrient Removal**

*Soil fertility depends on organic matter and nutrients. Soil productivity can be degraded if humus and topsoil, or even excess leaves and limbs, are taken offsite.*

There would be no impact to soil fertility from Alternative 1. Under the action alternatives, adequate residual biomass would remain because of the type of silvicultural treatment and associated mitigation measures. Therefore, effects on soil fertility would be minor.

#### **Soil Heating**

*Soil heating is caused by severe fires that occur when humus and large fuels are dry and large fuels are consumed near the ground. Soil heating sterilizes soil, alters soil physics, consumes organic matter, and removes much of the site's nutrients.*

Under Alternative 1, there would be no effect on soil heating. There could be some heating of soils if a wildfire occurs in the area. The action alternatives involve the use of prescribed fire to promote lodgepole regeneration. The moderate intensity burns with appropriate erosion control on fire lines as planned should result in only minor effects on soil heating.

### **Regeneration Hazard**

*Forests must be restocked within five years after final harvest. Regeneration may be impeded on marginal sites due to seedling mortality, plant competition, and other factors.*

Soil survey interpretations indicate regeneration potential is good. Under Alternative 1, natural regeneration would continue to occur. Under the action alternatives, treated areas should adequately regenerate within five years after final harvest.

### **3.3.3 Geologic Hazards**

#### **Landslides**

*Soil creep, debris avalanches and flows, slumps, and earthflows can occur on unstable slopes if roads overload or undercut them, vegetation is removed from them, or runoff is emptied onto them. Hazard depends on type of disturbance, nature of earth material, and water content.*

There would be no increased risk of landslides under Alternative 1. All of the treatment units in the North Fork Dick Creek drainage are located on landslide material mapped by Case (1994). Portions of the treatment units in the South Fork Dick Creek drainage are also on such material. Because of the types of silvicultural treatment, actual harvest should not result in negative effects. Roads and skid trails needed to access and yard material from these units could trigger movement if they are not properly located. Application of the mitigation should be adequate to minimize the risk of triggering landslides.

### **3.3.4 Special Areas**

#### **Riparian Ecosystems**

*Riparian ecosystems provide shade, bank stability, fish cover, and woody debris to aquatic ecosystems. They also provide key wildlife habitat, migration corridors, sediment storage and release, and surface-ground water interactions. Composition and structure of riparian vegetation can be changed by actions that remove certain species and age classes.*

Discussion of the current riparian condition is in Section 3.3.1.

Under Alternative 1, riparian condition would remain as is. Recent heavy road maintenance and other management direction would continue to improve conditions. Stream crossings currently impacted by sediments from roads would remain in their current condition.

For both action alternatives, major concerns associated with the timber sale are the potential to introduce more fine sediment into the stream systems and potential impacts to riparian areas from timber harvest. By following the mitigation contained in this document, sediment input and riparian disturbance from the actual timber harvest and aspen treatment would be minimal. Most of the risk would be eliminated by logging on snow or frozen ground. Restricting commercial hauling with closures when the roads are wet would minimize road damage and erosion. The condition of existing roads used for commercial hauling would be improved, thereby reducing sediment introduction into the streams. Properly located armored ford stream crossings would help minimize fine sediment input into streams and ensure no migration barriers would be created.

*Impacts from harvest activities would be limited because of following BMPs and conducting operations on snow and/or frozen ground. The winter operation would limit ground disturbance; mitigation measures to strictly control operations in riparian, wetlands, and along stream banks would limit sedimentation.*

In the long term, aquatic habitat would benefit from these treatments by improving the overall health and condition of riparian and aquatic habitat and reducing the risk of large scale, intense unnatural fires that can have significant adverse effects on riparian and aquatic habitat.

In order to access timber, three existing stream crossings would be used in the Dick Creek drainage. Stream crossings are located in areas with minimal bank damage and the crossing would be armored with cobble to large size gravel materials in order to minimize stream bottom disturbance and fine sediment

introduction. Temporary roads over snow or frozen ground would also be used to cross streams during harvest operations. Forest personnel would designate crossing locations. Crossings would be removed after operations are complete and before spring thaw. Given that the temporary road crossings would be used only in the winter, little impact is expected. Crossings of this type have been used with little impact on other timber sales on the Shoshone.

#### **Wetlands**

*Wetlands control runoff and water quality, recharge ground water, and provide special habitats. Actions that may alter their ground cover, soil structure, water budgets, drainage patterns, and long-term plant composition can impair these values.*

There would be no effects on wetlands under Alternative 1. The effects of both action alternatives on wetlands would be minor since roads are disconnected from them, all contract clauses are enforced, and other mitigation measures, such as winter logging, would be implemented.

#### **Floodplains**

*Floodplains are natural escape areas for floods that temper flood stages and velocities.*

There are no effects on floodplains from Alternative 1. Neither action alternative would affect floodplains, with the enforcement of contract clauses and implementation of other mitigation measures.

### **3.4 Fire and Fuels**

This section presents the existing condition relative to fuels and fire management (fire history and fuels loading) within the analysis area, considering past and present activities that helped to shape the existing fire ecology based on the vegetation communities. As has been the trend throughout the Rocky Mountain West, the policy of controlling fires since the creation of the Forest Service in 1902 is reflected in the buildup of natural fuels and the conversion through natural succession of what were grassland, sagebrush, and aspen stands to areas dominated by juniper, limber pine, and other conifers through the successional process.

The predominant cover type in the watershed is spruce/fir. Spruce/fir cover types normally have an average fire-recurrence interval of 100 to 300 years and generally burn with high severity. Fire suppression over the past 100 years generally has not changed the overall fire regime in these types, but over time leads to increased fuel loadings and to potentially higher intensity fires covering a larger area than would have historically occurred. This is particularly true where insect infestations cause areas of mortality to greatly increase already high fuel loadings.

Ecological succession is the dominant process on this landscape, moving vegetation communities toward late seral stages, increasing conifers and fuel loading. Wildfire and wildfire suppression is a process that has had an effect on the existing condition and could cause vegetation community change in the future.

Over the last 90+ years, fire suppression changed the landscape from one dominated by frequent small fires and early successional species to one dominated by less frequent, but more intense fires and late seral vegetation. Because of continuous fuels and increased fuels accumulations, these late seral vegetative communities have the potential to burn intensely if ignited during a dry season with windy conditions. In addition, fire suppression has made vegetation more homogenous in this area and reduced landscape diversity and species composition.

From 1970 to 2001, there was one lightning-caused wildfire in the Dick Creek watershed; in 2002, there were two lightning-caused wildfires. Each fire was less than 0.10 acres. Generally, this area as well as the rest of the Greybull Ranger District receives fewer fires than other areas of the Forest. Much of the Greybull Ranger District had large fires in the late 1800s because of sheep ranchers burning trees to increase the grass available for sheep.

Under Alternative 1, the natural successional process would continue to occur slowly, including changes to age class structure, aspen, and other diversity components such as meadows and riparian areas. Wildfires would continue to be suppressed. Diversity would decline, as components such as aspen

continue to be lost to increasing conifer encroachment. Forage and available habitat for many wildlife species would decline as encroaching conifer communities would continue to increase in cover at the expense of rangelands, aspen/shrub habitats, and wildlife/livestock forage.

As demonstrated by other large fires, impacts to vegetation, soil, and water can be severe. The effects from these types of fires would be more severe than lower intensity fires. Another effect of suppression efforts on a large wildfire may include fire line construction, removal of trees and construction of helispots, location of fire camps, heavy road use, etc.

Without disturbances (timber harvest, prescribed burning, wildfire etc.) to create young age classes, especially in aspen/shrub communities, the diverse patterns on the landscape would continue to decrease and may eventually disappear. The action alternatives would open areas to increased sunlight and ground temperatures, thus creating a semi-open patchwork or mosaic of grassland/shrubs/aspen and conifer communities. Aspen dependent species would benefit, as new stands of aspen and stands being encroached by conifers would be stimulated in the treated areas.

Fire risk could be exacerbated by periods of severe drought conditions, but these conditions are difficult to predict.

The likelihood of a wildfire resulting in removal of entire stands of vegetation is dependent on numerous factors such as fuel moisture content, weather conditions, topography, fuel loading, stand density, and the presence of multiple vegetation layers that provide ladder fuels. Management of the last three factors, as in the action alternatives, can greatly influence fire severity and intensity. If not managed, over time, the increases in understory species and fuel loads can lead to uncharacteristically intense wildfires. Timber harvest would have a direct effect on fuel loading. It would create small openings or reduced density in timber stands, which would reduce continuous fuel conditions and tree canopies. This would reduce the risk of crown fires and possible stand replacement fires. Indirectly, public health, safety, and the viewshed benefit positively from the reduced risk of large, uncontrollable wildfires.

Vegetation management through actions such as timber harvest or prescribed burning would result in reduced fire severity within the treated areas due to: 1) reduced fuel load, 2) possible reduction in spread rate, size, and severity of wildfires, and 3) improved safety and ease of suppression (Omi, et al. 2002).

### **3.5 Transportation**

The total miles of existing roads on national forest lands within the Dick Creek watershed are 18.2. (The roads are displayed in Figure 19). All roads are low standard improved or unimproved dirt roads. A portion of the road system (6.1 miles) is maintenance level one and is closed year-round to motorized access. Approximately 4.7 miles of these roads were closed in the late 1990s. These roads are essentially closed until the time that they are needed for future access. When these year-round closures are excluded from the total mileage, the road density is 0.8 miles per square mile. During the winter period (January 1 to April 30), seasonal restrictions for motorized vehicles including snowmobiles within the watershed effectively close all Forest roads within the Dick Creek drainage as well as those traversing upper Sheep, Pappapau, and Sunshine Creeks. Thus, the effective open road density for the Dick Creek area during this period is zero. The purpose of the restrictions is to prevent harassment of wintering elk and to protect soil and water resources. The road closures and restrictions have been effective in providing wildlife security and watershed protection.

There are numerous roads on private and BLM land in the eastern portion of the watershed. The road density in that area is approximately 2.25 miles per square mile. There is a road coming from private land onto the Forest up the main Dick Creek drainage where access to the Main Fork of Dick Creek is possible. However, this potential entrance during the winter period does not provide unrestricted access to the elk crucial winter range area, which occurs in the North Fork of Dick Creek.

The miles of road would not be changed under any of the alternatives. Under Alternative 1, the road system would still be connected to the stream network at stream crossings. In Alternatives 2 and 3, the stream crossings would be armored and additional cross drainage structures would be added to disconnect

the road from the stream. This would result in less sedimentation from roads into the stream. All harvest activity would be conducted on snow or frozen ground. This would minimize the disturbance associated with the temporary roads that would be used to access harvest units.

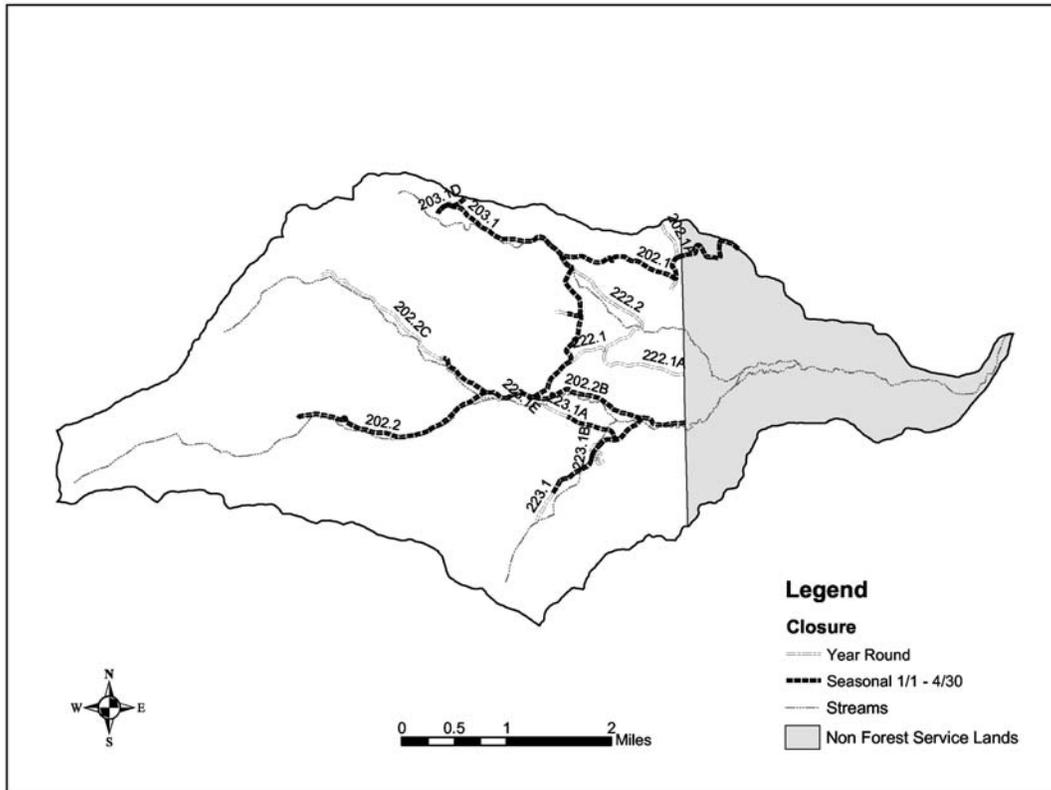
Any pre-use work on the existing roads would be conducted in the summer; to be effective, such work must be performed when the ground is not frozen.

***Roads Management Policy/Roads Analysis***

For all projects involving roads management decisions where a decision will be made after January 12, 2002, a roads analysis is required. Forest Service Manual 7700 provides direction when it is necessary to complete a roads analysis (FSM 7712.13 – Scope and Scale of Roads Analysis). When proposed management activities would result in changes in access, such as changes in current use, traffic patterns, and road standards, or where there may be adverse effects on soil and water resources, ecological processes, or biological communities (road construction, reconstruction, decommissioning), those decisions must be informed by a roads analysis except as provided in section 7712.13c. This EA analysis incorporates the discussion and recommendations made in the Roads Analysis for the Dick Creek Watershed, which was prepared in conjunction with this EA.

Implementation of the recommendations from the Roads Analysis does not require any ground disturbing activities. The major portion of the recommendations address what roads should remain on the Forest Service System to provide access to the area. There are currently 18.2 miles of system (classified roads) in the area with an additional 0.8 miles of old road that are closed, revegetated, and identified as unclassified. The Roads Analysis recommends that the miles of system roads be reduced to 17.1. An additional 1.1 miles of road would be designated as unclassified. These additional miles are already closed and vegetated so no on-the-ground work would be required to meet the recommendation.

Removing these roads from the system would reduce the miles of road providing redundant access to the same areas. Implementation of the RAP recommendations would not change the current amount of open and closed roads in the watershed.



*Figure 19. Existing and proposed transportation system within the Dick Creek Watershed.*

### 3.6 Recreation Resources

This analysis focuses on the following locations in the analysis area for determining the effects of the proposed Dick Creek Timber sale on recreation: the North Fork of Dick Creek, the South Fork of Dick Creek, and the Main Fork of Dick Creek. Other areas of focus included FSRs 202.2, 223.1, 202.2B, 223.1A, 202.2A, 203.1, and the Timber Creek Trail (656).

In 2B Management Areas recreation is to be managed for rural and roaded natural recreation opportunities and motorized and non-motorized activities. Semi-primitive and non-motorized activities are emphasized in Management Area 3A. Management emphasis in 4B is on habitat for Management Indicator Species. Within these areas recreation and other activities must be managed to favor the needs of the designated species. Roaded natural recreation opportunities may be provided along Forest arterial and collector roads (Plan III-126-145).

No developed recreation sites currently exist within the analysis area. The Timber Creek Trail traverses the southern boundary of the proposed analysis area that lies adjacent to the Main Fork of Dick Creek. The Timber Creek Trail begins at the Timber Creek Ranger Station and connects with the Middle Fork of the Wood River Trail (814) and trailhead 10 miles south.

There are approximately 25 dispersed campsites located within the Dick Creek drainage. Of these campsites, nine are located near treatment units or along proposed haul routes.

Summer recreation use occurs within the vicinity of the proposed timber sale. The majority of this use is by off-highway vehicles on Forest roads, and backpackers and horsepersons on the Timber Creek Trail. The trail is generally open in late June through late November, depending on snow conditions.

The heaviest recreational use of the Dick Creek drainage occurs during the fall big game hunting season. The hunting season begins in September and continues through early November. This area is part of elk hunting unit 62 and deer hunting area 117. In 2001, the Game and Fish recorded 2,629 hunter days in these two units. There are currently no outfitter or guide base camp permits issued for the proposed analysis area, but day use does occur.

Under Alternative 1, existing uses as described above would continue.

Under the action alternatives, any dispersed campsites that are adjacent to ongoing timber activities would be closed to camping during the operating period for safety purposes. The impact from this on dispersed use would be minimal, because most dispersed recreation occurs before the operating season, which starts in December. In addition, during the majority (January 1 to March 31) of the operating season (December 1 through March 31) the area would be closed to public motorized access. Other dispersed campsites in the drainage and other dispersed recreation users would be affected by the additional truck traffic. Again, this impact would be limited since the dispersed motorized recreation use season and the timber sale operating season overlap for only two months.

There would be limited effects to users of the Timber Creek Trail. Users may hear and see harvest activities in the distance. This effect is not much different from what users would currently experience from firewood cutting in the area, though the effects from timber harvest would be more continuous. Most use of the trail probably occurs outside of the operating season. Some other non-motorized dispersed users of the area may be displaced by harvest activities. Such effects would be short-term and are unlikely to affect total dispersed use, given the many other places available for such use.

### **3.6.1 Roadless Area**

Portions of the Dick Creek Watershed fall within inventoried roadless (*see* Figure 20). The roadless inventory is based on work done in the late 1970s; this work was transferred to a new map base around 1984 as part of Forest Plan development. The 1984 maps were used to identify inventoried roadless for this proposal. The 1986 Forest Plan allocated the inventoried roadless within the Dick Creek watershed to management areas that allowed timber harvest and road building. This allocation reflected the intent of the Wyoming Wilderness Act of 1984, which released these lands to multiple uses as identified in the Forest Plan.

In 1999, as a precursor to the Roadless Area Conservation Initiative, a moratorium was placed on activities within inventoried roadless areas. That moratorium halted the initial Dick Creek Timber Sale, which proposed road building and timber harvest within inventoried roadless areas. Since that time, various changes have occurred relative to the Roadless Conservation Rule and agency direction in response to that rule. Currently the courts have enjoined the Roadless Conservation Rule as the rule is litigated. In December 2001, the Chief of the Forest Service issued an interim Roadless Area Directive that is designed to protect roadless characteristics while allowing some road building and timber harvest in specific situations.

At this time management in roadless areas in the Dick Creek watershed is subject to the interim directive. There is no new road construction *or reconstruction* being proposed in roadless areas for this project, so that portion of the interim rule does not apply. The specific direction under which the harvest proposal in this EA is progressing without Chief's approval is:

*The Chief reserves the following:*

*2. The authority to approve or disapprove proposed timber harvest in inventoried roadless areas, except for the following:*

d. The harvest is in a portion of an inventoried roadless area where construction of a classified road and subsequent timber harvest have previously taken place, and the roadless area characteristics have been substantially altered by those activities (FSM 1925.04a and 04b).

Figure 20 shows the location of the harvest units in relationship to inventoried roadless areas. Most of Unit B and portions of Unit C are within roadless. Classified roads currently access both units: A classified road passes through the middle of Unit C, and a classified road accesses the north end of Unit B. All portions of the units are within ½ mile of a classified road. Both of these units have past evidence of logging, skidding, and other roads. Throughout all portions of Unit C, there is evidence of stumps from past harvest. Scattered throughout Unit B there is evidence of past harvest in the form of stumps and skid trails, though the evidence is not as prolific as that found in Unit C. Figure 20 displays the location of non-classified roads and skid trails in the vicinity of the harvest units. Many of these roads are partially vegetated and they tend to blend in with the landscape, but they do provide visual evidence of past activities.

Besides this specific evidence within the stands, there is other evidence that demonstrates that the portion of the Dick Creek watershed in which the activities are proposed is roaded. As can be seen in Figure 20 there are classified roads down a number of drainages in the western portion of the watershed. These roads penetrate further into the roadless area than the proposed harvest units. In addition, the portion of the watershed in which Unit B is located is designated as management area 2B Roaded Recreation. When looking at the area from a landscape scale it is fairly obvious that the western portion of the watershed is roaded. This observation is further reinforced when one walks through the stands where there is evidence of past roading, skidding, and harvesting. Based upon this discussion we feel that the harvest areas meet the exception noted above in the interim directive.

As documented in the Roadless Conservation Rule, roadless characteristics include the following:

1. High quality or undisturbed soil, water, and air
2. Sources of public drinking water
3. Diversity of plant and animal communities
4. Habitat for threatened, endangered, proposed, candidate, and sensitive species and for those species dependent on large, undisturbed areas of land
5. Primitive, semi-primitive non-motorized, and semi-primitive motorized classes of dispersed recreation
6. Reference landscapes
7. Natural appearing landscapes with high scenic quality
8. Traditional cultural properties and sacred sites
9. Other locally identified unique characteristics

For this area, items 6, 8, and 9 do not apply. No such sites have been identified in this watershed.

Items 1 and 2 are discussed in section 3.3 Watershed Resources (Soil and Water). The watershed has experienced disturbance from past activities and watershed conditions have been impaired.

For items 3 and 4, discussions are in sections 3.1.1 Diversity and 3.2 Wildlife.

Item 5 is discussed in section 3.6 Recreation Resources.

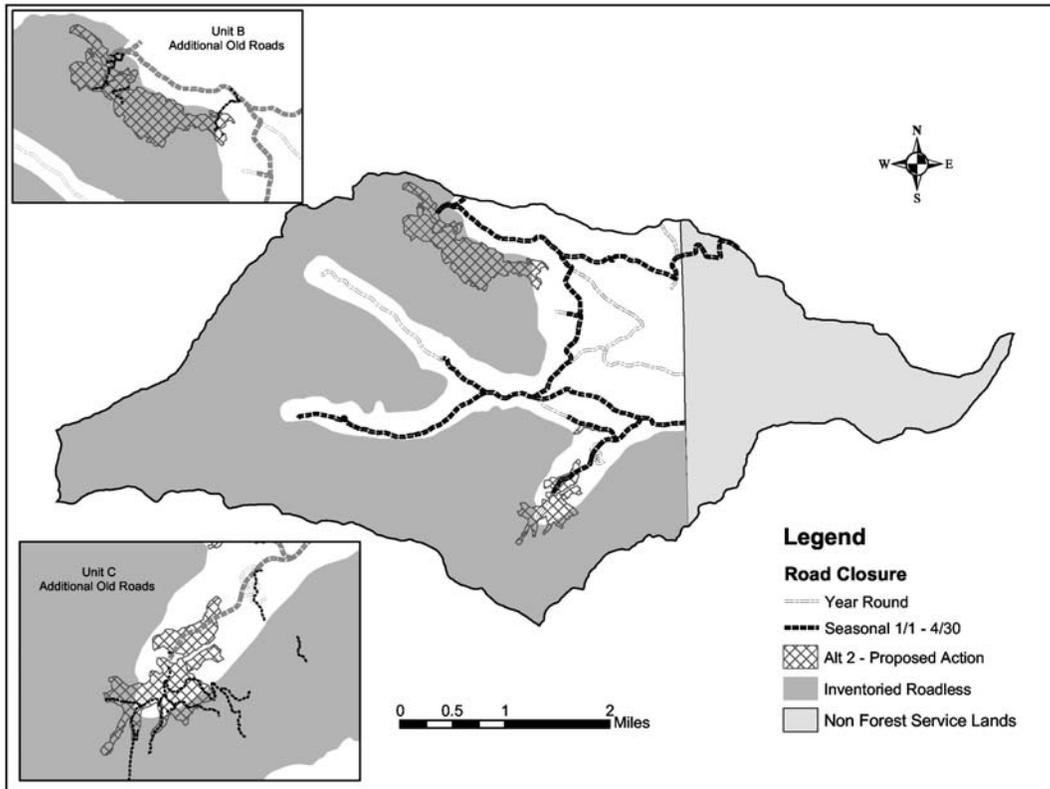
Item 7 is discussed in section 3.7 Visuals.

There is some question whether this area would be classified as roadless if a new inventory were completed; the answer to that question is beyond the scope of this analysis. *Nevertheless, it is important to remember that this discussion is based upon the conditions as they now exist and how they will be modified and not upon the conditions that existed when the area was designated. Both the existence of improved roads maintained for standard passenger type vehicles and the recognizable evidence of timber harvest and skid trails would make this area unsuitable for Wilderness designation (FSH 1909.12 Section 7.11) and possibly for roadless designation.*

The rest of this discussion evaluates the effects of the alternatives on the roadless characteristics of the area. Alternatives 1 and 3 do not affect roadless area characteristics of inventoried roadless areas because no activities occur within inventoried roadless areas.

For Alternative 2, the activities proposed within roadless include 268 acres of commercial timber harvest, with associated skidding, 10 acres of non-commercial timber harvest, and 192 acres of prescribed burning. *No road reconstruction or temporary roads would occur in inventoried roadless.* The effects of the prescribed burning would be similar to what would occur in a natural fire and would not affect roadless characteristics. The harvesting and skidding that would occur would leave evidence similar to the existing evidence of past treatments. The fact that the harvest would occur in the winter on snow covered or frozen ground would limit the amount of soil disturbance. The stumps and little skidding disturbance that may occur would be fresher and as such more evident in the short term than the current evidence of past activity. However, over the next 10 to 20 years the evidence would become more subdued to the point where the area would again look similar to what it does now.

Discussions on specific roadless characteristics are in the sections noted above. In summary, the proposed activities in Alternative 2 would not change the existing roadless characteristics of the area. Soil and water resources would be improved and/or maintained. Species diversity would actually increase under Alternative 2, while threatened and endangered species would be maintained to ensure their continued presence in the area. The current mix of recreation opportunities in the area would not change. Visual impacts would be similar to impacts that generated the current landscape. The proposed activities would not change the existing roadless characteristics of the area and would not preclude any future decisions on how to manage those roadless characteristics.



**Figure 20. Inventoried roadless areas proposed treatment units in the Dick Creek watershed.**

### 3.7 Visuals

The natural-appearing characteristic landscape in this watershed includes spruce/fir, limber pine, Douglas-fir, aspen and lodgepole pine forests, shrublands, and grass meadows. For decades, the analysis area has been slightly modified by human activities such as oil and gas, timber management, roads, recreation, and livestock grazing. Natural events of wildfires, winds, and insects and disease have also played a part in shaping the landscape.

This analysis focuses on all zones of the proposed project that are visible from FSRs 202.2, 202.2B, 222.1, 222.2, 223.1A, 223.1, and 203.1. Consideration of these areas for analysis is logical for the following reasons: the proposed harvesting activities would occur in the identified viewsheds, and the results of the proposed harvesting activities would be seen by the majority of viewers from the Forest roads listed above.

Existing visual quality condition and the visual effects of management proposals for the proposed Dick Creek Timber Sale were analyzed using the Visual Management System as outlined in National Forest Landscape Management, Volume 2, Chapter 1 (1974).

#### **Forest Plan Direction**

The Dick Creek analysis area is within Management Areas 2B, 3A, 4B, 4D and 9A as outlined in the Forest Plan. Forest Plan standards and guidelines for 2B, 3A and 9A areas require a visual quality objective of partial retention, which is defined as "A visual quality objective, which in general means that

man's [*sic*] activities may be evident but must remain subordinate to the characteristic landscape" (Landscape Management 1974).

In areas given the visual quality objective of partial retention, activities may repeat form, line, color, or texture that are found naturally in the surrounding landscape character, but the changes must remain subordinate to the surrounding landscape. Management activities may also introduce forms, lines, and textures that are found infrequently or not at all in the surrounding landscape. However, these activities must also remain subordinate to the surrounding characteristic landscape.

4B and 4D Management Areas have a visual quality objective of modification. A visual quality objective of modification allows management activities that may visually dominate the original characteristic landscape. However, activities of vegetative and landform alteration must borrow from naturally established form, line, color and texture (Landscape Management 1974).

Two distance zones occur within the proposed analysis area, foreground, and middleground. Distance zones are used to delineate the amount of detail that is distinguishable from a given view point or viewing corridor.

The foreground is described as the area generally within 0 to 0.25/0.50 miles of an observation point. Within the visible foreground, a greater level of detail is evident to a given observer. The middleground is described as the distance zone that extends from the foreground zone to three to five miles from the observer.

The Forest Plan indicates that all arterial and collector roads in 2B Management Areas have a sensitivity level of 1 (III-125). All Forest Service system roads and trails located in Management Area 3A are given a sensitivity level of 1 (III-133).

Sensitivity levels are used to measure the degree of viewer interest in the scenic qualities of the landscape. A sensitivity level of 1 has been assigned to all areas of the proposed project that are visible as foreground from FSRs 202.1 and 223.1. "Sensitivity level 1 includes all seen areas from primary travel routes and use areas and water bodies where at a minimum, at least one fourth of the Forest visitors have a major concern for the scenic qualities" (Landscape Management 1974).

All other local Forest roads are given a sensitivity level of 2 or "common."

#### **Effects on Visual Quality**

The analysis process began by identifying viewpoints critical to the project. The portions of the project that are visible from the critical viewpoints were then determined. Seen areas were determined in the field and then validated using ARCINFO seen area analysis. It is important to note that seen area analysis does not exclude an area because it is screened by vegetation.

Most Forest visitors view the Dick Creek area through their windshields, from dispersed campsites, or from the Timber Creek Trail. For this reason, seen area analysis was conducted from the main roads in the area.

Alternative 1 would have no direct effects on visuals. Some visual diversity in the form of aspen stands would continue to be lost as conifers encroach on those stands.

Proposed harvest Unit B on the North Fork of Dick Creek lies within the visible foreground of FSRs 203.1 and 202.2. Several points along FSR 203.1 offer wide landscape views of the sale area from the middleground. FSRs 203.1 and 202.2 are classified as local roads; the sensitivity level is 2, or "common."

With the implementation of Alternatives 2 or 3, approximately 202 acres and 30 acres respectively would be treated with a thinning and sanitation salvage harvest system. An additional 106 acres and 53 acres respectively would be treated for aspen regeneration. FSR 203.1 and two temporary roads would access this portion of the sale area across the North Fork Dick Creek.

The sanitation salvage treatment proposed for the North Fork of Dick Creek would be visible to travelers on FSRs 203.1 and 202.2. Sale activities would be visually evident as a change of texture in the tree canopy. Small clearcuts would be utilized where appropriate. The edges of these clearcuts would be feathered and blended to mimic other small openings apparent in the surrounding natural landscape.

The greatest visual effect of the action alternatives would be within those areas identified for aspen treatment. The short-term effects of these measures would be noticeable to travelers on FSR 203.1. It is anticipated that the long-term visual effects of this alternative would be quite favorable. Within one year, aspen sprouts should begin to regenerate. As the regenerated aspen stands mature, they would offer visual diversity and fall color in the landscape.

The visual quality objective for this portion of the analysis area is partial retention. The desired visual character of the landscape is to blend natural openings with timbered stands of various ages, densities, and species. The management objective for the analysis area is to maintain the timbered appearance while creating diversity.

The effects of the proposed timber harvest within the North Fork of the Dick Creek Drainage would comply with these goals and objectives.

Proposed harvest units A and C adjacent to the South Fork of Dick Creek lie within the visible foreground of FSR 223.1, and the foreground and middleground views of FSRs 223.1A, 202.2B, 222.2, and 222.1.

The sensitivity level for FSR 223.1 is 1. The sensitivity level for all other local roads is 2 or "common."

Under Alternatives 2 and 3 approximately 95 acres and 68 acres respectively of spruce/fir would be treated with the first step of a two-step shelterwood harvest system. An additional 14 acres of aspen treatment would occur in this area under both alternatives.

The effects of the proposed timber harvest would be most noticeable to Forest visitors traveling on FSR 223.1. Sale activities would occur in the immediate foreground of this local road. Visitors traveling here would notice stumps, skid trails, and disturbance to the understory vegetation. This would be somewhat lessened by the application of the sensitivity level 1 mitigation measures.

Other travelers would view the sale area as middleground. Visitors to these roads would notice slight changes in the texture of the forest canopy.

Areas where aspen treatment is proposed would be the most noticeable. For the first year after the aspen treatment is completed, Forest visitors would notice stumps and evidence of machinery. It is anticipated that the long-term effects of the aspen treatment would be visually favorable, with many of the most noticeable effects decreasing substantially after one to two seasons.

The proposed timber harvest activities within the South Fork of Dick Creek would meet the visual quality goals and objectives as identified in the Forest Plan.

### **3.8 Heritage Resources**

On February 7, 1997, a preliminary literature review was conducted for the Dick Creek Timber Sale analysis area. A file search was requested from the Wyoming State Historic Preservation Office (SHPO). The file search indicated one site, a conical lodge, recorded within the analysis area. It is listed as eligible to the NRHP (National Register of Historic Places) with SHPO concurrence. Forest files confirm the presence of this site and indicate it is outside the *analysis area* associated with the proposed activities.

A Class III (100%) cultural resource inventory of all areas proposed for ground disturbing activities was completed, as well as the cultural resource documentation called for in 36 CFR Part 800. The survey identified three historic sites, two historic isolates, and two prehistoric isolates. The isolates are not considered eligible to the NRHP. The three historic sites also do not meet the criteria of eligibility for the NRHP. The SHPO has been notified of the project and the required coordination with the SHPO was completed. A concurrence letter from the SHPO is located in the project file (Ref number #0197RLC001 (1997)).

No direct effects would result from implementation of any alternative. New sites discovered during the course of project implementation would be protected from ground disturbance while on-site evaluations of their significance and treatment are made in consultation with the SHPO.

### 3.9 Socio-Economic

The economic and social settings for the Shoshone National Forest are described in the FEIS for Allowable Sale Quantity, pages III-2 through III-18. This project is too small to have any measurable effects on the local social or economic conditions over the short or long term. However, this project does contribute to the effects that Forest resources have on the local economic and associated social conditions. This project is very important to some members of the public, in that it represents one part of the flow of resources from the Forest. The Park County Commissioners, in their scoping response letter of June 5, 2002, voiced this concern.

*Timber products are important to the economic welfare of Park County. Revenue to the County from 25% of National Forest timber sale receipts is increasingly important to us as income from mineral resources continues to decline. In addition to our county budget concerns, we want to maintain a healthy local economy, which is enhanced by the sale of National Forest timber. As you know our local sawmill, Cody Lumber, Inc., employs 60 people with an annual payroll of over \$1 million dollars. When we consider the multiplier effect, this industry contributes significantly to the local economy.”*

Under Alternative 1, there would be no wood products produced and no local benefits from the sale of wood products would be realized. Ongoing economic and social benefits from recreation, grazing, and firewood cutting would continue.

Under Alternatives 2 and 3, wood products would be produced for sale. These products would be available to support local businesses and publics that are dependent on timber resources. Alternative 2 provides more such material. Both action alternatives also provide additional sources of firewood for fuelwood cutters. The economic benefit from firewood is limited, because we anticipate that the use is just redirected from other areas and does not represent an increase of overall firewood gathering. Other benefits from recreation are also considered steady. As noted in the Recreation discussion, use in this area may be impacted, but we anticipate that use would be redirected to other areas with no net loss of benefit to the local area.

Financial effects of the alternatives are displayed in Figure 21. This analysis incorporates only real costs and revenues. Quantifying resources that are not typically valued in terms of dollars can be misleading due to the difficulty in assigning monetary value to resources such as wildlife, vegetation diversity, scenic quality, watershed condition, and recreation opportunities. For this reason these resource values were not quantified in terms of dollar values and were not included in the financial analysis. The values of other resources are considered qualitatively in specific resource discussions elsewhere in this document

**Figure 21. Financial analysis by alternative.**

	<b>Alternative 1</b>	<b>Alternative 2</b>	<b>Alternative 3</b>
Present Value benefits	0	410,292	132,289
Present Value costs	-44,200	-340,622	-148,785
Net Present Value <sup>12</sup>	-44,200	69,671	-16,497
B/C Ratio	0	1.20	0.89

The financial analysis indicates that Alternative 2 is the only alternative with a positive return. Alternative 1 is negative because it has no timber harvest to produce revenue, while still incurring the cost of completing this analysis. Alternative 3 is negative because it has a lower harvest level and associated revenue than Alternative 2, while it still incurs the same costs for the road system to access the harvest units and many of the costs associated with non-commercial treatments.

<sup>12</sup> Net present value = the difference between the discounted value of all outputs to which market prices are assigned and the total discounted costs. B/C ratio = discounted values divided by the discounted cost.

### **Environmental Justice**

Presidential Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, was issued in February 1994. This directed federal agencies to consider, as part of the NEPA analysis process, how their proposed actions or projects might affect human health and environmental conditions on minority and/or low-income communities.

Two fundamental questions are posed by the CEQ (Council of Environmental Quality) to help agencies address these and related factors: 1) Does the potentially affected community include minority and/or low-income populations? And, 2) Are the environmental impacts likely to fall disproportionately on minority and/or low-income members of the community and/or tribal resources?

In answering the first question, we used 1990 census data to examine the minority and low-income populations in Park County, the county where the proposed action occurs. The minority populations for Park County represent less than 2.5% of the total population for the county. This compares to 5.8% minority populations for the whole of Wyoming. CEQ guidance identifies a minority population as one where either: a) the minority population of the affected area exceeds 50 percent or b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population. For this analysis, the affected area is identified as Park County and the state of Wyoming is used as the geographic reference for the general population. Park County meets neither of the above conditions, so there are no minority populations identified.

The percentage of persons below the poverty level for Park County is 9.5 percent as compared to 11.9 percent for Wyoming. Those persons are generally dispersed throughout Park County and there are no specific communities that are predominately low income. For this analysis no low-income populations were identified.

Given that no minority or low-income populations are identified in the affected area, there is no disproportionate effect from any alternative on such populations regarding environmental justice concerns or factors.

### **3.10 Cumulative Effects**

#### **3.10.1 Past, Present, and Reasonably Foreseeable Future Actions**

The cumulative effects analysis documented here examined the impacts of the two action alternatives in conjunction with the incremental effects of past, present and future projects that may occur near the Dick Creek analysis area. Past, present, and foreseeable future actions include timber sales, livestock grazing, oil drilling, and recreational uses.

The boundary within which cumulative effects are analyzed is the Dick Creek Watershed. That area, along with some past, present, and future actions is shown on Figure 22. In the list of actions being considered, a few are located outside of the cumulative effects area. These actions are not being considered as part of the cumulative effects, but are provided to illustrate the intensity of activity that could occur in the Dick Creek area. The period within which cumulative effects are analyzed is roughly from the 1970s through 20 years from project implementation. This is related to the time over which this analysis is conducted, the decision made, and anticipated follow up actions are implemented and completed.

Some changes are always taking place in the condition of the Forest, with or without human activity. Many of these, such as changes set in motion by wildfires, storms, and floods can be significant changes and would continue even if all human activity ceased. An activity that overlaps the analysis area in time and space does not necessarily contribute to cumulative effects. The cumulative effects discussion that follows summarizes the effects of those items that contribute to cumulative effects.

The IDT indicates that the action alternatives would have no appreciable cumulative effects on transportation and heritage resources. Fire is discussed under Vegetation. Resources of concern needing further elaboration regarding cumulative effects are discussed below.

### **General History**

The Dick Creek drainage is part of the original Yellowstone Forest reserve. Beginning in the late 1800s, before reservation, livestock grazed the drainage. Domestic sheep grazing occurred until the 1930s. Both domestic sheep and cattle grazing occurred for several years in this period; commercial cattle grazing continues under permit. Timber harvest began in the drainage in the 1880s using portable sawmills (primarily in the South Fork between 1908 and 1950). Additional commercial entries into portions of the drainage have been made since, most recently in the 1980s. Personal use fuelwood gathering is a continuous activity. Exploratory oil drilling took place at several locations in the drainage in the 1980s; production has never occurred. Existing roads provide motorized access through much of the watershed. These roads are used for range and timber management and by the public for recreation (camping, hunting, OHV vehicle use, sightseeing, and fishing). *Herbicide treatment to control sagebrush occurred in the 1960s.*

### **Past Activities**

- Livestock grazing has occurred continuously over the last 30 years. Grazing numbers were reduced by 40% during that time.
- Oil and gas exploration has occurred within the Dick Creek Watershed. Three exploratory wells were drilled in the 1970s and 1980s. All three wells were dry and were subsequently rehabilitated. Evidence of the drill pads and access roads still exists. Small oil fields, such as the 4-Bear field, are located within 10 miles of the analysis area.
- A riparian improvement project and beaver reintroduction effort was completed in the early 1980s.
- Approximately 4.7 miles of road were closed in the late 1990s.
- In 1975 and 1979, 77 acres of precommercial and commercial thinning occurred.
- *In 1976, 168 acres were prescribe burned in Gwinn Fork drainage to control sagebrush and conifer encroachment.*
- In 1982, regeneration (clearcut) was conducted on 55 acres of aspen.
- In 1986, 15 acres of aspen release (conifer removal) was conducted.
- In 1996, 52 acres of timber were treated in the watershed north of Dick Creek.
- Noxious weed treatment occurred.
- Fire suppression activities occurred when there were wildfires.
- Fuelwood gathering occurred.
- The area is used for motorized dispersed recreation, particularly during the hunting season.
- In 2002, drainage structures were improved and gravel was added to some roads.

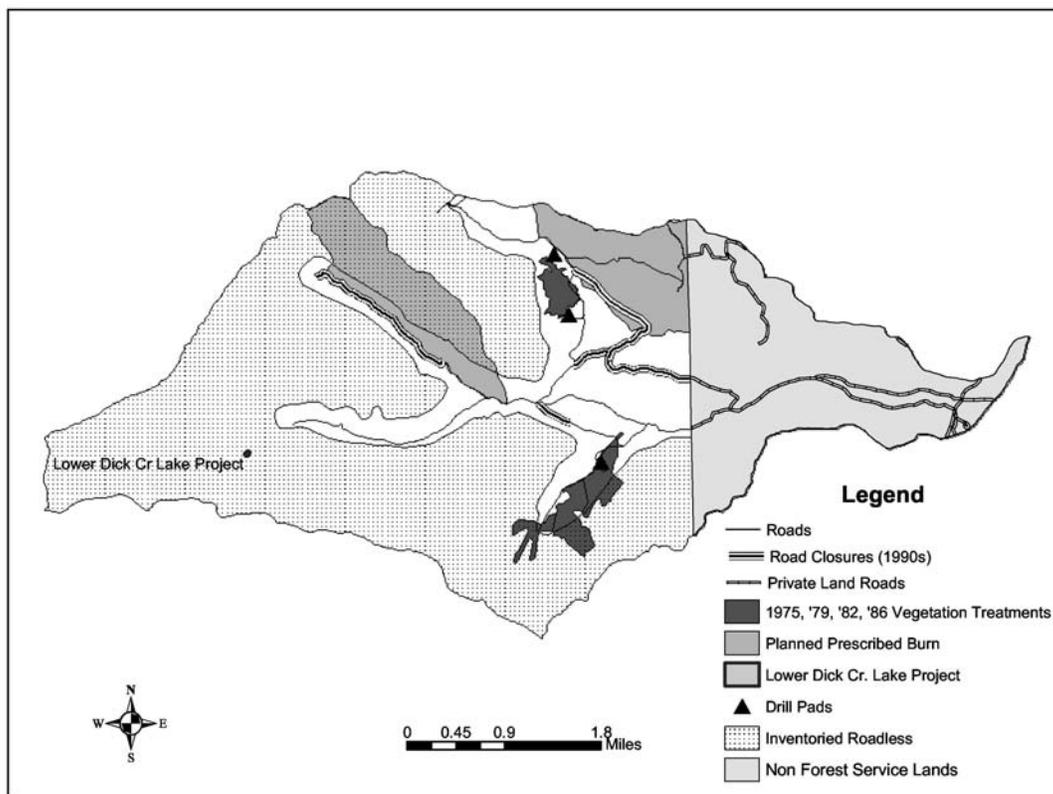
### **Present Activities**

- A project to deepen the level of the Lower Dick Creek Lake is proposed to be implemented in 2003 to enhance Yellowstone cutthroat trout habitat.
- Livestock grazing is continuing.
- Fuelwood gathering is occurring.
- The area is being used for motorized dispersed recreation, particularly during the hunting season.

### **Reasonably Foreseeable Future Actions**

- There is one term grazing permit authorized in the analysis area, so livestock grazing at or near current levels within the Forest Service allotment is expected to continue. Grazing on private lands and other federal lands would continue.
- The area is available for oil and gas leasing. Though there is no known planned drilling, there is the possibility that drilling could occur on Forest Service or BLM lands in the watershed.

- The analysis area would be entered again in 10 to 20 years to conduct follow up treatments on the harvested stands.
- Noxious weed treatment would occur after the sale as a follow up to the project. Other weed treatment would occur in the area, as funds are available.
- The area will continue to be used for motorized dispersed recreation, particularly during the hunting season.
- Fuelwood gathering will occur. For a short time after the sale, activity would be higher as fuelwood cutters gather activity fuels.
- Fire suppression activities will occur when there are wildfires<sup>13</sup>.
- Two prescribed burns are planned in the analysis area for 2003 or 2004: the Gwinn Creek burn on 735 acres and the North Fork Dick Creek burn on 633 acres.



**Figure 22. Past, present, and future activities considered in cumulative effects analysis for the Dick Creek Timber Sale.**

<sup>13</sup> Though there is greater awareness that allowing fires to burn is important for a healthy ecosystem, it is likely that fire suppression activities will continue. Suppression has become a necessity because increased fuel loadings make it risky to allow wildfires to burn. When weather and fuel conditions are appropriate some fires are allowed to burn.

### 3.10.2 Cumulative Effects

This section discloses cumulative effects from past and present activities, effects of the action alternatives, as well as effects of reasonably foreseeable activities that are likely to occur on federal, state, and private land within the analysis area over the next 10 to 20 years. Cumulative effects are primarily a result of previous logging, roading, wildfire or prescribed burning, fire suppression activities, insect and disease infestations, grazing, recreation uses, oil and gas, along with the effects from the action alternatives and any projects likely to occur in the near future.

#### **Cumulative Effects on Vegetation**

The only timber activity that has occurred near the Dick Creek drainage in the last two decades is the Timber Creek Timber Sale (north of the watershed) and aspen regeneration and release cuts within the area. Past management activities have led to a slightly younger and more diverse landscape in the eastern portion of the watershed when compared to the western portion. Though the whole watershed is dominated by mature timber, the majority of the old growth stands are located in the western portion of the watershed. The action alternatives perpetuate this condition. Those alternatives would set back some stands that would eventually become old growth in 50 to 100 years. In general, the amount of treatment is less now and is projected to be less in the future than it was in the past. Thus, the overall trend for all stands in the watershed is to progress toward more mature.

As the watershed becomes more dominated by mature timber, it becomes more susceptible to insects and disease. This would lead to increased insect activity in the watershed that would cause tree mortality. This progression would continue under Alternative 1. Under the action alternatives, some younger stands of trees would be regenerated that would be less susceptible to insect infestation. This increased diversity helps to reduce the risk that insect infestations would reach epidemic levels. Given the level of treatment and projected treatment in the area, this effect would be local in scale. The domination of the landscape by mature timber would tend to overshadow the small scale improvements represented by the action alternatives.

The likelihood of a wildfire becoming a stand replacing fire is dependent on numerous factors, such as fuel moisture content, weather conditions, topography, fuel loading, stand density, and the presence of multiple vegetation layers that provide ladder fuels. Management of the last three factors, as in the action alternatives, can greatly influence (reduce) fire severity and intensity. The general trend in the watershed as a result of past fire suppression and limited management action is increasingly dense stands and increasing fuel loadings. These increases can lead to uncharacteristically intense wildfires. Under Alternative 1, the stands proposed for treatment would continue along this progression. This would make them more susceptible to a stand replacing fire if a wildfire occurs in the area. The action alternatives would help reduce fuel loadings in treated stands by reducing stand densities, removing slash material, and prescribed burning. In addition, the emphasis of aspen would increase a cover type that is more resistant to wildfire. Thirteen hundred acres of prescribed burning is also scheduled to occur in the watershed. This burning, along with the proposed harvest treatments, would increase the acres within the watershed that have lower fire intensities and reduce the likelihood of a wildfire developing into a stand replacing fire. Alternative 3 has less of an effect, because it treats fewer acres. As with the insect infestation, the fact that the area is dominated by mature stands somewhat overshadows the beneficial effect of the harvest treatments. Though with the addition of the future prescribed fire, close to 10% of the watershed would have had some form of fuel reduction.

Previous logging, roads, prescribed burning, past and present fire suppression, past and current grazing, vehicle traffic, and recreation uses, are all actions that could affect sensitive plants. Given the extent of past activities, it is unlikely that the small number of acres impacted by the proposed activities would add any cumulative effect on sensitive plants. This is particularly true given the lack of suitable habitat in the area.

It is likely that past activities led to the spread of noxious weeds in the area. The spread would slowly occur under Alternative 1. Existing levels of weed treatment would control some of this spread. The

action alternatives would likely lead to the spread of some noxious weeds. This spread should be limited by the winter operation and limited acres being disturbed. Future actions associated with this project to monitor and treat weeds would be adequate to address the slight increase of weed infestation.

#### **Cumulative Effects on Wildlife Resources**

Cumulative impacts from previous activities in the Dick Creek drainage (both private and public land) within the past several decades have generally been beneficial to most wildlife species. A more desirable mosaic pattern of vegetation types and age classes has occurred due to the prescribed burning and silvicultural treatments, especially aspen regeneration. Livestock numbers have been significantly reduced during the past several decades, and enhanced range systems and range improvements have occurred. Approximately 4.7 miles of road have been decommissioned leading to fewer disturbances.

The addition of effects from either of the action alternatives to past and planned actions would contribute to the cumulative effect of enhancing structural diversity and improving forage availability. The effects of this project, when added to the effects of past and future projects, contribute to a long-term sustainable mosaic pattern of vegetation over the landscape that is beneficial to most all wildlife species, including the species of concern for this project

#### **Gray Wolf**

Wolves have benefited by the previous treatment in this and nearby areas, as these actions have increased prey habitat suitability. This project and others listed as potential future actions would have the same effects, and added together, these projects can potentially help wolf recovery.

#### **Grizzly Bear**

Grizzly bear population and use in the Greater Yellowstone area, the Forest, and recently in the Dick Creek Watershed have increased. In 2001, the status of the Yellowstone population in relation to the demographic recovery targets (females with cubs of the year, mortality, female mortalities, and distribution of females with young) indicates all are being met or exceeded. At least three females with cubs of the year were observed in the South Absaroka BMU in 1998, 1999, and 2000. An additional two females with cubs of the year were observed in each of these years within 10 miles of the BMU boundary. It appears that the past and present federal and state land management actions in this and other adjacent bear use areas have served the goal of grizzly bear recovery well. Future activities are planned under similar standards and guidelines, all of which incorporate the goals associated with grizzly recovery and management.

#### **Lynx**

There is little evidence of lynx on the Shoshone, even though potential habitat exists across the Forest. Adding the effects of either of the action alternatives to past and future actions, the cumulative effects are minimal. The additive situation does not exceed cumulative standards set out in the LCAS. The upcoming burns in this area may affect some additional lynx habitat but most likely not to the threshold levels. These projects will be analyzed in separate NEPA documents and effects will be disclosed at that time.

#### **Sensitive Species**

Cumulative effects from either action alternative are minimal on sensitive species and their habitats, as most of these additive projects affect small areas and are likely to affect individuals but not populations. These species mainly prefer mature coniferous forests and most of the past and future projects have or would decrease that habitat type. All together, however, these actions are not of enough magnitude to culminate in detrimental impacts to the species.

#### **Management Indicator Species**

Most of the Forest's MIS benefit from projects that increase habitat diversity. This holds true for elk, mule deer, moose, beaver, and blue and ruffed grouse. Even though, as mentioned before, adding either of the action alternatives to past and future projects still constitutes minor habitat modifiers, the cumulative effects are not enough to influence population levels.

Population levels for the game species are influenced by habitat suitability and by hunting regulations set by Game and Fish. Game and Fish sets population objective levels for these species and allows more or fewer animals to be taken, depending on whether the population is over or under set objectives. Habitat enhancement can increase population levels up to set objectives and can increase carrying capacity of the area.

The beaver is also a species whose populations are influenced by regulations. This species is trapped and if populations fall too low, the Game and Fish will reduce the number allowed to be taken. This keeps population levels from getting too high. Habitat conditions do influence this species and they will move to suitable habitat areas. This project, as well as past and future planned projects, aims to revitalize riparian areas and to regenerate vegetation that this species prefers. As these projects are completed, some increase in beaver colonization can be expected.

The hairy woodpecker is not hunted or in any way regulated by Game and Fish. This species is much more influenced by habitat condition and suitability, preferring mature deciduous (aspen) forests with dead and dying trees. This species would not benefit from past and present harvest activities, as the activities do not occur in enough magnitude to have a detrimental effect. There is an abundance of available habitat for this species in this analysis area and across the Forest. The birds are common and the Forest has begun monitoring the hairy woodpecker.

#### **Cumulative Effects on Watershed Resources**

Analysis of the alternatives demonstrates that management requirements and special design standards, which are proven techniques, provide adequate control to mitigate the potential direct and indirect effects of the alternatives. Thus, there would be no cumulative effects relative to water quality at the Forest boundary or relative to watersheds of concern. Numerous factors particularly related to watershed cumulative effects were considered in reaching this conclusion. Consideration was given to:

- Additive effects of past, present, and reasonably foreseeable activities
- Location of proposed disturbances relative to sensitive areas and degraded systems
- Timing, severity, and duration of disturbances and their effects
- Effects on State-classified uses *and their anti-degradation policy*.
- Effects on stream health and aquatic life limiting factors
- Overall effects on functions of the riparian and wetland network
- Long-term soil productivity

In addition to these considerations, it is widely recognized that watersheds experience periodic disturbance events that vary in size, duration, intensity, and frequency. Because these events are random, some level of risk is implied when implementing a management project. This risk is a product of event probability and its consequences. To account for this risk, a storm with reasonable probability of occurring is considered during project design. For this analysis, that storm is the 10-year, 24-hour event.

Both action alternatives (Alternatives 2 and 3) carry the risk of contributing to watershed cumulative effects because road reconstruction and harvest-related ground disturbance would occur. Analysis of the action alternatives demonstrates management requirements and mitigation measures factored into the design to provide adequate control to reduce potential direct and indirect effects to a level of insignificance. Thus, any contribution to cumulative effects, up to the design storm, have either been eliminated or adequately mitigated. Therefore, neither action alternative is expected to contribute to watershed cumulative effects.

As a part of watershed improvement and no net road increase, approximately 4.7 miles of road were previously closed to motorized travel and revegetated in the Dick Creek watershed. These road closures and seasonal restrictions have been effective in providing wildlife security and watershed protection. Additionally, recent additional maintenance on the open roads has improved road conditions and reduced sedimentation.

Past actions and present conditions that increase the sedimentation that is occurring would continue under no action. Past, prescribed burning and timber harvest in the analysis area have not caused detrimental erosion, sedimentation, or compaction, and did not remove excessive ground cover, organic matter, or nutrients from the sites. Sedimentation would decrease under the cumulative beneficial effects of either action alternative that armor stream crossings and implement BMPs for forestry and soil and water conservation.

Past livestock management and its effects on riparian habitat and the species that use it are the greatest concerns in this drainage. New mitigation and monitoring standards incorporated into the allotment management plan for the Dick Creek Allotment will address these concerns. In addition, additional fencing adjustments and range improvements will help. Under the proposed changes, riparian conditions and aquatic habitat will improve.

The condition of existing roads used to access the timber sale would actually be improved thereby reducing fine sediment input.

There would be no cumulative effects to riparian because of the proposed activities.

#### ***Cumulative Effects on Recreation Resources***

The cumulative effects of the proposal would not substantially alter the recreation setting or visual integrity, as in the long term, both motorized and non-motorized dispersed recreation would be relatively unchanged. None of the future activities would likely impact recreation use.

Dispersed recreation, primarily State-regulated wildlife hunting and fishing, occurs in the area and would continue. The proposed project and any future projects are not expected to have any influence on or be affected by non-Forest Service regulated activities such as hunting and fishing.

#### ***Cumulative Effects on Roadless Areas***

As can be seen, most of the ground disturbing activities that have occurred since 1970 within the watershed have occurred outside of the roadless areas. Some past harvesting occurred along the South Fork of Dick Creek that was in roadless. Past roading and management activities have created the current road levels in this area, which are the major factors influencing the roadless characteristics. Throughout the portions of the watershed being treated, there is evidence of road templates from other past activities that occurred between 1940 and 1970 (*see* Figure 20). None of the alternatives propose additional roading within the watershed. The temporary roads under the action alternatives would be on snow or frozen ground and would not result in new road templates. The only future activity that could add to the roading in the area would be oil and gas development. Though a possibility, no proposal has been made and any such proposal would have to go through a NEPA process to address impacts on roadless. Regardless, the proposed actions do not contribute to any cumulative change to the roadless characteristics of the area.

#### ***Cumulative Effects on Visual Resources***

Management activities were reviewed for cumulative effects on visual resources. Considered in concert, the past, present, and future activities help to define the future environment of the treatment and analysis area. Cumulative effects would be negligible for all alternatives. In the long term, the proposed action alternative would meet the visual quality objective of remaining visually subordinate.

The visual impact of the proposed Dick Creek Timber Sale is anticipated to comply with Forest Plan standards and guidelines. Past timber sale activities within the area are not readily apparent to the casual observer. The percentage of visual impacts caused by timber harvesting activities to any given watershed within the Dick Creek watershed is minimal. This activity would blend in with the other activities that have and will occur within the watershed.

#### ***Cumulative Effects on Socio-Economics***

None of the past, present, or future actions associated with this watershed are of significant enough scale to influence social and economic conditions individually or cumulatively. They do represent a small part of the flow of resources from the Forest that in total do provide support to local communities. Though the amount is insignificant, the fact that there is some timber harvest from this watershed is important to

many. This treatment and possible future treatments contribute positively to the local communities that are dependent on timber resources in that they represent a flow of resources from the Forest. This proposal and most of the future proposals are small enough in the case of this watershed that they do not directly decrease other sectors of the community that are focused on recreation and non-timber activities. This small flow of commercial resources also negatively influences some who believe this activity should not occur on public lands. In the case of these persons, the effect is non-monetary in nature.

The one future action that could be an exception is oil and gas development. Such development could represent significant changes, depending upon the proposal. Any such action would be addressed in a separate NEPA document. If it did occur, it would mask the relatively small effects from this proposal.

***Interdisciplinary Team***

The analysis in this EA is based on the analysis completed in association with the initial Dick Creek Timber Sale EA. Bryan Armel had the lead in transferring that information and incorporating the latest information into this document.

The EA was reviewed by:

<b>Name</b>	<b>Position</b>
Bryan Armel	Forest Planner
Clint Dawson	North Zone Fire Management Officer
Dave Cawrse	Resource Staff
Dennis Eckardt	Forester
Greg Bevenger	Hydrologist
Karin Lancaster	Civil Engineer
Kent Houston	Soil Scientist
Kim Barber	Wildlife Biologist
Lynette Otto	Wildlife Biologist
Marty Sharp	North Zone NEPA Coordinator
Monte Barker	North Zone Wildlife Biologist
Susie Douglas	Writer/Editor
Vaughn Hintze	Landscape Architect

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### *Appendix A - Public Involvement*

These individuals, groups, private landowners, businesses, Native American Tribes, and government agencies received the May 21, 2002 scoping letter:

A. Andrews, Gray-Plant Law Firm  
Abraham Spotted Elk, Sr., Northern Cheyenne Cultural Director  
Alan Slickpoo, Nez Perce Tribe  
Alliance for the Wild Rockies  
American Fisheries Society  
Anne H. Peterson, Crandall Creek Ranch Co.  
Arlene Hanson  
B & B Roustabout Co.  
B & W Logging  
Beartooth Ranger District, Custer National Forest  
Bernie Newton  
Betsy Chapoose, Cultural Rights and Protection Dept.  
Big Horn Radio Network  
Bill Carter, Carter Lumber Co.  
Bill Hardy, Hardy Investments  
Bill Schilling, Heritage Society  
Bill Timentwa, Colville Confederated Tribes  
Biodiversity Associates  
Biodiversity Legal Foundation  
Blake Trust  
Blevins Family Trust  
Bob Capron, Trout Unlimited  
Bob Model, Mooncrest Ranch  
Bob Ross, Valley Lumber  
Bronco Lebeau, Cheyenne River Sioux Tribe  
Bryan Carson, Jackson Hole Log Homes  
Bud McAdams, Shoshone Business Council  
Bureau of Land Management, Worland Field Office  
Burton Pretty on Top, Sr., Crow Tribal Council  
Buster Tolman, Bennett Creek Sheep  
C. Precure and M. Lough  
Cal and Irene Rimel  
Carson Johnson, Superior Helicopter  
Darwin and Cathy Asay  
Cary Enterprises, Inc.  
Chapman Family Trust  
Charles Cord, Star Hill Ranch  
Charles Johnstone  
Charlie Moses, Jr., Nez Perce National Historic Trails  
Charlotte Kersting  
Chuck Neal  
Clifford Duncan  
Cody Conservation District  
*Cody Enterprise*  
Cody Lumber

Conner Enterprises  
Connie Wogoman  
Cowboy Timber  
Craig Griffith  
Crow Tribal Council  
D. A. McQueen  
D. M. Wilson Lumber  
Dale and Donna Lynn  
Dale and Donna Meyer  
Dale and Rhonda Shipp  
Dallas Ross, Upper Sioux Community Board of Trustees  
Dan Estes  
Dan Tolman, Tolman Livestock  
Daniel and Dianne Shumway  
Daniel Gerber  
Darrell Anderson  
Darrell Youpee, Fort Peck Assiniboine and Sioux Tribes  
David and Uta Filkin  
David Leuschen, Switchback Ranch  
David Lichte, RY Timber Inc.  
David Slater  
Debbie Vivian  
Del Clair, Shoshone Cultural Committee  
Diane Yupe, Shoshone-Bannock Tribes  
Dick Scott  
Don McCracken, Bighorn Mountain Coalition  
Don Ross  
Donald Livingston  
Duane Whitmer, Backcountry Horsemen  
E. Tuttle and M. Casey  
Earl Holding, Sun Valley Company  
Ed Coats, Louisiana Pacific  
Ed Regan, RY Timber, Inc.  
Edwin and Carol Higbie  
Floyd Phillips  
Floyd Youngman, Hunkpapa-Santee Sioux Tribal Rep.  
Fordham Trust  
Frank and Sandy Donahoe  
Frank Cole  
Fred Harvard, Harvard Logging  
Fremont County Commissioners  
Gary Leseberg  
Gerald and Debra Boydston  
Gerald and Hattie Wilkins  
Glenn and Yvonne Nielson  
Greater Yellowstone Coalition  
Greg Bourland, Cheyenne River Sioux Tribal Council  
Guy Highland, Trout Unlimited  
Haman Wise, Historic Preservation Consultant  
Harold Davidson  
Harold Salway, Oglala Sioux Tribal Council

Hot Springs County Commissioners  
Howard Clark Ando  
International Association of Fish and Wildlife  
Ivan Posey, Shoshone Business Council  
Jack Malmberg, Single Tree Logging  
James and Hilda Maiden  
James Riley  
James Riley  
Jay Tuchton  
Jeff Van Pelt, Confederated Tribes of the Umatilla Res.  
Jerry Flute, Association on American Indian Affairs  
Jerry Longobardi  
Jim Gould  
Joe Walksalong, Northern Cheyenne Tribe  
Joe Williams  
John Emmerich, Wyoming Department of Game and Fish  
John Hill, Crow Tribe  
John Housel, c/o Collier Group  
John Jeffs, Teton Timber  
John McGee, Northwest Wyoming Resource Council  
John Pretty on Top  
John Raith, Raith Logging  
John Washakie, Shoshone Business Council  
Judy Donaldson, Rock Creek Ranch  
K. R. Lashlee  
Karen McCreery, c/o Sen. Mike Enzi  
Keith Bailey  
Keith L. Kohnke, Trustee  
Kevin Hurley  
Kimi Matsumoto  
KODI Radio  
Larry Lee Luckinbill  
Larry Roop, Wyoming Game and Fish Department  
Laurence Kysar  
Lawrence E. Cary  
Leonard Bopp  
Leroy and Theo Morgan  
Leseberg Ditching  
Lowell Keller  
Maitland Sharpe  
Marcia Rothwell, Wyoming Wildlife Federation  
Mark Duffy, Central Helicopters  
Mark Wandering Medicine, Northern Cheyenne Tribe  
Meeteetse Conservation District  
Meredith Taylor, Wyoming Outdoor Council  
Michael and Judy Jackson  
Michael Bromley  
Michael Graham, Oglala Sioux Tribe  
Michael Long, U.S. Fish and Wildlife Service  
Michael Scott, The Wilderness Society  
Mike and Donna O'Reile

Mike Blymyer, Bureau of Land Management  
Mike Stark, *Billings Gazette*  
Mike Stueve  
Mr. and Mrs. Alexander  
Mr. and Mrs. Becking  
Mr. and Mrs. Blevins  
Mr. and Mrs. Dearcorn  
Mr. and Mrs. Foulger  
Mr. and Mrs. Imburgia  
Mr. and Mrs. Keating  
Mr. and Mrs. Lord  
Mr. and Mrs. Loyning  
Mr. and Mrs. Michaels  
Mr. and Mrs. Patrick  
Mr. and Mrs. Rodriguez  
Mr. and Mrs. Rousseau  
Mr. and Mrs. Schoening  
Mr. and Mrs. Senitte  
Mr. and Mrs. Stebner  
Mr. and Mrs. Streeter  
Mr. and Mrs. Wasden  
Mr. and Mrs. Wilder  
Mr. and Mrs. Winsor  
Mrs. Garnett L. Cary, Trustee  
National Audubon Society  
Neeley Company  
Neil and Linda Niemi  
Nez Perce Tribal Council  
Nez Perce Tribe  
Norman G. Wilson, Rosebud Sioux Tribal Council  
Northern Arapahoe Business Council  
Northern Cheyenne Cultural Committee  
Northern Cheyenne Tribal Council  
P. Harris and D. Flaherty  
Pam Buline, c/o Sen. Craig Thomas  
Park County Commissioners  
Pat Connell, Rocky Mountain Homes  
Pat Hickerson, Wyoming Wood Products  
Paul Morency  
People for Wyoming  
Pitchfork Ranch  
*Powell Tribune*  
Quentin and Nellie Raymond  
Quin and Tracy LaFollette  
R S Land Co.  
Ralph Larson, Larson Ranch Co.  
Randy Moorman, EarthJustice  
Randy Olson, High Country Log Homes  
Ray and Rose Mefford  
Raymond Usesknife, Cheyenne River Sioux Tribe  
Richard and Craig Geving, Mooncrest Ranch

Richard Ortiz  
Rick Brasher, Teddy Roosevelt Conservation Alliance  
Rickey Monroe Wogoman  
Rob Abarr  
Rob Ament, American Wildlands  
Robert Hanson  
Robert Keith  
Rodger Leseberg  
Ron Livesay, State Parks and Historical Sites  
Ron McKnight, Wyoming Game and Fish Department  
Ron Wopsock, Northern Ute Tribal Council  
Royal Benjamin Anspach  
Russ Boardman  
Russ Linneman  
Sara Robinson, Shoshone Business Council  
Shoshone Tribal Council  
Shoshone-Bannock Tribal Council  
Sierra Club, Wyoming Chapter  
Starr Weed  
State of Wyoming/Department of Environmental Quality  
State of Wyoming/Office of Federal Land Policy  
Steve Thomas  
Terry Root, U.S. Fish and Wildlife Service  
The Eastons  
The Greens, c/o Livingston Cabin Partnership  
The Wilderness Society  
Thomas McCarthy  
Thomas Seeman  
Thomas W. Churchill  
Tim Wade  
Tom Collins, Wyoming Game and Fish Department  
Tom Troxel  
Tony and Sandra Simek  
Tracy Williams  
University of Wyoming Extension Agent  
Vivan Stokes, c/o Rep. Barbara Cubin  
W. Kirk Miller  
Walter and Renee Hibbert  
Walter Riley  
Wes Martel, Shoshone Business Council  
Western Forest Industries Association  
Wild Forever  
Wilderness Watch  
William and Lola McCrann  
Wilma J. Gerber, Trustee  
Wyoming Outdoor Council  
Wyoming Sawmills  
Yellowstone National Park

**Appendix B – Scoping Comment Summary**

Within this appendix we present a summary of the scoping comments that we received and considered in the development of the Dick Creek EA. Comments are identified by commentor. IDT members paraphrased the comments. The intent was to capture the main intent of the comment. Comments that were used in describing a particular issue are noted in the issue column. The Type column is one that we used to help us sort the comments. The Disposition column briefly indicates how the comment is addressed in the analysis. How a comment is categorized is not important; our focus is ensuring that the comment is addressed.

**Table 1 Type Code Descriptions**

Type Code	Type	Description
ALT	Alternative Development	Comments that could provide an alternative to the proposed action.
C	Concerns	These comments will be responded to by discussion in the comment disposition, project file, the EA, or in an appendix to the EA.
GS	General Statement	Comments expressing a statement and do not require a response.
OS	Outside Scope	Comments where a decision has already been made or is beyond the scope of the proposed action.
R	Request	Comment requests information or clarification. Does not necessarily indicate an issue or concern. Items requesting specific activities are coded with RA.
RD	Recommend Decision	These comments express a preference for a final decision, or an aspect of the decision. They will not generally be responded to in the analysis, but will be considered by the decision maker. These tend to be more general in nature than those items under RA.
RA	Recommend Other	These comments make recommendation related to specific proposed actions other than the decision.

**Table 2. Dick Creek Comment Summary**

Source	#	Comment (paraphrased)	Issue	Type	Disposition
Raymond	1	Expresses support for project		RD	
RY Timber	1	To meet the Forest Plan goals the acres treated should be expanded		ALT	See 2.1 Alternatives not considered in detail section.
RY Timber	2	Effects to TE species would be temporary. It is more important to protect habitat in the long term by reducing the risk of wildfire	Wildlife Fire	C	
RY Timber	3	The roadless boundary appears to be incorrect. There is evidence of old roads and logging within the boundary.		R	See 3.6.1 Roadless discussion.
RY Timber	4	Consider helicopter logging.		ALT	See 2.1 Alternatives not considered in detail section.
Cheyenne River Sioux Tribe	1	The tribe has no cultural concerns with the project.		GS	
Park County Commissioners	1	Support multiple use management such as the Dick Creek Timber Sale.		RD	

Source	#	Comment (paraphrased)	Issue	Type	Disposition
Park County Commissioners	2	The Roadless considerations should not be a concern. The Roadless Conservation rule is enjoined in court. The Wyoming Wilderness Bill and Forest Plan released those lands for multiple use consideration.	Roadless	C	See 3.6.1 Roadless discussion.
Park County Commissioners	3	The grizzly bear should not be an issue. The bear is expanding and as long as it does no special consideration is needed. This project will have insignificant effects and would most likely improve habitat.	Wildlife	C	See 3.2.2 Threatened and Endangered Species
Park County Commissioners	4	The wolf will also not be affected. They are expanding. They mostly follow the elk and they spend little time in this area.	Wildlife	C	See 3.2.2 Threatened and Endangered Species
Park County Commissioners	5	The EA needs to consider the economic effects that the sale will have on Park County and the businesses therein.	Economics	C	See 3.9 Socio Economic and 3.10.2 Cumulative Effects discussions
Park County Commissioners	6	The part of the proposal that converts 120 acres to aspen violates NFMA that requires lands in the suitable base to be regenerated within five years with commercial species. This type of conversion should only occur on unsuitable acres.		C	Timbered lands in the project area that are mapped as part of the suited timber base contain small area inclusions (i.e., aspen, riparian, etc.) that have separate management goals that emphasize uses other than commercial timber production. These small inclusions were too small and scattered to be mapped at the forest planning map scale. These non-suited areas were identified for this project area as a part of this analysis.  The Forest Plan specifically indicates that aspen is to be managed for retention wherever it occurs (FP III-21), except under three conditions which do not apply in this area. This project is implementing Forest Plan direction for these areas. The Forest Plan contains no direction that indicates these scattered areas should not be managed if they occur within suitable areas as mapped in the plan.
American Wildlands	1	Do not support the logging in roadless areas.	Roadless	RD	
American Wildlands	2	Discuss effects on any water quality limited stream segments.		R	See 3.3 Watershed Resources discussion.
American Wildlands	3	Discuss state water quality classifications and the effects on them. Also discuss whether the project meets the state's antedegradation requirements.		R	See 3.3 Watershed Resources discussion.
American Wildlands	4	Construct alternatives to maintain or improve water quality relative to the state standards.	Water	ALT	Alternatives include mitigation and design elements to improve water quality.
American Wildlands	5	Identify any sources and quantities of pollutants that result from the activities.		R	See 3.3 Watershed Resources discussion.
American Wildlands	6	Indicate how mitigation measures change any effects.		R	See 3.3 Watershed Resources discussion.
American Wildlands	7	Oppose logging in roadless areas. Roadless Conservation Rule should be followed until the courts decide the issue so that opportunities are not lost.	Roadless	RD	

Source	#	Comment (paraphrased)	Issue	Type	Disposition
American Wildlands	8	Please disclose how the project relates to the Roadless Conservation Rule and the Chief's interim direction on roadless areas.		R	See 3.6.1 Roadless discussion.
American Wildlands	9	Provide a map that shows the fragmentation effects the project has on the roadless area.		R	See 3.6.1 Roadless discussion.
American Wildlands	10	Discuss the road density of the area, whether there have been road closures, and the effectiveness of those closures.		R	See 3.5 Transportation discussion.
American Wildlands	11	Discuss big game security areas in the context of the road development in the area.		R	See 3.2 Wildlife discussion
American Wildlands	12	Discuss the effects of the project on MIS		R	See 3.2.4 MIS discussion
American Wildlands	13	Discuss the effects on hiding cover, thermal cover, effective habitat, and security cover for big game.		R	See 3.2.4 MIS discussion
American Wildlands	14	Discuss mitigation measures for wildlife that will compensate for any possible adverse impacts.		R	See 3.2 Wildlife discussion
American Wildlands	15	Discuss the effects on TES species in a BA/BE including the cumulative effects caused by increased activity.		R	The text of the BE is incorporated into the EA, Section 3.2 Wildlife.
American Wildlands	16	An MIS for snags should be selected and the effects on of the project on snags should be discussed. Green trees should be left to provide snags.	Wildlife	C	See 3.2.4 MIS discussion – Hairy Woodpecker.
American Wildlands	17	Riparian zones should be excluded from harvest and logging equipment or road construction should not cross riparian zones.	Water	RA	See 3.3.4 Special Areas
American Wildlands	18	Include an analysis of the effects on fisheries including sedimentation, channel stability, and temperature.		R	See 3.3 Watershed Resources discussion
American Wildlands	19	Specifically discuss sedimentation, the effects with and without mitigation, and baseline and predicted sediment loads for streams in the area.		R	Sedimentation is discussed in 3.3 Watershed Resources. Baseline information for specific sediment loads is not needed to analyze the effects.
American Wildlands	20	Discuss compliance with INFISH standards and guidelines.		R	INFISH is applicable to the Columbia River Basin in the Pacific Northwest. It is not used in this EA.
American Wildlands	21	Discuss BMPs and mitigation for controlling sediment, including their effectiveness, specific locations, cost, and any planned monitoring.		R	Mitigation is listed in Section 2.2.4. Also see Section 3.3 on watershed. A BMP monitoring trip and the sale administrator would monitor BMP effectiveness.
American Wildlands	22	Include a map of soils.		R	Soils are discussed in 3.3 Watershed Resources. Maps are available in the District Office.
American Wildlands	23	Discuss mitigation planned for harvest or road work on unstable or steep slopes. Include a schedule of visits for soil scientist to the area to make determination of soil conditions.		R	See 3.3.3 Geologic Hazards discussion.
American Wildlands	24	Discuss effects on long-term soil productivity.		R	See 3.3.2 Soil Productivity discussion
American Wildlands	25	Provide map of activities considered in cumulative effects analysis and the current condition of impacted areas.		R	See 3.10 Cumulative Effects discussion

Source	#	Comment (paraphrased)	Issue	Type	Disposition
American Wildlands	26	Provide a map of the management areas and the IDT's determination that they are appropriate along with other Forest Plan direction.		R	See 1.3 Management Areas discussion. Chapter 2 covers Forest Plan direction.
American Wildlands	27	Discuss any needs for reforestation after even aged harvest how such reforestation is being assured within 5 years.		R	See 3.1.3 Forest Products discussion
American Wildlands	28	Provide a range of alternatives including: 1) one that maximizes biodiversity and wildlife habitat; 2) one that does not involve commercial harvesting; and 3) one that provides road obliteration and closure and no new road building.	Wildlife Roadless	ALT	The no action alternative addresses no commercial harvest. No new road building is included in the action alternatives. The no action alternative covers no new roadwork. Issues of closing additional roads were addressed in other decisions and are beyond the scope of this alternative. The 3.2 Wildlife section discusses how the Alternatives affect wildlife habitat.
American Wildlands	29	Discuss potential TES plant species habitat, the field reconnaissance of that habitat, and the botanical qualifications of the persons.		R	See 3.1.5 Sensitive Plants discussion.
American Wildlands	30	Unoccupied habitat should be protected if occupied habitat occurs in or near the area.		RA	See 3.1.5 Sensitive Plants discussion.
American Wildlands	31	For biodiversity analyze the existing conditions of important elements including composition, structure, and processes and the projected state of those elements after implementation.		R	Chapter 3 includes discussions on old growth, aspen, riparian areas, and stand diversity.
American Wildlands	32	Identify any rare elements in the analysis area.		R	No rare elements were identified.
American Wildlands	33	Discuss connectivity in the analysis area.		R	See Section 3.2 Wildlife.
American Wildlands	34	Include a comprehensive economic analysis of costs.		R	See 3.9 Socioeconomic discussion.
American Wildlands	35	Discuss of noxious weeds current conditions and efforts to control spread that could result from the project.		R	See 3.1.6 Noxious weed discussion and Section 2.2.4 mitigation.
American Wildlands	36	Discuss cultural resource survey.		R	See 3.8 Heritage Resources discussion.
American Wildlands	37	Discuss forest fragmentation effects given the fragmentation of the surrounding area.		R	See 3.1.1 Vegetation Diversity discussion.
American Wildlands	38	Include actions from the KV plan in the analysis.		R	They are included.
American Wildlands	39	Discuss wildlife corridors.		R	See Section 3.2 Wildlife.
American Wildlands	40	Discuss the fire ecology for the area.		R	See 3.4 Fire and Fuels discussion.
American Wildlands	41	Develop a long-term fire management plan rather than relying on logging. This should be included along with or instead of the proposed activities.	Fire	ALT	See 2.1 Alternatives Considered But Eliminated from Detailed Study.
American Wildlands	42	Discuss the roads analysis done for the project area.		R	See 3.5 Transportation discussion.

Source	#	Comment (paraphrased)	Issue	Type	Disposition
Vintling	1	Support harvesting timber in the area to reduce fuel loads and the risk of it burning.	Fire	RD	
Nielson	1	Strongly supports educated timber sales, multiples use, controlled burns, and insecticides to clean up and preserve forest.		RD	
Nielson	2	It is better to manage the forest than to let it burn up.	Fire	C	
Cody Lumber	1	Oppose the reanalysis of the timber sale. There are no new issues to consider.		GS	
Cody Lumber	2	Implementation of the Roadless Directive violates the Wyoming Wilderness Bill.		R	See 3.6.1 Roadless discussion
Cody Lumber	3	Oppose the conversion of commercial coniferous acreage to aspen on suitable lands. We consider such conversion a legal violation of the Forest Plan.		R	Timbered lands in the project area that are mapped as part of the suited timber base, contain small area inclusions (i.e., aspen, riparian, etc.) that have separate management goals that emphasize uses other than commercial timber production. These small inclusions were too small and scattered to be mapped at the forest planning map scale. These non-suited areas were identified for this project area as a part of this analysis.  The Forest Plan specifically indicates that aspen is to be managed for retention wherever it occurs (FP III-21), except under three conditions which do not apply in this area. This project is implementing Forest Plan direction for these areas. The Forest Plan contains no direction that indicates these scattered areas should not be managed if they occur within suitable areas as mapped in the plan.
Cody Lumber	4	Offering timber sales is important to the continued survival of the timber industry in the local area.	Economics	C	
State Historical Preservation Office	1	Have no more comments outside of the comments associated with the cultural resource reporting.		GS	
Wyoming Game and Fish	1	Want a map that shows harvest areas, roadwork, and haul routes.		R	See maps in Chapter 2 and Section 3.5 Transportation.
Wyoming Game and Fish	2	Identify the season/dates that firewood gathering will be allowed for the two years following the sale.		R	Firewood gathering would be allowed along existing open roads and outside of the existing seasonal closure. This is no change from the current situation.
Wyoming Game and Fish	3	Indicate whether all conifer will be removed from aspen stands treated to regenerate.		R	Yes they would. See 2.2.2 Alternative 2 discussion.
Wyoming Game and Fish	4	Maximize aspen regeneration results if the trees are treated after leaf drop in the fall. Partial cuts result in less vigorous aspen regeneration.		RA	Partial cuts are not planned.
Wyoming Game and Fish	5	How will livestock be kept away from regenerated aspen. Electric fencing works well.		R	See Section 2.2.4 Mitigation. The Forest does not anticipate that there would be a need for fencing. This is based upon the success of past aspen treatment in the Dick Creek watershed.

Source	#	Comment (paraphrased)	Issue	Type	Disposition
Wyoming Game and Fish	6	The EA should address efforts that will be taken to protect water quality and fisheries resources in the analysis area.		R	See 3.3 Watershed Resources discussion.
Capron	1	Would rather see timber harvest and firewood sales than have the area burn.	Fire	C	
Capron	2	Conifer encroachment is resulting in less grass and aspen than 30 years ago.		C	
Capron	3	Thinks winter logging with horses is a good option to consider in some area (not necessarily Dick Creek).		GS	
Whitmer	1	The project looks good. It will provide timber and habitat enhancement, while reducing the fuel loading.		RD	
Greater Yellowstone Coalition	1	Concerned that the fact that the sale was already prepared for sale that it will bias the consideration of other alternatives.		C	
Greater Yellowstone Coalition	2	Please examine a reasonable range of alternatives.		R	See Chapter 2 Alternatives discussion.
Greater Yellowstone Coalition	3	Consider an alternative that does not include timber harvest within the inventoried roadless area.	Roadless	ALT	See 2.2.3 Alternative 3 discussion.
Greater Yellowstone Coalition	4	Document in the EA how the proposed activity complies with the Chief's Interim roadless directive.		R	See 3.6.1 Roadless discussion.
Greater Yellowstone Coalition	5	Discuss the past wildfire history of the area and how the project will alter the wildfire occurrence in the area. Relate the discussion to habitat types.		R	See 3.4 Fire and Fuels.
Greater Yellowstone Coalition	6	Indicate what the purpose is of encouraging aspen regeneration in the project area. Address when the purpose will be achieved and what evidence we have that low aspen levels are having a negative effect.		R	Treatments are designed to meet Forest Plan direction. See Chapter 2.
Greater Yellowstone Coalition	7	Include a BA/BE for T&E species.		R	The text of the BE is incorporated into the EA section of Wildlife (Section 3.2)
Greater Yellowstone Coalition	8	Provide complete cumulative effects analysis with maps of past activities and current condition of treated areas.		R	See 3.1.1 Vegetative Diversity, 3.10 Cumulative Effects discussions.
Greater Yellowstone Coalition	9	Identify the amount of mature timber available in each of the project areas.		R	See 3.1.1 Vegetative Diversity discussion.
Greater Yellowstone Coalition	10	Provide an analysis of MIS species and any monitoring that is available.		R	See 3.2.4 MIS discussion.

Source	#	Comment (paraphrased)	Issue	Type	Disposition
Greater Yellowstone Coalition	11	Address reduction of cover and effective habitat and provide mitigation for any possible adverse impacts to wildlife in the project area.		R	See Section 3.2 Wildlife.
Greater Yellowstone Coalition	12	Address the old growth situation in the project area and provide a map that shows the location of old growth in relationship to treatment areas.		R	See 3.1.1 Vegetative Diversity discussion.
Greater Yellowstone Coalition	13	Address fisheries and water quality including sedimentation, channel stability, water temperature, and effects on fisheries.		R	See 3.3 Watershed Resources discussion.
Greater Yellowstone Coalition	14	Address TES plant species, their potential habitat and any impacts.		R	See 3.1.5 Sensitive Plants discussion.
Wyoming Outdoor Council	1	Consider new information regarding the distribution of grizzly bears and disclose grizzly bear locations within the proposed sale area and evaluate the impacts on the expanded grizzly population.		R	See 3.2.2 Threatened and Endangered Species discussion.
Wyoming Outdoor Council	2	Consider new information regarding food sources for grizzly bears and evaluate the impacts of the sale on those food sources.		R	See 3.2.2 Threatened and Endangered Species discussion.
Wyoming Outdoor Council	3	Evaluate impacts on the Greybull wolf pack.		R	See 3.2.2 Threatened and Endangered Species discussion.
Wyoming Outdoor Council	4	Analyze impacts on lynx based upon designated Lynx analysis Units. Show boundaries on a map.		R	See 3.2.2 Threatened and Endangered Species discussion. The area falls within one LAU. Maps are available at Forest Service offices.
Wyoming Outdoor Council	5	Reinitiate consultation with the FWS.		R	That is being done.
Wyoming Outdoor Council	6	Identify the old sale boundaries as compared with the new proposed sale boundary. Use a map.		R	That information is not included in the EA. The proposed action is not being considered in the EA.
Wyoming Outdoor Council	7	Use a map to illustrate the location of the sale boundaries to roadless areas.		R	See 3.6.1 Roadless discussion
Wyoming Outdoor Council	8	Discuss how the timing of the logging will affect grizzly bears, lynx, and wintering elk.		R	See 3.2 Wildlife discussion.
Wyoming Outdoor Council	9	Disclose whether the sale will maintain and restore the desirable characteristics of ecosystem composition and how it will do so. Include supporting documentation.		R	Chapter 2 includes discussion on the purpose and need. The Vegetation Diversity section describes vegetation changes.
Wyoming Outdoor Council	10	Discuss how the sale complies with the Chief's interim roadless directive.		R	See 3.6.1 Roadless discussion.

Source	#	Comment (paraphrased)	Issue	Type	Disposition
Wyoming Outdoor Council	11	Complete consultation relative to Section 106 of the National Historic Preservation Act.		R	See 3.8 Heritage Resources discussion.
Wyoming Outdoor Council	12	Support the purpose and need for the sale. Specifically support conclusions that sale will improve habitat for wildlife and reduce the threat of wildfire.		R	See Purpose and Need discussion in Chapter 2. EA focuses on implementing the Forest Plan. Fire and fuels are not a focus of the purpose and need.
Wyoming Outdoor Council	13	Discuss the fire ecology and history of the area.		R	See 3.4 Fire and fuels discussion
Wyoming Outdoor Council	14	Concerned that the fact that the sale was already prepared for sale that it will bias the consideration of other alternatives.		C	
Wyoming Outdoor Council	15	Please examine a reasonable range of alternatives.		R	See Chapter 2 Alternatives.
Wyoming Outdoor Council	16	Consider an alternative that does not include timber harvest within the inventoried roadless area.	Roadless	ALT	See 2.2.3 Alternative 3 discussion.
Wyoming Outdoor Council	17	Provide a complete cumulative effects analysis with maps of past activities and current condition of treated areas.		R	See 3.1.1 Vegetative Diversity, 3.10 Cumulative Effects discussions.
Wyoming Outdoor Council	18	Identify the amount of mature timber available in each of the project areas.		R	See 3.1.1 Diversity discussion.
Wyoming Outdoor Council	19	Address the old growth situation in the project area and provide a map that shows the location of old growth in relationship to treatment areas.		R	See 3.1.1 Diversity discussion
Wyoming Outdoor Council	20	Address fisheries and water quality including sedimentation, channel stability, water temperature, and effects on fisheries.		R	See 3.3 Watershed Resources discussion
Wyoming Outdoor Council	21	Address TES plant species, their potential habitat and any impacts.		R	See 3.1.5 Sensitive Plants discussion
Meeteetse Conservation District	1	The existing document addressed all the significant issues identified and the project should be able to move forward.		GS	
Meeteetse Conservation District	2	The area needs to have some management, otherwise insects, disease, and potentially wildfire will have a negative effect on the habitat and health of the watershed.	Fire Insect & Disease	RD	
Meeteetse Conservation District	3	We believe that the sale meets the intent of the interim roadless rule that allows some harvest.	Roadless	GS	

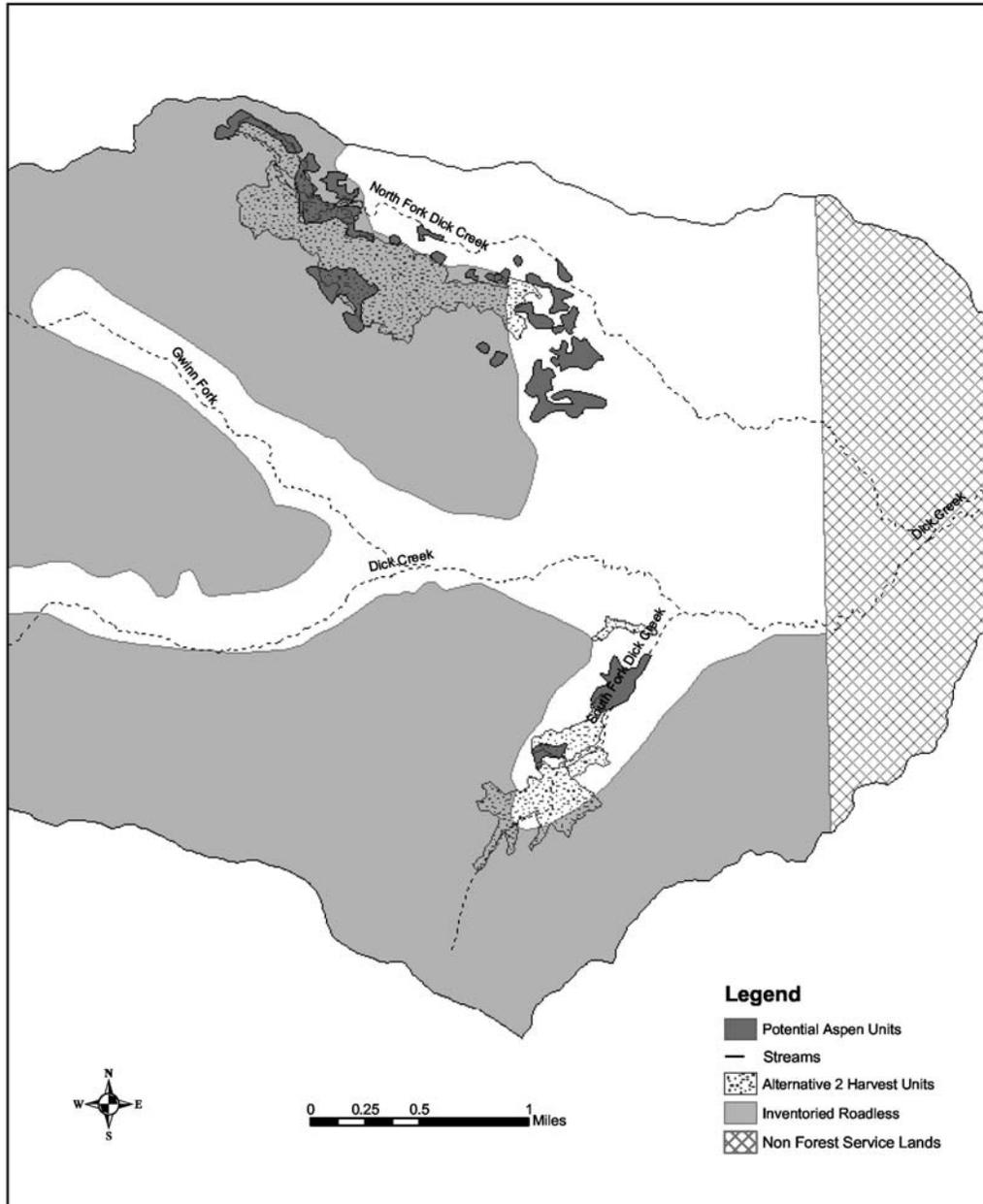
Source	#	Comment (paraphrased)	Issue	Type	Disposition
Meeteetse Conservation District	4	The cumulative effects on elk will be minimal.		GS	
Meeteetse Conservation District	5	Ensure that there is a need to modify livestock grazing to protect aspen regeneration.		R	We do not anticipate needing to fence the aspen regeneration based upon the success of previous treatments in the watershed. Fencing would only occur if there are impacts.
Meeteetse Conservation District	6	Support intensive monitoring or pre and post treatment noxious weed conditions.		R	See 3.1.6 Noxious weeds discussion.
Meeteetse Conservation District	7	Consider the projects impacts on spreading noxious weeds.		R	See 3.1.6 Noxious weeds discussion.
Meeteetse Conservation District	8	We have long-term quantitative water quality monitoring for Dick Creek.		GS	
US Fish and Wildlife	1	A disturbance free buffer zone of 1 mile should be maintained around eagle nest or the activity should be conducted outside of the nesting season.		RA	Mitigation for raptors is included in mitigation section 2.2.4
US Fish and Wildlife	2	The FWS recommends that the FS analyze impacts on the wolf.		R	See Section 3.2.2 on TE species.
US Fish and Wildlife	3	In consideration of the lynx roads constructed for logging should be closed and obliterated following logging activities and should not penetrate quality old growth habitats. Do not establish and maintain new roads where they will introduce new fragmenting or disturbance effects into potentially valuable lynx habitat.		RA	See Section 3.2.2 and Lynx discussion. No new permanent road is being built.
US Fish and Wildlife	4	Please consider impacts on migratory birds.		R	See Section 3.2 Wildlife discussion.
US Fish and Wildlife	5	Take measures to avoid any wetland losses. Indicate what wetlands there are and specific actions taken to minimize impacts.		RA	See 3.3.4 Special Areas discussion
US Fish and Wildlife	6	Impacts to riparian and streamside areas should be avoided whenever possible.		RA	See 3.3.4 Special Areas discussion
US Fish and Wildlife	7	Prepare a Biological Assessment		R	A BA is being submitted to FWS.
1997 EA	1	There is a concern about the additional wear and tear on the Wood River Road from logging traffic.		C	Hauling would occur over the Timber Creek Road, FSR 203.
1997 EA	2	Roads should remain open for a period following sale activity to allow for fuel wood gathering.		RA	Existing opportunities for fuel wood collection would be maintained.
1997 EA	3	How will road access be restricted after completion of harvest activities?		R	See 3.5 Transportation discussion.
1997 EA	4	The EA should indicate what would be done with new roads following the sale.		R	No new roads are being built. See 3.5 Transportation discussion.

Source	#	Comment (paraphrased)	Issue	Type	Disposition
1997 EA	5	The EA should present what new roads will be built and why.		R	No new roads are being built. See 3.5 Transportation discussion.
1997 EA	6	Any conflicts with recreational activities in the project area should be disclosed.		R	See 3.6 Recreation discussion.
1997 EA	7	How will the proposed project impact the quality of backcountry hiking?		R	See 3.6 Recreation discussion.
1997 EA	8	Include impacts to hunter opportunity and other forms of recreation.		R	See 3.6 Recreation discussion.
1997 EA	9	If this timber sale is done we hope that the sale would be completed as quickly as possible to minimize the impacts to recreation and wildlife.		RO	The sale period would be three years.
1997 EA	10	Where will timber harvest activities be visible from?		R	See 3.7 Visuals discussion.
1997 EA	11	Are current large woody debris needs being met in the streams?		R	Lack of woody debris was not identified as a concern.
1997 EA	12	Do not harvest in riparian areas.		RA	See 3.3.4 Special areas discussion.
1997 EA	13	Do not create any new stream crossings.		RA	See Section 3.3.4 Special Areas and 3.5 Transportation.
1997 EA	14	Do not disturb wetlands.		RA	See 3.3.4 Special areas discussion.
1997 EA	15	Crossings of riparian areas and wetlands by ground based logging equipment or for road construction should be minimized.		RA	See 3.3.4 Special areas discussion.
1997 EA	16	Avoid slopes greater than 40% when using conventional logging equipment.		RA	The Forest Plan does not allow use of conventional logging equipment on continuous slopes over 40%. There is not such logging proposed in this proposal.
1997 EA	17	Develop a water quality-monitoring program.		R	This is outside the scope of this EA. BMPs would be monitored.
1997 EA	18	Harvest in the winter to protect the watershed.		RA	Part of project design.
1997 EA	19	Close, obliterate, and rehabilitate roads with native vegetation.		RA	A native seed mixture is being used.
1997 EA	20	Maintain or enhance water yield for the fishery.		RA	Not enough vegetation is being removed from the watershed to affect water yield.
1997 EA	21	Maintain 150-foot buffer strip along streams.		RA	See 3.3.4 Special areas discussion.
1997 EA	22	Minimize slash entry to streams.		RA	Timber sale contract clause.
1997 EA	23	Allow for fish passage.		RA	No potential barriers to fish passage are being created.
1997 EA	24	Since Dick Creek is a watershed of concern, logging should not be permitted as per the ASQ EIS.		RA	The Dick Creek drainage was identified in the ASQ EIS as a potential watershed of concern. Activities in watersheds of concern are not excluded, but they should be managed to protect watershed values.
1997 EA	25	Identify and map wetlands.		R	See 3.3.4 Special areas discussion. A map of protected areas is available at the District Office.
1997 EA	26	Identify unstable soils and activities that occur on them.		R	See 3.3.3 Geologic Hazards discussion.
1997 EA	27	What is the condition of streams in relation to all past activities?		R	See 3.3 Watershed Resources discussion.
1997 EA	28	Disclose the benefits of road improvement on sediment production and whether or not this can offset short-term increases due to harvest.		R	See 3.3 Watershed Resources discussion.

Source	#	Comment (paraphrased)	Issue	Type	Disposition
1997 EA	29	Disclose how Forest Plan objectives, guidelines, and standards are being met.		R	Discussed throughout the EA.
1997 EA	30	Disclose acreage of land already out of production.		R	Miles of road are displayed.
Coates	1	<i>The sale won't have effect on T&amp;E species. It should be expanded</i>	Wildlife	C	See 3.2.2 Threatened and Endangered Species
Coates	2	<i>Propose expanding vegetative treatments into adjacent roadless areas.</i>	Roadless	RA	See 3.6.1 Roadless discussion.
Coates	3	<i>Should more acres be treated to better move towards desired future conditions.</i>		RA	See Section 2.1 Alternatives Considered But Eliminated from Detailed Study.
Coates	4	<i>All areas proposed for treatment in the area have been harvested in the past. How has this affected habitat for different species. The success of past treatments decrease the likelihood of any failures.</i>		R	Effects of existing conditions on wildlife species are discussed in Sections 3.2 Wildlife and 3.10.2 Cumulative Effects.
Coates	5	<i>I have reviewed the proposed harvest units and based on my experience and knowledge as a professional forester, the treatments would accomplish their intended results.</i>		GS	
Coates	6	<i>I assume that the proposed timber sale meets all applicable Shoshone Forest Plan requirements.</i>		R	The EA documents the compliance with the Forest Plan.

*Appendix C – Aspen Treatments*

This Appendix was added to the final EA to provide additional information about the proposed aspen treatments including where and when they would occur.



*Figure 23. Potential aspen harvest areas.*

Figure 23 displays areas that could be harvested to encourage aspen regeneration. Alternative 2 and Alternative 3 call for 120 and 67 acres of such treatment respectively. The map displays 172 acres from which the acres will be selected. Final selection of noncommercial aspen units will be completed after the commercial harvest has been completed. This is done so that the response of stands to the initial treatment of removing commercial conifer can be assessed. In some units regeneration may occur without the need to fully cut all the standing hardwoods. Specific boundaries may adjust when sites are designated on the ground. The acres selected for harvest will be chosen based upon the following criteria:

- 1) Individual treated units will be limited to 10 acres in size.
- 2) Total treatment will be limited to 120 acres in Alternative 2 and 67 acres in Alternative 3.
- 3) In Alternative 2, up to 60 acres will be treated in conjunction with commercial treatments.
- 4) In Alternative 3, up to 17 acres will be treated in conjunction with commercial treatments.
- 5) In Alternative 2, a maximum of 79 acres will be treated within inventoried roadless.
- 6) In Alternative 3, no treatment will occur within inventoried roadless.
- 7) Treatment will be scheduled over time such that no more than 40 acres will occur at any one time and there will be 5 years between treatments.
- 8) Treat those areas most in need of treatment first.