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Department of
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Final Environmental Impact Statement

John Wood Forest Management Project

Soda Springs Ranger District, Caribou-Targhee National Forest, Caribou County, Idaho

Township 8 South, Range 43 East, Sections 29, 31, 32, 33 and 34; and Township 9 South, Range 43 East, Sections 3, 4, 5, 8, and 9 of the Boise Meridian



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John Wood Forest Management Project

Final Environmental Impact Statement

May 2019

Location: Caribou County, Idaho

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Abstract

This Environmental Impact Statement details an action proposed by the Forest Service in an area just east of Soda Springs Idaho, on the Soda Springs Ranger District of the Caribou-Targhee National Forest. The proposed action was developed to address the poor condition of forest vegetation and forest roads in the area. Based on comments received during the scoping period, another alternative was developed and is described herein. Both alternatives address the purpose and need of the project. Both alternatives have unavoidable short-term impacts, but provide long-term improvements to the condition of forest habitat and the motorized transportation system in the area. Both action alternatives are preferred over taking no action. The Increased Restoration Alternative (Alternative 2) will have some negative effect on public access, but is the preferred alternative as it provides the most environmental benefit to the project area.

This proposed project is subject to the objection process pursuant to 36 CFR 218 Subparts A and B.

Objections will be accepted only from those who have previously submitted specific written comments regarding the proposed project, either during scoping or other designated opportunity for public comment, in accordance with 36 CFR 218.5(a). Issues

raised in objections must be based on previously submitted, timely, specific, written comments regarding the proposed project unless based on new information arising after designated opportunities for comment.

Individual members of organizations must have submitted their own comments to meet the requirements of eligibility as an individual. Objections received on behalf of an organization are considered as those of the organization only (36 CFR 218.5(c)). If an objection is submitted on behalf of a number of individuals or organizations, each individual or organization listed must meet the eligibility requirement of having previously submitted comments on the project (36 CFR 218.5(d)). Names and addresses of objectors will become part of the public record.

Incorporation of documents by reference in the objection is permitted only as provided for at 36 CFR 218.8(b). Per 36 CFR 218.8(d), at a minimum, an objection must include:

- Objector's name and address with a telephone number if available, with signature or other verification of authorship supplied upon request;
- Identification of the lead objector when multiple names are listed, along with verification upon request;
- Name of the project, name and title of the responsible official, national forest/ranger district of the project;
- Sufficient narrative description of those aspects of the proposed project objected to, specific issues related to the project, how environmental law, regulation, or policy would be violated, and suggested remedies which would resolve the objection; and
- Statement demonstrating the connection between prior specific written comments on this project and the content of the objection, unless the objection issue arose after the designated opportunities for comment.

Written objections, including any attachments, must be addressed to: Reviewing Officer, Intermountain Region USFS, 324 25th Street, Ogden, Utah 84401; or faxed to 801-625-5277; within 45 days following the publication date of this legal notice in the newspaper of record. The office business hours for those submitting hand-delivered objections are: 8:00 a.m. – 4:30 p.m. Monday through Friday, excluding holidays. Electronic objections must be submitted in a format such as an email message, pdf, plain text (.txt), rich text format (.rtf), and Word (.doc or .docx) to objections-intermtn-regional-office@fs.fed.us. It is the responsibility of Objectors to ensure their objection is received in a timely manner (36 CFR 218.9).

The publication date in the Idaho State Journal, the newspaper of record, is the exclusive means for calculating the time to file an objection to this project. Those wishing to object to this proposed project should not rely upon dates or timeframe information provided by any other source.

The Reviewing Officer for this project is the Forest Supervisor. Send objections to:
Objection Reviewing Officer, Intermountain Region USFS, 324 25th Street, Ogden, Utah 84401; or fax to 801-625-5277; or by email to: objections-intermtn-regional-office@fs.fed.us.

Table of Contents

<i>Summary.....</i>	S-1
<i>Chapter 1 Purpose and Need for Action</i>	1-1
1.1 Introduction.....	1-1
1.2 Document Structure.....	1-2
1.3 The Purpose.....	1-3
1.4 Need for the Proposed Action	1-4
1.4.1 Forest Structure, Composition and Resilience Need:	1-4
1.4.2 Utilize, Improve and Protect Timber Resources Need	1-5
1.4.3 Long-term Transportation System Need.....	1-5
1.5 Objective of the Proposed Action	1-6
1.6 Proposed Action Summary	1-7
1.7 Management Direction	1-8
1.7.1 Forest-Wide Guidance	1-8
1.7.2 Prescription Area Guidance	1-17
1.8 Public Involvement	1-20
1.8.1 Public Scoping.....	1-20
1.8.2 Draft Environmental Impact Statement	1-20
1.8.3 Agencies and Persons Consulted	1-21
1.9 Issues	1-21
1.9.1 Key Issues.....	1-22
1.9.2 Analysis Issues	1-23
1.9.3 Issues Considered but not Analyzed in Detail	1-23
1.10 Decision Framework	1-26
<i>Chapter 2 The Proposed Action and Alternative Actions.....</i>	2-1
2.1 Alternatives Considered in Detail.....	2-1
2.1.1 The Proposed Action	2-2
2.1.2 Alternative 2 – Increase Restoration Alternative	2-9
2.1.3 Alternative 3 – No Action.....	2-16
2.2 Other Alternatives Considered	2-17
2.2.1 No new roads.....	2-17
2.2.2 Reduce Road Density.	2-17
2.2.3 Burn then Salvage.....	2-18
2.3 Design Features	2-18
2.4 Monitoring	2-23
2.5 Comparison of Effects and Outputs	2-24
<i>Chapter 3 Affected Environment.....</i>	3-1
3.1 Forest Vegetation	3-1
3.1.1 Introduction	3-2
3.1.1 Fire Regime and Condition Class	3-4
3.1.2 Forest Structure Stage.....	3-6
3.1.3 Species Composition	3-11
3.1.4 Canopy Cover	3-13
3.1.5 Risk to Douglas-fir Bark Beetle.....	3-14
3.2 Timber Management	3-16
3.3 Transportation Management	3-17
3.3.1 Background.....	3-17
3.3.2 Roads and Trails	3-17
3.3.3 Condition Summary.....	3-19

3.4	Wildlife.....	3-20
3.4.1	Introduction	3-20
3.4.2	Endangered Species Act (ESA) listed Wildlife	3-21
3.4.3	Sensitive Species	3-22
3.4.4	Other Species of Local Concern	3-29
3.5	Hydrology	3-31
3.5.1	Existing Condition	3-31
3.6	Soils.....	3-34
3.6.1	Soil Resource.....	3-34
Chapter 4 Environmental Consequences		4-1
4.1	Forested Vegetation	4-1
4.1.1	Alternative 1- Proposed Action	4-3
4.1.2	Alternative 2 (Increased Restoration Alternative)	4-7
4.1.3	No Action Alternative.....	4-11
4.2	Timber Management	4-12
4.2.1	Alternative 1 & 2 (Action Alternatives)	4-12
4.2.2	No Action Alternative.....	4-13
4.3	Transportation Management	4-14
4.3.1	Alternative 1 (Proposed Action).....	4-14
4.3.2	Alternative 2	4-15
4.3.3	No Action Alternative.....	4-15
4.4	Wildlife.....	4-16
4.4.1	Alternative 1- (Proposed Action).....	4-16
4.4.2	Alternative 2- Increased Restoration Alternative.....	4-23
4.4.3	Alternative 3 – No Action.....	4-24
4.5	Hydrology	4-25
4.5.1	Alternative 1 (Proposed Action).....	4-25
4.5.2	Alternative 2 (Increase Restoration).....	4-27
4.5.3	No Action Alternative.....	4-29
4.6	Soils.....	4-30
4.6.1	Alternative 1 & 2	4-30
4.6.2	Alternative 3 (No Action) Effects.....	4-31
4.7	Other Required Disclosures	4-32
4.7.1	Environmentally Preferred Alternative.....	4-34
5. Lists – Including Preparer’s, Scoping, and Bibliography.....		5-1
5.1	Interdisciplinary Team (IDT) and Consultants	5-1
5.2	Public Involvement	5-2
5.3	Bibliography	5-3
Glossary.....		1
Index.....		1
Appendix A. Response to Comments on the Draft EIS.....		A-1

List of Tables & Figures

Tables

<i>Table 1-1 Proposed Action road activities</i>	<i>1-7</i>
<i>Table 2-1 Alternative 1, Proposed Action, Forested Vegetation Proposal.....</i>	<i>2-5</i>
<i>Table 2-2 Proposed Action Road Activity Proposal Totals Alternative 1 (* Mileages are approximate) ...</i>	<i>2-6</i>
<i>Table 2-3 Road Activity Descriptions: The following narratives provide details for proposed road work.</i> 2-7	
<i>Table 2-4 Alternative 2 Forested Vegetation Proposal</i>	<i>2-12</i>
<i>Table 2-5 Road Activity Proposal Totals Alternative 2 (* Mileages are approximate)</i>	<i>2-13</i>
<i>Table 2-6 Road Activity Descriptions: The following narratives provide details for road work proposed in alternative 2.....</i>	<i>2-14</i>
<i>Table 2-7 : Activities summary comparison of Alternatives.....</i>	<i>2-24</i>
<i>Table 2-8 Project Purpose and Need Indicators, Summary Comparison of Alternatives.</i>	<i>2-24</i>
<i>Table 2-9 Hydrology and Soils effects summary comparison of alternatives.....</i>	<i>2-25</i>
<i>Table 2-10 Wildlife effects summary comparison of alternatives.....</i>	<i>2-25</i>
<i>Table 3-1. This landscape, when assessed with LANDFIRE FRCC protocol, was classified as condition class 2, meaning there is a moderate departure from natural conditions. Two strata had a vegetation condition class rating of 3</i>	<i>3-5</i>
<i>Table 3-2. This table shows the Forest Structure Stages (FSS). It also outlines approximate historical ranges of variability, and the DFC set in the RFP-EIS. The DFC was set as a central average for the stage which is shown in brackets, the range is based on the goshawk management table in the RFP. The RFP set a standard to maintain at least 20% mature and late seral in each HUC. It also set a standard to maintain 15% Region 4 definition old-growth, but clearly identifies it as a subset of the late seral class.....</i>	<i>3-7</i>
<i>Table 3-3. This table shows the combined FSS map units that were used to classify every stand on the Caribou N.F. The FSS were combined into map units to simplify the classification and improve the accuracy. The Forest wide assessment indicated that the user accuracy for this data is 91% (Beck, 2016a).</i>	<i>3-9</i>
<i>Table 3-4. This table shows that when viewed by forest type the results are much the same. It shows that most of the seedling/sapling stage is in the lodgepole pine type. This is because most of the regeneration harvest in the past 25 years has occurred in this type. A portion of the lodgepole seedling/sapling class will soon be large enough and old enough to move into the young/mid class.....</i>	<i>3-9</i>
<i>Table 3-5 Change in acres classified as forested between 1913 and 2016. The Douglas-fir forest type has increased while the lodgepole pine and aspen types have decreased. The increase in forest form was mostly brush types moving to Douglas-fir.....</i>	<i>3-12</i>
<i>Table 3-6. The desired condition is to keep most of the landscape out of a high risk condition, 50% or more of the stands with aspen should have less than 50% relative conifer canopy cover. Currently 67% of aspen stands have more than 50% conifer canopy. Since we are using aspen as a surrogate for disturbance dependent species, this tells us that disturbance dependent species assemblages are at risk in this landscape as is the biodiversity associated with them.....</i>	<i>3-12</i>
<i>Table 3-7. Aspen stands where less than 50% of the basal area is aspen can be considered at risk. (Cambell and Bartos 2001) The desired condition for this landscape is to keep most acres at low risk. Relative canopy cover is a reasonable surrogate for basal area and can be estimated from aerial photography, so it was used as the metric.....</i>	<i>3-13</i>

Table 3-8. This table shows the canopy cover condition of Douglas-fir stands.....	3-14
Table 3-9. Risk to Douglas-fir bark beetle is increasing. The overall threat is greatest to large old trees. The consequences of a DFBB event are likely outside of historical normal, due to the homogeneity of age-class and density/canopy cover.....	3-15
Table 3-10 Summary of Roads and Trails in the project area.....	3-17
Table 3-11 Condition summary of system routes within the project area.....	3-19
Table 3-12 Hydrologic Disturbance. This table show the Forest Service acres of the watershed covered by the proposed action. It also shows the number of acres disturbed based on GIS data and what percent of the watershed that disturbance represents.....	3-31
Table 3-13 Motorized Routes in AIZ's. This table breaks the AIZ in the project area down by the drainage they are located in.....	3-32
Table 3-14 Resource indicators and measures for the existing soil resource condition.....	3-35
Table 4-1. Fire regime groups and descriptions. Groups are classified based on severity to dominate overstory and mean fire interval (MFI), adapted from FRCC 2010.....	4-2
Table 4-2. Effects summary by alternative. This table shows the condition of each metric ten years after implementation for the action alternatives approximately 15 years in the future for the no action alternative. The numbers in the brackets show the effect of the alternative.....	4-3
Table 4-3. Resource indicators and measures for alternative 1 (The Proposed Action) are shown in the below table. The predicted condition that will result from the proposed action for the measure is shown and the effect (direct/indirect) is shown in brackets.....	4-4
Table 4-4. Resource indicators and measures for alternative 2 are shown in the below table. The predicted condition that will result from the proposed action for the measure is shown and the effect (direct/indirect) is shown in brackets.....	4-8
Table 4-5. Resource indicators and measures for the No-Action alternative (alternative 3) are shown in the table below. The predicted condition that will result from no action for the measure are shown and the effect (direct/indirect) is shown in brackets.....	4-11
Table 4-6. Resource indicators and measures for Alternative 1	4-21
Table 4-7 Resource indicators and measures for Alternative 2	4-23
Table 4-8 Proposed Action Hydrologic Disturbance. This table shows the percent of the each watershed hydrologically disturbed shortly after implementation. It includes disturbance from roads that are closed and the harvest. In 20 years it is anticipated that the hydrologic disturbance will drop back to about 1% as the harvest units and closed roads recover.	4-25
Table 4-9 Proposed Action Miles of open Motorized Routes in AIZ. The proposed action decreases open motorized routes by about 0.3 miles. This table shows the reduction by drainage. The mileages in this table are rounded, so adding the drainages results in a slight difference.	4-26
Table 4-10 Alternative 2 Hydrologic disturbance. This alternative results in an additional 20 acres of disturbance.....	4-27
Table 4-11 Alternative 2 Miles of open Motorized Routes in AIZ. This table shows the reduction by drainage. The mileages in this table are rounded so adding the drainages results in a slight difference.	4-28
Table 4-12 Direct/indirect effects of the proposal described using the soil resource indicators.	4-30
Table 4-13 Cumulative effects of the proposal described using the soil resource indicators.....	4-31

Figures

Figure 1-1 Vicinity Map of Project Area. The inset in this map shows where the project is located in the State and on the Forest. The main section of the map shows where the project area is located relative to the towns of Soda Springs and Montpelier.....	1-3
Figure 1-2 Forest plan management prescription for the project area.....	1-17
Figure 2-1 Proposed Action Map.....	2-4
Figure 2-2 Alternative 2 Map.....	2-11
Figure 3-1. Forest Vegetation Analysis Area. VMU 58 is used for the landscape scale and the project area is also used for some indicators.	3-1
Figure 3-2 Isolated legacy tree (relic) that resulted from the historical fire regime. This tree has multiple fire scars indicating that it stood alone through multiple fires prior to white man settling in the valley. The repeated fire kept the area around it from filling in with trees. In the last 120 plus years without fire, the trees have filled the interspace between the legacy trees and clumps, resulting in a drastic increase in density.....	3-2
Figure 3-3 The historic fire regime maintained open canopies that allowed aspen to dominate on most acres. In the absence of fire Douglas-fir canopy cover has drastically increased shading out aspen. Aspen health has suffered as result of the absence of fire.....	3-3
Figure 3-4. This chart presents the departure of vegetation and fire regime from its natural condition, as well as a combined departure for each strata and for the forested acres of the landscape as a whole. The horizontal blue line represents the class break between condition classes 1 and 2. The green line represents the class break between condition classes 2 and 3. The greatest fire regime departure is in the dry Douglas-fir strata. This strata is adjacent to non-forest types that would have burned very frequently under the natural regime and thus has missed the most fire cycles. The dry Douglas-fir and the Douglas-fir strata have vegetation departures above 66% and the aspen/conifer strata has departure of 65%, which means there is a need to manipulate age-class distribution, density and species composition in these types.	3-6
Figure 3-5 Forest Structure Stage. This map shows the forest structure stage map units for the project area and the larger landscape assessment area. Viewing this map, it is easy to see that the mature and late seral stages dominate landscape and exist in large continuous patches.....	3-8
Figure 3-6. This pair of charts illustrates the desired distribution of forest structural stage groups and the current distribution. Currently, there is a shortage of seedling/sapling and young/mid classes while the mature/late seral class is way over represented. This chart type was chosen to depict the circle of life, organisms all start out young and mature and eventually become old; here the term late seral is used. In a balanced system disturbance would periodically kill some individuals making room for new ones. In the absence of disturbance stands have continued to age creating the current imbalance. Without disturbance there is not room for new seral tree species to grow.....	3-10
Figure 3-7. This pair of photos show the change in species composition and structure in Johnson Creek. The top photo was taken circa 1910, the bottom photo was taken about 2006. (Beck 2018)	3-10
Figure 3-8 Current Vegetation Form.....	3-11
Figure 3-9 1913 Vegetation Form.....	3-11
Figure 3-10. Conifer is increasing and aspen is being lost due to succession.....	3-11
Figure 3-11. Douglas-fir bark beetle boring dust on a tree downed by heavy snow and wind. Down green trees are great habitat for DFBB. Populations can grow in this type of environment to the point that they can successfully attack and kill standing green trees especially when the stand has high basal area and are mature to over mature.....	3-14
Figure 3-12 Trail in Wood Canyon AIZ. This picture show trail 248 between unit 13 and 14. Note the lack of understory vegetation and the alpine fir dominated overstory. Aspen is being lost in this area.....	3-32

Figure 3-13 John Wood Project Area AIZ's. This map shows the areas identified as part of the project assessment as meeting the criteria in the RFP to be mapped as Aquatic Influence Zones..... 3-33

Figure 4-1 Example of poorly located roads that result in poor condition. The first photo shows a segment road 574 that is too steep and located where drainage is difficult to provide. The second photo shows a segment of road 126 where it intersects a riparian area becoming wet and unpassable most of the year. Relocating roads like 574 requires increasing the length, which decreases the grade of the road..... 4-14

Figure 4-2 Aspen is being shaded out by conifer in the AIZ. In this picture you can see the deep shade that exists in the understory of dense alpine fir. This shade keeps aspen from sending up suckers from their root system, those that do come up, don't survive in the deep shade. The proposed action is to remove part of the overstory conifer with harvest to allow aspen the competitive advantage. Aspen will provide shade for the stream, food for beaver and will allow more sunlight to reach the forest floor which will provide for an increase in density and diversity of grasses and forbs, all of which improves the overall health of the AIZ. 4-26

Summary

The Caribou-Targhee National Forest, Soda Springs Ranger District (Forest), has prepared this Final Environmental Impact Statement (FEIS) pursuant to the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C.A. §§4321 to 4370(h)), Council on Environmental Quality implementing regulations (40 C.F.R. parts 1500 to 1508 (1978)), Forest Service supplemental regulations and guidance (36 C.F.R. part 220, National Environmental Policy Act Compliance (2008), and Forest Service Handbook (FSH) 1901.15, National Environmental Policy Act Handbook (2010)), and other relevant laws, regulations and policies (as discussed herein) to evaluate the potential effects of this forest management project proposal within the Johnson Creek and Wood Canyon drainages, located approximately six miles east of Soda Springs, Idaho.

Project Proposal. The Forest proposes to conduct a forest management project on the Soda Spring Ranger District of the Caribou-Targhee National Forest.

Project Area. The project area is approximately 5,590 acres and is located within two drainages – Wood Canyon and Johnson Creek – approximately six miles east of Soda Springs, Idaho. The legal description of the project area is: Township 8 South, Range 43 East, Sections 29, 31, 32, 33 and 34; and Township 9 South, Range 43 East, Sections 3, 4, 5, 8, and 9 of the Boise Meridian, Caribou County, Idaho.

Background. The Forest seeks to conduct a forest management project in the project area because existing conditions are outside desired conditions outlined in the Caribou National Forest Revised Forest Plan. A review of conditions in this landscape indicates that forest structure is out of balance. The dense mature and late seral age classes are over represented, with a corresponding shortage of younger classes. As a result, aspen as well as other seral species are declining across the landscape. This creates conditions that are at an increased risk to uncharacteristic disturbances (insects and wildfire) and are less resilient to these disturbances. Also, assessments show some roads in the project area are poorly located, resulting in roads that are hard to maintain in a useable condition, which results in resource concerns. The Forest believes that actively managing forest and road resources in the area is the best course to improve the condition of this landscape.

Purpose and Need. The purpose and need of the project proposal is to improve the overall condition, health and resilience of the forest; utilize and improve timber resources; and improve the forest transportation system.

Management Direction. The Caribou Revised Forest Plan and associated travel plan contain land management requirements and direction that were used to develop the project proposal.

Public Involvement. The Notice of Intent for this project was published on March 30, 2017. Eight individuals or groups submitted comments on the scoping for this project. The issues raised included concerns for the effects to wildlife and the effects to soil and

John Wood Forest Management Project
Final Environmental Impact Statement

hydrology resources. There was also concern about the amount of road work that was being proposed.

These issues led the agency to develop one additional action alternative (Alternative 2) in addition to the proposed action and no action alternatives. All three alternatives are summarized below:

Proposed Action (Alternative 1). The proposed action involves forest vegetation management activities on 797 acres. The proposed vegetation management activities can be divided into two categories, harvest (401 acres) and non-commercial stand tending (396 acres). The harvest proposed will employ mostly uneven-aged with some two-aged silvicultural systems. The stand tending proposed will use a combinations of treatments such as pre-commercial thinning, piling, pile burning, jackpot burning, and chopping. To facilitate the harvest approximately 1.2 miles temporary road is also proposed and 6.1 miles of road would be improved. Additionally, approximately 3.2 miles of roads are proposed to be relocated to more sustainable locations that will result in less resource damage. A corresponding 3.2 miles of road would be decommissioned.

Alternatives 2 (Increase Restoration). This alternative involves forest vegetation management activities on 847 acres (401 acres harvest, 407 acres tending and 40 acres broadcast burning). In this alternative one broadcast burn and one tending unit were added and temporary road construction was reduced to approximately 0.6 miles. The road work proposed in this alternative is the same as the proposed action, but an additional 1.8 miles of road is proposed to be decommissioned.

Environmental Consequences. Both action alternatives improve the condition of the forested ecosystem in the project area and the landscape as a whole. While the proposed activities improve forested conditions at the stand scale, much more work is still needed at the landscape scale. The proposed harvest would produce about 524,800 cubic feet of timber (or 5,248 CCF).

Both action alternatives improve the same amount of road, both reducing negative impacts of poorly located roads. Alternative 2 reduces an additional 1.8 miles of system road, most of which is in the Aquatic Influence Zone (AIZ). This would improve watershed conditions, but would somewhat limit recreation access to the Johnson Creek area.

The proposed activities would impact some individuals or habitat of the various wildlife species in the area but would not likely contribute to a trend toward listing. The vegetation treatments would improve the condition of aspen on 797 to 847 acres, this would benefit big game in the area and migratory landbirds.

Decisions to be made. Based upon the effects of the alternatives, the responsible official will decide whether to implement the proposed action (original or modified form) or one of the other alternatives that have been developed (original or modified form), and whether mitigation and/or monitoring is required.

Chapter 1 Purpose and Need for Action

1.1 Introduction

The Soda Springs Ranger District of the Caribou-Targhee National Forest proposes to treat approximately 800 acres to improve the overall health and resilience of the forested ecosystem within the project area. (More information on the current condition of the forested ecosystem can be found in chapter 3 of this document).

The project area is an approximate 5,590-acre area that covers two drainages –

Wood Canyon and Johnson Creek, and is located approximately six miles east of Soda Springs, Idaho. The legal description of the project area is: Township 8 South, Range 43 East, Sections 29, 31, 32, 33 and 34; and Township 9 South, Range 43 East, Sections 3, 4, 5, 8, and 9 of the Boise Meridian, Caribou County, Idaho. Figure 1-1 Vicinity Map of Project Area. The inset in this map shows where the project is located in the State and on the Forest. The main section of the map shows where the project area is located relative to the towns of Soda Springs and Montpelier.

The Forest Service selected this project area because it has invested substantial time and resources in understanding and analyzing the area for a past proposal that was not implemented. That project was called Aspen Range Timber Sale and Vegetation Management (USFS 2008). Aspects of this proposal are similar to the Aspen Range project, however, this is a new project area with a new proposed action, new scoping period, and a new public comment period. The Forest Service did consider the issues raised in the Aspen Range EIS while developing this project.

The overarching direction for this project comes from the Revised Forest Plan for the Caribou National Forest (RFP). The citation in the reference list for the Revised Forest Plan is (USDAFS 2003a), but will be referred to as (RFP) from this point forward in the document.

Chapter Content	
1.1	Introduction 1-1
1.2	Document Structure 1-2
1.3	The Purpose 1-3
1.4	Need for the Proposed Action 1-4
1.5	Objective of the Proposed Action 1-6
1.6	Proposed Action Summary 1-7
1.7	Management Direction 1-8
1.8	Public Involvement 1-20
1.9	Issues 1-21
1.10	Decision Framework 1-26

1.2 Document Structure

This document is organized into the following six chapters with an attached appendix and index:

Chapter 1. Purpose and Need for Action. This chapter includes information on the purpose and need, the proposed action developed to achieve the purpose and need, and the decisions to be made under this EIS. This chapter also summarizes the Forest Plan management direction applicable to the project area, the public involvement process including persons and agencies consulted, and the scope of the environmental analysis for this EIS.

Chapter 2. The Proposed Action and Alternative Actions. This chapter provides a more detailed description of the agency's proposed action, alternative methods for achieving the purpose and need, design features incorporated into the action alternatives, and summaries of the environmental consequences and permitting/consultation associated with each alternative.

Chapter 3. Affected Environment. This chapter describes the current conditions of the physical, social, and economic environment in, and adjacent to, the project area that is likely to be affected by the developed alternatives. This chapter is organized by resource.

Chapter 4. This chapter outlines the environmental effects that would occur relative to the implementation of any of the alternatives presented in Chapter 2. This chapter is also organized by resource.

Chapter 5. List of Preparers. This chapter lists the persons primarily responsible for preparing this EIS, including their contribution and qualifications.

Chapter 6. References. This chapter lists the sources used and relied upon in preparing this EIS, some of which are incorporated by reference into this EIS. All references are located in the project planning record at the Soda Springs Ranger District's office in Soda Springs, Idaho.

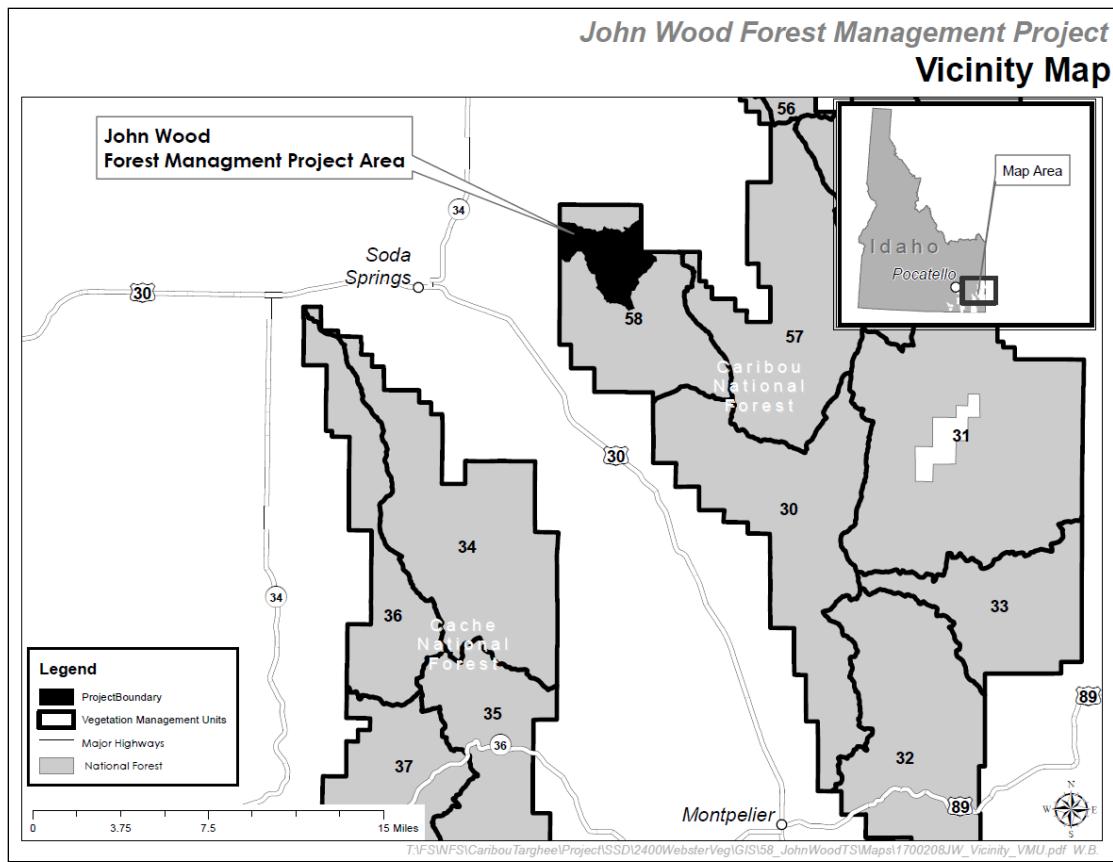


Figure 1-1 Vicinity Map of Project Area. The inset in this map shows where the project is located in the State and on the Forest. The main section of the map shows where the project area is located relative to the towns of Soda Springs and Montpelier.

1.3 The Purpose

The purpose of the proposed action and other action alternatives is to:

- Increase age-class structural diversity in aspen/conifer and Douglas-fir stands in the project area. (RFP 3-17 and 3-18)
- Increase stand resilience and health by reducing density and shifting composition toward seral species by mimicking natural disturbance processes. (DFC) (RFP 3-17) (RFP 4-72)
- Maintain or enhance aspen where it exists. (RFP 3-17 & RFP 4-72)
- Emphasize the cost effective production of timber within the land's capability and capacity, as outlined for lands within **5.2 Forest Vegetation Management Prescription.** (RFP 4-72)
- Develop and maintain the Forest transportation system to the minimum level necessary to effectively manage natural resources, provide user access, and protect capital investments, while providing for user safety and protecting the environment. (RFP 3-36)

1.4 Need for the Proposed Action

There are three overarching needs that caused the Forest Service to propose these alternatives, including the proposed action at this time. The need to:

- Increase age-class diversity, reduce conifer density and shift stand composition toward seral species (such as aspen) to increase the resilience of the forest within the project area.
- Utilize, improve, and protect timber resources.
- Improve the forest transportation system.

Each of these needs are more fully described below.

1.4.1 Forest Structure, Composition and Resilience Need:

A *fire regime condition class* (FRCC) assessment of the forested landscape surrounding this project area, indicates that the landscape qualifies as *condition class 2*, which means that: *vegetation composition, structure and fuels have moderate departure from the natural regime and predispose the system to risk of loss of key ecosystem components*.

The FRCC assessment indicates there is a need to manipulate stand structure, density, species composition, and fuels to improve the overall condition class, health, and resilience of the landscape. The current condition of the landscape is primarily due to the lack of disturbance in this ecosystem, which was historically maintained by fire. The ecosystem attributes that require the most attention within this project are further detailed below.

This project is needed because forested structure at the landscape scale is outside the Desired Future Condition (DFC) outlined in the Revised Forest Plan (RFP 3-17), and the trend is not expected to improve without management action. Currently, the mature and/or late seral classes are overrepresented; the mid/young and seedling/sapling classes are underrepresented. The forested landscape as a whole is currently 94% mature/late seral (old¹). This creates a need to increase age class (structural) diversity.

The disruption of the natural fire regime has led to an imbalance in landscape scale structure and an increase in density, thus increasing biomass and ladder fuels. These changes result in stands that are less resilient to natural fire events, which creates a need to reduce density and/or rearrange biomass/fuels at the stand scale.

Due to the lack of natural disturbances in the landscape, succession has shifted species composition away from the natural balance that developed under the natural disturbance regime. Under the natural disturbance regime, early seral species would have been more

¹ The Revised Forest Plan for the Caribou National Forest (USDAFS, 2003a) and the associated Final Environmental Impact Statement (USDAFS, 2003b) used the terms “old” and “late seral” interchangeably, in this document late seral is used in an attempt to avoid confusion between “old” and “old-growth.” For more detailed description of these terms refer to the glossary.

plentiful. The RFP highlights aspen as an early seral tree species that is declining as a result of succession. It also explains its many important roles in the natural ecosystem. Aspen is often referred to as a keystone species because it is so important in ecosystems. (Bartos, 2001) Because of this the RFP outlines the following Guideline for **5.2 Prescription Areas**: *Where aspen exists, it should be maintained or enhanced as a component through restoration treatments.*

Aspen within the project area is declining in numbers and overall health. Regeneration of aspen is either limited or absent, and is not keeping pace with succession to conifers where conifer are present. This situation is a threat to the health and resilience of aspen stands and the ecosystem as a whole because when aspen decrease so do the other species that rely on them. Because of this there is a need to emphasize aspen regeneration and reduce density in stands currently dominated by conifer.

1.4.2Utilize, Improve and Protect Timber Resources Need

Forested stands in the project area are within RFP prescription **5.2 Forest Vegetation Management**. The emphasis in this prescription is on scheduled wood-fiber production, timber growth, and yield while maintaining or restoring forested ecosystem processes and functions to more closely resemble historical ranges of variability with consideration of long-term forest resilience. Investments made in these areas for timber production, such as road systems, silvicultural improvements and the value of the timber for wood production, receive consideration prior to the use of fire (RFP 4-71). There is a need to utilize, improve, and protect the timber resource while restoring ecosystem processes.

The RFP outlines the following Guideline for this prescription area: *Practices to prevent or control natural disturbances, such as insects and disease losses and wildfire, are emphasized.* (RFP 4-72) The imbalance of landscape scale age structure and the current density of Douglas-fir in many of the stands puts the project area at risk to Douglas-fir Bark Beetle (DBB) attack. Also, the current conifer densities increase the risk of a lethal fire, which would be outside of the natural range of variability. This creates a need to reduce conifer density to help reduce the losses of timber resources to uncharacteristic disturbances.

1.4.3Long-term Transportation System Need

There is a need to provide access for a variety of motorized uses including timber harvest in the project area, and to other destinations accessed via the project area. The nature of these roads ranges from primitive two track roads to properly located, constructed and maintained roads. The majority of these roads have native surface material. The lack of turnouts and gravel on some of these narrow, winding roads creates safety concerns and makes driving conditions hazardous when wet. The hauling of logs across some of these roads could also create resource problems. There is a need to provide a safe road system that provides for user needs while reducing impacts on other forest resources. (RFP 3-36)

1.5 Objective of the Proposed Action

The specific objectives of this proposed action are:

- Move forest age class structure towards the desired future condition, on a landscape scale, by decreasing the percentage of mature/late seral and increasing the seedling/sapling stage. (RFP 3-17) **Indicator:** Percentage of acres in seedling/sapling, young/mid, and mature/late seral stages relative to the DFCs.
- Maintain and enhance aspen within the project area. (RFP 3-17) **Indicator:** The number of acres with aspen as a stand component treated.
- Increase relative amount of seral species and reduce ladder fuels. **Indicator(s):** Acres treated.
- Decrease the percentage of the project area at risk to Douglas-fir bark beetle. **Indicator:** Percent of project area at high or moderate risk.
- Capture the economic value of surplus timber while restoring the forested ecosystem. (RFP 4-71&72) **Indicator:** CCF (Hundred Cubic feet) harvested.
- Promote growth and yield of timber through stand tending. (RFP 4-74) **Indicator(s):** Acres of tending treatments.
- Improve the overall condition of the transportation system in the project commensurate with the revenues generated by the sale of sawtimber from the project area. **Indicator:** Number of miles of road improvements.

1.6 Proposed Action Summary

This section provides a short summary of the activities proposed for the John Wood Forest Management Project. A more detailed description of the proposed action is presented in **Chapter 2: Alternatives**.

- A combination of vegetation management activities would occur on approximately 800 acres. Most of the treatments are proposed to occur in Revised Forest Plan (RFP) prescription area 5.2 Forest Vegetation Management (98%), with a small amount in 2.8.3 Aquatic Influence Zone (2%). The RFP emphasis in prescription area 5.2 “is on scheduled wood-fiber production, timber growth and yield while maintaining or restoring forested ecosystems processes and functions to more closely resemble historical ranges of variability with consideration for long-term forest resilience.” (RFP-4-71)
 - Approximately 400 acres would be treated with a mechanical harvest of merchantable timber followed by other stand tending treatments.
 - Additionally 396 acres would be treated with non-commercial harvest stand tending treatments.
- Several different types of road work are also proposed. The road work is proposed to meet transportation system needs for timber removal, resource needs, and public safety. Approximate mileages by proposed activities are outlined below (see Chapter 2 for more detail).

Table 1-1 Proposed Action road activities

Relocation of Existing	Improve Existing	Maintain Existing	Decommissioning Existing roads
3.2 miles	0.5 miles	5.6 miles	3.2 miles

All acreages and road mileages are approximate and have been determined with the use of Geographic Information System (GIS) technology. Figures have been rounded and as such totals may not exactly match to the acre or tenth of a road mile. The Forest Service used the most current and complete data available. GIS data and product accuracy may vary. They may be: developed from sources of differing accuracy, accurate only at certain scales, based on modeling or interpretation, incomplete while being created or revised, etc. The Forest Service reserves the right to correct, update, modify, or replace GIS products without notification. For more information on GIS products used for this project contact the Soda Springs Ranger District at (208) 547-4356.

1.7 Management Direction

The project area is located within the southern portion of the Caribou-Targhee National Forest thus management is directed by the 2003 Caribou Revised Forest Plan (RFP) and 2005 travel plan. (USFS 2003a and USFS 2005)

These plans were the result of a forest planning process carried out pursuant to applicable statutes (i.e., National Forest Management Act of 1976, Federal and Rangeland Renewable Resources Planning Act of 1974, Multiple-Use Sustained-Yield Act of 1960, and Organic Administration Act of 1897) so as to determine forest-specific requirements for the management of forest land. As a result, these plans set forth direction and guidance for forest management decisions and allocation of uses across forest landscapes in the form of desired future conditions (DFC), goals, objectives, standards, and Guidelines. Within the Caribou-Targhee National Forest, project proposals are developed to achieve consistency with applicable requirements.

RFP management prescriptions were applied to specific areas of land to attain multiple-use and other goals and objectives. The purposes of management prescriptions are to provide a basis of consistently displayed management direction on Forest Service administered lands. Management prescriptions in the Forest Plan are intended to provide a general sense of the management direction or treatment of the land where each prescription is applied. They identify the emphasis and focus of multiple-use management activities in a specific area, however, emphasis, as used in this context, is defined as a focus or a highlight and does not necessarily mean exclusive use.

RFP direction for the project area can be divided into two broad categories: forest-wide guidance and prescription area guidance. A summary of RFP direction applicable to this project in each of these two broad categories is outlined below. The whole of the RFP is incorporated by reference.

1.7.1 Forest-Wide Guidance

1.7.1.1 Ecological Processes and Patterns (RFP 3-3 to 3-4)

- Ecological systems and their components are maintained to be dynamic and resilient to disturbances. Vegetation structure, compositions, and densities are appropriate for maintaining physical and biological processes at any temporal or spatial scale. Ecosystems are not at risk of disturbance beyond the point of resiliency and sustainability. (DFC)
- All fires shall be suppressed if they are in areas not covered by a pre-approved fire management plan. (Standard)

1.7.1.2 Soils (RFP 3-6&7)

- Landtypes identified as being unstable or marginally unstable in the *Caribou N.F. Soil Resource Inventory* shall be ground verified prior to soil disturbing activities to determine the capability of the land to sustain resource development activities including road construction. (Standard)

- Suitability for resource management activities shall be disclosed in the site-specific analysis. (Standard)
- For ground-disturbing activities when detrimental soil disturbances occur on areas of 10 acres or greater, plan and implement rehabilitation to meet desired future conditions. (Standard)
- On landtypes where landslides or landslide prone areas have been identified, a site-specific analysis shall be conducted to ensure project implementation is compatible with the desired future conditions. (Standard)
- Resource developments and utilization should be restricted to lands identified in the Soil Resource Inventory as being capable of sustaining such impacts. (Guideline)
- Maintain ground cover, microbiotic crusts, and fine organic matter that would protect the soil from erosion in excess of soil loss tolerance limits and provide nutrient cycling. (Guideline)
- Detrimental soil disturbance such as compaction, erosion, puddling, displacement, and severely burned soils caused by management practices should be limited or mitigated to meet long-term soil productivity goals. (Guideline)
- Reduce soil erosion to less than the soil loss tolerance limits on lands disturbed by management activities within one growing season after disturbance.
- Sustain site productivity by providing the minimum amounts of woody residue greater than or equal to 3 inches in diameter dispersed on the site as outlined in Table 3-1, RFP 3-7. These do not apply within a 300-foot corridor on either side of roads designated as open on the most current version of the Travel Plan.

1.7.1.3 Air Quality (RFP 3-8)

- All management ignited fires shall comply with rules, regulations and permit procedures required by the Idaho Department of Health and Welfare, Department of Environmental Quality or appropriate agency from Wyoming and Utah. Planned activities shall be conducted in accordance with the Idaho State Implementation Plan of the Clean Air Act, the Montana/Idaho Smoke management Plan, and other plans and policies that control smoke emissions on the National Forest. (Standard)
- Follow visibility and clearing index Guidelines when implementing management practices such as prescribed burning. (Guideline)
- Ensure treatments using prescribed fire are consistent with EPA's Interim Air Quality Policy on Wildland and Prescribed Fires, or more current direction. (Guideline)

1.7.1.4 Minerals and Geology (RFP 3-11)

- Give priority to use of currently developed mineral material (sand, clay, gravel and stone) sources over undeveloped sources. New sources can be identified when existing sources are unable to economically or safely supply the quality and quantity of material needed. (Guideline)

1.7.1.5 Watershed and Riparian Resources (RFP 3-16)

- Watersheds provide a well-distributed pattern of nutrients and energy as well as diverse age-classes of vegetation that contribute to watershed health. (DFC)
- Riparian areas have a range of vegetative structural stages that are at, or moving towards, a properly functioning condition, have features necessary to promote stable stream channels, provide diverse habitat conditions for both aquatic and terrestrial wildlife species and deliver clean water in support of the Clean Water Act and State Drinking Water Act. (DFC)
- Not more than 30% of any of the principal watersheds and their sub-watersheds should be in a hydrologically disturbed condition at any one time. (Guideline)
- Proposed actions analyzed under NEPA should adhere to the State Source Water Assessment Plan to achieve consistency with the Safe Drinking Water Act, and amendments, to emphasize the protection of surface and ground water sources used for public drinking water. (Guideline)
- Projects in watersheds with 303(d) listed water bodies and/or delineated Source Water Protection Areas should be supported by scale and level of analysis sufficient to permit an understanding of the implications of the project within the larger watershed context. (Guideline)
- Proposed actions analyzed under NEPA should adhere to the State Non-Point Source Management Plan to best achieve consistency with both Sections 313 and 319 of the Federal Water Pollution Control Act. (Guideline)

1.7.1.6 Vegetation (RFP 3-17 to 3-20)

- Forest habitats display a diversity of structure and composition. Productive and diverse population of plants are maintained or restored. (DFC)
- In conifers, a range of structural stages exists where 30 to 40% of the acres are in mature and late seral (old) age classes. Early successional stages are maintained through endemic insect and disease disturbance, vegetation management and fire. Patterns are within historical ranges of variability with functional corridors present.(DFC)
- Conifer types are maintained and disturbance processes are restored through vegetation management, endemic insect and disease disturbances, and fire. (DFC)
- Quaking aspen communities are moving towards historical ranges with fire and other practices influencing structural class distribution and patterns across the landscape. Aspen forests are managed to achieve desired vegetative conditions with 20 to 30% in mature and late seral (old) classes, and to reduce the decline of aspen acres due to succession of aspen to conifer. (DFC)
- In each 5th code HUC which has the ecological capability to produce forested vegetation, the combination of mature and late seral (old) age classes (including old growth) shall be at least 20% of the forested acres. At least 15% of all the forested acres in the HUC are to meet or be actively managed to attain old growth characteristics. (Standard)
- The definition of old-growth characteristics by forest type found in “Characteristics of Old-growth Forests in the Intermountain Region” (USDA Forest Service 1993) shall be used unless more current direction is developed.

(Standard)

- Silvicultural prescriptions shall be completed for all forested vegetation treatments. (Standard)
- Manage to reduce the decline of aspen and promote aspen regeneration and establishment. Provide protection from grazing where needed and consistent with management objectives. (Guideline)
- Focus treatments on aspen clones, which are at the greatest risk of conversion to conifer. (Guideline)
- For aspen and conifer types, acres classified as mature and late seral (old) should be in blocks over 200 acres in size unless the natural patch size is smaller. (A block can consist of a combination of mature, late seral and old-growth forest types). Within these blocks:
 - Maintain the dead and down woody material Guidelines for wildlife.
 - Silvicultural techniques may be used to maintain or improve old growth and mature forest characteristics.
 - If a catastrophic event (such as fire) reduces the acres of old-growth, late seral, and mature forest below 20% of the forested acres in a principal watershed, identify replacement forested acres. When necessary, use silvicultural techniques to promote desired characteristics in the replacement acres.
- When delineating late seral (old) forests, use the definitions of late seral stages by forest type as shown in RFP table 3.2. These are Guidelines and site-specific stand structure should determine delineation of late seral stands. (Guideline)
- Use methods of vegetation treatment that emulate natural disturbance and successional processes. (Guideline)
- Forest vegetation manipulation is allowed on unsuitable timberlands to accomplish individual management prescriptions, other than resource benefits or for reduction of hazardous fuels in urban interface zones. Production of wood products should not be the primary consideration. (Guideline)
- Vegetation manipulation may include mechanical treatments, chemical treatments, commercial or non-commercial timber harvest of wood products, prescribed fire, wildfire for resource benefit, or other appropriate methods. Manipulations should emphasize ecological and multiple-use outcomes over being “above cost”. (Guideline)
- Wood fiber should be utilized consistent with ecosystem management and multiple use goals. (Guideline)
- Give priority to vegetation treatments in private land interface zones or those vegetation types identified as having a high degree of departure from HRV. (Guideline)

1.7.1.7 Noxious Weeds (RFP 3-21)

- The introduction and spread of noxious weeds and other invasive plant species are contained, and ecologically sound methods of control are applied across the forest. New infestations of noxious weeds are rare across the landscape and existing large infestations are slowly declining. (DFC)

- Only weed free hay, straw, pellets, and mulch shall be used on Forest. (Standard)
- All seed used shall be certified to be free of noxious weeds from weeds listed on the current *All Stages Noxious Weeds List*. (Standard)
- Gravel or barrow material sources shall be monitored for noxious weeds and other invasive species. Sources infested with noxious weeds shall be closed until the weeds are successfully controlled. (Standard)
- Noxious weeds shall be aggressively treated throughout the Forest, unless specifically prohibited, following the Caribou Noxious Weed Strategy. Using Integrated Weed Management, methods of control and access shall be consistent with the goals of each prescription area. (Standard)
- Weed treatment projects, especially those using herbicides should be timed to achieve desired effects on target vegetation, while having minimal effects on non-target vegetation. (Guideline)
- Monitor, as needed, disturbed areas such as landings, skid trails, roads, mines, burned areas, etc., for noxious weeds or invasive species and treat where necessary. (Guideline)
- Evaluate the potential for invasion by noxious weeds into proposed vegetation units and modify units or mitigate where necessary. (Guideline)

1.7.1.8 Plant Species Diversity (RFP 3-21 & 22)

- Forest-wide vegetation communities have the necessary structure and composition, ecological processes and function to maintain native plant species. (DFC)
- Projects and activities shall be managed to avoid adverse impacts to sensitive plant species that would result in a trend toward federal listing or loss of viability.(Standard)
- Native plant species from genetically local sources should be used to the extent practical for erosion control, fire rehabilitation, riparian restoration, road right-of-ways seeding and other revegetation projects. (Guideline)
- Where practical, disturbed sites should be allowed to revegetate naturally where the seed source and soil conditions are favorable and noxious weeds are not expected to be a problem. (Guideline)
- The Forest Botanist or Ecologist should review seed mixes used for revegetation to insure non-adverse impacts to threatened, endangered, sensitive species, other species at risk, and the overall native flora within the analysis area. (Guideline)

1.7.1.9 Wildlife Resources (RFP 3-24 to 3-33)

- The Forest provides habitat that contributes to state wildlife management plans. (DFC)
- Forest management contributes to the recovery of federally listed threatened, endangered, and proposed species, and provides for conditions which help preclude sensitive species from being proposed for federal listing. (DFC)
- In project analyses affecting the habitats listed below, assess impacts to habitat and populations for the following management indicator species: (Standard)
 - Grassland and open canopy sagebrush habitats – Columbian Sharp-tailed

Grouse

- Sagebrush habitats – Sage Grouse
- Mature and late seral (old) forest habitat – Northern Goshawk
- Survey for the presence of sensitive species if suitable habitats are found within a project area at a minimum of once prior to, or during project development.
- Following forested vegetation treatments, an average of 11 logs per acre should be left consisting of logs in decomposition classes 1, 2 and/or 3 (where they exist). (Guideline)
 - In specific areas where fuel loading and fire hazard are a concern (i.e. urban areas), the number of logs per acre can be reduced to meet acceptable fuel loading standards.
 - This guideline does not apply within 300 feet of an open designated route.
 - These requirements can be achieved, in part with the down woody debris requirements for soils; they are interrelated and are not cumulative.
 - Logs do not need to be evenly distributed over the forested acres. Some acres may have no logs, while others may have many more than 11 logs per acre. The Guideline is to have an average of 11 logs per acre on at least 60 percent of the forested acres of each analysis area.
- Public, workforce, and contractor safety shall be considered and provided for selecting the arrangement of retained snags and trees. (Standard)
- Snags with existing cavities or nests shall be the priority for retention. (Standard)
- Snag height shall be 15 feet or greater for all forest types. (Standard)
- Snags \geq 12 inches diameter breast height (DBH) or the largest diameter for the stand should be retained in clusters, where possible. (Guideline)
- Hard-snag densities for various biological potentials (see Table 3.3 in RFP) should be maintained. The analysis area for calculating biological potential for woodpeckers should usually be the specific management prescription area polygon. Smaller analysis areas can be used when identified for site-specific projects. (Guideline)
- Retain live trees for future snag recruitment following Guidelines for various biological potentials. (Table 3.4 of the RFP)
- If existing snag levels are below the biological potential for woodpeckers that is identified for a prescription area, no dead standing trees should be harvested. Snag creation should only occur if specified as mitigation in a project level analysis. (Guideline)
- Strive not to disturb or destroy existing nests, whether active or inactive. (Guideline)
- The management standards and Guidelines in Table 3.5 in the RFP apply to all forest types within active and historic goshawk nesting territories. (Standard and Guideline)
- Do not allow timber harvest activities within a 30-acre area around all known flammulated owl nest sites. (Guideline)
- Within a 3,600-acre area around all known boreal owl nest sites, maintain over 40% of the forested acres in mature and late seral (old) age classes. (Guideline)
- Within a 1,600-acre area around all known great gray owl nest sites, maintain over 40% of the forested acres in mature and late seral (old) age classes.

(Guideline)

- Provide for vegetation buffers of at least one sight distance around big game concentration/use areas such as wallows and mineral licks. Sight distance is the distance at which 90% of a deer or elk is hidden from an observer. (Guideline)
- Provide for security or travel corridors near created openings. (Guideline)
- Where summer or fall habitat conditions, including security areas, are identified as factor in not meeting State population objectives, work with State wildlife management agencies to address the issue(s). (Guideline)

1.7.1.10 Transportation (RFP 3-36 & 37)

- Transportation system provides access to the Forest to meet planning and management goals including recreation, special uses, timber management, range management, minerals development, and fire protection. (DFC)
- The transportation system is safe, environmentally sound and is responsive to public needs and affordable to manage and maintain. (DFC)
- Roads analysis (currently in Part 212 of Title 36 of the Code of Federal Regulations) shall be used to inform road management decisions including construction, reconstruction, or obliteration of roads. (Standard)
- Road construction, reconstruction and maintenance standards and criteria shall be guided by roads analysis and documented through the use of road management objectives (RMO's) (Standard)
- For roads scheduled for decommissioning, the site-specific analysis shall disclose and analyze effects of the closure methods. (Standard)
- Minimize construction of new transportation routes, evaluate existing routes and reconstruct or relocate those routes not meeting management goals. (Guideline)
- Design and construct roads to a standard appropriate to their intended use, considering safety, cost and resource impacts, and emphasizing protection of water quality. (Guideline)
- Avoid road construction on unstable slopes and highly erosive soils. (Guideline)
- Surface gravel should be placed on roads where necessary to reduce rutting, surface erosion and sedimentation, and to reduce maintenance costs. (Guideline)
- Existing cut slopes that contain suitable material may be widened and material used for surfacing. (Guideline)
- Slide materials which obstruct drainage systems should be removed. (Guideline)
- Roads identified as unneeded in a roads analysis should be decommissioned, stabilized and returned to production. (Guideline)
- Road closures should be located and designed to effectively control motorized use and minimize safety hazards. (Guideline)
- All roads should be properly drained before closure. (Guideline)

1.7.1.11 Recreation (RFP 3-39 & 3-40)

- People visiting the National Forest enjoy a broad range of recreation opportunities amid natural settings. Recreation experiences and settings meet public expectations of quality and variety, while complimenting other resource objectives. (DFC)

- Projects should be planned and implemented to meet the Recreational Opportunity Spectrum (ROS) as depicted on the Forest ROS map. (Guideline)

1.7.1.12 Scenic Resources (RFP 3-40)

- The scenery of the Forest reflects both natural and modified appearing landscapes. (DFC)
- Until the Scenery Management System is fully implemented, projects should be planned and implemented to meet the VQO's as displayed in the Forest VQO map. (Guideline)

1.7.1.13 Heritage Resources and Tribal Treaty Rights (RFP 3-41)

- Historic and archaeological resources are properly managed to provide for preservation of these non-renewable resource for current and future generations. Significant sites are inventoried, protected, and, if warranted, nominated to the National Register of Historic Places. Visitors to the Forest find opportunities to learn about and enjoy their cultural heritage (DFC).
- Cultural resource inventories shall be conducted in consultation with the Idaho State Historical Preservation Office, local Native American Tribes, and interested individuals or organizations likely to have knowledge or interest in the historic properties in the area. (Standard)

1.7.1.14 Grazing Management (RFP 3-42 to 3-43)

- Livestock grazing shall be restricted following prescribed or natural fire and/or rangeland planting or seeding before seed set of the second growing season, or until the objectives of the treatment are achieved. (Standard)

1.7.1.15 Timber Management (RFP 3-44 to 3-46)

- Provide wood fiber while maintaining a healthy and sustainable forest (DFC).
- Management prescriptions preserve and enhance the diversity of plant and animal communities over time, including endemic and desirable naturalized plants and animal species (DFC).
- All commercial sales, including sawtimber, convertible products, select material, and commercial firewood, shall be advertised and sold on a bid basis, unless demand can be met and “sale on demand” sales can be justified. (Standard)
- For tree planting projects, tree seedlings used shall be native species grown from seed from the appropriate seed zone, matched to site and elevation. (Standard)
- The maximum size of limit for forested vegetation openings created in one harvest operation by an even-aged silvicultural system shall normally be 40 acres. Openings may exceed 40 acres in aspen and lodgepole types contingent on Regional Forester approval, or as a result of natural catastrophic conditions such as fire, insect and disease, or windstorm. (Standard)
- A harvested area of commercial forestland shall not be considered a created opening for silvicultural purposes when stocking surveys indicate the minimum stocking is achieved and average tree height equals or exceeds seven feet. When other resource management considerations prevail, a created opening shall no

longer be considered an opening when the vegetation meets a particular management objective stated in the applicable management prescription. (Standard)

- Suitability shall be verified at the site-specific level. (Standard)
- Design timber management projects to simulate natural patch sizes and shapes, connectivity, species composition, and age-class diversity in accordance with silvicultural prescriptions. (Guideline)
- The silvicultural system used on managed timberlands should allow for control of pests, animal damage, including livestock, and vegetation competition to promote regeneration and tree growth at optimum levels. (Guideline)
- When feasible and appropriate, use prescribed burning to dispose of slash to reduce fire hazard and to promote seedbeds for natural regeneration. (Guideline)
- A full complement of harvest systems and techniques may be used across the Forest unless specifically prohibited or limited by individual prescription direction. (Guideline)
- Minimum stocking levels for regeneration treatments by vegetation type are: 170 trees/acre for lodgepole, 140 trees/acre for Douglas-fir, 200 trees/acre for mixed conifer and 5,000 trees/acre for aspen stands on at least 70% of the stand (unless specified differently in the site specific prescription). (Guideline)
- Limit tractor skidding to slopes less than 40% and generally prohibit logging on slopes over 60%. (Guideline)
- Consider the use of helicopter logging methods or other specialized logging methods on slopes in excess of 40%.
- Yarding operations should not take place when ground conditions are wet enough that there is a risk of rutting and compaction as determined by the sale administrator. (Guideline)
- Minimize skid trails and temporary roads during logging operations. Identify skid trails and temporary roads requiring construction in the sale planning process, and assure appropriate rehabilitation of these trails by the purchaser or in post-sale activities. (Guideline)
- Commercial sales of forest products should be offered in a variety of sale-size packages to meet the needs of small and large operations. (Guideline)

1.7.2 Prescription Area Guidance

The project area is within five RFP prescription areas as shown in Figure 1-2. Treatment activities are proposed primarily (98%) in areas designated as “Forest Vegetation Management” (Prescription 5.2). About 2% of the treatment is also proposed in the “Aquatic Influence Zone” (AIZ) (Prescription 2.8.3). There is also a small sliver of one treatment unit that overlaps with Prescription 2.7.1 (approximately 1.5 acres). The direction for the two that represent measurable percentages are summarized below:

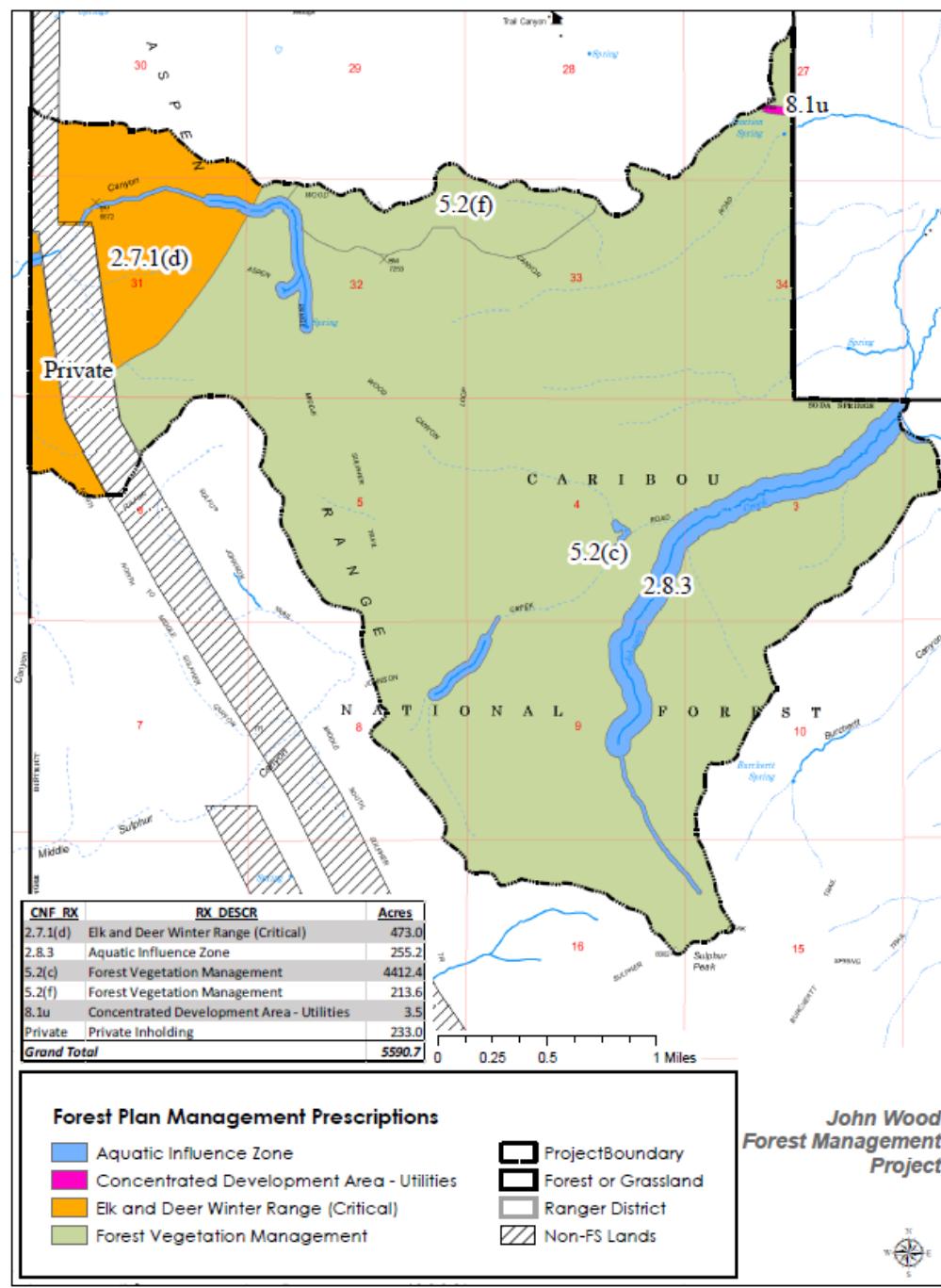


Figure 1-2 Forest plan management prescription for the project area.

1.7.2.1 Aquatic Influence Zone (Prescription 2.8.3, RFP 4-45 to 4-53)

This prescription was applied to approximately 5.6% of the Forest and 4.6% of the project area. It applies to the aquatic influence zone (AIZ) associated with lakes, reservoirs, ponds, wetlands (such as wet meadows, springs, seeps, and bogs), perennial and intermittent streams. The emphasis on this prescription area is to restore and maintain the ecological processes and functions of riparian areas that provide clean water and habitat for aquatic and terrestrial species. Default widths for this management prescription were outlined in the RFP for the various feature types. The RFP also outlines desired future conditions for this prescription area, as well as numerous standards and Guidelines. Some of the most relevant to this project are listed below.

- Allow wildland fire use, prescribed fire and mechanical fuel treatments to meet the desired future conditions of the AIZ. (Guideline)
- Felled trees should remain on site when needed to meet woody debris objectives and desired AIZ attributes. (Guideline)
- Use herbicides, pesticides and other toxicants and chemicals only as needed to maintain desired AIZ attributes. (Guideline)
- Avoid storage of fuels and other toxicants or refueling with AIZs unless there are no other alternatives. Any refueling sites within an AIZ should have an approved spill containment plan. (Guideline)
- Design and implement fish and other aquatic biota habitat restoration and enhancement actions in a manner that contributes to attainment of desired AIZ attributes. (Guideline)
- Snags shall be maintained at 80% biological potential for wood peckers or higher. (Standard)
- All new and replacement culverts, both permanent and temporary, shall be designed and installed to meet desired conditions for riparian and aquatic species. (Standard)
- Avoid constructing roads within the AIZ unless there is no practical alternative. (Guideline)
- Avoid placing ditch relief culverts where they may discharge onto erodible slopes or directly into streams. (Guideline)
- Where feasible, install cross-drainage above stream crossings to prevent ditch sediments from entering streams. (Guideline)
- New or reconstructed roads and trails should cross AIZ riparian areas as perpendicular as possible. (Guideline)
- Design and install drainage crossings to reduce the chances of turning stream flows down road prism in case of a blocked or overflowing culvert. (Guideline)
- Aquatic influence Zones are not included in the suitable timber base and do not contribute to the Allowable sale Quantity. (Standard)
- Timber harvest is generally not allowed unless silvicultural practices are necessary to achieve desired vegetation characteristics and desired AIZ attributes. (Guideline)
- Mechanized slash piling and burning should be minimized. (Guideline)

1.7.2.2 Forest Vegetation Management (Prescription 5.2, RFP 4-71 to 4-74)

This prescription was applied to approximately 15.7 % of the Forest, covers 79% of the project area and 98% of the proposed treatments. The emphasis in this prescription area is on scheduled wood-fiber production, timber growth, and yield while maintaining or restoring forested ecosystem processes and functions to more closely resemble historical ranges of variability with consideration for long-term forest resilience. Goods and services are provided within the productive capacity of the land. The quantity of goods and services produced may or may not fully meet demand. Amenity values are provided for. Investments made in these areas for timber production, such as road systems and silvicultural improvements and the value of the timber for wood production, receive consideration prior to the use of fire. (RFP 4-71) The RFP disclosed that visitors to areas with this prescription will notice signs of management practices. This would include seeing harvest and burn units, hearing machinery and encountering road work.

Lands in this prescription are included in the suitable timber base and contribute to the Allowable Sale Quantity (ASQ). These lands are managed to emphasize the cost-effective production of timber within its land capability and capacity.

- Practices to prevent or control natural disturbances, such as insect and disease losses and wildfire are emphasized. (Guideline)
- Wildfires should be suppressed. (Guideline)
- Prescribed fire may be used to reduce fuel loading, obtain natural regeneration for wildlife habitat improvement, and for other purposes that meet the goals of the prescription. (Guideline)
- Maintain snag habitat at 40 percent or higher of the biological potential for woodpeckers. (Guideline)
- Where aspen exists, it should be maintained or enhanced as a component through restoration treatments. (Guideline)
- All ground-disturbed areas within an activity area should be monitored for five years for noxious weed invasions.
- Lands in this prescription are included in the suitable timber base and contribute to the Allowable Sale Quantity (ASQ). (Standard)
- The ASQ attributed to stands on slopes between 40% and 60% and areas within inventoried Roadless Areas is a non-interchangeable component (NIC). (Standard)
- Harvest and treatment residues should be made available for firewood and other products in a manner compatible with site preparation, productivity, and restocking requirements. Designated aspen areas should be made available for firewood. (Guideline)
- All forms of timber harvest, to achieve stated goals and objectives are permitted. (Guideline)

1.8 Public Involvement

1.8.1 Public Scoping

The Forest Service listed the project proposal in the Schedule of Proposed Actions on December 6, 2016. A letter regarding the proposal was mailed to the Shoshone-Bannock Tribes on March 27, 2017.

A Notice of Intent (NOI) to prepare a Draft EIS was published in the Federal Register on March 31, 2017, initiating public scoping. The Forest Service posted a public scoping letter on the Forest Service website and persons/entities requesting individual notice of project proposals within the Soda Springs Ranger District were notified on March 31, 2017. The Forest Service published a legal notice in the Idaho State Journal, the newspaper of record, on April 1, 2017, to ensure wide distribution. The Forest Service accepted public scoping comments for 30 days (from March 31 to April 30).

The Forest Service received nine comment letters from different segments of the interested public, including non-governmental organizations, a County Commissioner, and private citizens. Public concerns covered a wide range of potential issues and topics, with the majority focused on natural resource issues associated with forest land management and expressing both support and opposition to the proposed action. The comment letters were considered in developing this Draft EIS, as discussed in Section 1.9 Issues.

1.8.2 Draft Environmental Impact Statement

The Notice of Availability (NOA) of the Draft Environmental Impact Statement (DEIS) for this project was published in the Federal Register on December 21, 2018. The Forest Service also posted the DEIS on the Forest Service website on December 21, 2018. Persons/entities requesting individual notice of project proposals within the Soda Springs Ranger District were notified. The Forest Service published a legal notice in the Idaho State Journal, the newspaper of record, on December 26, 2018, to ensure wide distribution. As disclosed in the NOA the Forest Service accepted public comments on the DEIS until February 4th, 2019. Due to the government shutdown comments received after February 4th were also included.

The Forest Service received nine comment letters on the DEIS. Comments focused on effects to wildlife and the use of timber harvest as a management tool. Both support and opposition to the two action alternatives was received. The comment letters received on the DEIS are included in Appendix A as are the Forest Service's responses to the concerns raised.

1.8.3 Agencies and Persons Consulted

1.8.3.1 Forest Service IDT

The Forest Service Interdisciplinary Team (IDT) conducted internal scoping during fall of 2016 and spring-summer of 2017. Internal scoping consisted of IDT meetings, site visits to the project area, and communications with regulatory agencies. These efforts led to the development of the proposed action, alternatives, effects analyses, and to determine mitigation/monitoring and permitting/consultation requirements.

For more information on the Forest Service IDT, see Chapter 5 (List of Preparers).

1.8.3.2 Consultation and Coordination

The Forest Service IDT determined that the following authorization is required for implementing the proposed action and alternatives:

- Section 106 consultation (National Historic Preservation Act, “NHPA”); required consultation has been completed, see the heritage section of this document and corresponding specialist report for more detail.
- A Clean Water Act section 404 permit will be required for any work below the ordinary high water mark, which is not exempt from permitting. A permit will be acquired if needed. Typically, a corresponding State of Idaho stream alteration permit is also required if working below the high water mark. This permit will also be acquired if needed.

1.8.3.3 Government-to-Government Consultation

The proposed action and alternatives would not affect the treaty rights of Shoshone-Bannock Tribes for hunting and gathering on ceded lands or other rights/resources (i.e., American Indian Religious Freedom Act, Executive Order (EO) 13007 (Indian Sacred Sites), or traditional cultural properties. No comments or requests were received from the Shoshone-Bannock Tribes and archeological survey results did not recommend further inquiry. Therefore, formal Government-to-Government consultation was not conducted, as set forth in EO 13175 (Consultation and Coordination with Indian Tribal Governments), U.S. Department of Agriculture, Departmental Regulation 1350-002 (Tribal Consultation, Coordination, and Collaboration), and FSH 1509.13 (Tribal Relations Handbook).

1.9 Issues

Information and concerns from public and internal scoping was considered and incorporated into this document. The following individuals/groups responded to scoping and provided feedback: Jean Publiee, Idaho Conservation League, Native Ecosystems Council, Alliance for the Wild Rockies, Yellowstone to Uintas Connection, Wildland’s Defense, and the American Forest Resource Council. Scoping is used to identify issues

that relate to the effects of the proposed action. An issue is an unresolved conflict or concern over a potential or perceived effect to a resource resulting from implementing the proposed action. Issues provide focus for the analysis of the environmental effects and may influence alternative development, including development of project design criteria.

The Interdisciplinary Team (IDT) analyzed comments and concerns raised during scoping and split them up into three categories: 1) Key Issues, 2) Analysis Issues, 3) Issues Considered but Not Analyzed in Detail. Comments submitted during public scoping are included in the project record as is the IDT's classification and consideration of those comments.

1.9.1 Key Issues

Key issues were defined as issues identified during scoping that were within the scope of the project and of sufficient concern to drive an alternative. Key issues are used to focus and direct activity types used to develop the action alternatives. Key issues are covered in detail in chapter 3 and 4 of this document.

1.9.1.1 Forest Vegetation

The condition of the forest vegetation in the project area was one of three needs for initiating this project. One of the purposes of the project is to improve the condition of the forested ecosystem. Internal and public comments asked why more non-timber sale activities were not included to address the condition of the forest.

Indicator & Measure: Fire Regime Condition Class (FRCC) departure %, age-class diversity (% by forest structure stage), % of aspen acres at high risk, % Douglas-fir forest type with closed canopy, % Douglas-fir at high risk to bark beetle, and acres treated.

1.9.1.2 Timber Management

Revised Forest Plan (RFP) direction outlines a need to emphasize timber resource management in most of this project area. One of the purposes of the project was to emphasize the cost effect production for timber. Public comments indicate that there are concerns using timber management and logging as management tools.

Indicator & Measure: Forest product offered (hundred cubic feet (CCF)) and acres treated

1.9.1.3 Transportation System

The condition of the transportation system (roads and motorized trails) in the project area was identified prior to initiating the project as needing to be addressed. One of the purposes of the project was to improve the condition and reduce the effects of the transportation system. Internal and public comments asked why more activities were not included to reduce the impacts of existing travel system.

Indicator & Measure: Miles of road relocated

1.9.2 Analysis Issues

Analysis issues are those issues/resources identified during scoping that may be directly and/or indirectly affected by the proposed activities that have relevance to the decision to be made, that is they drive design features or mitigation. Issues that fall in this category are covered in detail in chapter 3 and 4 of this document and are outlined below.

1.9.2.1 Wildlife

The proposed action and alternatives could have effects on wildlife species and their habitat. This includes Threatened and Endangered (T&E) Species, Regional Forester's Sensitive (S), Migratory Landbirds, and big game species (mule deer, elk, and moose) located in the project area.

Indicator & Measurement: Total acres treated/acres of aspen treated, and determination of the effect for Forest Service Sensitive Species.

1.9.2.2 Hydrology

The proposed action and alternatives could have effects on hydrologic function and condition.

Indicator & Measurement: Percent hydrologic disturbance per watershed, miles of open motorized routes in aquatic influence zone (AIZ) and acres of AIZ treated.

1.9.2.3 Soils

The proposed logging operations, landing construction and use, slash disposal, temporary road construction (aka skid trails), and broadcast burning (aka prescribed burning) could adversely affect soil resources by causing detrimental soil disturbances, reducing long-term productivity and soil resiliency.

Indicator & Measure: Percent forest soil disturbance by unit, and acres of productive land dedicated to the transportation system.

1.9.3 Issues Considered but not Analyzed in Detail

Issues that were considered but not analyzed in detail were those that:

1. have been addressed by eliminating or minimizing any potential effects through alternative design and/or design criteria
2. are already decided by law, regulation, Forest Plan, or other higher level decision
3. are irrelevant or outside the scope of the project or the decision to be made
4. are conjectural and not supported by scientific or factual evidence

The following issues were considered but not analyzed in detail:

1.9.3.1 Air Quality

The Forest will comply with Idaho's state Clean Air Act requirements. The project will comply with rules, regulations, and permit procedures required by Idaho Department of

Health and Welfare, and Department of Environmental Quality (RFP 3-8). We will not discuss air quality further in the EIS, due to project design and adherence to laws and regulations.

1.9.3.2 Threatened, Endangered or Sensitive Plant Species

Field surveys and the resulting assessment determined that there will be “No Effect” to plant species listed under the Endangered Species Act (ESA) and “No Impacts” to plant species listed as Sensitive by the Intermountain Regional Forester for the Caribou National Forest from the implementation of this project. Currently there are no plant species of special concern in Idaho known to occur within the project area (Lehman, R., 2018). Threatened, Endangered and Sensitive plants is an issue not carried forward in this document because it has been addressed through surveys and project design.

1.9.3.3 Climate Change

While advances have been made in accounting for and documenting the relationship between greenhouse gases and global climate change, difficulties remain in reliably simulating and attributing observed temperature changes to natural or human causes at smaller than continental scales (IPCC 2007, pg. 72). The effects of a relatively minor land management action such as this on global greenhouse gas emissions or global climate change is neither possible nor warranted in this case. The effects this project will have on climate change is outside the scope of the decision to be made because of the small scale of the action compared to the issue. The effects climate change may have on forest vegetation were considered in the Forest Vegetation Report.

1.9.3.4 Cultural Resources

The proposed logging operations, landing construction and use, slash disposal, temporary road construction (aka skid trails), road construction, road decommissioning, broadcast burning (aka prescribed burning), and use of large mechanized equipment could adversely affect cultural resources by crushing or displacing artifacts. A cultural resource survey was conducted to identify cultural resources within the project’s area of potential effect. Historic properties are those cultural resources that are listed in or are eligible for listing in the National Register of Historic Places. The project has been designed to avoid these cultural resources and the project will have no effect on any historic properties. The Idaho State Historic Preservation Office (SHPO) concurred with the no effect determination on July 25, 2018. Cultural Resources while important are not an issue carried forward in this document because the issue has been addressed through surveys and project design.

1.9.3.5 Fisheries

The project area contains only one documented fishery, which is Johnson Creek. Presently, Johnson Creek is hydrologically disconnected from Slug Creek and is not likely to be re-founded by native cutthroat trout. Because there will be no negative effect to native cutthroat trout or its habitat from either action alternatives, we will not discuss fisheries further in the EIS. Effects to the riparian area around the streams are covered in the hydrology section. Fisheries is irrelevant to the decision to be made.

1.9.3.6 Permitted Livestock

The project area is within the Johnson Creek and North Sulfur Sheep and Goat allotments. With current stocking rates, the allotments are not using all available forage. Therefore, no reduction in time or numbers is expected following either action alternative. Sheep grazing would continue at current levels. However, the permittee would be expected to keep the sheep out of treatment units for at least two growing seasons or until objectives were met. Because there will be no change after the proposed action, or other action alternative, we will not discuss range further in the EIS. Range management is an issue not carried forward in this document because it has been addressed through project design features.

1.9.3.7 Recreation

The action alternatives will affect several motorized trails and dispersed camp sites within the project area. The action alternatives may also affect other recreation activities such as hunting, site seeing, etc.

One of the primary design criteria for the development of both action alternatives was maintaining access to dispersed campsites off roads 901 and 1234. These sites are very popular. Road access is an important component to dispersed camping. The proposed logging will not directly impact any campsites. During treatment there will be some negative indirect impacts to the recreational experience due to noise and other treatment disturbances. However, roads that access the sites will be improved as a result of the project. The short term negatives are far outweighed by the long term improvement to campsites access.

Several ATV trails will be directly impacted by the action alternatives. These trails have historically been used to support harvest operations, so the proposed use will not change the overall recreational experience. The primary impact will be the short period of restricted access while logging operations are in progress. This short term impact will be offset by improvements to trails that are part of the design.

This issue was an important part of the project design, it will not be tracked further in this document because the effects have been minimized by the design of the project.

1.9.3.8 Noxious Weeds

Noxious weeds and non-native invasive plants are managed according to Forest Service policy and direction. The Soda Springs Ranger District has an active noxious weed and non-native invasive plant treatment program managed in cooperation with State, County, other Federal agencies and private land owners as part of a Cooperative Weed Management Area (CWMA). Forest Service weed management is carried out following Forest Service direction in the Caribou-Targhee National Forest Weed Management Strategy (1996).

Currently spotted knapweed, hounds tongue, Canada thistle, musk thistle and toad flax can be found in the project area. Treatment activities are occurring and are expected to

continue within the project area independently of the selection of alternatives proposed in this document.

Following either action alternative there would be a potential for increased weeds due to soil disturbances and the removal of current canopy cover. Noxious weeds and non-native invasive plants would continue to be monitored and treated but at an elevated level with an emphasis on disturbed areas (project design feature). The focus would be to minimize the establishment and spread of noxious weeds and other invasive plant species through the application of Forest direction, Integrated Pest Management (IPM), and Best Management Practices (BMP's). The Forest Service would also continue to work with the CWMA in the area.

There is also a risk for weeds to increase in the future due to no-action. If the forest ecosystem condition is not improved and an uncharacteristic disturbance occurs weeds will increase.

This issue while important has been addressed through project design and will not be tracked as an issue further in this document.

1.9.3.9 Roadless

The project area is partially located in the Huckleberry Basin Inventoried Roadless Area (IRA), which is designated as a general forest classification, which allows timber harvest, road construction, and road deconstruction in the area (Federal Register V. 73, 2018). However, the District Ranger directed that no treatments be proposed in the IRA portion of the project area at this time. By design the IRA and the Idaho Roadless Rule is irrelevant to the decision being made, and will not be discussed further in the EIS.

1.9.3.10 Scenic Values

The project will comply with the Revised Forest Plan's Desired Future Conditions, Goals, Objectives, Standards, and Guidelines for Scenic Resources found in (RFP 3-40). Because the proposed action will reflect both natural and modified appearance, we will not discuss scenic values further in the EIS. Scenic values are irrelevant to the decision due to project design.

1.9.3.11 Tribal Treaty Rights

The project as designed will not change Native American's rights in the project area. Tribal treaty rights are outside the scope of the decision being made, and will not be discussed further in the EIS.

1.10 Decision Framework

This environmental analysis outlines an opportunity/need to manage forest resources within the project area. It also summarizes and reviews the Revised Forest Plan direction for the project area as well as the potential impacts and issues with implementing the project. The overall goal is to shift forest resources toward desired conditions as much as possible (meet the need) while attempting to avoid substantial adverse impacts to other

resource values. With this overall goal in mind, the decision maker will use the following criteria in order to make the decision.

- Should management activities including: timber harvest, fuels treatments, stand tending, and road work be implemented in the *John Wood* proposed project area at this time?
- If so:
 - Where within the project area should these activities occur?
 - What type and mix of timber harvests, prescribed burning, stand tending and road management should be used on this specific portion of Forest Service managed lands?
 - What design features, mitigation measures, and monitoring should be applied to the project?
- And:
 - Which alternative provides the best balance of all issues under consideration?

Chapter 2 The Proposed Action and Alternative Actions

This chapter describes and compares the alternatives that the Interdisciplinary Team (IDT) developed and analyzed in detail. It also briefly describes the other alternatives considered but eliminated from further analysis. Alternatives to the proposed action were designed in response to scoping issues and comments described in Chapter 1.

Chapter Content

2.1	Alternatives Considered in Detail	2-1
2.2	Other Alternatives Considered.....	2-17
2.3	Design Features.....	2-18
2.4	Monitoring	2-23
2.5	Comparison of Effects and Outputs....	2-24

In addition to describing the alternatives, this chapter presents a comparative summary of the alternatives based on the information and analysis in Chapter 3: Affected Environment, and Chapter 4: Environmental Consequences.

2.1 Alternatives Considered in Detail

The Forest Service developed three alternatives, the Proposed Action, one alternative action and the No Action. The Proposed Action alternative is the initial formulation of the project that was subject to internal and public scoping and comment. The Increased Restoration Alternative was developed to address concerns identified through the scoping that only treatments associated with timber production were considered. The No Action Alternative is required by regulation and provides a baseline for analysis, so it was also considered in detail.

The IDT and the decision maker felt the two action alternatives that have been developed along with the no action alternative provide a reasonable range of options to evaluate effects and lessen or eliminate unresolved conflicts/issues.

2.1.1 The Proposed Action

The proposed action as outlined here has been refined since the project was initially scoped. It was developed by the IDT to address the purpose and need and to comply with Revised Forest Plan (RFP) management direction. This proposed action can be broken into two main parts; **forest vegetation management**, and **transportation management**. Each of these are described in greater detail below.

2.1.1.1 Forest Vegetation Management

Almost 800 forested acres within the project area are proposed to receive treatments that will move affected stands and the landscape as a whole toward desired conditions outlined in the Revised Forest Plan. These forest vegetation management treatments can be divided into two categories: harvest and tending. **Harvest** is proposed in stands where merchantable sized trees that are not needed to meet desired stand conditions can be removed with ground-based equipment. Utilizing/harvesting this surplus timber meets forest plan direction for this prescription area to *emphasize wood-fiber production, timber growth, and yield while maintaining and restoring ecosystem processes*. **Tending** is a broad term for treatment activities that reduce density, change species composition and rearrange forest material (trees, woody debris and brush) that are generally not merchantable size. These treatments are described further below.

Approximately 401 acres are proposed for **harvest** (50% of the proposed treatment). Portions of some stands will not be harvested due to steep slopes, poor access or low commercial volume, approximately 328 acres will actually be harvested. In addition to the commercial harvest proposed, other stand tending activities would occur on all 401 acres after the harvest operation is completed.

The silviculture systems that are proposed to guide the timber harvest are the selection and irregular shelterwood systems. Selection systems are used to create uneven-aged stands (stands with 3 or more age classes) while the irregular shelterwood system is used to create two-aged stands. With both systems stand density would be reduced enough to allow a new age class to develop (the Forest as a whole and this landscape scale is lacking seedling and sapling age classes). To reduce the stand to the desired density the surplus trees from each age/size class would be cut, those of merchantable size would be harvested. The surplus merchantable size trees (greater than 8 inches in diameter at breast height) would be felled and skidded to landings using ground based skidding equipment (e.g. dozers, skidders forwarders, feller bunchers, etc.). These activities would generally occur between July 5th and December 20th.

To facilitate the timber harvest, approximately 1.2 miles of temporary road would need to be constructed (approximate locations are shown on the proposed action map). Additionally, skid trails and landings would also be developed within the units or in openings adjacent to them. Upon completion of the timber harvest, the temporary roads, landings, and skid trails would be closed and rehabilitated (more detail in design features section).

An additional 396 stand acres are proposed for **tending** treatments. The treatment activities (e.g. pre-commercial thinning, weeding, piling, pile burning, jackpot burning,

chopping, etc.) used will vary acre to acre across the project area, depending on the condition of the stands. The most common treatment activities are listed and described below. Portions of some stands may not be treated and some acres may receive multiple treatments. This work would likely be spread across the next decade or so as funds and personnel are available.

- **Pre-commercial Thinning** involves cutting surplus trees generally less than 8 inches in diameter at breast height. Target densities will vary depending on stand condition, but generally decreases density to 360 trees per acre or less. Target densities will vary by tree size and forest type. Thinning material if accessible will be made available to the public with personal use forest product permits.
- **Weeding** is similar to pre-commercial thinning but generally allows for more variation in tree spacing to leave the most desirable tree species.
- **Piling** involves putting surplus large woody debris (greater than 3 inches diameter) and course woody debris (less than 3 inches diameter) into piles that are arranged (density and size) conducive to burning later. Piling will generally be done by hand, but where fuel loads warrant track mounted mechanical equipment may be used (e.g. skid steer, dozer)
- **Burning** of both piles and jackpots (areas with high fuel loads that are surrounded by low fuel loads). Burning will be done by hand and in accordance with a signed burn plan.
- **Chopping or masticating** typically involves a tracked machine with a chopping head that moves through the stand chopping or rearranging fuels to decrease the intensity that they would burn.

Unit numbers, locations and treatment type are shown for stands proposed for treatment in **Figure 2-1**. **Table 2-1** provides additional detail by unit number.

All design features that have been listed in section **2.3 Design Features** would be included in this alternative.

Figure 2-1 Proposed Action Map

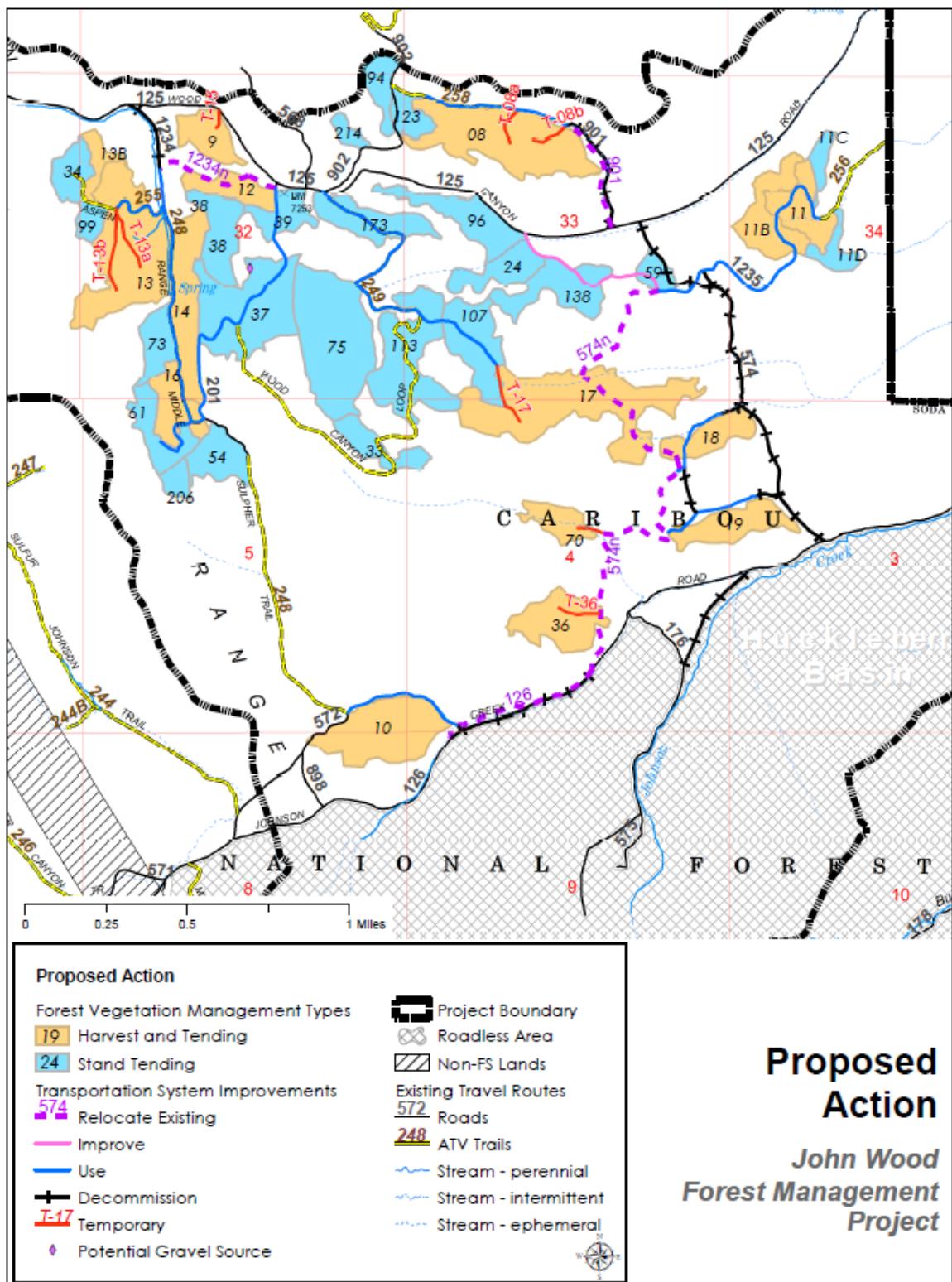


Table 2-1 Alternative 1, Proposed Action, Forested Vegetation Proposal

Unit #	Acres	Harvest Acres	Silvicultural System	Silvicultural Treatment	Yarding Method	Fuels Treatment
08	52.6	48.5	Uneven-aged	Selection Harvest	Ground Based	Yard tops+
9	12.8	10.3	Uneven-aged	Selection Harvest	Ground Based	Yard tops+
10	38.4	28.5	Uneven-aged	Selection Harvest	Ground Based	Yard tops+
11	17.9	17.9	Uneven-aged	Selection Harvest	Ground Based	Yard tops+
11B	21.8	18.0	Uneven-aged	Selection Harvest	Ground Based	Yard tops+
12	12.9	12.9	Uneven-aged	Selection Harvest	Ground Based	Yard tops+
13	57.9	44.9	Uneven-aged	Selection Harvest	Ground Based	Yard tops+
13B	6.8	4.1	Two-aged	Shelterwood- Harvest	Ground Based	Yard tops+
14	29.3	29.3	Uneven-aged	Selection Harvest	Ground Based	Yard tops+
16	16.3	15.3	Uneven-aged	Selection Harvest	Ground Based	Yard tops+
17	67.3	61.0	Uneven-aged	Selection Harvest	Ground Based	Yard tops+
18	14.6	12.3	Two-aged	Shelterwood- Harvest	Ground Based	Yard tops+
19	18.8	4.7	Two-aged	Shelterwood- Harvest	Ground Based	Yard tops+
36	23.1	14.5	Uneven-aged	Selection Harvest	Ground Based	Yard tops+
70	10.8	5.8	Two-aged	Shelterwood- Harvest	Ground Based	Yard tops+
24	13.1		Uneven-aged	Tending Activities		Various
33	12.5		Two-aged	Tending Activities		Various
34	11.3		Uneven-aged	Tending Activities		Various
37	46.6		Uneven-aged	Tending Activities		Various
38	18.3		Uneven-aged	Tending Activities		Various
39	11.9		Uneven-aged	Tending Activities		Various
54	15.5		Two-aged	Tending Activities		Various
59	6.6		Uneven-aged	Tending Activities		Various
61	14.9		Uneven-aged	Tending Activities		Various
73	11.9		Uneven-aged	Tending Activities		Various
75	55.5		Uneven-aged	Tending Activities		Various
96	22.8		Uneven-aged	Tending Activities		Various
99	5.8		Uneven-aged	Tending Activities		Various
107	25.2		Uneven-aged	Tending Activities		Various
113	40.4		Two-aged	Tending Activities		Various
123	9.0		Uneven-aged	Tending Activities		Various
138	23.2		Two-aged	Tending Activities		Various
173	19.3		Uneven-aged	Tending Activities		Various
194	10.5		Uneven-aged	Tending Activities		Various
206	5.1		Uneven-aged	Tending Activities		Various
214	3.9		Uneven-aged	Tending Activities		Various
11C	5.2		Two-aged	Tending Activities		Various
11D	7.4		Two-aged	Tending Activities		Various
Acres Treated	797	328				

Silvicultural System and **Silvicultural Treatments** are described in the text body above and in more detail in the vegetation specialist report and draft Silviculture prescriptions in the project record. **Yard tops+**= tops of merchantable trees would be yarded to landings and piled and burned if not utilized. The accumulated fuels that are not attached to merchantable trees would be handled in various ways, such as limb and lop, crush, masticate or jackpot burn. This determination would be made based on a post-harvest assessment. **Various** fuels treatments may be used in the non-harvest stands and will often vary across a given stand.

2.1.1.2 Transportation System:

The proposed transportation system activities are designed to improve the transportation system to facilitate resource removal (logging), improve recreational experience, reduce watershed impacts, and provide for long term resource management needs. **Table 2-2** outlines the categories and mileages of the proposed activities, while **Figure 2-1**, shows the locations of the proposed activities. **Table 2-3** provides a more detail description of the activities by road segment. The changes made to the transportation system with this alternative would be reflected on the Forest Motorized Use Map once implemented.

In addition to the road work described, it is proposed that up to 3 acres be developed as a gravel source. The proposed location for the gravel source is shown on **Figure 2-1**. The gravel source will remain open until the site is no longer of use. Top soil from the area developed will be salvaged and used in reclamation.

Table 2-2 Proposed Action Road Activity Proposal Totals Alternative 1 (* Mileages are approximate)

Activity	Description	Miles
Relocation of Existing	This treatment provides a safe operable road to haul logs on and provide user access to the project area, and/or to reduce resource impacts. Relocation involves constructing a new road bed or activating a previously closed road to replace one that is poorly located. In addition to the construction of the new road bed, the following may occur as needed: blading, shaping for proper drainage, placement of proper drainage structures, culvert installation, construction of pull outs, and adding gravel where needed.	3.2*
Improve Existing	The objective of this action is to provide a safe, operable road to haul logs on and provide user access to the project area. Improving involves one or more of the following: widening, blading, shaping for proper drainage, placement of proper drainage structures, minor realignments, construction of pull outs, culvert installation, and graveling as needed.	0.5*
Maintain Existing	Roads identified for this action will be used to remove timber from the project area. These roads would receive road maintenance as needed. Types of maintenance activities may include: blading, shaping for proper drainage, placement of proper drainage structures, culvert replacement, and spot graveling where needed. This may also include some minor (less than 66 feet) realignments for safety or to improve drainage.	5.6*
Decommission Existing	Roads no longer needed for long term management or that are being moved to another location will be removed from the transportation system and returned to productive vegetation. The intent is to eliminate motorized travel from these roads. This may include a combination of one or more of the following: ripping, re-contouring, scattering of slash, placement of rocks, berthing, and seeding to native species.	3.2*

Table 2-3 Road Activity Descriptions: The following narratives provide details for proposed road work.

Route #	Objective and Detailed Descriptions
1234	This alternative proposes to decommission the first 0.2 miles of this road (it is in a meadow and is often wet and rutted) and relocate it to an existing closed road template that comes in from the east (0.4 miles). This will provide a more sustainable and maintainable access to the popular dispersed camp site near where the new route comes in. Additionally approximately 0.1 of a mile will be used and maintained as part of the timber sale. Of the 0.1 miles being used, about half is currently opened to full size vehicles the other half is managed as an ATV trail, the same is planned at the end of the project. This road provides for harvest access to units 13, 13B, 14 and 16.
255	This alternative proposes to use approximately 0.2 miles of this road to access units 13 and 13B. All of this road is currently being managed as an ATV trail and will return to this use after the harvest project is completed.
248	This alternative proposes to use approximately 0.75 miles of this ATV trail. This trail was constructed as a road for a past timber sale and is currently being managed as an ATV trail, this use will continue after it is used and maintained as a road for the timber sale. There is one small spring that has developed in the trail and runs down, then across the trail, this will be put in a pipe or a French drain to keep the water off the trail/road surface. To improve long term maintenance of this trail, a couple minor realignments will be done to improve trail drainage. This road provides for harvest access to units 14 and 16
201	This alternative proposes to use the first 0.9 miles of this road. The road to this point is currently open to full size vehicles and this will not change. Portions of this road are very rutted and will require some major reshaping and it will likely receive some spot graveling. Additionally, several corners will be slightly realigned to improve safety (sight distance). This road provides for harvest access to units 14 and 16
201B	This alternative proposes to use the first 0.2 miles of this non-system road to access unit 16. It is currently closed to motorized use and will be returned to this condition at the end of the project.
249	This alternative proposes to open and use the first 0.75 miles to facilitate the removal of timber (via road 1232) from unit 17. This is a road that is managed as an ATV trail. This route is shown on MVUM as an ATV trail, but currently there are no barriers until mile post 0.5, so it is being driven by full size vehicles for 0.5 miles. It is proposed to leave the first 0.1 miles open to full size vehicles to access an existing dispersed camping location, then close from that point forward leaving it accessible to ATV traffic.
1232	This alternative proposes to open and use the first 0.3 miles to facilitate the removal of timber (via temp road into unit 17). This road is currently closed to all motorized use. After harvest and associated activities it will be returned to a closed and stable condition.
901	This alternative proposes to decommission the first 0.4 miles that is user created and relocate (0.4 miles) it onto a previously constructed and closed

Route #	Objective and Detailed Descriptions
	road bed that parallels the current route. It is also proposed to use about 0.2 miles above that point. This road provides for harvest access to unit 08. This road is currently open to all motorized use, the proposed action will not change that. This road transitions into trail 258, this transition point will be better defined at about its current location.
258	This alternative proposes to open and use about 0.3 miles to remove timber from unit 08. This trail is currently open to ATV use, it was previously used to remove logs. It will be closed to all but ATV traffic after the harvest and associated treatments are complete.
1235	This alternative proposes to improve the first 0.5 miles if this road, up to the new intersection with 574 road. This section of road will be used to access units 11, 11B, 17, 18, 19, 70, 36 and 10. The next 1.0 miles will be used (for units 11 and 11B). The open motorized road status of this road would remain the same after the project.
574	This alternative proposes to decommission the entire length of this road from its current location (1.4 miles) and relocate it to the west. The relocated road will be about 1.9 miles long and will provide access to units 17, 18, 19, 70, 36 and 10. The current location is steep and has poor drainage and an unsafe intersection with road 126. The relocated route provides for resource removal and addresses the issue of its current location.
574A	This alternative proposes to use 0.25 miles of this non-system road to access unit 18. The road is currently not blocked. After use all of this 0.3 mile road will be decommissioned .
574AA	This alternative proposes to decommission all 0.2 miles of this non-system road. This is a connector between 274A and 574B and serves no long or short term need.
574B	This alternative proposes to use 0.3 miles if this non-system roads to access unit 19. After the project is complete all 0.4 miles will be decommissioned .
126	This alternative proposes to relocate 0.5 miles of this road above where the new 574 road will connect, up to about the intersection of road 572. It will be used to access unit 10. It is proposed to move the road north out of the draw bottom, in some areas the road would only be moved 10 feet in other areas it would be about 150 feet from the current location. This is proposed to provide better long term maintenance and to reduce sediment production cause by its current location. The existing 0.5 miles of corresponding road would be decommissioned .
572	This alternative proposes to use the first 0.4 miles of this road to access unit 10. After the project the road will remain open to full size vehicles.
176X	The proposed action is to decommission all 0.4 miles of this none system road. This route is currently not shown as open on the motorized use map but is also not blocked and is being used. With the current road configuration this is the most logical access to route 176, once road 574 is relocated that will not be the case.

2.1.2 Alternative 2 – Increase Restoration Alternative

This alternative was created to evaluate the effects of adding non-timber production restoration activities. This alternative was created because many of the comments received during scoping had statements similar to the following “add restoration components” (Idaho Conservation League). This alternative can be broken into the same two main parts as the proposed action; **forest vegetation management**, and **transportation management**. Each of these are described in greater detail below.

Unit numbers, locations and treatment type are shown for stands proposed for treatment in this alternative in **Figure 2-2**. **Table 2-4** provides additional detail by unit/stand number. **Table 2-5** and **Table 2-6** outline the proposed road activities and proposed activity by road number.

All design features that have been listed in section **2.3 Design Features** of this document would also be included in this alternative.

2.1.2.1 Forest Vegetation Management

Approximately 850 acres within the project area are proposed to receive treatments that will move affected stands and the landscape as a whole toward desired conditions outlined in the Revised Forest Plan. These forest vegetation management treatments can be divided into three categories: harvest, tending, and burning. **Harvest** and **tending** are described in the proposed action. In addition, **burning** is proposed in this alternative.

Burning is used here to describe treatments that will change species composition and density using fire as the primary tool. The harvest and tending treatment areas may have some prescribed fire treatments, but it will not be the primary tool for affecting structure and density. Each of these treatments are described further below.

Harvest: This alternative is identical to the proposed action for harvest treatments, it has approximately 401 stand acres proposed for harvest. Just like the proposed action 328 acres will actually be harvested.

The silviculture systems proposed are also the same as the proposed action (see **Table 2-4**). See the proposed action section for a more detailed description of this activity.

To facilitate the harvest this alternative proposes approximately 0.6 miles of temporary road be constructed. This is about half the temporary road proposed in the proposed action. Additionally, skid trails and landings would also be developed within the units or in openings adjacent to them. The reduction in temporary road would require larger landings and longer skid trails. Upon completion of the timber harvest the temporary roads, landings and skid trails would be closed and rehabilitated.

Tending: This alternative proposes 406 stand acres for tending treatments. Like the proposed action the treatment activities (e.g. pre-commercial thinning, weeding, piling, pile burning, jackpot burning, chopping, etc.) that would be used would vary acre to acre across the project area, depending on the current condition of the stands. The types and descriptions of tending activates is described in the proposed action and would be the same for this alternative. This alternative treats all the same stands as the proposed action and adds one aspen conifer stand that has never been harvested.

Burning: Approximately 41 acres of burning is proposed in this alternative to create a new age-class, reduce stand density, and promote aspen in a stand that is too steep to harvest with ground based equipment. The silvicultural system proposed for this stand is group selection. Group selection is used to manage for multiple age classes (three or more) within a stand that are arranged in groups or patches that are distributed across the stand. The ideal result of this burning operation would be to kill about 1/3 of the current tree and shrub canopy cover in the stand in a patchy configuration, thus creating openings for the new age class. When fire is used as the primary tool to manipulate vegetation, especially when the intent is to open the stand up enough to create a new age-class, the results are often quite variable. Because fire is not a precise tool, a range of acceptable conditions has been defined. It would be acceptable to kill up to 75% the existing canopy cover and as little as 20% in this entry.

Figure 2-2 Alternative 2 Map

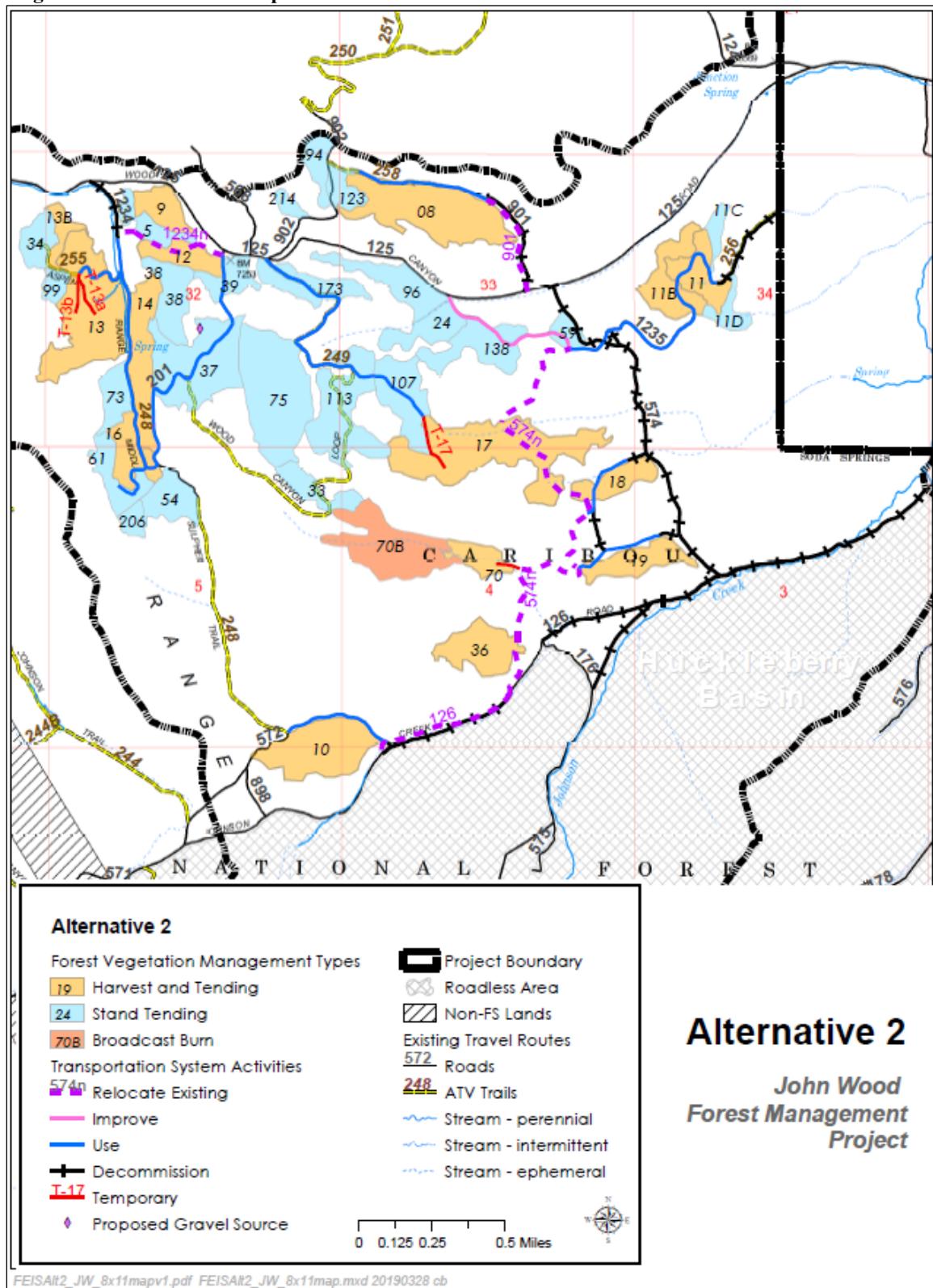


Table 2-4 Alternative 2 Forested Vegetation Proposal

Unit #	Acres	Harvest Acres	Silvicultural System	Silvicultural Treatment	Yarding Method	Fuels Treatment
08	52.6	48.5	Uneven-aged	Selection Harvest	Ground Based	Yard tops+
9	12.8	10.3	Uneven-aged	Selection Harvest	Ground Based	Yard tops+
10	38.4	28.5	Uneven-aged	Selection Harvest	Ground Based	Yard tops+
11	17.9	17.9	Uneven-aged	Selection Harvest	Ground Based	Yard tops+
11B	21.8	18.0	Uneven-aged	Selection Harvest	Ground Based	Yard tops+
12	12.9	12.9	Uneven-aged	Selection Harvest	Ground Based	Yard tops+
13	57.8	44.9	Uneven-aged	Selection Harvest	Ground Based	Yard tops+
13B	6.8	4.1	Two-aged	Shelterwood- Harvest	Ground Based	Yard tops+
14	29.3	29.3	Uneven-aged	Selection Harvest	Ground Based	Yard tops+
16	16.3	15.3	Uneven-aged	Selection Harvest	Ground Based	Yard tops+
17	67.3	61.0	Uneven-aged	Selection Harvest	Ground Based	Yard tops+
18	14.6	12.3	Two-aged	Shelterwood- Harvest	Ground Based	Yard tops+
19	18.8	4.7	Two-aged	Shelterwood- Harvest	Ground Based	Yard tops+
36	23.1	14.5	Uneven-aged	Selection Harvest	Ground Based	Yard tops+
70	10.8	5.8	Two-aged	Shelterwood- Harvest	Ground Based	Yard tops+
70B	40.4		Uneven-aged	Burn/Group Selection		Burn
24	13.1		Uneven-aged	Tending Activities		Various
33	12.5		Two-aged	Tending Activities		Various
34	11.3		Uneven-aged	Tending Activities		Various
37	46.6		Uneven-aged	Tending Activities		Various
38	18.3		Uneven-aged	Tending Activities		Various
39	11.9		Uneven-aged	Tending Activities		Various
54	15.5		Two-aged	Tending Activities		Various
59	6.6		Uneven-aged	Tending Activities		Various
61	14.9		Uneven-aged	Tending Activities		Various
73	11.9		Uneven-aged	Tending Activities		Various
75	55.5		Uneven-aged	Tending Activities		Various
96	22.8		Uneven-aged	Tending Activities		Various
99	5.8		Uneven-aged	Tending Activities		Various
107	25.2		Uneven-aged	Tending Activities		Various
113	40.4		Two-aged	Tending Activities		Various
123	9.0		Uneven-aged	Tending Activities		Various
138	23.2		Two-aged	Tending Activities		Various
173	19.3		Uneven-aged	Tending Activities		Various
194	10.5		Uneven-aged	Tending Activities		Various
206	5.1		Uneven-aged	Tending Activities		Various
214	3.9		Uneven-aged	Tending Activities		Various
11C	5.2		Two-aged	Tending Activities		Various
11D	7.4		Two-aged	Tending Activities		Various
5	10.3		Two-aged	Tending Activities		
Acres Treated	847.8	328				

Yard tops+= tops of merchantable trees would be yarded to landings and pile and burn if not utilized, the accumulated fuels that are not attached to merchantable trees would be handled in various ways. Such as limb and lop, crush, masticate or jackpot burn. This determination would be made based on a post-harvest assessment. **Various** fuels treatments may be used in the non-harvest stands and will often vary across a given stand. Silvicultural systems and treatments are described in the text body above.

2.1.2.2 Transportation System:

In this alternative the proposed transportation system activities are the same as the proposed action, but the objective of reducing road density was added. **Table 2-2** outlines the categories and mileages of the proposed activities, while **Figure 2-2** shows the locations of the proposed activities. **Table 2-3** provides a more detail description of the activities by road segment. The changes made to the transportation system with this alternative would be reflected on the Forest Motorized Use Map once implemented.

Like the proposed action this alternative includes the development of up to 3 acres as a gravel source. Not more than 3 acres will be developed for this purpose. The gravel source will remain open until the site is no longer of use. Top soil from the developed sites will be salvaged and used in reclamation.

Table 2-5 Road Activity Proposal Totals Alternative 2 (* Mileages are approximate)

Activity	Description	Miles
Relocation of Existing	This treatment is to provide a safe operable road to haul logs on and provide user access to the project area, and/or to reduce resource impacts. Relocation involves constructing a new road bed or activating a previously closed road to replace one that is poorly located. In addition to the construction of the new road bed the following may occur as needed: blading, shaping for proper drainage, placement of proper drainage structures, culvert installation, construction of pull outs, and adding gravel where needed.	3.2*
Improve Existing	The objective of this action is to provide a safe, operable road to haul logs on and provide user access to the project area. Improving involves one or more of the following: widening, blading, shaping for proper drainage, placement of proper drainage structures, minor realignments, construction of pull outs, culvert installation, and adding gravel where needed.	0.5*
Maintain Existing	Roads identified for this action will be used to remove timber from the project area. These roads would receive road maintenance as needed. Types of maintenance activities may include: blading, shaping for proper drainage, placement of proper drainage structures, culvert replacement and spot graveling where needed. This may also include some minor (less than 66 feet) realignments for safety or to improve drainage.	5.6*
Decommission Existing	This treatment is to remove roads, not needed for long term management or that are being moved to another location, from the system and return them to productivity. The intent is to eliminate motorized travel from these roads. This may include a combination of one or more of the following: ripping, recontouring, scattering of slash, placement of rocks, berming, and seeding to native species.	5.0*

Table 2-6 Road Activity Descriptions: The following narratives provide details for road work proposed in alternative 2.

Route #	Objective and Detailed Descriptions
1234	For this road the proposal is the same as the proposed action. The proposal is to decommission 0.2 miles, relocate 0.4 miles and use 0.1 miles. This road provides for harvest access to units 13, 13B, 14 and 16. Overall access would be the same as the existing condition, although mileages would change due to the relocation and corresponding obliteration.
255	For this road the proposal is the same as the proposed action. The proposal is use approximately 0.2 miles of this road to access units 13 and 13B. All of this road is currently being managed as an ATV trail and will return to this use after the harvest project is completed.
248	For this route the proposal is the same as the proposed action. The proposal is to use approximately 0.75 miles of this ATV trail. This road provides for harvest access to units 14 and 16. It will return to an open ATV after use.
201	For this road the proposal is the same as the proposed action. The proposal is to use the first 0.9 miles of this road. This road provides for harvest access to units 14 and 16. Access remains the same as the existing condition.
201B	For this road the proposal is the same as the proposed action. The proposal is to use the first 0.2 miles of this non-system road to access unit 16. Access would be returned to closed after the use.
249	For this road the proposal is the same as the proposed action. The proposal is use the first 0.75 miles to facilitate the removal of timber (via road 1232) from unit 17. It is proposed to continue to manage this road as a trail, like the proposed action the closure point would be moved.
1232	For this road the proposal is the same as the proposed action. The proposal is to use the first 0.3 miles to facilitate the removal of timber (via temp road into unit 17). This road is currently closed to all motorized use. After harvest and associated activities it will be returned to a closed and stable condition.
901	For this road the proposal is the same as the proposed action. The proposal is to decommission the first 0.4 miles and relocate (0.4 miles) it onto a previously constructed and closed road bed that parallels the current route. It is also proposed to use about 0.2 miles above that point. This road provides for harvest access to unit 08. This road is currently open to all motorized use the proposed action will not change that.
258	For this route the proposal is the same as the proposed action. The proposal is to use about 0.3 miles to remove timber from unit 08. This trail is currently open to ATV use, it will be closed to all but ATV traffic after the harvest and associated treatments are complete.
1235	For this road the proposal is the same as the proposed action. The proposal is to improve the first 0.5 miles of this road, up to the new intersection with 574 road. This section of road will be used to access units 11, 11B, 17, 18, 19, 70, 36 and 10. The next 1.0 miles will be used (for units 11 and 11B). It is proposed to leave this route open to full sized vehicles to this point.

Route #	Objective and Detailed Descriptions
256	It is proposed to decommission the entire length (~0.3 miles) of this ATV trail from the end of road 1235 to the Forest boundary. This is a change from the proposed action.
574	For this road the proposal is the same as the proposed action. The proposal is to decommission the entire length of this road from its current location (1.4 miles) and relocate it to the west. The relocated road will be about 1.9 miles long and will provide access to units 17, 18, 19, 70, 36 and 10.
574A	For this road the proposal is the same as the proposed action. The proposal is to use 0.25 miles of this non-system road to access unit 18. After use all of this 0.3 mile road will be decommission .
574AA	For this road the proposal is the same as the proposed action. The proposal is to decommission all 0.2 miles of this non-system road.
574B	For this road the proposal is the same as the proposed action. The proposal is to use 0.3 miles if this non-system roads to access unit 19. After the project is complete all 0.4 miles will be decommission .
126	<p>This alternative proposes to relocate 0.5 miles of this road above where the new 574 road will connect, up to about the intersection of road 572. It will be used to access unit 10. This relocation is the same as the proposed action and is proposed to provide better long term maintenance and to reduce sediment production cause by its current location. The existing 0.5 miles of corresponding road would be decommission.</p> <p>Additionally this alternative proposes to decommission 1.5 miles of road 126 from the intersection of road 176 down to the edge of the project boundary. The improved and relocated 574 road will provide access to this portion of Johnson Creek and this section of road is located in the AIZ and is poor condition. While this action fits the “additional restoration” theme of this alternative, this obliteration would not be part of the timber sale, it would be completed either with stewardship credits, KV funds or other funds when available.</p>
572	For this road the proposal is the same as the proposed action. The proposal is to use the first 0.4 miles of this road to access unit 10. After the project the road will remain open to full size vehicles.
176X	For this road the proposal is the same as the proposed action. The proposal is to decommission all 0.4 miles of this none system road.

2.1.3 Alternative 3 – No Action

This alternative provides a baseline against which impacts of the action alternatives can be measured and compared. Under the no action alternative, current land management plans would continue to be implemented and ongoing activities would continue within the project area in accordance with the Caribou RFP and travel plan, as previously analyzed under NEPA (USFS 2003a, USFS 2005).

Typical ongoing activities occurring in the project area and its vicinity include: dispersed camping, motorized recreation, non-motorized recreation, hunting, livestock grazing, noxious weed management, and personal use firewood. Products would continue to be gathered, road maintenance on county roads would continue, but Forest Service roads would continue to degrade.

In addition to the above listed activities, the following process will continue to occur:

- Forest succession
 - Aspen would continue to be shaded out by conifer
 - Conifer density and canopy cover will continue to increase
 - Fuels will continue to accumulate
 - All of which will contribute to increasing the risk of uncharacteristic wildfire, insect and/or disease events
- Forest Roads will continue to deteriorate as a result of their location and condition

Under this alternative the present course of management would continue. There would be no active management to address the imbalance of structural stages present in the forest community. There also would be no active management to enhance or restore aspen, and reduce conifer density. Forest Service roads would not be improved and maintenance would become more difficult. There would be no timber harvest that would help to support the local economy.

2.2 Other Alternatives Considered

Public comments and the Interdisciplinary Team (IDT) proposed other approaches or alternatives to accomplish the project objectives. These alternatives were evaluated by the IDT, but eliminated from detailed study due to not fully meeting the project purpose and need, the Revised Forest Plan (RFP) direction, or other management constraints. A brief discussion of each alternative considered, and the reasons for elimination from detailed study are listed below.

2.2.1 No new roads.

The IDT considered an alternative in some detail that would construct “No New Roads”. This alternative was considered as a result of comments received during public scoping. Several of the publics that responded expressed concerns related to the effects of building roads. Some of the concerns were: open road densities, wildlife, effectiveness of closures on temporary roads and road obliterations, etc. This alternative was discussed and it was determined by the IDT and District Ranger that for the following reasons this alternative did not warrant being carried any further.

The IDT and the District Ranger determined that the majority of the “new construction” also provided a resource benefit because of the poor location of roads #574, 126 and 901. The Proposed Action captures the effect of moving them, and The No Action captures the effect of leaving them in their current location. The team felt that for all action alternatives these three roads should be relocated as proposed.

Thus, the No New Roads alternative boiled down to a no new temporary road alternative. The effects of the temporary roads and skid trails from an effects stand point can be assessed between the two developed action alternatives and the no action alternative. Without temporary roads and skid trails the harvest is not economically feasible, thus covered by the No Action Alternative. So, this alternative was not considered any further.

2.2.2 Reduce Road Density.

Several individuals/groups that commented on the scoping suggested that an alternative that reduces the motorized density in the project area be developed. The Revised Forest Plan set the target motorized density for this area, changing that is outside the scope of this project’s purpose and need. Opportunities to reduce open motorized routes where the routes caused resource concerns is part of Alternative 2 and the effects are covered there.

2.2.3 Burn then Salvage.

The IDT discussed using prescribed fire to reduce density and initiate a younger age class, followed by a salvage operation to remove excess dead trees. While this is feasible and would likely meet the purpose and need of the project, it was decided that this approach was not appropriate on this prescription area. The emphasis on this RFP prescription area is on scheduled wood-fiber production. The RFP directs that in this prescription area the value of the timber for wood production will receive consideration prior to the use of fire.

2.3 Design Features

This section outlines the design features that are common to all action alternatives. Design features are actions or management direction to be implemented, that have been identified by the IDT or during scoping, to be implemented with the action alternatives to avoid or minimize potential adverse effects, and improve the project outcomes. The avoidance and effect minimization potential of these design features are considered and discussed in Chapter 4 (Environmental Consequences).

Timber Sale:

- A 2400-6T Timber Sale Contract (or equivalent) will be used to control timber sale harvest operations. This contract has standard contract provisions referred to as B provisions. The B5 section refers to transportation facilities. The B6 section refers to sale operations, and the B7 section refers to fire precaution and control. There are other sections of the B portion of the contract, but the ones listed above are the main sections that relate to effects and the design of this project. Each section has numerous provisions. For example, under the operations section (BT6.0) there is a provision called BT6.422 titled “Skidding and Yarding” and one called BT 6.6 “Erosion Prevention and Control.” The intent here is not to repeat all of the contract provisions but to inform the reader that a detailed contract will be used. Some of the design features listed below are addressed by the standard B provisions of a timber sale contract. The timber sale contract also has C provisions. These provisions provide more specific requirements and are tiered off the corresponding B provision. The C provisions that will be added to the timber sale contract are listed as design features.

Forested Vegetation

- A silvicultural prescription will be developed for each stand that details the objectives of each stand and the treatments that will be used. The prescription may be refined and updated as needed.
- Stands planned for harvest treatments would be marked prior to sale. Stands would be marked in two ways. Some stands would have leave trees marked with orange paint and some would have cut trees marked with blue paint. Aspen will not be marked in either case and will not be included timber in the contract other than those that must be cut for skid trails and landings.

- The trees planned to be retained in stand after harvest will be considered leave trees. The leave trees will be arranged as individuals and/or groups of varying sizes and shapes irregularly arranged across the harvest units to provide protection and seed for natural regeneration. They would also function as green tree replacement snags, a reservoir for future large down woody material, vertical and visual diversity. The intent is to mimic the patch sizes and shapes that would be left unburned after a natural fire, for a given cover type and site.
- All commercial logging units would be yarded with ground based equipment such as tractors or rubber tired skidders. Whole tree skidding would be specified.
- Natural regeneration will be the primary means for creating the new age-class. No planting is planned, but may be used if monitoring indicates a need.
 - The logging operation should provide the necessary site preparation needed for regeneration while the reserve trees and the harvest unit edges would provide the seed sources for natural regeneration of conifers. Aspen regeneration would be from the existing root systems.
 - Some portions of stands may require jackpot burning to reduce fuels and expose enough soil to get regeneration, this will be determined after harvest.
 - If harvest and prescribed fire fail to produce adequate site preparation, scarification would be augmented by mechanical means (e.g. dozer with brush blade).
- Firewood, posts, and poles would be made available from the residue created by treatment activities. These will be made available only where practical, and to those with valid permits.
- Monitoring for tree regeneration, species composition, and population numbers would be conducted with stand exams at a minimum of the third, and fifth years following treatment.
- Fencing would be an acceptable means to protect seedlings from herbivory if monitoring shows a need.
- Treatment units will be monitored for five years following implementation. This monitoring would include but is not limited to: tree regeneration surveys, tree condition survival and mortality, herbivory by ungulates, firewood/post/pole gathering, motorized violations on closed roads within the project area, noxious weeds, livestock movements, and utilization and any natural events such as insect outbreaks.

Air Quality:

- To meet air quality standards, burn plan(s) will be developed to comply with air quality regulations, and each firing operation will be approved by the Montana/Idaho Smoke Monitoring Unit.

Noxious Weeds

- To minimize the spread of noxious weeds, the purchaser would be required under standard contract provision, BT 6.35 Equipment Cleaning, to clean all logging and construction equipment that operates off-road prior to entry on the sale area.
- Weed-free straw or mulch will be required, if needed.
- All seed used shall be certified free of noxious weed seeds from weeds listed on the current *All states Noxious Weeds List*.
- Gravel/borrow material sources shall be monitored for noxious weeds and other invasive species, off forest sources shall be certified as noxious weed free.
- Monitoring and treating noxious weed populations will be given a high priority when developing KV plans.
- Forest best management practices and standard operating procedures will be used to treat weeds in the area as funds are available.

Hydrology & Soils

- Large woody debris (pieces larger than 3" diameter) will be retained in the treatment units at RFP guidance levels at a minimum. About 10 tons is the minimum, but there will be an emphasis on retaining more than the minimum material scattered throughout the unit rather than piling and burning.
- Landing piles will be reclaimed after burning.
- Limit tractor skidding to slopes less than 40 percent (Guideline) (RFP 3-45). Also addressed in Idaho Forestry BMP Field Guide p. 101, and FSH2508.22 Practice 13.02 and 14.07.
- “Avoid any harvest operations when soils are wet. If harvesting is unavoidable, manual felling is preferred; allow soils to dry out before using forwarding equipment. Use thick slash mats if mechanical harvesting before late July.” (Idaho Forestry Best Management Practices Field Guide p. 40, 2015). Yarding operations should not take place when ground conditions are wet enough that there is a risk of rutting and compaction as determined by the sale administrator (Guideline) (RFP 3-45). Also, detrimental soil disturbances such as compaction and puddling should be limited or mitigated to meet long-term soil productivity goals (Guideline) (RFP 3-6). Also supported by FSH 2508.22 Practice 13.06, and 14.12.

Moist and wet soils compact much more readily than dry soil because water lubricates the soil particles and more efficiently and effectively compacts the soil under tire pressure (Multiquip, 2011). Sandy soils have been found to benefit from compaction, but the loams and silt loams in the analysis area are susceptible to, and can be damaged by compaction (Ponder et al, 2012). Ideal operating conditions for limiting compaction are dry soils, and a quick hand test can help determine if soils are within acceptable moisture content for operations (Multiquip p. 8, 2011).

- Minimize skid trails and temporary roads during logging operations. Identify skid trails and temporary roads requiring construction in the sale planning process and

assure appropriate rehabilitation of these trails by the purchaser or in post-sale activities (Guideline) (RFP 3-46). Identify log landing locations and USFS and purchaser agree prior to construction (FSH 2509.22 Practice 14.10). Also, “detrimental soil disturbances such as compaction, puddling, displacement...should be limited or mitigated to meet long-term soil productivity goals” (Guideline) (RFP 3-6). To prevent gulling, skid trails and temp roads would not be placed running directly up the low spot (gut) of swale bottoms or so close so as to divert, collect and capture flow.

- Appropriate drainage features should be installed prior to the end of the season on temporary roads needed for more than one operating year. Appropriate rehabilitation would include pulling back any displaced material to approximate original contour and placing slash materials over the trail/road/landing to reduce erosion. Temporary roads, landings, and possibly main skid trails, may need to be ripped to reduce compaction.
- Rehabilitate closed roads with similar actions as temporary roads, including pulling back any displaced material to approximate original contour and placing slash materials over the trail/road to reduce erosion. Closed roads may need to be ripped to reduce compaction. Road 574 is through shrubland and many segments follow a dry swale, so check dams/drainage structures will need to be installed as well as available brush slash applied to the surface.
- As practical, aim to keep the forest floor intact and minimize displacement of topsoil. This will help meet soil guidelines 2 on pages RFP 3-6 and Forested guideline 1 on page RFP 3-7, and Idaho Forestry Best Management Practices Field Guide recommendations p.40-41.
- Keep tractors out of wetlands and wet meadows (FSH 2509.22 Practice 13.03).
- Salvage topsoil on gravel source area for reclamation (FSH 2509.22 Practice 15.17).
- Road re-alignment design, construction and maintenance will follow applicable FSH 2509.22 practices, Idaho Forestry Best Management Practices Field Guide, USDA FS National Best Management Practices for Water Quality Management on National Forest System Lands Volume 1, and Caribou Revised Forest Plan standards and guidelines.
- Acquire required clean water act and state permits if needed.

Heritage Resources/Tribal Treaty Rights

- Avoid identified cultural resources determined eligible for listing in the National Register of Historic Places.
- If any additional cultural resources are encountered during the course of the project, the Forest Archaeologist would be notified immediately and all ground disturbing activities would cease in that area until the Forest Archaeologist takes appropriate action in consultation with SHPO and the Shoshone-Bannock Tribes.

Operating Season

- In order to provide for the groomed snowmobile route, no snow plowing would be permitted between December 15 and April 15th.
- Logging operations would occur only when the soils are frozen or there is sufficient snow cover, or during the dry season when soils are not saturated to avoid adverse soil compaction (RFP 3-45).
- Felling and skidding operation will not begin before July 5 unless otherwise agreed to in writing. Operations would be restricted in stands within an active goshawk territory as outlined in the RFP (Units 8, 94, 214 and 123 are in the PFA of a historical nest site, so operations would be restricted until after September 1, if the site is occupied) Use contract provisions CT6.411# and CT6.42# or similar.
- Hauling on weekends should be avoided if possible to reduce conflicts with other Forest users.
- Hauling on popular holidays and opening day of general deer and elk season will be prohibited unless otherwise agreed in writing. CT6.312#

Wildlife

- During project implementation, project personnel would report any nest found that may be active to the district wildlife biologist who would then review the status of the nest and, in coordination with the project leader, determine the most appropriate course of action to protect the nest (expected to consist of delayed project implementation).
- Snags within the units will be retained to the extent safety and feasibility will permit. If extensive mortality occurs in the future dead trees will only be cut if RFP snag requirements are being met within the unit.

Fuels/Prescribed Fire (Prescribed Burning)

- Prior to burning activities, a burn plan would be prepared and authorized by the District Ranger. This plan discusses lighting and holding strategies, contingency plans, equipment needs, personnel requirements, fire behavior predictions, a smoke prediction model, wild land fuel loads and models, and a range of weather conditions that guide the timing of the prescribed burn. Although the District Ranger has final approval authority for the burn plan, the Prescribed Fire Burn Boss has the responsibility to make the on-site, tactical, and the “go, no-go” decision. The Burn Boss ensures that all prescription, staffing, equipment, and other plan specifications are met before, during, and after the burn. Prescribed fire plans cannot be implemented when prescriptive elements have been exceeded.
- In order to meet air quality standards, the burn plan would be developed to comply with air quality regulations, and each firing operation must be approved by the Montana/Idaho Smoke Monitoring Unit to insure compliance and mitigate cumulative effects.

- Existing roads, trails and natural fuel breaks would be used as control lines where possible. Constructed firelines, if needed, would have erosion control structures (waterbars), constructed as needed. Firelines that could create motorized access would either be obliterated or made impassable after burning is completed.
- To limit impacts from the burn, the duff layer should have moisture content greater than 30%.
- Fireline construction if needed would be accomplished with the smallest feasible equipment. Very little line construction is expected.
- Design prescribed fires to prevent excessive temperatures and loss of nutrients from volatilization (Region 1/Region 4 Soil and Water Conservation Practices Handbook, FSH 2509.22, 5/88, Practice 18.03).

Roads

- Roads will be designed and constructed to Forest Service standards for the road type.
- The sale administrator or engineer will oversee all purchaser road work.
- The gravel source once developed will be stabilized and barriers installed during periods of non-use.
- Signs will be posted to warn public of construction work in the area.
- To limit the impact of gravel crushing operations to recreational users, gravel crushing would not be allowed on holidays and only allowed on weekends on rare occasions.

Livestock Grazing

- Livestock grazing will be restricted in treatment units until silvicultural objectives have been met. This will be accomplished by a combination of rest/rotation and AOI (annual operating instruction) modifications. Site specific monitoring will be conducted to assure silvicultural objectives are met and to determine if any adaptive management strategies are required. (RFP 3-42).

2.4 Monitoring

The following activities have been identified as monitoring activities that would be implemented with all action alternatives.

- Sale Administrators would monitor for compliance with the Timber Sale Contract.
- Forest Engineers would monitor road construction and reconstruction activities.
- Silviculturist would conduct regeneration surveys to document compliance with National Forest Management Act (NFMA).
- Sales that would be generated by this EIS would be included in the Forest BMP monitoring program to evaluate BMP implementation and effectiveness and AIZ adequacy.
- A Hydrologist and/or the Soil Scientist will conduct a BMP and Implementation Review at least once during the life of the project.
- District personnel will monitor for and treat noxious weeds.

- The Soil Scientist and Fuels Specialist will evaluate fire intensity to determine impacts on soil quality and measure extent of severely burned soils.
- Soil Scientist will monitor soil disturbance in activity areas.
- Silviculturist and Range Specialist will evaluate harvest units and determine when the grazing restriction can be loosened or rescinded.

2.5 Comparison of Effects and Outputs

This section summarizes the information from **Chapter 3: Affected Environment** and **Chapter 4: Environmental Consequences**, and displays the environmental effects, and project outputs by alternative. A comparative summary of the project activities and environmental outputs and effects on the resources or issues of concern associated with each of the alternatives are presented in the following tables.

Table 2-7 : Activities summary comparison of Alternatives

Activity	Alternative 1 Proposed	Alternative 2 Restoration	Alternative 3 No Action
Harvest Plus Tending (acres)	401	401	0
Tending (acres)	396	406	0
Broadcast Burning (acres)	0	40	0
Temporary Road (miles)	1.2	0.6	0
Road Relocation (miles)	3.2	3.2	0
Road Improvement (miles)	0.5	0.5	0
Road Maintenance (miles)	5.6	5.6	0
Road Decommissioning (miles)	3.2	5.0	0
Gravel Source Development (acres)	3	3	0

Table 2-8 Project Purpose and Need Indicators, Summary Comparison of Alternatives.

Purpose and Need Indicators and Project Objectives	Desired Future Condition	Alternative 1 Proposed	Alternative 2 Restoration	Alternative 3 No Action
Fire Regime Condition Class Departure	<33%	54%	53%	57%
Age-class Diversity	M/LS ¹	40-50%	93%	93%
	YM ²	30-50%	4%	4%
	SS ³	25-30%	3%	2%
Percent of Aspen acres at high risk	<50%	58%	57%	68%
Percent of Douglas-fir type with closed canopy	<50%	78%	76%	99%
% Project Area at high risk to DFBB ⁴	<33%	38%	36%	46%
Number of acres of fuels treated		797	847	0
Forest Product offered (hundred cubic ft.(CCF))		5,248	5,248	0
Miles of poorly located system road	0	2.1	1.3	4.5

¹ M/LS—Mature/Late Seral. ² YM—young/mid. ³ SS – seedling/sapling. ⁴ DFBB – Douglas-fir Bark Beetle.

Table 2-9 Hydrology and Soils effects summary comparison of alternatives

Resource	Alternative 1 Proposed	Alternative 2 Restoration	Alternative 3 No Action
Hydrology Indicators			
% Hydrological Disturbance [Bailey Creek HUC]	3.0%	3.0%	1.0%
% Hydrological Disturbance [Johnson Creek HUC]	3.0%	3.2%	1.2%
Miles of open motorized routes in AIZ	3.4	2.2	3.7
Acres of AIZ treated	13.7	13.7	0
Soils Indicators			
Approx. acres of class 2 or 3 soil disturbance in treatment units	85	93	20
Approx. acres dedicated to the travel system in the analysis area.	56	51	56

Table 2-10 Wildlife effects summary comparison of alternatives

Resource	Presence ¹	Alternative 1 Proposed ²	Alternative 2 Restoration ²	Alternative 3 No Action ²
Acres towards DFC in RFP(Aspen Improvement)		797	847	0
FS Designated Sensitive Species				
Spotted Bat (<i>Euderma maculatum</i>)	Not	NI	NI	NI
Townsend's big-eared bat (<i>Corynorhinus townsendii</i>)	Probable	MIIH	MIIH	NI
Pygmy rabbit (<i>Brachylagus idahoensis</i>)	No	NI	NI	NI
Gray Wolf (<i>Canis lupus</i>)	Probable	MIIH	MIIH	NI
Trumpeter swan (<i>Cygnus buccinator</i>)	No	NI	NI	NI
Harlequin Duck (<i>Histrionicus histrionicus</i>)	No	NI	NI	NI
Peregrine falcon (<i>Falco peregrinus anatum</i>)	Probable	NI	NI	NI
Bald Eagle (<i>Haliaeetus leucocephalus</i>)	Probable	NI	NI	NI
Northern Goshawk (<i>Accipiter gentilis</i>)	Known	MIIH	MIIH	NI
Columbian sharp-tailed grouse (<i>Tympanuchus phasianellus columbianus</i>)	Not expected	NI	NI	NI
Greater sage-grouse (<i>Centrocercus urophasianus</i>)	Not expected	NI	NI	NI
Great gray owl (<i>Strix nebulosa</i>)	Probable	MIIH	MIIH	NI
Flammulated owl (<i>Otus flammeolus</i>)	Probable	MIIH	MIIH	NI
Boreal owl (<i>Aegolius funereus</i>)	Probable	MIIH	MIIH	NI
Three-toed woodpecker (<i>Picoides tridactylus</i>)	Probable	MIIH	MIIH	NI
Columbia spotted frog (<i>Rana luteiventris</i>)	None	NI	NI	NI
Boreal toad (<i>Bufo boreas</i>)	Not expected	NI	NI	NI
Other Special Status Species/ Species of Local Concern³				
Migratory Landbirds	Known	BI	BI	Adverse
Big Game	Known	BI	BI	Adverse

* Sensitive species identified by the Regional Forester are known or suspected to occur on the Caribou NF (USDA- FS 2016). Population viability is a concern for these species as evidenced by current or expected downward trends in population numbers and/or habitat.

¹Occurrence is within the analysis area is classified as “known”, “probable”, “not expected”, or “no presence” in the analysis area determined by the amount, distribution, and quality of suitable habitat in and around the project area; reviewing file information of suitable habitat, sightings; survey data; site visits; and/or personal knowledge of species and habitat. Classification of occurrence is further defined in the Wildlife DFC worksheet (Green 2018).

²Determination of effects of alternatives: NI: “No Impact” No direct, indirect, or cumulative effects would occur because there is no suitable habitat in the analysis area, analysis area is outside the range of species, or species presence is not expected in the area due to a lack of suitable habitat, and lack of documented observations. MIIH: “May impact individuals or habitat, but will not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species” due to direct effects to species or indirect effects to habitat important to their prey. BI: “Beneficial impact” due to expected improvement in habitat quality. WIFV: “Will impact individuals or habitat with a consequence that the action may contribute to a trend towards federal listing or cause a loss of viability to the population or species”. A Conservation Strategy is required.

³Note that these are not Forest Service Sensitive Species, and therefore, no effects determination is required, but relative impacts are given to complete the summary.

Chapter 3 Affected Environment

This chapter summarizes the current condition of resource areas in and adjacent to the Project Area that are affected by the alternatives described in this document. For most sections there is additional information contained within the project record.

Chapter Content

3.1	Forest Vegetation	3-1
3.2	Timber Management.....	3-16
3.3	Transportation Management..	3-17
3.4	Wildlife	3-20
3.5	Hydrology	3-31
3.6	Soils	3-34

3.1 Forest Vegetation

Analysis Area: The John Wood Forest Management project area is relatively small but falls within two watersheds (HUC's) and one vegetation management unit (VMU). For ease of display the VMU will be used as the landscape scale analysis unit, rather than using the two watersheds. The project area will be used as an analysis unit for some indicators. Figure 3-1 shows the project area, VMU 58 and the two 5th code watersheds (HUC).

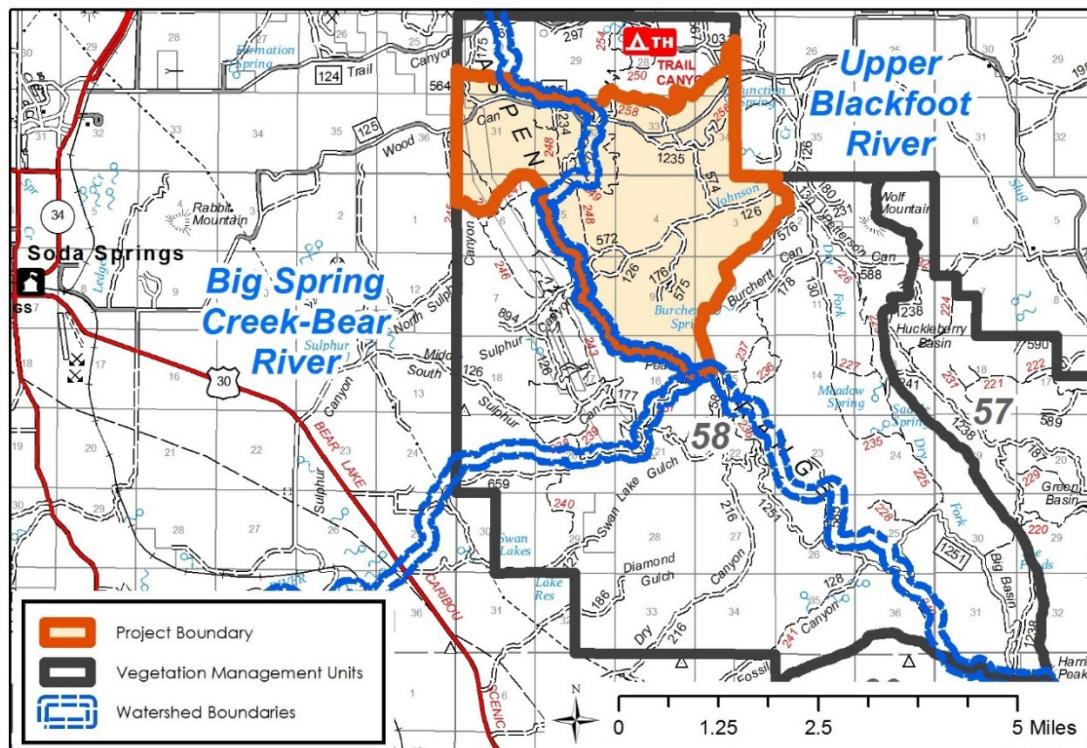


Figure 3-1. Forest Vegetation Analysis Area. VMU 58 is used for the landscape scale and the project area is also used for some indicators.

Analysis Method: A combination of data sources were used to assess the condition of the forest resources in the landscape as a whole and the project area. More information on the analysis methods can be found in the forest vegetation existing condition report, forest vegetation specialist report and the draft silvicultural prescription, but in short, a combination of the GIS stands coverage (Cstands), and stand exams were used. Stand exam data used resulted from both walk through assessments and detailed plot data. Attributes of these data sets were summarized and manipulated in several spreadsheets and in ArcMap.

3.1.1 Introduction

Forested ecosystems in the Rocky Mountains are highly diverse, complex and dynamic (Long, 2003). They are dynamic because they are always changing as a result of disturbances (both natural and man caused), growth and succession. Disturbance regimes are increasingly being used to categorize these complex and dynamic ecosystems. A disturbance regime is a general term that describes the temporal and spatial characteristics of the cumulative effects of multiple disturbances events over time and space (Keane, 2017). Biodiversity of an area is intimately linked to disturbance regimes because disturbances create the natural mosaic of diverse plant communities and habitats typical for a landscape. Mimicking the spatial and temporal fluctuations of plant communities and habitat provides for the conservation of biodiversity (Keane, 2017). The biodiversity of an ecosystem or landscape is connected to the natural disturbance regime. If the intensity, severity, size, pattern or timing of the natural disturbance regime changes the natural biodiversity of the area can be at risk. (RFP, RFP-EIS, Keane, 2017, FRCC, 2010, Long 2003, Long 2009).

Barrett (1994) sampled fire history across the Forest in 1994. One of the areas that he sampled was the Aspen Range, which is part of this landscape. He reported that all evidence points to the fact that fire historically played a critical role in shaping the forest ecosystems of the area. He reported that most stands were multi-aged but that few trees were found in excess of 250 years old. He reported historically the mean fire interval (MFI) at the Forest scale would approach one year, meaning that historically fire would



Figure 3-2 Isolated legacy tree (relic) that resulted from the historical fire regime. This tree has multiple fire scars indicating that it stood alone through multiple fires prior to white man settling in the valley. The repeated fire kept the area around it from filling in with trees. In the last 120 plus years without fire, the trees have filled the interspace between the legacy trees and clumps, resulting in a drastic increase in density.

have occurred somewhere on the Caribou virtually every fire season before the late 1800s. The characteristic fire regime was a short to moderately long interval mixed severity regime. Fire scars were found on virtually every tree species found on the Forest, even those that are highly fire sensitive, such as aspen, spruce, and subalpine fir, which further supported the assessment of a mixed fire regime. Some small, single cohort stands were also observed, indicating that lethal patches of fire also occurred. Barrett further reported that fire-induced mosaics on the Forest are relatively indistinct, meaning they do not display the readily visible burn margins that occur under replacement regimes.

By definition, mixed-severity fire regimes are inherently complex and vary at multiple scales (Marcoux, 2015). Marcoux (2015) also said that mixed severity fires tend to create a feedback loop; they create conditions across the landscape that increase the odds that the next fire will also burn at mixed severity. Without fire, landscapes become homogenous and this creates a feedback loop that supports lethal fire.

Multiple fire scars were found on relic trees (legacies) throughout the project area, providing site specific evidence that fire was a frequent visitor on this landscape. Like Barrett observed, there are few relics older than 250 years in age. It appears that trees and groups of trees historically survived several fires, but over time the resulting scars would make them susceptible to fire and the group would be killed by fire or insects. This is especially true on moist sites. On drier sites, the fires were lighter and did not scar the trees as much, which allowed them to live longer.

Many scientists have described fire as a keystone disturbance in forests across the western United States (Marcoux 2015, Long 2009, & Falk 2006). In this landscape, historically, fire was the ecosystem process that shaped the natural structure and composition of the landscape. Historically clumps, patches, and occasional stands would have been killed by fire, creating mostly small relatively frequent openings. Fire would have also thinned the understory, keeping conifer density relatively low across most stands. Spatial and temporal variation in fire severity in the project area was influenced



Figure 3-3 The historic fire regime maintained open canopies that allowed aspen to dominate on most acres. In the absence of fire Douglas-fir canopy cover has drastically increased shading out aspen. Aspen health has suffered as result of the absence of fire.

by factors such as topography, vegetation types, weather, and Native American burning. All these factors would have combined to create a very heterogeneous landscape, with a reasonable balance of forest structure stages (age-classes) and a relatively low densities on the majority of the landscape. Seral species like aspen would have dominated at the landscape scale, due to the competitive advantage frequent fire would have provided (low densities and openings).

Currently, much of the within-stand heterogeneity created by a natural disturbance regime has been lost due to succession and growth. Due to the current homogeneity, if a fire was to occur under favorable weather conditions, mortality patches would be much larger than under the natural regime. Several years ago, an assessment of conifer dominated stands in this area predicted 98% mortality under 90th percentile weather (USDA-FS, 2008). The current stand density creates conditions where non-lethal and light mixed severity fire is not probable. However, under dry windy conditions fire will burn and will result in large, lethal patches, removing the natural heterogeneity. Stands in this area are not currently resilient to this type of disturbance, heterogeneity yields heterogeneity and homogeneity yields homogeneity.

Fire regime condition class and forest structure stage have been assessed at the landscape scale and are used to access departure of the landscape from desired conditions. Species composition, density, and forest health are used to assess effects at the project scale and stand scale for the action and no action alternatives.

3.1.1 Fire Regime and Condition Class

The Fire Regime Condition Class (FRCC) assessment method was established to provide a relatively simple, fast, and effective way to evaluate ecosystem components that are fundamental to maintaining biodiversity on landscapes. FRCC provides a solid foundation for understanding historical fire regimes and associated vegetation. (FRCC 2010) FRCC is a useful tool in summarizing ecosystem trends at the landscape scale and provides context for ecosystem restoration efforts.

The FRCC assessment completed on this landscape indicates that the overall condition class is “2 Moderate Departure from natural conditions.” FRCC assessments measure departure of two components of ecosystems: 1) fire regime (fire frequency and severity) and 2) associated vegetation (composition, density and structure). Table 3-1 below summarizes the assessment of the landscape. The forested cover types in the landscape were grouped into five biophysical settings (strata) for the assessment. LANDFIRE biophysical setting (BpS) models describe the historical fire regime, vegetation composition, and structures based on research (FRCC 2010). FRCC was assessed using the worksheet method described in the FRCC Guidebook (2010) (Beck, 2017 & Beck, 2018).

Table 3-1. This landscape, when assessed with LANDFIRE FRCC protocol, was classified as condition class 2, meaning there is a moderate departure from natural conditions. Two strata had a vegetation condition class rating of 3.

Strata	% of Area	Veg-Fuel Condition Class	Frequency-Severity Condition Class	Strata Condition Class
Dry Douglas-fir (1810510)	4%	3	3	3
Aspen (1810110)	22%	2	2	2
Aspen/Conifer (1810610)	34%	2	2	2
Douglas-fir (2111660)	31%	3	2	2
Lodgepole (1810560)	10%	1	2	1
Landscape Summary		2	2	2

FRCC departure and condition classes measure the amount of characteristic versus uncharacteristic conditions that exist in the current landscape. The landscape overall FRCC departure score was 57, the range to be classified as condition class 2 is 33-66% (see Figure 3-4). FRCC 2 means vegetation composition, structure, and fuels have moderate departure from the natural regime and predispose the system to risk of loss of key ecosystem components. In this landscape, the scores for the vegetation and regime departures were similar (63% and 50% respectively). This means that neither vegetation nor fire regime is driving the overall rating, as they are both out of character.

The effects of fire exclusion in forests in mixed severity fire regimes is often more apparent at the landscape scale than the stand level (Long, 2003). Forested vegetation in this landscape lacks structural diversity when viewed at the landscape scale. This landscape is dominated by stands that have dense late seral structure and species composition is trending towards climax, and fuels have accumulated in the absence of fire. A landscape in this condition is considered at moderate risk to loss of key ecosystem components (condition class 2). The lack of diversity in age structure, and the high percentage of stands that have closed canopies created by the lack of disturbance, creates a landscape that is susceptible to fire and insect disturbances that are outside or on the upper limits of the natural range. It also creates a landscape that is less resilient to these type events.

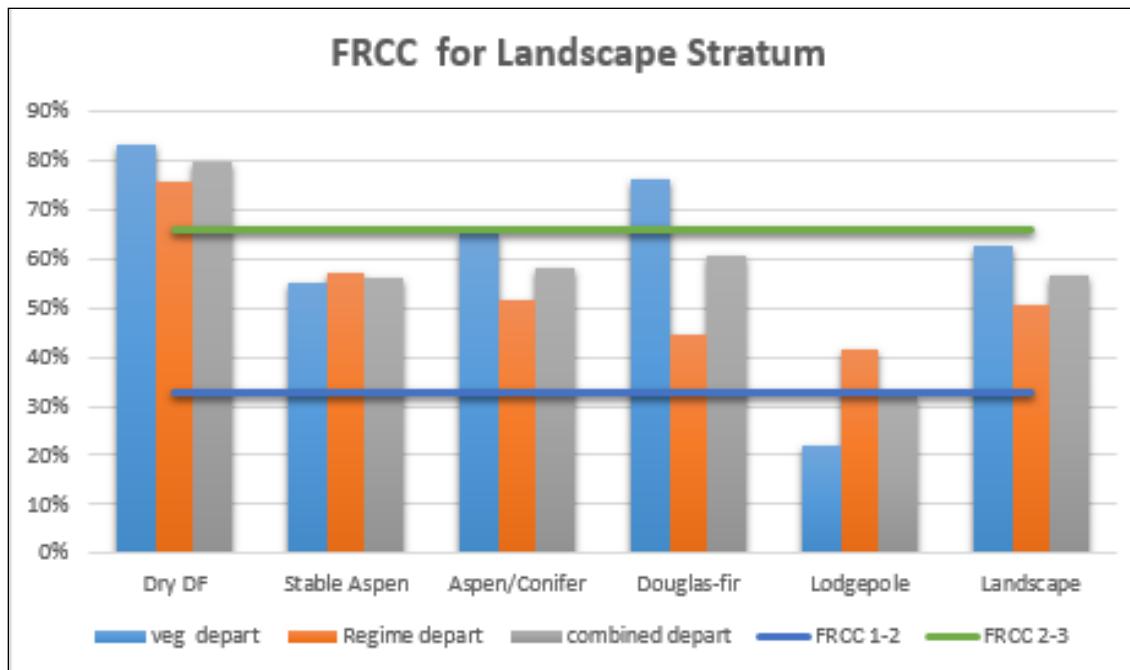


Figure 3-4. This chart presents the departure of vegetation and fire regime from its natural condition, as well as a combined departure for each strata and for the forested acres of the landscape as a whole. The horizontal blue line represents the class break between condition classes 1 and 2. The green line represents the class break between condition classes 2 and 3. The greatest fire regime departure is in the dry Douglas-fir strata. This strata is adjacent to non-forest types that would have burned very frequently under the natural regime and thus has missed the most fire cycles. The dry Douglas-fir and the Douglas-fir strata have vegetation departures above 66% and the aspen/conifer strata has departure of 65%, which means there is a need to manipulate age-class distribution, density and species composition in these types.

3.1.2 Forest Structure Stage

The structural attribute most widely used to assess the condition of a landscape is age-class distribution (Long 2009). Revised Forest Plan (RFP) direction is to maintain a balance of age classes at the landscape scale. Based on information found in the RFP and Reynolds (1992), forest structural stages (FSS) were developed (Beck, 2016a; Beck, 2016b). Seven forest structure stages were defined, they are: 1) seedling, 2) sapling, 3) young, 4) mid-aged, 5) mature, 6) late seral and 7) R4 old-growth. These seven classes are often grouped into map units (e.g. seed/sap, young/mid, mature/late seral). The RFP uses the terms “old” and “late seral” interchangeably. In this document the term “late seral” is used to avoid confusion with old-growth and the generic use of the word old or older.

Vegetation management unit (VMU) 58 was used as the landscape assessment unit for this analysis. VMU 58 has a similar FSS distribution to the Forest as a whole; the Caribou is 95% mature/late seral (Beck, 2016b), and this landscape is 94% mature/late seral. The current homogeneity in age-class across the Forest and this landscape is a result of direct and indirect fire control. The lack of heterogeneity puts the landscape and the Forest as a whole at risk to uncharacteristic disturbances and reduces the resilience to such disturbances (RFP & Beck, 2016b). **Table 3-2** outlines the approximate historical range of variability (HRV) for each FSS. HRV represents the range that best predicts resilience to disturbance. **Table 3-3** displays the desired future condition for each FSS outlined in the RFP and the RFP-EIS and shows the current

condition and the trend. **Table 3-4** shows that the results are much the same when summarized by forest type.

There is a clear shortage of seedling/sapling and young/mid-aged patches in VMU 58, especially in the Douglas-fir and aspen forest types. This shift to older classes is the result of 100 plus years of succession. Succession is natural, but historically age-classes were kept somewhat balanced because fire was routinely setting succession back. **Figure 3-7** shows what the Johnson Creek drainage looked like in 1910, compared to what it looks like now. It clearly shows the landscape age-class structure has become more homogenous in the last 100 years. **Figure 3-6** also shows that one age-class currently dominates the landscape, and contrasts that to the desired diversity outline in the RFP-EIS.

Table 3-2. This table shows the Forest Structure Stages (FSS). It also outlines approximate historical ranges of variability, and the DFC set in the RFP-EIS. The DFC was set as a central average for the stage which is shown in brackets, the range is based on the goshawk management table in the RFP. The RFP set a standard to maintain at least 20% mature and late seral in each HUC. It also set a standard to maintain 15% Region 4 definition old-growth, but clearly identifies it as a subset of the late seral class.

Forest Structural Stage	Approximate HRV	Desired Future Condition
Seedling	5 – 40%	5 – 15% (10%)
Sapling	10 – 30%	10 – 15% (10%)
Young	10 – 30%	15 – 25% (20%)
Mid-aged	10 – 30%	15 – 25% (20%)
Mature	10 – 30%	15 – 25% (20%)
Late Seral	10 – 40%	15 – 25% (20%)
R4 Old-growth ¹	5 – 15%	5 – 15% (15%)

¹R4 old-growth is a sub class of late-seral and is not additive.

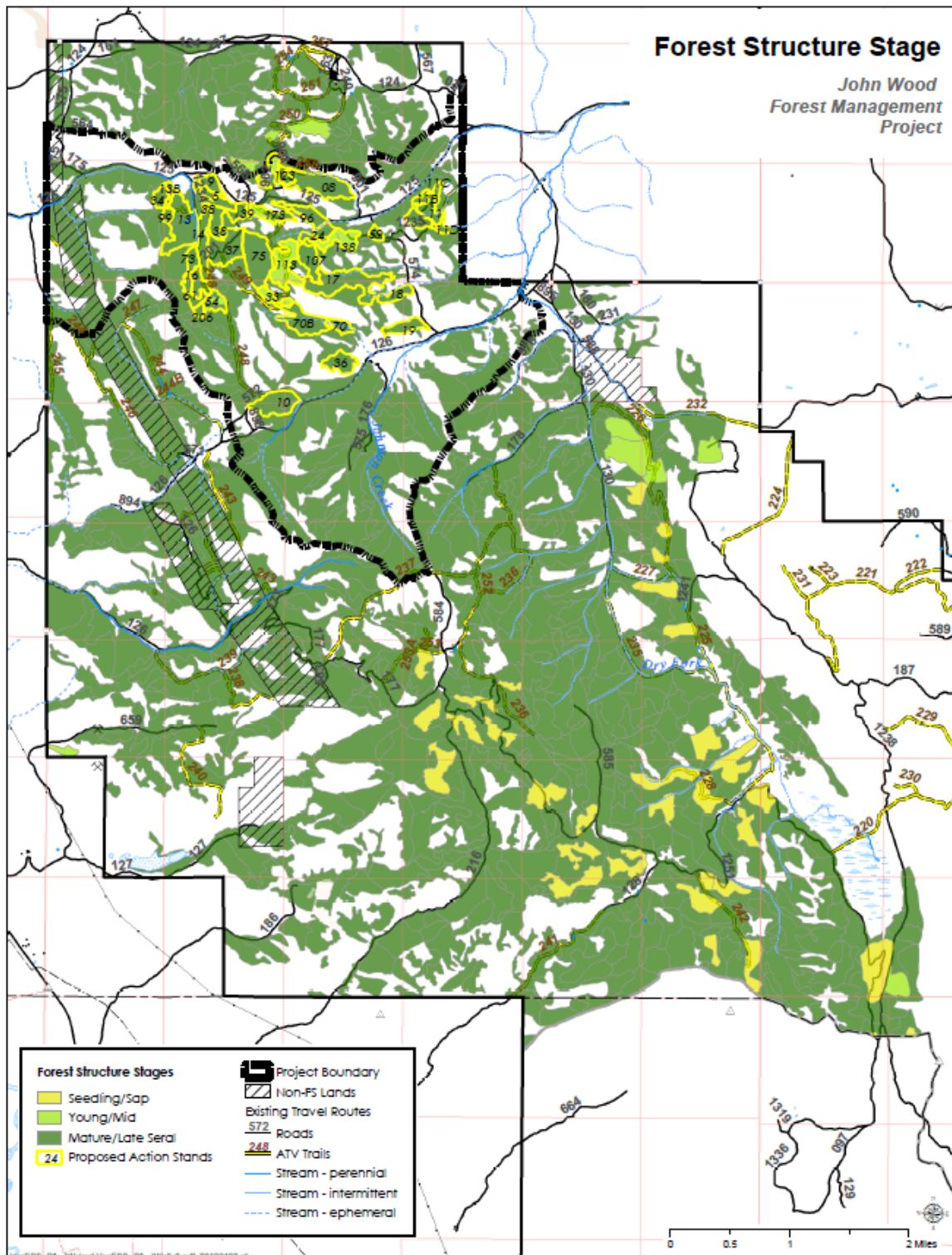


Figure 3-5 Forest Structure Stage. This map shows the forest structure stage map units for the project area and the larger landscape assessment area. Viewing this map, it is easy to see that the mature and late seral stages dominate landscape and exist in large continuous patches.

Table 3-3. This table shows the combined FSS map units that were used to classify every stand on the Caribou N.F. The FSS were combined into map units to simplify the classification and improve the accuracy. The Forest wide assessment indicated that the user accuracy for this data is 91% (Beck, 2016a).

Forest Structural Stage	RFP DFC	Current Condition	Trend
Seedling/Sapling	5 – 25% (20%)	3%	This FSS is under represented
Young/Mid-aged	30 – 50% (40%)	3%	This FSS is way under represented
Mature	15 – 25% (20%)	6%	This FSS is under represented
Late Seral*	15 – 25% (20%)	88%	This FSS is over represented

* As noted earlier in the document and this section the RFP used late seral and old interchangeably, in this document late seral is used to reduce confusion. Refer to late seral and old in the glossary for more detail.

Table 3-4. This table shows that when viewed by forest type the results are much the same. It shows that most of the seedling/sapling stage is in the lodgepole pine type. This is because most of the regeneration harvest in the past 25 years has occurred in this type. A portion of the lodgepole seedling/sapling class will soon be large enough and old enough to move into the young/mid class.

Forest Type	Condition	Seedling/Sapling	Young/Mid	Mature/Late Seral
Aspen	Desired	5 - 25% (20%)	30 - 50% (40%)	20 - 50% (40%)
	Current	0%	1%	99%
	Assessment	Less than DFC*	Less than DFC *	Above DFC*
Douglas-fir	Desired	5 - 25% (20%)	30 - 50% (40%)	30 - 50% (40%)
	Current	0%	3%	97%
	Assessment	Less than DFC*	Less than DFC*	Above DFC*
Lodgepole	Desired	5 - 25% (20%)	30 - 50% (40%)	30 - 50% (40%)
	Current	25%	3%	72%
	Assessment	Within DFC*	Less than DFC*	Above DFC*

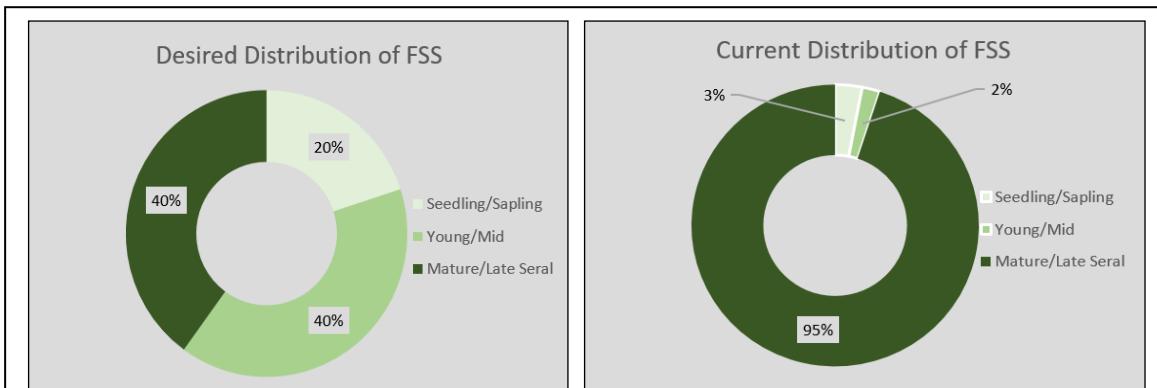


Figure 3-6. This pair of charts illustrates the desired distribution of forest structural stage groups and the current distribution. Currently, there is a shortage of seedling/sapling and young/mid classes while the mature/late seral class is way over represented. This chart type was chosen to depict the circle of life, organisms all start out young and mature and eventually become old; here the term late seral is used. In a balanced system disturbance would periodically kill some individuals making room for new ones. In the absence of disturbance stands have continued to age creating the current imbalance. Without disturbance there is not room for new seral tree species to grow.



Figure 3-7. This pair of photos show the change in species composition and structure in Johnson Creek. The top photo was taken circa 1910, the bottom photo was taken about 2006. (Beck 2018)

3.1.3 Species Composition

Currently the landscape can be characterized as primarily forested. Approximately 65% of the acres have been classified as forested, 1% woodland, and 34% non-forest (See **Figure 3-7**). Forested vegetation has been classified into three forest types. Douglas-fir dominates 47%, lodgepole 14%, and aspen 39% of the forested acres.

Historically, the composition of the landscape was quite different. In 1913 an inventory of the area was completed and mapped in an atlas (Beck 2017 & Beck, 2018). To assess how vegetation form and forest type has changed in the last 100 plus years, the current inventory was compared to the 1913 inventory (see **Table 3-5**, **Figure 3-9** and **Figure 3-7**).

Forested acres have increased by 11%. This means that 3,156 non-forest acres have become forest. The forest types also differ. Douglas-fir acres have increased dramatically while lodgepole pine and aspen dominated types have decreased. The Douglas-fir type has gained acres over the last 100 plus years from non-forest, aspen and lodgepole types. See **Table 3-5** for more details. This shift in composition is a result of a changed fire regime. Without fire as a disturbance to stop their progression, Douglas-fir has increased. The resolutions of the two data sets are obviously different, and exact acreage changes need to be used with caution. However the trend is clear. The 1909 atlas (currently not digitized, Beck 2017) also shows the largest portion of the area as non-forest, and the next largest category is burned with scattered trees, further painting the picture that when the Forest Service took over management, the species composition of the landscape was very different.

Plant species composition in an ecosystem is influenced by complex interactions between species, disturbances, and chance events (Reynolds, 2013). Long (2009) stated that favoring disturbance-adapted species assemblage's is an effective method to conserve biodiversity. It is well understood that open canopy conditions created by fire, favor shade-intolerant species, while closed canopy conditions favor shade-tolerant species. Since the natural disturbance regime maintained a mix of open and closed canopy conditions, it is logical that maintaining a mix of open and closed canopy, mimicking the natural conditions, will maintain natural biodiversity (plants and wildlife).

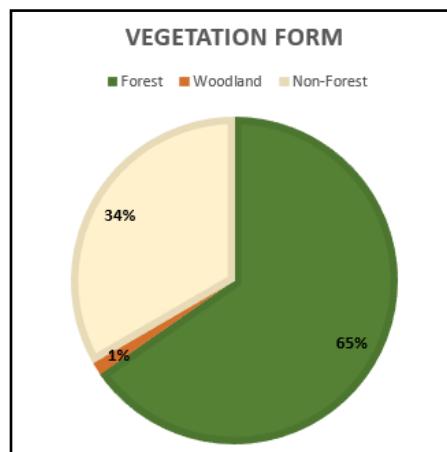


Figure 3-8 Current Vegetation Form.

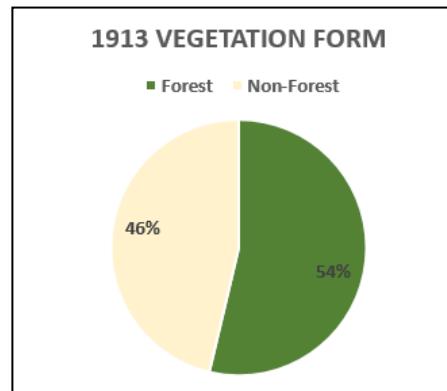


Figure 3-9 1913 Vegetation Form



Figure 3-10. Conifer is increasing and aspen is being lost due to succession.

Table 3-5 Change in acres classified as forested between 1913 and 2016. The Douglas-fir forest type has increased while the lodgepole pine and aspen types have decreased. The increase in forest form was mostly brush types moving to Douglas-fir.

Forest type	1913 (acres & %)	Current (acres & %)	Trend
Forest Form	14,606 54%	17,762 65%	Increased by 3,156 acres, up 11%
Douglas-fir	2,123 15%	8,342 47%	Increase by 6,219 acres, up 32%
Lodgepole pine	3,064 21%	2,499 14%	Decreased by 565 acres, down 7%
Aspen	9,419 64%	6,920 39%	Decreased by 2,499 acres, down 25%

Aspen is considered a keystone species (e.g. removal makes it unlikely that the ecological community stays intact) which is why management of aspen has been emphasized across the west (Bartos, 2001). Some data indicates that aspen in the western United States has declined 50-96% (Bartos, 2001). The RFP-EIS reported that aspen had declined across the forest an estimated 40%. Aspen was historically widely distributed across the west and is now being lost as a result of changes in the natural disturbance regimes. As shown in **Table 3-5**, in this landscape aspen dominated acres have decreased by 2,499 acres in the last 100 or so years, dropping from 64% of forested acres to 39%. This change in aspen, an easily measured seral species, is likely reflected in a host of species that rely on fire and other disturbances. For this reason aspen has been selected as a condition and effects indicator for this project.

Within the project area there are 3,688 acres of stands that have been classified as forest, of those stands, 3,661 stand acres have aspen present (approximately 99%). A matrix of vegetation types and stands with aspen present was created and classified into four classes. The classes created are pure aspen, aspen dominated, conifer dominated, and minimal aspen present. The stands were put into classes based on the percent of canopy cover aspen represented. This exercise shows that while aspen is very common in the project area, in more than half of the acres, it only makes up a small percentage of the canopy cover. Campbell and Bartos (2001) state that stands with greater than 50% conifer cover can be considered at high risk and stands with 25% conifer cover can be considered at risk. Desired future conditions were developed for this landscape based on the aspen types present and the historical composition. While there can be some debate about what is ideal, it is very clear that a majority of stands should have less than 50% conifer canopy cover.

Table 3-6. The desired condition is to keep most of the landscape out of a high risk condition, 50% or more of the stands with aspen should have less than 50% relative conifer canopy cover. Currently 67% of aspen stands have more than 50% conifer canopy. Since we are using aspen as a surrogate for disturbance dependent species, this tells us that disturbance dependent species assemblages are at risk in this landscape as is the biodiversity associated with them.

Aspen Status Class	DFC	Current	Trend
Pure Aspen (relative aspen canopy cover (CC) is >85%)	10-33%	13%	Similar
Aspen Dominated (relative aspen CC is >50%)	33-66%	20%	Under Represented
Conifer Dominated (Relative aspen CC is >15% & < 50%)	16-33%	16%	Similar
Minimal Aspen (relative aspen CC <15%)	10-33%	51%	Abundant

Table 3-7. Aspen stands where less than 50% of the basal area is aspen can be considered at risk. (Campbell and Bartos 2001) The desired condition for this landscape is to keep most acres at low risk. Relative canopy cover is a reasonable surrogate for basal area and can be estimated from aerial photography, so it was used as the metric.

Aspen Risk	DFC	Current	Trend
Low Risk (Relative aspen canopy cover is >50%)	50-66%	33%	Under Represented
High Risk (Relative aspen canopy cover is <50%)	33-50%	67%	Over Represented

3.1.4 Canopy Cover

Keane (2017) stated that biodiversity is intimately linked to disturbance regimes, in that disturbances create mosaics of diverse plant communities and habitats across a landscape. Temporal fluctuations of these communities ensure the conservation of biodiversity. The mixed severity regime that historically shaped stands in the project area would have resulted in different canopy cover conditions for each forest type, and it would have varied through time. Aspen, because of its ability to sucker, would have very quickly filled any open spaces after a fire. Douglas-fir, on the other hand, is much slower to fill in openings due to infrequent cone crops and lodgepole pine would be in between.

Forests shaped by relatively frequent mixed severity fire, especially Douglas-fir, were dominated by clusters and groups of trees separated by sparsely treed openings and gaps that shifted and moved across the landscape with time (see **Figure 3-6**, historical photo). This heterogeneity provided for increased plant diversity, shrub cover, sites for shade-intolerant species to regenerate, moderated the surface and canopy microclimate, as well as provided a variety of habitats for birds and animals (North et al. 2009). Natural disturbances, especially fire, reduced canopy cover creating heterogeneity at the group, patch, stand, and landscape scale (North et al. 2009).

LANDFIRE biophysical models provide reasonable canopy cover reference condition. The estimated reference condition is based on a matrix of openings, gaps, low density, and dense patches that moved and shifted across the landscape with time. Forests with open canopy conditions have different species assemblages than those with closed canopies. Historically, most stands would have had open canopies (less than 40% canopy cover), that favored early seral species. Closed canopy conditions would have been less prominent on the landscape. Because this project area is in a RFP timber emphasis prescription area, the desired future condition for conifer canopy cover differs slightly from the reference condition. The DFC is to maintain about half the stands in an open canopy condition and half in closed canopy. While there could be some debate as to the exact DFC there is little debate that 97% closed canopy condition is not desirable, because it is way outside HRV. Across the landscape there is a shortage of conditions that favor open canopy early seral species.

Open canopy conditions created and maintained by mixed severity fire and other disturbances in conifer types, provide ideal growing conditions for many annual and perennial flowering forbs and thus are important habitat for butterflies, moths and other pollinators (Swanson & others, 2011, Potts et al. 2003, Roberts et al. 2017). The early-successional environments found in openings created by disturbance, play an important role in sustaining ecosystem processes and biodiversity because of the resource rich environment and varying conditions found in openings (Swanson et al. 2011). For this reason canopy cover in the Douglas-fir type has been selected as

a condition and effects indicator for this project. **Table 3-8** highlights the trend from open forest to closed forest, this shift has had a negative impact on species composition across the landscape.

Table 3-8. This table shows the canopy cover condition of Douglas-fir stands.

Type	Reference Condition	Current Condition	Trend
Douglas-fir	Open Canopy ¹ 60 -90% Closed Canopy ² 10 -40%	Open Canopy 3% Closed Canopy 97%	Douglas-fir stands are much denser than under a natural disturbance regime, this favors shade tolerant plants. Under a natural fire regime sun loving plants would have dominated.

¹Open Canopy < 40 canopy cover, ²Closed Canopy >40 canopy cover

3.1.5 Risk to Douglas-fir Bark Beetle

Douglas-fir bark beetles (DFBB) have been observed within the project area and surrounding landscapes, but are currently at low levels. DFBB have shown a preference for attacking large diameter trees growing in dense conditions, evidence of this is common throughout the project area. The last time DFBB populations in this area were high, old large relics left after the last fire were killed.

DFBB outbreaks are often initiated by a disturbance event that stresses or weakens trees (Fettig et al. 2007). The summer of 2017, DFBB were observed in the project area attacking trees downed by heavy snow the previous winter. It is anticipated that DFBB mortality in the project area will increase in the years to come as a result of the broods that developed in the downed trees.

Stands with a basal area greater than 120 - 150 ft²/ac, where the dominate trees are over 14 inches DBH, where the trees are 120 years old and where Douglas-fir is more than 50 percent basal area considered susceptible or at risk to DFBB. (Steele et al. 1996; C. Jorgensen, 2016 & L. Lowrey, 2017 personal communications)

To assess the risk of DFBB to Douglas-fir in the project area a simple model was developed based on an assessment published by Steele et al. (1996). The points system outlined for Douglas-fir bark beetle in Steele (1996) were applied to stands with Douglas-fir (aspen/conifer and Douglas-fir cover types) in the project area. Stand exam data was used to determine average



Figure 3-11. Douglas-fir bark beetle boring dust on a tree downed by heavy snow and wind. Down green trees are great habitat for DFBB. Populations can grow in this type of environment to the point that they can successfully attack and kill standing green trees especially when the stand has high basal area and are mature to over mature.

overstory diameters, ages, basal area and percent basal area by cover type. Based on this assessment 74% of the stands dominated by Douglas-fir are at high risk, and 45% of all acres with Douglas-fir as a component are at high risk.

Table 3-9. Risk to Douglas-fir bark beetle is increasing. The overall threat is greatest to large old trees. The consequences of a DFBB event are likely outside of historical normal, due to the homogeneity of age-class and density/canopy cover.

Strata	Acres	High	Moderate	Low	Trend
Desired Future Condition		< 25%	< 40%	>50%	
Aspen conifer	1,188	0%	91%	9%	Risk is increasing as Douglas-fir composition, density and size increase with time.
Douglas-fir	1,842	74%	26%	0%	
Overall Weighted	3,030	45%	51%	4%	

3.2 Timber Management

Analysis Method: The timber management aspects of this project were assessed using past projects across the Forest and professional judgement. Other similar projects were reviewed to assess feasibility and the need for special design features. Stand exam data was also collected and analyzed. Every stand proposed for treatment was walked through and assessed by a Certified Silviculturist.

Analysis Area: The direct and indirect *analysis area* for timber management effects is the project area. The cumulative effects analysis area for timber management is the Caribou National Forest.

As shown in Figure 2 of chapter 1 of this document, 83% of the project area falls within the Revised Forest Plan prescription “Forest Vegetation Management.” The emphasis of this prescription area is on scheduled wood-fiber production, timber growth and yielded while maintaining or restoring forested ecosystem processes and functions. As described in the previous section the forested landscape is dominated by dense forest in the mature and late seral age classes. Stands in this condition have stopped or soon will stop adding volume, and have entered a state where volume is reallocated from seral tree species to climax tree species as mortality occurs.

Douglas-fir dominated stands proposed for harvest currently have between 24 and 34 hundred cubic feet (CCF)/acre on average that is of merchantable size. They average over 155 square feet of basal area with a stand density index (SDI) of 377 or 59% of the maximum. Density related mortality typically begins when a stand reaches 60% of max SDI. Stands in this condition are ideal for “Forest Vegetation Management,” there is an opportunity to harvest timber (merchantable volume), reducing the basal area and lowering the SDI while moving the stands closer to historical ranges of conditions as prescribed in the Revised Forest Plan.

Each stand proposed for treatment has been examined by a certified Silviculturist and draft prescriptions have been developed. The prescriptions outline treatment options that move the stands toward desired conditions. Stands proposed for harvest have been assessed and found to be suitable for timber production as well as feasible for treatment with conventional ground based logging equipment. The stands proposed for treatment are similar to others successfully treated on the Forest in the past, indicating a good probability of future success.

3.3 Transportation Management

Analysis Method: The Road Analysis for the Caribou National Forest (USFS, 2002), the Revised Caribou Travel Plan (USFS, 2005), Forest Service Manual Direction, engineer plans, Corporate GIS Data, road and trail inventory, and field observations. The GIS coverage(s) are available in the project record.

Analysis Area: The *Analysis Area* for roads and trails is the project area.

3.3.1 Background

The issue of open motorized density came up several times during scoping. There were concerns about the motorized density in the project area. The issue of motorized density was addressed in the Revised Forest Plan (RFP). The majority of the project area is in RFP prescription 5.2 (c), which allowed for cross-country travel (RFP 4-73). Map 9 of the RFP shows “no” open motorized road density for the area, meaning there is no limit. The Revised Caribou Travel Plan (RCTP) record of decision amended the RFP and closed the area to cross country travel and designated the routes currently shown on the Caribou Motorized Vehicle Use Map (MVUM). Therefore, the acceptable density of routes and which routes were to be open to motorized travel had been decided in previous analysis and are outside the scope of this project. This project focused instead on the usability and resource concerns for roads in the project area.

3.3.2 Roads and Trails

Historically, roads and trails were developed to provide access for local ranchers, miners, and loggers. Many of the existing roads and trails were once trails that facilitated forest use during the mid to late 1800’s. While under Forest Service management, timber, mineral and general forest users’ interests have required new and/or improved access. As public access, though road construction and reconstruction has improved, local population pressure has increased and additional roads and trails have been pioneered for hunting, firewood gathering and other recreational activities. Over time, an extensive transportation system had evolved.

Table 3-10 Summary of Roads and Trails in the project area.

Route #	Condition
1234	This road leaves county road 125 and goes south along a seasonally wet meadow. The road accesses a popular dispersed camping site along Wood Creek and provides access to trail 248. Because of the road location in the meadow it is very rutted and is becoming braided as users try to avoid the mud and ruts. The location of this road is a concern from a hydrology, soils and other resources stand point.
255	This is a closed road in good condition that connects to road 1234. It is open to ATV traffic and provides for long term forest management needs. It presents few resource concerns.

Route #	Condition
248	This ATV trail was a temporary work road used to haul logs in the past, it was later converted into an ATV trail. The primary concern with this trail is its proximity to the Wood Creek. The trail could use some additional drainage features to reduce the risk of erosion. There is also one small spring that has developed in the trail and runs down the trail a short distance, this is not a major concern with existing traffic levels but could use some attention.
201	This road is well located and constructed but has several drainage issues that cause water to puddle and over time has resulted in rough rutted areas.
201B	This is a closed road used for forest management. Closures have been effective and it has not received motorized use.
249	This road is shown on MVUM as an ATV trail, but currently there are no barriers until mile post 0.5, so it is being driven by full size vehicles for 0.5 miles. There is a well-used dispersed camp site approximately 0.1 miles from the intersection with county road 125. This road was developed for timber management but currently is used as part the Wood Canyon ATV loop.
1232	This road is currently closed and not being used.
901	This road was developed for a past timber sale, after the sale the road was closed, a user created route was developed along the closed constructed route. This road accesses a popular dispersed camping location and provides for forest management. This road transitions into trail 258.
258	This ATV trail connects road 901 to 902. This trail was developed on a closed logging road.
1235	This road is well located and constructed but has several drainage issues that cause water to puddle and over time has resulted in rough rutted areas. The roads primary purpose to provide access for timber management.
574	This road serves as an important connector between the two forks of Johnson Creek, but is poorly located. It is steep and has poor drainage, which has resulted in it being in poor condition, which makes it difficult to travel if wet.
574A	This is a non-system road that is not shown on the MVUM but is currently not blocked so it receives light use.
574AA	This is a non-system road that is not shown on the MVUM but is currently not blocked so it receives light use.
574B	This is a non-system road that is not shown on the MVUM but is currently not blocked so it receives light use.

Route #	Condition
126	The portion of this road from the intersection of the 895 road (east side project boundary) up to the intersection of the 574 road is poorly located. The water table keeps the road wet much of the year causing deep mud puddles and ruts. From 574 up to 176 is in fair condition. From just above 176 to the intersection of 572 the road is the lowest point and water flows down the road during run-off events. From the intersection of 574 up to the project boundary the road is in fair condition. Part of this upper section is in the AIZ as is the lower section.
572	This road is open to full size vehicles but currently receives very light full size use for about 0.25 miles then narrows and receives only ATV and UTV use up to the project boundary. There is one steep section between trail 248 and the intersection with 898 that limits pickup traffic.
176X	This road is open and being driven as the primary access to the upper portions of the 176 road. It is not shown as open on the MVUM. It is in fair condition.
176	The first 0.25 mile of this road receives very light use because most people access it using 176X. From the intersection of 176X south the road is poorly located and in poor condition. Water runs down the road for some distance. The team did consider relocating this road to address the resource concerns but doing so would have involved changing the Roadless Area line, and was outside of the project development guidelines.
575	This is a short spur off the 176 road and has the same issues.
898	This is a short two track road shown on the MVUM that connects 126 and 572. It receives very light use.

3.3.3 Condition Summary

There are approximately 21 miles of system roads and trails in the project area. About 20% of the 21 miles are county roads that are in good condition. There are approximately 15.5 miles of open road in the project area of which 4.5 miles is in poor condition or about 30%. There are 5.3 miles of system ATV trails in the project area which are in good to fair condition.

Table 3-11 Condition summary of system routes within the project area.

Travel	county	good	fair	poor	Total
Improved Road	4.3	0.2			4.6
Road Open		0.7	5.7	4.5	10.9
Road Closed		0.1			0.1
ATV Trail		2.3	3.0		5.3
Total	4.3	3.3	8.7	4.5	20.9

3.4 Wildlife

Analysis Area: The John Wood Forest Management project area is the primary analysis area used to analyze the effects to wildlife and its habitat. If project activities have the potential to impact a species at a larger scale, these potential effects are addressed outside of the analysis area where warranted.

The project area falls within Idaho Fish & Game Management Area 76. The portion of the project area where activities are proposed falls in Forest Plan Prescription Area, 5.2 – Forest Vegetation Management.

Analysis Methods: A combination of CNF Wildlife White Papers (USDA-FS 2010), Idaho Department of Fish and Game databases, applicable scientific literature, survey data and reports, monitoring data, aerial photos, known habitat types, and field visits have been used to determine the existing condition. The existing conditions for each species potentially present in the analysis area is then combined with the potential effects of vegetation management activities to disclose the potential impacts of the project.

The analysis of potential effects tiers to current conditions, travel planning documents, and other literature where cited. The wildlife species of concern for this project are divided into six groups and further documented in their respective reports (if necessary):

- Threatened and Endangered (T&E) Species identified by the U.S. Fish and Wildlife Service (USFWS) [Biological Assessment (BA)]
- Sensitive Species identified by the Regional Forester [Biological Evaluation (BE)]
- Management Indicator Species (MIS) identified in the 2003 Caribou National Forest Revised Forest Plan (CNF RFP) [included in BE]
- Amphibians in the CNF RFP [included in BE]
- Migratory Landbirds as required by Executive Order [included in BE]
- Big Game (mule deer and elk) [included in BE]

It is important to note the BA and BE are written to further analyze the impacts of the selected alternative, therefore, these documents will not be finalized until after a final decision has been made. For simplicity, the BA and BE are often combined into one document.

3.4.1 Introduction

Wildlife, and more specifically, the potential for this project to have impacts on wildlife species and their habitat (both positive and negative), have been identified as an issue during scoping efforts. The Caribou National Forest provides a wide variety of diverse habitats for terrestrial vertebrate wildlife. This section discusses the existing conditions of wildlife and wildlife habitat within and adjacent to the analysis area, focusing on ESA listed species, Forest Service designated sensitive species, and other special status species.

As described in Chapter 1 of the EIS, the current forest structure is outside of the Desired Future Conditions as described in the Forest Plan (due to strong overrepresentation of mature and late seral age classes), and aspen within the project area are declining in numbers and overall health. The strong overrepresentation of mature/late seral age classes, limits the overall wildlife biodiversity by limiting species with preferences towards seedling/sapling and mid/young age classes.

Aspen has been described by many authors as a “keystone species,” providing a wide variety of ecological values. Second only to riparian areas, aspen stands are the most biologically diverse ecosystems in the Intermountain West (USDA-FS 2003b p. 3-75; Campbell and Bartos in Sheppard et. al. 2001). While it is generally well known that aspen stands provide extremely important habitat for mule deer and elk, perhaps lesser known are the other important aspects of biodiversity that aspen stands provide. Aspen stands have been shown to provide for high levels of bird diversity (higher than conifer stands (Hood 2007)), and provide extremely important bird breeding habitat, especially for cavity nesting birds (Newlon and Saab 2011). Even bats, snails and lichens can be impacted by the decline of aspen (Hood 2007, Rogers et. al 2007). It has been noted that as these aspen stands convert to other cover types, the high levels of biodiversity that they provide are lost (Bartos and Amacher 1998 and Bartos and Campbell 1998a,b cited in Sheppard et. al. 2001).

Therefore, the forest structure stage and the loss of aspen (and the loss of the benefits it provides) within the analysis area is an issue. Therefore, *Acres of Aspen Improvement* has been chosen as one of the indicators to help assess the potential impacts of the project on wildlife.

3.4.2 Endangered Species Act (ESA) listed Wildlife

This project was presented to the US Fish and Wildlife Service (USFWS) at the March 27th 2017 streamlining meeting. The IPaC species list for the project (Consultation Code: 01EIFW00-2017-SLI-0543 updated March 13th, 2019). Per the IPaC list, the Canada Lynx remains the only ESA listed species potentially present in the project area, while Wolverine are “*Proposed Threatened*.” Conferencing with the USFWS on Proposed species is only required in certain instances where the project is “*Likely To Jeopardize The Continued Existence Of The Species Or Result In Destruction Or Adverse Modification Of Proposed Critical Habitat*” (USFS Proposed and 10j Guidance sheet, project record). The existing condition for Wolverine is discussed below, with potential impacts described in the effects sections below.

3.4.2.1 Canada Lynx

The Soda Springs and Montpelier Ranger Districts are linkage habitat for lynx as shown in Map 1 of the FEIS for the Caribou Forest Plan (RFP). There is no critical habitat, Lynx Analysis Units (LAUs), or core areas in the analysis area. Three observations of Lynx are known within the analysis area, one from 1948 one from the 1960’s and the other in the early 1970’s (Persons who reported observations unsure of the exact date) (IFWIS 2017).

A preliminary determination of *No Effect* for Canada Lynx has been made for this project. Given the status of the habitat as linkage habitat and that observations are generally limited to historical accounts, Lynx are not expected to occur in the analysis area. As such, Lynx are not discussed further in this document. Reference the Biological Assessment for the project for additional information.

3.4.2.2 North American Wolverine

While wolverine denning habitat is known to have certain characteristic criteria, general wolverine habitat is best described more in terms of adequate year-round food supplies in large, sparsely inhabited areas, rather than in terms of certain vegetation types or topography (USDA FS 2003b p. D-138). Denning habitat is characterized as rocky sites, such as north-facing boulder talus or subalpine cirques in forest openings (USFWS 2010 and USFWS 2014a) above 8200' (8200' elevation is considered the minimum elevation for wolverine denning in Idaho [USFWS 2010]). No denning sites are known or expected to occur in the analysis area, the analysis area only overlaps one very small portion of an area above 8,200' elevation (see map in project record), and the area generally lacks the persistent snowpack required for denning. There are no documented observations of wolverines within the analysis area, the nearest observation to the analysis area occurred approximately 13 miles east of the analysis area in 2008(IFWIS 2017). Additional recent (within the last 5 years) observations of Wolverine have occurred across the Caribou National Forest. Although naturally occurring at low levels, presence of wolverines within the analysis area is probable. The probable occurrence is supported by the state management plan for wolverines (IDFG 2014a), which shows the analysis area occurring in an area of predicted high use (p. 21), as the analysis area occurs in/adjacent to an area that has high potential for use as a dispersal corridor. Climate change has been identified as a potential impact to wolverine (USFWS 2016), but a large amount of uncertainty exists as to how this might site specifically impact the analysis area. The State Management Plan also discusses potential climate change impacts on wolverine (and the uncertainty surrounding those potential impacts) (IDF&G 2014a). Worst case scenario, warming would reduce the suitability of the habitat, decreasing any current use of the area.

3.4.2.3 Critical Habitat

As described in the 2016 Streamlining notes and the updated IPaC lists (Consultation Code: 01EIFW00-2017-SLI-0543; updated March 13th, 2019)) there is no USFWS Designated or Proposed Critical Habitat for any species within the analysis area.

3.4.3 Sensitive Species

The Regional Forester identifies Sensitive Species when population viability is a concern (USDA-FS. 2016). The following narratives disclose the presence of R4 sensitive species, other protected species and species of local concern within the analysis area.

Occurrence within the analysis area is described as “known”, “probable”, “not expected”, or “no presence.” This occurrence determination is based on the amount, distribution, and quality of suitable habitat in and around the project area; reviewing file information of

suitable habitat, sightings; survey data; site visits; and/or personal knowledge of species and habitat. The terms “known,” “probable,” “not expected,” and “no presence” are defined in more detail in the Wildlife DFC, Issues and Indicators worksheet (Green 2018).

3.4.3.1 Spotted Bat

In Idaho, spotted bats occur primarily in southwest and central Idaho and is not generally expected to occur in Southeast Idaho. (Miller et al. 2005, page 45, WBWG 2005, USDA-FS 2003b p. 3-214, IDF&G 2005). This species characteristically occurs in association with xeric and riparian habitats in deep, narrow canyons where massive cliffs predominate (IDF&G 2005), and dominant vegetation at occurrence sites within Idaho includes sagebrush, juniper, mountain mahogany, cottonwood and Ponderosa Pine Forests (*Id.*). While no observations of Spotted bats have occurred within or adjacent to the analysis area (IFWIS 2017), the Caribou Forest lies between known populations in Southwest Idaho and the northeastern portion of the Greater Yellowstone Area in Montana and Wyoming (USDA-FS 2003b p. 3-214). Overall, distribution of spotted bats is patchy and limited geomorphically, by roosting habitats (cliffs) (USDA-FS 2003b D-50), and their close association with prominent rock features (Miller et. al. 2005 p.45) (which are non-existent in the analysis area). Therefore, while they may be intermittently present, overall presence of spotted bats within the analysis area is not expected. Since presence within the project area is not expected, there will be *No Impact* to this species under any alternative. Since there will be no impacts to spotted bats, there will be no Cumulative effects. This species will not be discussed further.

3.4.3.2 Townsend's big-eared bat

This species occupies moist forests, as well as arid savannah and shrub steppe. It has been found foraging over sagebrush-grasslands, riparian areas, and open pine forests within the Greater Yellowstone Ecosystem (USDA-FS 2003b p.3-214). Townsend's bats forage primarily forage on Lepidopteran's (moths and butterflies) (IDF&G 2005b), but occasionally will forage on flies and beetles as well (USDA-FS 2003b p. 3-214). Known maternity colonies occur well to the west of the analysis area on the Craters of the Moon National Monument (IDFG 2005b). Townsend's bats use a variety day roosting habitats, including caves, cliffs, buildings, bridges, and tree cavities. (USDA-FS 2003b p. D-136, Groves et al 1997 p.285)

There are no documented occurrences of Townsend's bats within the analysis area; however Townsend's bats have been documented to the south and on other areas of the Soda Springs Ranger District (USDA-FS 2003b D-136 and IFWIS 2017). While there are no documented occurrences within the analysis area, habitat for Townsend's big-eared bats and their prey exists within the analysis area, and they are known to occur in adjacent areas. The presence of Townsend's big eared bats within the analysis area is probable.

3.4.3.3 Pygmy Rabbit

Pygmy rabbits generally occur in sagebrush habitats with dense structure, high canopy cover and deep soils. Sagebrush is the primary food source, but grasses and forbs are eaten in mid-late summer (USDA-FS 2003b p. D-155). The vast majority of Pygmy rabbit observations in Southeast Idaho have occurred off-Forest, and habitat for Pygmy rabbits within the analysis is inherently limited due to the forested habitat and relatively steep topographies. There are no documented observations of Pygmy Rabbits within or near the analysis area (IFWIS 2017). Since there is No Presence of Pygmy Rabbits or their habitat within the analysis area, there will be *No Impact* to this species under any alternative. Since there will be no impacts to Pygmy rabbits, there will be no Cumulative effects. This species will not be discussed further.

3.4.3.4 Gray Wolf-

Gray wolves were removed from the Endangered Species list on May 11, 2011 (USFWS 2011). There are no known established packs within or adjacent to the analysis area. Known established packs are located approximately 50 miles north of the analysis area, and include the Pine Creek pack in Idaho and the Horse Creek pack to the Northeast in Wyoming. (USFWS et al. 2015 Wolf Report Figure 3 and Tables 2a and 3c, and IFWIS 2017). Given the suitable habitat occurring within the analysis area, the relative adjacency of nearby established packs, and reported observations of individual wolves throughout the Soda Springs Ranger District, continued presence of individual wolves intermittently within the analysis area is probable.

3.4.3.5 Trumpeter Swan –

Suitable nesting habitat for Trumpeter swans includes marshes, lakes, beaver ponds, and oxbows and backwaters of rivers. They prefer quiet, shallow water with dense aquatic plant and invertebrate growth, with tall emergent vegetation being important to provide cover for both adults and broods (USDA-FS 2003b p. D-114). Known nesting habitat in SE Idaho includes Palisades Reservoir, Salt River, Grays Lake, and Bear Lake NWR, along the length of the Bear River, (including Alexander Reservoir), and along the Snake River (Groves et al. 1997 p. 52) (USFWS 2012). In SE Idaho the vast majority of documented Trumpeter swan observations have occurred adjacent to these larger rivers and reservoirs. There are no documented occurrences within the analysis area (IFWIS 2017). The analysis area occurs in higher gradient terrain with small higher gradient streams, (lacking marshes, lakes, and large rivers) and therefore no suitable habitat for trumpeter swans is expected to occur within the analysis area. Since there is no presence of Trumpeter swans within the analysis area due to a lack of suitable habitat, *No Impacts* will occur under any alternative. Since there will be no impacts to Trumpeter swans, there will be no Cumulative effects. This species will not be discussed further.

3.4.3.6 Harlequin duck

Suitable habitat for Harlequin ducks includes relatively undisturbed, low gradient ($< 3^\circ$), mountain streams with dense shrubby riparian areas & woody debris for nesting. The only area on the Caribou National Forest (CNF) that has been identified as potentially

providing habitat for Harlequin ducks is the McCoy Creek area, south and west of the Palisade reservoir. Outside of this area, the presence of Harlequin Duck on the CNF is considered to be highly unlikely (USDA-FS 2003b p. D-115). In the analysis area, which is well south of the McCoy Creek area, water bodies generally consist of small relatively high gradient streams and therefore lack the water depth and area to provide suitable Harlequin duck habitat. No Harlequin ducks have been observed within or adjacent to the analysis area (IFWIS 2017). Since there is no presence of Harlequin duck within the analysis area due to a lack of suitable habitat, there will be no impact to this species under any alternative. Since there will be no impacts to Harlequin ducks, there will be no cumulative effects. This species will not be discussed further.

3.4.3.7 Peregrine Falcon

Peregrine falcons are typically found in open country near rivers, marshes and lakes. Foraging habitat includes wetlands and riparian habitats; meadows and parklands; croplands; gorges and mountain valleys; and lakes which support good populations of small to medium terrestrial birds, shorebirds, and waterfowl. Cliffs are preferred nesting sites, but other tall manmade structures, such as towers and high rise buildings may be used as well (USDA-FS 2003b p. 3-216).

Peregrine falcons are known to occur within and adjacent to the Caribou National Forest (near Grays Lake, Grays Ridge, Soda Springs, and Last Chance Canal (Moulton 2008, 2008b; USDA-FS 2003b p. D-101)). However, there are no known eyries in the analysis area, and no identified potential nesting habitat (USDA-FS 200b p. D-101), within the analysis area. There are no documented occurrences within the analysis area, (IFWIS 2017) but one was potentially observed flying over the analysis area during Goshawk surveys (Field Notes, project record). While there is a lack of potential nesting habitat, there is foraging habitat within the analysis area. Peregrines may occur there intermittently during foraging activities. Presence of Peregrine Falcons within the analysis is probable.

3.4.3.8 Bald Eagle

While Bald eagles may be found in a variety of habitats they are found primarily near larger bodies of water including rivers, reservoirs and lakes (Groves et al 1997). On and adjacent to the CNF, nesting habitat is associated with rivers, lakes, and reservoirs, while wintering habitat is comprised mainly of major rivers and large lakes (USDA-FS 2003b p. D-91), none of which occurs within the analysis area. There are no known (or expected) bald eagle nests located in or near the analysis area, (IFWIS 2017). There are no documented occurrences of bald eagles within the analysis area (IFWIS 2017).

However, similar to Peregrine Falcon described above, while there is a lack of potential nesting habitat, and no documented observations, there is foraging habitat for Bald eagles within the analysis area and, they are expected to occur within the analysis area at least intermittently during foraging activities. Presence of Bald eagles within the analysis area is probable, expected to be limited to relatively short term presence occurring during foraging or flights through/over the analysis area.

3.4.3.9 Northern Goshawk

Suitable nesting (mature/late seral forested habitat with high canopy closure and open understories) and foraging (forest in all forest structure stages) habitat occurs throughout the analysis area. Mapping of capable/suitable habitat for northern goshawk was completed in 2012 (Colt and Green 2012), that effort indicates that, goshawk habitat occurs across all portions of the analysis area (important to note that that analysis was tiered to livestock grazing, but is generally useful in describing/displaying Goshawk habitat at the forest scale). Forest-wide monitoring indicates that population trends, at the forest scale are stable across the Caribou NF (USDA-FS 2016b).

Extensive surveys of the analysis area in the summers of 2017 and 2018 found no Goshawk nests within the analysis area (Goshawk survey notes –project record). However, there are multiple historic nests just to the north of the analysis area, associated with the Trail Creek/Wood Canyon Territory. The Trail Creek /Wood Canyon territory has been surveyed regularly since approximately 2004, and was active or occupied in 2004, 2006 through 2012, and 2015. Most recently, the territory was surveyed in 2017, but was not active or occupied (Green, 2018b).

Management of Goshawk territories is based on areas surrounding active and historical nest locations, Standards and Guidelines associated with the Nest Areas, Post-Fledging Family Areas, and Foraging Areas are described on p. 3-30 of the Forest Plan (USDA-FS 2003). The analysis area is sufficiently separated from the nest locations that there is no overlap with any nest area. However, a small portion of the analysis area overlaps Post-Fledging Family Areas, and most of the northern portion of the analysis area falls within foraging habitat.

Given the presence of the Trail Creek/Wood Canyon to the north and the suitable foraging habitat presence of Northern Goshawks within the analysis area is known. Presence is expected to be limited to foraging based on known nest locations and surveys throughout the project area finding no additional nest locations.

3.4.3.10 Columbian sharp-tailed grouse

Columbian sharp-tailed grouse are described as habitat generalists, and they generally inhabit a mosaic of agricultural and rangeland communities in the 12-20 inch precipitation zone (IDFG 2015 p. 6). While some of the lower elevation areas along boundary of the analysis areas may be suitable wintering habitat, overall the relatively high elevation forested mountainous terrain within the analysis area has little potential to serve as habitat for Columbian sharp-tailed grouse. This is supported by IFWIS occurrence data which shows several documented observations in the lower elevation valleys outside of the analysis area, but no observations of sharp-tails within the analysis area. The nearest sharp-tailed grouse leks (IFWIS 2017) are approximately 3 miles from the boundary of the analysis area, and over three miles from the nearest area where vegetation management activities are proposed. These lek locations are beyond the 2 mile buffer of active leks where habitat suitability should be given further consideration, as described in the Forest Plan (p. 3-32), and thus that guideline is not applicable to this project. The vegetation management activities are not expected to impact the small

amount of potential wintering habitat in the lower elevation areas of the analysis area, as the majority of proposed treatment units are centered in the analysis area, thus not impacting the potential wintering habitat.

Given that habitat overall within the analysis area is generally unsuitable and there is no documented presence within the analysis area, presence within the analysis area is not expected (with no Presence expected where vegetation management activities will occur). Therefore, there will be *No Impact* to Columbian sharp-tailed grouse under any alternative. Since there will be no impacts to Columbian sharp-tailed grouse, there will be no cumulative effects. This species will not be discussed further.

3.4.3.11 Greater Sage-Grouse

Significant efforts to ensure the conservation of sage-grouse and their habitats have been occurring over the past several years, these efforts resulted in two substantial events: the signing of the “Greater-Sage Grouse Record of Decision (ROD) for Idaho and Southwest Montana, Nevada and Utah and Land Management Plan Amendments . . .” (USDA-FS 2015), and the finding by the U.S. Fish and Wildlife Service that the listing of the Greater sage-grouse under the Endangered Species Act was “Not Warranted” (USFWS 2015a). As part of these efforts, important habitat across the range of sage grouse was mapped and identified as Priority Habitat Management Areas (PHMAs), General Habitat Management Areas (GHMAs), Important Habitat Management Areas (IHMAs), or sagebrush focal areas (USDA-FS 2015). There are no GHMA’s, PHMA’s, IHMA’s, or sagebrush focal areas overlapping the analysis area or documented observations of sage grouse within the analysis area (IFIWS 2017). Nearest GHMA is delineated just to the North and East of the analysis area (See sage grouse GHMA map, project record), and there is one occupied lek within this area of GHMA, in the Trail Creek area approximately 4.5 miles north of the analysis area. While habitat and observations of sage grouse have occurred in the GHMA to the north of the analysis area (in the wider open sagebrush valleys), the analysis area itself is relatively steep and forested, and thus suitable habitats are lacking within the analysis area (which is why it wasn’t included in the GHMA).

Therefore, presence of Sage Grouse within the analysis area is Not Expected and there will be *No Impact* to Sage Grouse or its habitat under any alternative and this species will not be discussed further. Since there will be no impacts to Greater Sage-grouse, there will be no cumulative effects.

3.4.3.12 Great Gray Owl

Great Gray Owls forage primarily on voles, pocket gophers, and other small mammals throughout the year, utilizing mixed coniferous forests usually bordering small openings or meadows (USDA-FS 2003b p. D-111). While no observations of Great Gray owls have occurred within the analysis area (IFWIS 2017), and no Great Gray Owls were heard during project level surveys (Green, 2018b), areas of suitable habitat exist within the analysis area and they have been documented on adjacent areas of the Soda Springs Ranger District. Great Gray Owl presence within the analysis area is probable.

3.4.3.13 Flammulated Owl

Flammulated Owls are almost exclusively insectivorous, and are found in a variety of forest types. Project level surveys for Flammulated Owls heard one owl calling within the analysis area, but follow up surveys were unable to locate any potential nests (Green, 2018b). Suitable habitat occurs in the analysis area and they have been documented in other areas of the Caribou NF. Flammulated Owl presence within the analysis area is probable.

3.4.3.14 Boreal Owl

While no boreal owls were heard during project level surveys (Green, 2018b) there is one documented observations of a boreal owl within the analysis area (IFWIS 2017). Overall, suitable habitat (mature Douglas-fir, mixed conifer, spruce-fir and aspen forests) occurs within the analysis area and they have been documented in other areas of the Caribou NF. Boreal Owl presence within the analysis area is probable.

3.4.3.15 Three-toed Woodpecker

Suitable habitat (snags) occurs within the analysis area. Three-toed woodpeckers forage primarily on wood-boring insect larvae, but will also eat moth larvae, spiders, berries and cambium. These woodpeckers primarily excavate cavities in standing trees or snags, but will nest in a variety of habitats including riparian willows (USDA-FS 2003b p. D-117). Large scale wildfires and insect epidemics are of particular benefit to three-toed woodpeckers, providing important habitat components (snags for nesting and insects for foraging). There are no documented observations of Three-toed woodpeckers within the analysis area (IFWIS 2017), and none were observed in the analysis area, however, Three-toed woodpecker presence within the analysis area is probable.

3.4.3.16 Columbia Spotted Frog

This frog is not expected to occur in southeast Idaho (USDA 2003b p. D-134). There are no documented observations of this species in Southeast Idaho (IFWIS 2017). Given the analysis area is outside the known range of this species, there will be No Impact to the Columbia spotted frog under any alternative. Since there will be *No Impact* to this species there will be no Cumulative effects. This species will not be discussed further.

3.4.3.17 Boreal (Western) Toad

On the Caribou National Forest, Boreal Toads are only known to occur in the Tincup, McCoy Creek, and Deer Creek drainages, all well outside of the Analysis area. There are no documented observations of Boreal Toads in or near the analysis area (IFWIS 2017). Since Boreal toad presence within the analysis area is not expected, there will be *No Impacts* to Boreal toads under any alternative. Since there will be no impacts to Boreal toads, there will be no Cumulative effects. This species will not be discussed further.

3.4.4 Other Species of Local Concern

3.4.4.1 Migratory Birds

Riparian areas, non-riverine wetlands, sagebrush and aspen woodlands are “priority A” habitats and conifer forested habitats/mountain shrubs are “Priority B and C” habitats (IWJV 2005), all important for nesting migratory landbirds. The Idaho Bird Conservation Plan (ID PIF Bird Conservation Plan 2000) identified Riparian, non-riverine wetlands, sagebrush shrublands, and Dry Ponderosa Pine/Douglas-fir/Grand Fir forests as the highest priority habitats for birds in Idaho (Note that only Douglas-fir occurs in the analysis area). Important Bird Areas (IBA’s) are sites that provide essential nesting, migration, or wintering habitat for birds (IBT 2016). No IBA’s occur within the analysis area. Overall, Executive Order #13186 and the Memorandum of Understanding (MOU) between the Forest Service and the US Fish and Wildlife (USDA-FS and USFWS 2008), along with the Forest Plan, guide the management of migratory bird habitat on land managed by the Forest Service.

3.4.4.2 Big Game

The analysis area contains important spring, summer and transitional habitat for mule deer, elk, and moose (*collectively referred to as Big Game*). Lower elevations, particularly along the western edge of the analysis area are expected to be used in the winter. Fawning and calving areas, while locations not specifically known, are also expected to occur at lower to mid elevations of the analysis area. Of particular importance are aspen stands and riparian areas, these areas are used heavily for foraging and reproductive activities (including parturition) and are present throughout the analysis area. Analysis area specific information for big game is presented below:

Mule Deer- The John Wood Forest Management Project occurs within Game Management Unit (GMU) 76, Unit 76 occurs within the “Caribou Population Management Unit (PMU) (as described in the Mule Deer Management Plan p. 62-63). The Caribou PMU is a large area encompassing 3,875 square miles and also includes GMUs 66, 66A, and 69. While specific numbers are not given (either for existing deer populations or deer population goals), the short and long term objective for deer populations in this PMU are “increase” (IDFG 2008 p. 62-63). Since the goal is to increase deer populations, this is interpreted herein as the same as “not meeting objectives.” While the analysis area certainly provides important habitat for deer in this PMU, it is also important to note that the analysis area used herein amounts to approximately 0.2% of the area in the Caribou PMU. Therefore, a wide variety of factors, on both public and private land, impact deer populations in this PMU.

Elk – The analysis area for the John Wood Forest Management project occurs within Game Management Unit (GMU) 76, GMU 76 combined with GMU 66A make up the “Diamond Creek Zone”. The Diamond Creek Zone is a large area encompassing 1,659 square miles, (IDF&G 2014). Population Objectives for elk are being met within this zone (IDFG 2018). Similar to Mule Deer, while the analysis area certainly provides important habitat for elk in this zone, it is also

important to note that the analysis area used herein amounts to approximately 0.5% of the area in the Diamond Creek Zone. Therefore, a wide variety of factors, on both public and private land, impact elk populations in this zone.

Moose – The analysis area occurs within Unit 76-1 for bull moose, and unit 76-4 for antlerless moose hunts. While moose numbers are not as closely monitored as deer and elk numbers, recent data indicated that moose populations have been in decline over the past ~16 years within units 66A and 76. This has resulted in a corresponding decrease in permitted harvest (IDFG 2018). Important to note that this decline is not specific to the analysis area, statewide, moose populations are decreasing in parts of the state while increasing in others.

For the purposes of this analysis, Big Game winter range areas are defined as prescriptions areas 2.7.1(d) and 2.7.2 (d), as described and drawn in the CNF Revised Forest Plan (USDA-FS 2003). The analysis area overlaps two areas of Forest Plan designated winter range (designated 2.7.1 Winter Range-Critical), both of the areas of overlap occur on the western edge of the analysis area (see Big Game winter range map-project record). The amount of winter range within the analysis area totals approximately 460 acres.

Big Game security areas are defined as an area of cover over 0.5 miles from an open motorized route and over 250 acres. These areas are important for limiting disturbance and hunting vulnerability to big game animals (but provide benefits to other animals as well). Because of the amount of roads and trails within the analysis area, there are no security areas within the analysis area. While a multitude of factors contribute to big game vulnerability during hunting seasons (including vegetation, topography, etc), given the road/motorized trail densities and the lack of security areas, big game vulnerability would be higher here than in an area with less motorized use.

Open Motorized Route Density (*OMRD*) “ceilings” were set for management areas in the Caribou Travel Plan Revision (USDA-FS 2005), and were intended to achieve a desired recreation setting while minimizing wildlife disturbance. OMRD includes all open roads and motorized trails in a prescription area polygon, and is expressed in mi/mi². Per the 2005 Travel Plan, the only prescription areas with OMRD limits that overlap the analysis area, are the 2.7.1(d)-Winter Range Critical prescription areas. Both of these prescription areas have an OMRD ceiling of 1.5 mi/mi², and are currently below their OMRD limit, both having an OMRD of 1.2 mi/mi². While the area lacks security areas as described above, it is important to note that the current OMRD of 1.2mi/mi2 is well below the threshold of 2.0/mi2. An OMRD cap of 2.0 mi/mi2 was used in the FEIS for the Forest Plan to describe areas where a primary resource consideration is big game, areas that remained beneficial for elk, and areas that maintain habitat effectiveness at or above 50% (USDA-FS 2003b p.D-30). Therefore, while no security areas exist, the current OMRD level of 1.2 mi/mi2 indicates the area still functions as effective habitat.

3.5 Hydrology

Analysis Methods: Field visits were conducted and observations made by walking all of the areas of concern (e.g. wetlands, drainages, proposed harvest units and haul routes). The purpose of these visits were to determine: (1) existing stream, wetland, and road conditions, (2) stream, wetland and watershed sensitivities, (3) potential project effects, and (4) discover opportunities for improving watershed condition and/or identify design features.

Additionally, the Forest's GIS system was used to calculate percent hydrologic disturbed area to assure compliance with the RFP guidelines. This process is described in more detail in the specialist report.

Analysis Area: The analysis area(s) for hydrologic disturbance consists of the Forest Service portions of two HUC-6 (Hydrologic Unit Code level 6) subbasins that cover the project area. These are Bailey Cr 160102010702, which is part of the Bear River/Great Basin system, and Johnson Cr 170402070204, which is part of the Slug Creek-Blackfoot-Snake-Columbia River system. The Forest Service portion of the Bailey Creek HUC-6 that is west of the Bear River is not included. The Johnson Creek subbasin portion of the project area is all within Johnson Creek. The analysis area for hydrological condition is the Aquatic Influence Zones (AIZ) within the project area.

3.5.1 Existing Condition

3.5.1.1 Hydrologic Disturbance

The Revised Forest Plan (RFP) sets a guideline that not more than 30 percent of any subwatershed (6th level HUC (Hydrologic Unit Code)) should be in a hydrologically disturbed condition at any one time. Hydrologic disturbance in the RFP is defined as: “*Changes in the natural canopy cover (vegetation removal) or change in surface soil characteristics (such as compaction) that may alter natural streamflow quantities and character*”. The two subwatersheds that cover the project were assessed and both had a calculated disturbance of less than 1.2%. Most of the acres of disturbance were the result of the transportation system (roads and trail). Almost all the past harvest in both HUCs was older than 20 years old and judged to be hydrologically recovered. **Table 3-12** below shows the Forest Service acres in each HUC and the acres currently disturbed. Both HUCs are well below the RFP guideline. Discussions in the RFP and associated EIS regarding hydrologic disturbance are incorporated by reference (USFSa&b, 2003).

Table 3-12 Hydrologic Disturbance. This table show the Forest Service acres of the watershed covered by the proposed action. It also shows the number of acres disturbed based on GIS data and what percent of the watershed that disturbance represents.

Hydrologic Unit Code level 6	Acres	Acres Disturbed	% Disturbance
Bailey Creek (160102010702)	5,444	59.1	1%
Johnson Creek (170402070204)	11,850	140.3	1.2%
Total	17,294	199.4	1.1%

3.5.1.2 Aquatic Influence Zones

The wetlands, perennial and intermittent stream channels within the project area were identified and the default AIZ widths were applied (see **Figure 3-12**). This effort identified 260 acres of AIZ within the project area, of which 255 acres is managed by the Forest Service (i.e. RFP AIZ prescription). Open motorized routes are the primary hydrologic concern in the AIZ's. Currently, there are 3.7 miles of road in identified AIZ's.

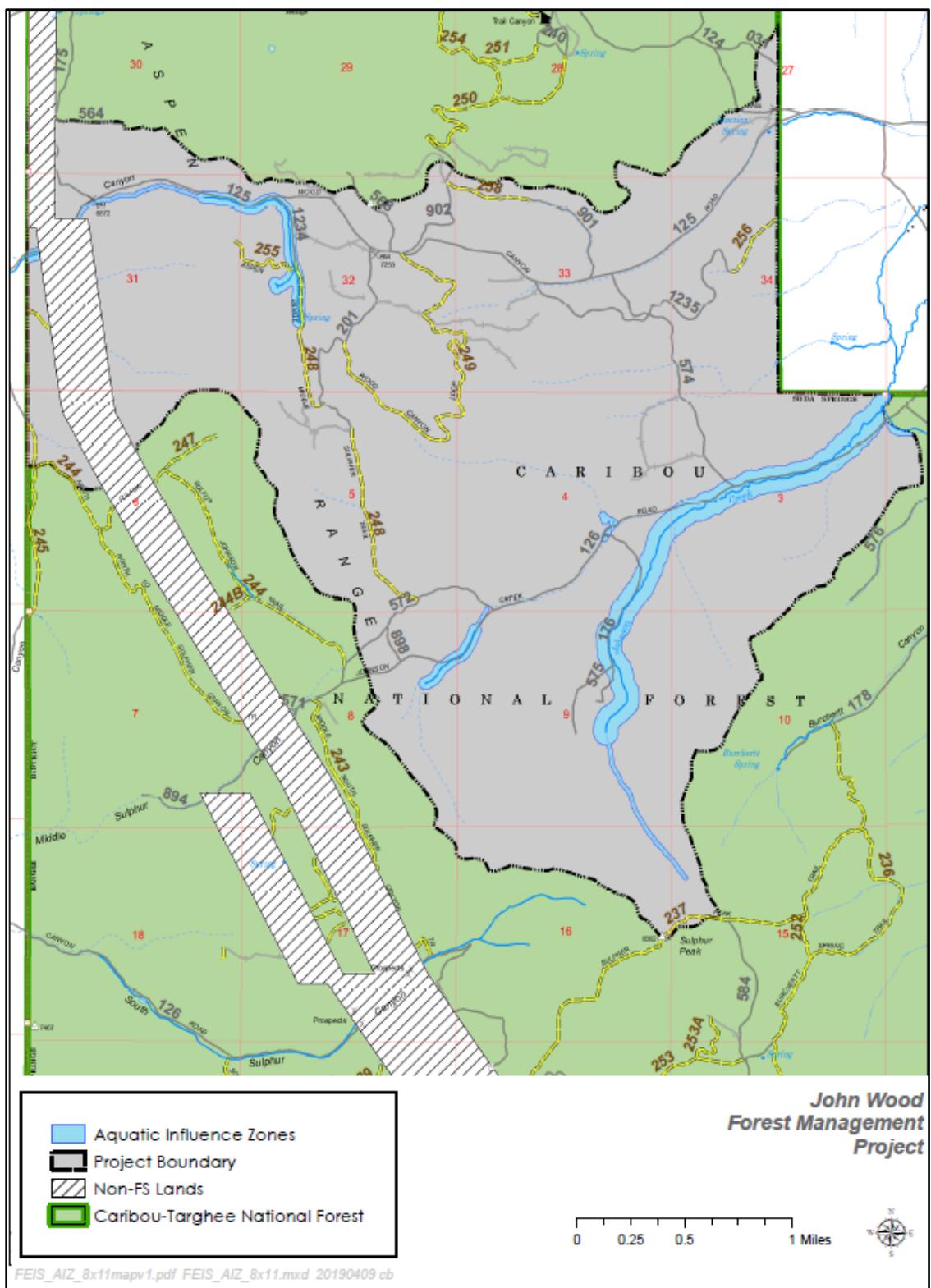
Another issue identified by the interdisciplinary team was the condition of the forest within the AIZ's. Conditions in the AIZ were similar to the upland forests, in that seral trees like aspen were being replaced as conifer density increases in the absence of disturbance. In the upper reaches of Wood Canyon near unit 13 and 14 this was very apparent (see **Figure 3-11**). Alpine fir is increasing and quaking aspen and willow are being lost in this area. Evidence found in this area suggests that historically aspen and willow dominated. Just as in the uplands, loss of these species is undesirable.

Table 3-13 Motorized Routes in AIZ's. This table breaks the AIZ in the project area down by the drainage they are located in.

Drainage	AIZ Acres	Miles of Open Motorized Routes
Wood Canyon	56	1.4
Johnson Creek	204	2.3
Total	260	3.7



Figure 3-12 Trail in Wood Canyon AIZ. This picture shows trail 248 between unit 13 and 14. Note the lack of understory vegetation and the alpine fir dominated overstory. Aspen is being lost in this area.



3.6 Soils

Analysis Methods: Forest Service Manual 2550, provides direction on methods to determine soil quality, both qualitative and quantitative methods were used for this assessment (USDA Forest Service, 2010).

Forest soil disturbance is described using published definitions, protocol and assumptions described in the specialist report. Coarse woody debris is assessed using protocol by Brown (1974) and compared to desirable values outlined in a Forest Plan guideline (USDA Forest Service, 2003a, p. 3-7).

Spatial & Temporal Context: The soil resources affected by this proposal are the proposed treatment units and the area affected by the road re-alignment, gravel source, and road decommissioning actions.

The temporal scope is assumed to be less than 100 years, with implementation of the proposals occurring over an approximate 10 year period. Short-term effects will be defined as 1-3 years after disturbance, which may occur throughout project implementation period. Longer-term effects may be more than 50 years.

3.6.1 Soil Resource

Different parts of the analysis area have different land use histories and the existing conditions are described separately. The timber harvest units have productive, high quality mountain soils with negligible soil disturbance in the units with no past ground-based management history. Similar existing conditions were documented in units that were thinned in the 1980's; faint, scattered evidence of soil disturbance. The units planned for timber stand improvement treatments were harvested between the mid 1960's and late 1980's. These units have more residual soil disturbances, primarily associated with pile burn scars and persistent compaction (of minor extent) from that past action, and about half of the coarse woody debris on the forest floor that the undisturbed units have (Green, (2018)).

The system roads that are proposed to be decommissioned and re-located exhibit moderate-severe erosion in segments, primarily due to road grades in excess of standard specifications and poor location on the landform concentrating water on the road (i.e. following swales on mountain slopes). The system road network in the area shows no indication of mass instability or landslide risk (Green, (2018), p. 3-4). Corridors proposed for new system roads and temporary roads have productive, high quality forest and rangeland soils with negligible disturbance. An old gravel source was identified during field survey near Road 201. It includes access roads that are closed but not reclaimed and an un-reclaimed area where it appears that a limestone knob was crushed and removed for road surface material. The best estimate is that this gravel source was developed in the 1960's. See **Table 3-14** for a tabular summary of the soil resource indicators for the existing condition.

Table 3-14 Resource indicators and measures for the existing soil resource condition.

Resource Element	Resource Indicator	Measure	Management History		Existing Condition	
				Acres	Class 2	Class 3
Soil Quality and Productivity	Forest Soil Disturbance	% soil disturbance by unit	Timber harvest- using ground-based equipment during the growing season	200	9% (+or- 8%)	<1% (+or- 1%)
			Thinning using ground-based equipment during the growing season	248	0%	0%
			No past timber management	352	0%	0%
Productive land base	Productive land dedicated to the travel system	Acres within the cumulative effects boundary	Includes system roads, motorized trails, and the gravel source.		56 acres	

Chapter 4 Environmental Consequences

Environmental effects that would occur relative to the implementation of any alternative presented in Chapter 2 are disclosed in this chapter. Unless specifically stated otherwise, additional information is contained in the project record. Environmental consequences are described in terms of direct, indirect, and/or cumulative effects. Direct effects are those that are caused by the action and occur at the same time and place. Indirect effects are those that are caused by the action and are later in time or further removed in distance, but are still reasonably foreseeable. Cumulative effects are those that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions.

Chapter Content	
4.1	Forested Vegetation 4-1
4.2	Timber Management 4-12
4.3	Transportation Management 4-14
4.4	Wildlife 4-16
4.5	Hydrology 4-25
4.6	Soils 4-30
4.7	Other Required Disclosures 4-32

For each resource, an indicator was selected by the appropriate specialist to measure the direct, indirect, and cumulative impact for each alternative. Only this indicator will be discussed in the section below.

4.1 **Forested Vegetation**

The disruption of the natural disturbance regime and succession are the two factors that have had the greatest effect on the current condition of forest vegetation within the project area and landscape. The effects of succession and the lack of a natural disturbance cycle have been building across the landscape since the settlement of the area (late 1800's). The ecology of this landscape evolved with a relatively frequent mixed severity fire regime (Barrett 1994), classified as fire regime group III (FRCC 2010) (see **Table 4-1**). Aspen and a host of other species evolved with this natural disturbance regime and depend on disturbance (usually fire) to sustain them in the landscape. Historically fires burned across the landscape every 30 to 65 years setting back succession, reducing density and creating openings where conditions were favorable for early succession plants to successfully regenerate.

Table 4-1. Fire regime groups and descriptions. Groups are classified based on severity to dominate overstory and mean fire interval (MFI), adapted from FRCC 2010.

Group	Frequency	Severity	Description
I	0 - 35 years	Low/mixed	Generally low-severity fires replacing less than 25% of the dominant overstory vegetation; can include mixed-severity fires that replace up to 75% of the overstory
II	0 - 35 years	Replacement	High-severity fires replacing greater than 75% of the dominant overstory vegetation
III	35 – 200 years	Mixed/low	Generally mixed-severity; can also include low severity fires
IV	35 – 200 years	Replacement	High-severity fires
V	200+ years	any severity	Infrequent fire, generally replacement severity; can include any severity

The implications of fire exclusion for forests that evolved in fire regime group III are often more apparent at the landscape scale than the stand level. (Long, 2003) Without routine disturbance the landscape has become more homogeneous, there is a shortage of younger age-classes, seral plant species and openings in the canopy. As the forest has become more homogeneous the risk of uncharacteristic fire and insect events has increased. Without the heterogeneity that resulted from the natural fire regime the landscape is not as resistant or resilient to disturbance as it once was.

Aldo Leopold wrote, “To keep every cog and wheel is the first precaution of intelligent tinkering.” Fire was an important cog in this landscape, and without it the wheels are coming off the system. The purpose of this project is to start the process of restoring this ecosystem. The first order of business is to not lose any more parts. Without fire the early seral species assemblage are at risk. The homogeneity of the age-class structure and density is creating conditions where uncharacteristic disturbance events (intensity and scale) are possible. The system may not be resilient to uncharacteristic disturbances, but it is resilient when conditions are similar to those of a natural disturbance regime. There is a need to increase age-class diversity, increase early seral species like aspen and reduce density to create a more heterogeneous landscape. Doing these things will reduce the risk to the ecosystem and increase resilience to disturbance.

To assess the effect of the proposed restoration, Fire Regime Condition Class and age-class structure will be used as effect metrics for the landscape as a whole. Additionally, aspen health, Douglas-fir canopy cover, and Douglas-fir bark beetle risk are used to assess effects at the project scale. Acres treated are also used to reflect the effects of the action alternatives.

The effects of the alternatives on each indicator are based on observations of similar stands and treatments across the Forest and a basic understanding of forest ecology. This local knowledge was used to inform how treatments would shift stand attributes. The details of how this was done are described in more detail in the vegetation specialist report in the project record.

Alternative 2 treats the most acres and moves the landscape and project area closest to desired conditions. The 40 acres of broadcast burning is the primary difference between the proposed action and Alternative 2. The No-Action moves the area further away from desired conditions. The landscape remains well outside the desired balance of age-classes for all alternatives, but both action alternatives improve the balance. Both action alternatives reduce the acres where aspen is at risk and reduce conifer density. These two things combine to reduce the percent of the Douglas-fir acres that are at risk to bark beetle. With the No-Action alternative, aspen at risk will increase, and so will Douglas-fir density. This would result in an increased risk to Douglas-fir bark beetle.

The direct, indirect and cumulative effects of each alternative are presented in more detail below by alternative.

Table 4-2. Effects summary by alternative. This table shows the condition of each metric ten years after implementation for the action alternatives approximately 15 years in the future for the no action alternative. The numbers in the brackets show the effect of the alternative.

Resource Indicator	Measure	Existing Condition	Proposed Action	Alt. 2	No Action
Risk to uncharacteristic disturbance landscape	Fire Regime Condition Class	FRCC 2 56% departure	FRCC 2 54% departure (329 acres from CC 2 to CC1)	FRCC 2 53% departure (369 acres from CC 2 to CC1)	FRCC 2 57% departure (0 acres improved)
Age-class diversity	% mature/late seral % Young/mid % seedling/sapling	94% 3% 3%	93% (-1%) 4% (+1%) 3% (+1%)	93% (-1%) 4% (+1%) 3% (+1%)	94% (0%) 4% (+1%) 2% (-1%)
Aspen Health	Low risk RCC>50% High Risk RCC<50%	33% 67%	42% (+9%) 58% (-9%)	43% (+10%) 57% (-10%)	32% (-1%) 68% (+1%)
Douglas-fir forest type Canopy Cover	% Open CC (<40%) % Closed CC (>40%)	3% 97%	22% (+19%) 78% (-19%)	24% (+21%) 76% (-21%)	1% (-2%) 99% (+2%)
Risk to Douglas-fir bark beetle	% at high risk % at moderate risk % at low risk	45% 51% 4%	38% (-7%) 56% (+5%) 6% (+2%)	36% (-9%) 58% (+7%) 6% (+2%)	46% (+1%) 51% (-1%) 4% (0%)
Fuels Treated	Acres Treated		(+797)	(+847)	0
Forest Product	Volume (CCF)	N/A	(+5,248)	(+5,248)	0

4.1.1 Alternative 1- Proposed Action

1.1.1 Direct and Indirect Effects

The direct effects of the proposed **harvest (401 acres)** and **stand tending (396 acres)**, is that a **total of 797 acres** will have a reduced density of Douglas-fir and other conifer species. The proposed treatments will result in small patch openings as well as patches with varying densities and sizes across each treated stand. The cutting and harvest will result in the rearrangement and reduction of forest fuels.

The indirect effect of the reduced density is that growing space will be made available for the remaining conifer and aspen, which will increase growth and vigor. The created openings will result in the development of a new cohort, or age-class, of trees on the site, mostly aspen. The openings will also insure that other early seral, sun loving species are maintained. The combination of reduced density, increased vigor, and the increased species diversity will also have the indirect effect of reducing Douglas-fir bark beetle risk. Another indirect effect of the change in composition and arrangement of fuels will be a reduction of the risk of an uncharacteristic fire disturbance.

The combined direct and indirect effects of the proposed activities will increase the resilience of the project area and the landscape to future disturbance. They will move the forest toward the Revised Forest Plan (RFP) desired future conditions (DFC). The proposed treatments and their effects are compliant with RFP standards and guidelines related to management of forest vegetation. The resource indicators selected to display the effects are summarized in **Table 4-3** and described in some detail in the paragraphs below.

Table 4-3. Resource indicators and measures for alternative 1 (The Proposed Action) are shown in the below table. The predicted condition that will result from the proposed action for the measure is shown and the effect (direct/indirect) is shown in brackets.

Resource Element	Resource Indicator	Measure	Alternative 1 Condition (Effect)
Landscape Fire Regime Condition Class	Risk to uncharacteristic disturbance	Fire Regime Condition Class	FRCC 2 54% departure (-2%) (329 Acres from FRCC 2 to FRCC 1)
Age-class diversity	Forest Structure Stage	% late seral/ mature % Young/mid % seedling/sapling	% late seral/ mature: 93% (-1%) % Young/mid: 4% % seedling/sapling: 3% (+1%)
Species Composition	Aspen Health	% Low Risk % High Risk	% Low Risk = aspen >50% RCC= 42% (+9%) % High Risk = aspen <50% RCC= 58% (-9%)
Conifer Density	Douglas-fir Canopy Cover	% Open % Closed	% Open =CC<40% = 22% (+19%) % Closed =CC>40% = 78% (-19%)
Forest Health	Risk to Douglas-fir bark beetle	% of Project area at high, moderate and low risk to DFBB	% at high risk 38% (-7%) % at moderate risk 56% (+5%) % at low risk 6% (+2%)
Fuels	Fuels Treated	Acres	(797 acres)
Forest Product	Volume	CCF (hundred cubic feet)	(5,248 CCF)

CC= canopy Cover, RCC= Relative Canopy Cover, CCF=hundred cubic feet

4.1.1.1.A Fire Regime Condition Class

The proposed treatments do not lower the fire regime condition class (FRCC) for the landscape as a whole. It remains a 2, however, it does reduce the percent departure of the landscape from 56% to 54%, a 2% improvement. The proposed treatments moves 329 acres from condition class 2 to a condition class of 1 at the stand scale.

4.1.1.1.B Age-class Diversity

The proposed action alternative would result in a slight increase in landscape scale age class diversity. The proposed treatments would **move approximately 1% of the forested acres out of the mature/late seral group into the seedling/sapling group.** This is a small shift but does move the landscape closer to the desired future conditions (DFC) outlined in the RFP. The aspen/conifer and Douglas-fir cover types where the harvest treatments were focused would experience a greater shift than the landscape as a whole. The small openings created as part of the selection harvest provide open areas for a new age-class (cohort) to become established.

Succession would continue in the untreated, mature, and late seral stands, moving them closer to old-growth conditions as well as increasing risk to uncharacteristic disturbance. Some of the existing sapling forest structure stage (FSS) stands and patches would grow enough to move into the young FSS. The design feature of retaining all relicts (trees that survived the last major fire disturbance) in combination with reducing Douglas-fir bark beetle risk will help to maintain large old-growth trees in the landscape. The combination of natural succession and management activities would create a landscape that is more structurally diverse and closer to desired future condition, although it would still be a long way from the desired future condition (DFC).

4.1.1.1.C Aspen Health

The reduction in density and the openings created will result in a flush of new growth by seral species such as aspen. This is an indirect effect of the proposed treatments. The desired future condition is to have less than half the stand acres at high risk. High risk is defined as stands with aspen as a component that have more than 50% relative conifer canopy cover. Currently 67% of the stand acres with aspen as a component are at high risk (>50% relative conifer cover), the proposed action will reduce the acres at risk to 58%, a **9% reduction in acres at high risk.**

Based on past experience there is a high probability that openings created in stands would be fully stocked in five years and be sapling size within fifteen years (i.e. there is a low probability of regeneration failure). Experience has shown that wildlife and domestic ungulate browsing is not a significant problem on this area of the forest. Design features allow for resting the units as needed to ensure regeneration success.

4.1.1.1.D Conifer Canopy Cover

The proposed treatments (harvest and tending) would directly reduce density of Douglas-fir and other conifer species in the units treated. The LANDFIRE reference model for Douglas-fir types in this area sets a reference condition of 10 to 40% of the acres being in the closed canopy class (>40% canopy cover), currently the project area is at 97% closed canopy. The proposed action would reduce this metric to 78%. It **moves approximately 19% of the acres from closed to open canopy cover class**, moving the area closer to desired conditions. Most of this shift is a result of the harvest but a few stands that were just over the 40% threshold will drop to the open class as a result of the tending treatments.

4.1.1.1.E Douglas-fir Bark Beetle Risk

The reduction in density and the increase in aspen will result in a decreased risk to Douglas-fir bark beetle. The proposed treatments would increase the average diameter of Douglas-fir by leaving the largest and oldest Douglas-fir. However, the reduction in density will increase the vigor and reduce the stress of the trees that remain. The proposed action will also decrease the relative portion of Douglas-fir in the stand and increase the portion in aspen, further reducing risk. These two factors cause an increase in vigor and a shift in species composition which results in a decrease in risk to large scale beetle attacks. Because of the age and size of the trees that will remain in the stands, Douglas-fir beetle will continue to play its natural role in killing a few trees a year, but the risk of an epidemic is reduced.

4.1.1.1.F Fuels Treated

The combination of the proposed harvest and stand tending treatments would reduce and/or rearrange fuels on 797 acres and improve growth, yield, and sustainability, all while restoring forested ecosystem processes and functions to more closely resemble historical conditions and promoting long-term resilience.

4.1.1.2 Cumulative Effects (Proposed Action)

The RFP set the goal of maintaining a balance of age and size classes in each forest type on a watershed or landscape scale because it is a good indicator of overall forest condition. The Forest developed vegetation management units (VMU) to track the desired landscape conditions outlined in the RFP. In a recent assessment of age-class structure the Forest found that regardless of the assessment scale used, (Forest, Subsections, HUC, VMU's or PWI (project work inventories)) there is a surplus of the mature/late seral forest structure stage across the Forest. (Beck, 2016b)

VMU 58 was used as the landscape scale unit in the existing condition assessment and will also be used for the cumulative effects assessment area. A larger analysis area would not change the effects as indicated in the Forest wide assessment, because the proposed action only shifts 1% of the forested acres into a new age class in the VMU. The consistent surplus of mature/late seral class across the Forest means the Forest will not approach the 20% mature/late seral RFP standard, because the direct effects are small, regardless of the cumulative effects boundary chosen.

There are no other proposed or planned actions that will affect forested vegetation in the foreseeable future in VMU 58 (or affected HUCs). The past actions in VMU 58 were accounted for in the existing condition described in chapter three. The direct and indirect effects of this proposed action have been added to existing condition. Because there are no other foreseeable actions there are no cumulative effects to add to direct and indirect effects.

In unmanaged stands, natural succession will continue to increase stand age, increase density, increase risk to uncharacteristic disturbance (fire and insects) and early seral species will continue to be outcompeted by late seral species. The RFP allowed for managing wildfires to improve forest condition, but most of this landscape is in RFP

prescription 5.2 which does not allow managed fires, so it is not anticipated that managed fire will increase age-class diversity. Because of the homogeneity of the landscape wildfire under extreme weather that cannot be suppressed may create major undesirable shifts in age-class diversity.

4.1.1.3 Irretrievable/Irreversible Effects

There are no irreversible effects to forest vegetation that are associated with this alternative. There is a minor irretrievable loss of forest vegetation benefits associated with construction of roads and landings. The production of acres affected by these features is lost until they recover. This is a minor irretrievable commitment but not irreversible. The landings and temp roads will be a very short term loss, the relocated roads that are primarily in non-forest areas will be lost until the road is not needed.

4.1.2 Alternative 2 (Increased Restoration Alternative)

4.1.2.1 Direct and Indirect Effects

The direct effects of the proposed **harvest (401 acres), stand tending (406 acres), and broadcast burning (40 acres)** is that a **total of 847 acres**, will have a reduced density of Douglas-fir and other conifer species. The proposed treatments will result in small patch openings as well as patches with varying densities and sizes across each treated stand. The cutting, harvest, and burning will result in the rearrangement and reduction in forest fuels. The other direct effect is that forest products will be provided to support the local economy.

The indirect effect of the reduced density is that growing space will be made available for the remaining conifer and aspen, which will increase growth and vigor. The created openings will result in the development of a new cohort or age-class of trees on the site, mostly aspen. The openings will also insure that other early seral, sun loving species, are maintained. The combination of reduced density, increased vigor, and increased species diversity will also have the indirect effect of reducing Douglas-fir bark beetle risk. Another indirect effect of the change in composition and arrangement of fuels will be a reduction of the risk of an uncharacteristic fire disturbance.

The combined direct and indirect effects of the proposed activities will increase the resilience of the project area and the landscape to future disturbance. They will move the forest toward the Revised Forest Plan (RFP) desired future conditions (DFC). The proposed treatments and their effects are compliant with RFP standards and guidelines related to management of forest vegetation. The resource indicators selected to display the effects are summarized in **Table 4-4** and described in some detail in the paragraphs below.

Table 4-4. Resource indicators and measures for alternative 2 are shown in the below table. The predicted condition that will result from the proposed action for the measure is shown and the effect (direct/indirect) is shown in brackets.

Resource Element	Resource Indicator	Measure	Alternative 2 Condition (Effect)
Landscape Fire Regime Condition Class	Risk to uncharacteristic disturbance	Fire Regime Condition Class	FRCC 2 53% departure (-3%) (369 Acres from FRCC 2 to FRCC 1)
Age-class diversity	Forest Structure Stage	% late seral/ mature % Young/mid % seedling/sapling	% late seral/ mature: 93% (-1%) % Young/mid: 4% % seedling/sapling: 3% (+1%)
Species Composition	Aspen Health	% Low Risk % High Risk	% Low Risk = aspen >50% RCC= 43% (+10%) % High Risk = aspen <50% RCC= 57% (-10%)
Conifer Density	Douglas-fir Canopy Cover	% Open % Closed	% Open =CC<40% = 24% (+21%) % Closed =CC>40% = 76% (-21%)
Forest Health	Risk to Douglas-fir bark beetle	% of Project area at high, moderate and low risk to DFBB	% at high risk 36% (-9%) % at moderate risk 58% (+7%) % at low risk 6% (+2%)
Fuels	Fuels Treated	Acres	(847 acres)
Forest Product	Volume	CCF (hundred cubic feet)	(5,248 CCF)

CC= canopy Cover, RCC= Relative Canopy Cover, CCF=hundred cubic feet

4.1.2.1.A Fire Regime Condition Class

The treatments proposed in this alternative do not lower the fire regime condition class (FRCC) for the landscape as a whole, it remains a 2. However it does reduce the percent departure of the landscape from 56% to 53%, a 3% improvement. The proposed treatments move 369 acres from condition class 2 to a condition class of 1 at the stand scale.

4.1.2.1.B Age-class Diversity

The treatments proposed in this alternative would result in a slight increase in landscape scale age class diversity. The proposed treatments would **move approximately 1% of the forested acres out of the mature/late seral group into the seedling/sapling group.**

This is a small shift but does move the landscape closer to the desired future conditions (DFC) outlined in the RFP. It creates about 10 more acres of the seedling/sapling stage than the proposed action but results in the same percent change. The aspen/conifer and Douglas-fir cover types that the treatments target would experience greater shifts than the landscape as a whole. The small openings created as part of the selection harvest and broadcast burn provide open areas for a new age-class (cohort) to become established.

Succession would continue in the untreated mature and late seral stands moving them closer to old-growth conditions as well as increasing risk to uncharacteristic disturbance. Some of the existing sapling forest structure stage (FSS) stands and patches would grow enough to move into the young FSS. The design feature of retaining all relics (trees that survived the last major fire disturbance) in combination with reducing Douglas-fir bark beetle risk will help to maintain large old-growth trees in the landscape. The combination of natural succession and management activities would create a landscape that is more structurally diverse and closer to desired future condition, although it would still be a long way from the desired future condition (DFC).

4.1.2.1.C Aspen Health

The reduction in density and the openings created as a result of this alternative will result in a flush of new growth by seral species such as aspen. This is an indirect effect of the proposed treatments. The desired future condition is to have less than half the stand acres at high risk. High risk is defined as stands with aspen as a component that have more than 50% relative conifer canopy cover. Currently 67% of the stand acres with aspen as a component are at high risk (>50% relative conifer cover), the proposed action will reduce the acres at risk to 57%, a **10% reduction in acres at high risk**.

Based on past experience there is a high probability that openings created in stands would be fully stocked in five years and be sapling size within fifteen years (i.e. there is a low probability of regeneration failure). Experience has shown that wildlife and domestic ungulate browsing is not a significant problem on this area of the forest. Design features allow for resting the area as need to ensure regeneration success.

4.1.2.1.D Conifer Canopy Cover

The proposed treatments (harvest, tending and broadcast burning) would directly reduce density of Douglas-fir and other conifer species in the units treated. The LANDFIRE reference model for Douglas-fir types in this area sets a reference condition of 10 to 40% of the acres being in the closed canopy class (>40% canopy cover), currently the project area is at 97% closed canopy. The proposed action would reduce this metric to 76%. It **moves approximately 21% of the acres from closed to open canopy cover class**, moving the area closer to desired conditions. Most of this shift is a result of the harvest and burn, but a few stands that were just over the 40% threshold will drop to the open class as a result of the tending treatments.

4.1.2.1.E Douglas-fir Bark Beetle Risk

The reduction in density and the increase in aspen will result in a decreased risk to Douglas-fir bark beetle. The treatments proposed in this alternative would slightly increase the average diameter of Douglas-fir by leaving the largest and oldest Douglas-fir. However, the reduction in density will increase the vigor and reduce the stress of the trees that remain. The treatments proposed will also decrease the relative portion of Douglas-fir in the stands and increase the portion in aspen, further reducing risk. These two factors cause an increase in vigor and a shift in species composition which results in a decrease in risk to large scale beetle attacks. Because of the age and size of the trees that will remain in the stands, Douglas-fir beetle will continue to play its natural role in killing a few trees a year, but the risk of an epidemic is reduced.

4.1.2.1.F Fuels Treated

The combination of the harvest, stand tending, and broadcast burning treatments proposed would reduce and or rearrange fuels on 847 acres and improve growth, yield, and sustainability, all while restoring forested ecosystem processes and functions to more closely resemble historical conditions and promoting long-term resilience.

4.1.2.2 Cumulative Effects (Increased Restoration Alternative)

The RFP set the goal of maintaining a balance of age and size classes in each forest type on a watershed or landscape scale because it is a good indicator of overall forest condition. The Forest developed vegetation management units (VMU) to track the desired landscape conditions outlined in the RFP. In a recent assessment of age-class structure of the Forest found that regardless of the assessment scale used (Forest, Subsections, HUC, VMU's or PWI (project work inventories)) there is a surplus of the mature/late seral forest structure stage across the Forest. (Beck, 2016b)

VMU 58 was used as the landscape scale unit in the existing condition assessment and will also be used for the cumulative effects assessment area. A larger analysis area would not change the effects as indicated in the Forest wide assessment, because the proposed action only shifts 1% of the forested acres into a new age class in the VMU. The consistent surplus of mature/late seral class across the Forest means the Forest will not approach the 20% mature/late seral RFP standard, because the direct effects are small, regardless of the cumulative effects boundary chosen.

There are no other proposed or planned actions that will affect forested vegetation in the foreseeable future in VMU 58 (or affected HUCs). The past actions in VMU 58 were accounted for in the existing condition described in chapter three. The direct and indirect effects of the treatments proposed in this alternative have been added to existing condition. Because there are no other foreseeable actions, there are no cumulative effects to add to direct and indirect effects.

In unmanaged stands, natural succession will continue to increase stand age, increase density, increase risk to uncharacteristic disturbance (fire and insects), and early seral species will continue to be outcompeted by late seral species. The RFP allowed for managing wildfires to improve forest condition but most of this landscape is in RFP prescription 5.2, which doesn't allow managed fires, so it is not anticipated that managed fire will increase age-class diversity. Because of the homogeneity of the landscape, wildfire under extreme weather that cannot be suppressed may create major undesirable shifts in age-class diversity.

4.1.2.3 Irretrievable/Irreversible Effects

There are no irreversible effects to forest vegetation that are associated with this alternative. There is a minor irretrievable loss of forest vegetation benefits associated with construction of roads and landings. The production of acres affected by these features is lost until they recover. This is a minor irretrievable commitment but not irreversible. The landings and temp roads will be a very short term loss, the relocated roads that are primarily in non-forest areas will be lost until the road is not needed.

4.1.3 No Action Alternative

4.1.3.1 Direct and Indirect Effects

Under the No-action alternative, none of the proposed activities described for the action alternatives would occur. Current uses, activities (grazing, recreation, weed treatment, firewood gathering, etc.) and processes (growth, succession, decomposition, insects, fire, etc.) would continue. There are no other proposed or planned actions that would affect forested vegetation in the foreseeable future in VMU 58 (or affected HUCs). The past actions in VMU 58 were accounted for in the existing condition described in chapter three. However, just because there is no action does not mean there is no effect.

Without action, none of the overarching needs would be met. There would be no increase in age-class diversity, no reduction of conifer density, and no improvement in species composition. Aspen will continue to be lost to succession. The resiliency of the ecosystem to future disturbances will continue to decrease as the risk continues to increase. There would be no commercial forest products produced. Growth and yield would be lost due to the high densities.

Without management, natural succession will continue to increase stand age, increase density, increase risk to uncharacteristic disturbance (fire and insects), and early seral species will continue to be outcompeted by late seral species. The RFP allowed for managing wildfires to improve forest condition but most of this landscape is in RFP prescription 5.2 which doesn't allow managed fires, so it is not anticipated that managed fire will increase age-class diversity. Because of the homogeneity of the landscape, wildfire under extreme weather that cannot be suppressed may create major undesirable shifts in age-class diversity.

Table 4-5. Resource indicators and measures for the No-Action alternative (alternative 3) are shown in the table below. The predicted condition that will result from no action for the measure are shown and the effect (direct/indirect) is shown in brackets.

Resource Element	Resource Indicator	Measure	Alternative 3 Condition (Effect)
Landscape Fire Regime Condition Class	Risk to uncharacteristic disturbance	Fire Regime Condition Class	FRCC 2 57% departure (+1%) (0 Acres from FRCC 2 to FRCC 1)
Age-class diversity	Forest Structure Stage	% late seral/ mature % Young/mid % seedling/sapling	% late seral/ mature: 94% (0%) % Young/mid: 4% (+1%) % seedling/sapling: 2% (-1%)
Species Composition	Aspen Health	% Low Risk % High Risk	% Low Risk = aspen >50% RCC= 32% (- 1%) % High Risk = aspen <50% RCC= 68% (+1%)
Conifer Density	Douglas-fir Canopy Cover	% Open % Closed	% Open =CC<40% = 1% (-2%) % Closed =CC>40% = 99% (+2%)
Forest Health	Risk to Douglas-fir bark beetle	% of Project area at high, moderate and low risk to DFBB	% at high risk 46% (+1%) % at moderate risk 50% (-1%) % at low risk 4% (0%)
Fuels	Fuels Treated	Acres	(0 acres)
Forest Product	Volume	CCF (hundred cubic feet)	(0 CCF)

4.1.3.2 Cumulative Effects

The cumulative effect of the no-action is that at the Forest scale there is no increase in age-class diversity. There are no acres where aspen is restored. Succession continues to push the project area and the landscape toward climax, increasing the risk of an uncharacteristic disturbance.

4.1.3.3 Irretrievable/Irreversible Effects

There is a risk that aspen could be lost on some acres within the project area in the next fifty years due to succession and the lack of disturbance. This would be an irreversible loss because when a clone of aspen is lost it cannot be replaced. Aspen reproduces primarily from root suckers, sexual reproduction is rare. Once a clone is lost the genetics of that clone are gone.

4.2 Timber Management

4.2.1 Alternative 1 & 2 (Action Alternatives)

4.2.1.1 Direct & Indirect Effects

The primary direct effect of both action alternatives is that timber would be harvested on approximately 328 acres of the 401 stand acres identified for commercial treatment. It is anticipated that the harvest would yield approximately 11- 20 CCF/acre (1/3 to 2/3 of the merchantable volume, estimated average of 16 CCF/acre) resulting in approximately 5,248 CCF (hundred cubic feet) of volume being offered. Of the 328 acres of harvest, approximately 4.9 acres are in the aquatic influence zones (AIZ). Harvest was proposed in the AIZ to improve the overall condition of the AIZ, reducing alpine fir to allow aspen to be maintained in the AIZ. The volume harvested out of the AIZ does not contribute to the allowable sale quantity identified in the RFP. It is estimated that less than 60 CCF would be harvested out of the AIZ. The sale would produce approximately 5,188 CCF or about 99% of the 5,200 CCF of the annual Allowable Sale Quantity (ASQ) outline in the RFP-EIS.

With both action alternatives the same volume would be harvested, however the proposed action includes more temporary road than Alternative 2. Alternative 2 included a reduction in temporary road as a response to concerns during scoping. From a timber management stand point, reducing temporary road increases logging cost, reduces return to the public, and increase the impact of the logging operation. When temporary roads are shortened the length of skid trails increase. Material is removed by trucks on temporary roads on wheels, about 10 CCF per truck. Without temporary roads the material is skidded across the same length, 1 CCF per pass, so it takes approximately 10 times more trips, thus increasing compaction and dust. Skid trails also tend to be wider than temporary roads. Alternative 2 increases logging costs and increases impacts when compared to the proposed action.

The indirect effect of harvesting timber is that harvest operations would help to support the local economy by providing jobs and economic input to the community.

4.2.1.2 Cumulative Effects

The Caribou Forest has been offering below the allowable sale quantity consistently since the Revised Forest Plan was released. There are currently no other large sales planned for the same year as this one on the Caribou. This project added to any miscellaneous harvest that could occur would bring the Forest very near the ASQ for a single year, but would not make up the shortage of production over the last few years.

4.2.1.3 Irretrievable/Irreversible Effects

There are no irreversible effects to timber production associated with this alternative. There is a minor irretrievable loss of production associated with construction of roads and landings.

4.2.2 No Action Alternative

4.2.2.1 Direct & Indirect Effects

No harvest would occur, existing volume could be lost to insects and disease.

4.2.2.2 Cumulative Effects

The effect of the no action is that the Forest would again fail to sell anywhere near the annual ASQ in the RFP-EIS. The forest industry in the area would likely suffer, increasing the risk that the Forest would lose the future opportunities to manage forest habitat using timber harvest.

4.2.2.3 Irretrievable/Irreversible Effects

There would likely be an irretrievable loss of volume due to density and insect related mortality.

4.3 Transportation Management

The issue indicator for transportation management in the project area is miles of poorly located system road. In the project area, there is currently an approximate 4.5 miles of system road that is poorly located or in poor condition. These are located in segments on roads 1234, 901, 574, 126, 572, 176 and 575.



Figure 4-1 Example of poorly located roads that result in poor condition. The first photo shows a segment road 574 that is too steep and located where drainage is difficult to provide. The second photo shows a segment of road 126 where it intersects a riparian area becoming wet and unpassable most of the year. Relocating roads like 574 requires increasing the length, which decreases the grade of the road.

4.3.1 Alternative 1 (Proposed Action)

4.3.1.1 Direct & Indirect Effects

The proposed action will eliminate 2.4 miles of poorly located road (deep, wet, poor draining roads) through relocation (1234, 901, 574, and upper portion of 126). This leaves 2.1 miles of poorly located road remaining in the project area.

This alternative would provide a source of gravel that could be used to improve the road system in the short term and provide for better maintenance in the long term.

4.3.1.2 Cumulative Effects

There are no other foreseeable projects that will address the poor location and condition of the roads in the project area. However, the improved locations will allow the roads to be better maintained and will result in improved access for the public.

4.3.1.3 Irretrievable/Irreversible Effects

There are no irretrievable or irreversible effects to the transportation system as a result of this alternative.

4.3.2 Alternative 2

4.3.2.1 Direct & Indirect Effects

The alternative is similar to the proposed action but it will eliminate 3.2 miles of poorly located road (deep, wet, poor draining roads) through relocation (1234, 901, 574, and upper portion of 126) and road closure (lower portion of 126). This would leave 1.3 miles of poor condition/located road in the project area. Closure of road 126 along Johnson Creek will alter the access route to the Johnson Creek area because the public will not be able to access the area from the private property to the northeast. The improved location of road 574 will provide the long term access to the drainage. This was done due the lack of a right-of way across the private land.

This alternative would provide a source of gravel that could be used to improve the road system in the short term and provide for better maintenance in the long term.

4.3.2.2 Cumulative Effects

There are no other foreseeable projects that will address the poor location and condition of the roads in the project area. However, the improved locations will allow the roads to be better maintained and will result in improved access for the public.

4.3.2.3 Irretrievable/Irreversible Effects

There are no irretrievable or irreversible effects to the transportation system as a result of this alternative.

4.3.3 No Action Alternative

4.3.3.1 Direct & Indirect Effects

Under the no action alternative, none of the proposed activities described in any action alternative would occur. Zero miles of road would be relocated, which means that 4.5 miles of poorly located road would remain. Current uses and activities in the project area would continue. Road conditions would continue deteriorating since road maintenance funds are limited.

4.3.3.2 Cumulative Effects

Open roads within the project area would continue to degrade without project funded improvements. User created routes could continue to be used and developed if more efficient routes do not exist. Miles of poorly located roads would remain, user access would continue to be limited, and road erosion in low areas would continue to impact nearby streams.

4.3.3.3 Irretrievable/Irreversible Effects

There are no irretrievable or irreversible effects to the transportation system as a result of this alternative.

4.4 Wildlife

Two indicators are used to quantify the impacts of each alternative on the Wildlife Resource. They are:

- 1) Total acres with aspen as a stand component moved toward desired conditions outlined in the Revised Forest Plan (i.e. acres of Aspen improved).
- 2) The determination of effect for Forest Service Sensitive Species.

The first indicator tracks the movement of acres with aspen present towards desired conditions. Improving the condition of aspen as described in the vegetation sections of this document would support wildlife goals as described in the Forest Plan (p. 3-24). This would directly relate to the project contributing towards attainment of the desired future conditions for Wildlife (Green, D. 2018).

The determination of effect for Forest Service Sensitive Species is used as the second indicator. The objective for the effects determination for Forest Service Sensitive species is that the impacts to sensitive species do not result in a “*Will Impact Individuals or Habitat with a consequence that the action may contribute to a trend towards federal listing or cause a loss of viability to the population or species (WIIH)*” determination. If project impacts warranted a WIIH determination for a sensitive species, it would indicate that habitat within the analysis area would degrade substantially due to Forest management activities and the goal of implementing forest management that precludes that species from being listed is not being met.

4.4.1 Alternative 1- (Proposed Action)

4.4.1.1 Direct and Indirect Effects

Under the proposed action, approximately 800 acres of vegetation management of various types is prescribed. Overall, this is a small impact (14% project area, and 0.1% of the forested habitat on the Caribou N.F.) and effects to wildlife would be minimal. The direct impacts to wildlife would mostly be limited to short term displacement from the project area. The indirect effects of the project would be more habitat diversity.

While specific impacts to special status species are described below, overall, a balanced approach to management of forest succession is appropriate and well described in the text “Wildlife, Forests, and Forestry” (Hunter 1990) where he describes “*Although it seems obvious that a forest landscape with many successional stages will be more diverse than one at a single stage of succession, research on this subject is often misinterpreted. Imagine a study in which a group of animals is censused in a mature forest and a recently cut forest and it is discovered that there are fewer species, or lower populations, on the logged site (e.g., Loyn 1980, Bury 1983). Many people would read such a report and conclude that forest harvesting has harmed wildlife. And they are right; cutting does often reduce wildlife diversity and abundance – on the cut site – for a finite time. Viewed from the larger space and time perspective, forest cutting will often have little effect on diversity and may actually enhance it. On the other hand, this same narrow approach can*

also cloud how people think of old forests. Imagine a study in which some plant or animal populations were censused in young forests at various successional stages and in an old forest (e.g., Conner and Adkisson 1975, Middleton and Merriam 1985, Childers et al. 1986). Some people might focus on all the species coming and going through succession and conclude that old forests are not an important type of wildlife habitat, but,this is an erroneous perception (p. 51)." It is acknowledged that mature and late seral forests are an important element of wildlife habitat, and under the proposed action, they will remain, by far, the most predominant age classes within the project area. This project simply seeks to introduce small areas of earlier succession and to help improve the diversity of age classes. Within the ~800 acres proposed for treatment there likely would be some minor impacts to wildlife, but overall, the management of these acres would be expected to improve vegetation diversity, supporting Forest Plan Goals and Objectives and resulting in a net benefit to wildlife.

Road management activities will have some short term impacts on wildlife, but over the long term improvements to the road system including relocation/decommissioning and maintenance (as described in earlier the EIS) would be expected to have a minor net benefit to wildlife.

4.4.1.1.A Threatened and Endangered Species

4.4.1.1.A.1 North American Wolverine

Any direct impacts to Wolverine would be expected to be limited to temporary displacement away from the proposed management activities in the short term. These temporary displacements would be expected to result in altered movements by wolverines which would generally result in minimal impacts to the individual, due to the amount of adjacent habitat that is alternatively available and that the disturbance could be easily circumvented. The relative minimal potential for presence along with the expected minimal potential impacts of the disturbances would result in any direct impacts being insignificant.

Any impacts to habitat are generally discountable as well. While approximately 800 acres would be impacted, these areas would still have sufficient large trees and other vegetation remaining to serve as habitat (would not create any barriers, would still serve as a potential dispersal corridor, and would not have any potential to reduce prey/carrion availability).

Potential disturbance impacts to denning are discountable, since denning is not known or expected due to a general lack of denning habitat within the analysis area, (and no denning habitat occurring in areas proposed for management).

Considering the minimal impacts to wolverine are described above, the scale of the project and that there is no known or expected denning within the analysis area, the impacts would not rise to the level of jeopardizing the existence of the species. Therefore, as a proposed species, project impacts are "*Not Likely to Jeopardize the Continued Existence of the Species.*" If listed, the appropriate effects determination would likely be, *May Affect-Not Likely to Adversely Affect*.

4.4.1.1.B Sensitive Species

4.4.1.1.B.1 Townsend's big-eared bat

While unlikely, direct impacts to Townsend's big-eared bat could occur, potentially through the removal of roosting habitat (tree cavities) during vegetation management activities. Indirect impacts, though small scale and site specific, would consist primarily of short term impacts to foraging habitat. No long term impacts are expected as the areas where impacts occur will continue to provide habitat for insects and moths. No impacts to hibernacula would be expected to occur as none are known or expected to occur within the analysis area. While these direct and indirect impacts may impact individual or small numbers of bats, overall this impact would be minor and no impacts to the population viability would be expected to occur. Therefore, the Proposed Action "*May impact individuals or habitat, but will not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species.*"

4.4.1.1.B.2 Gray Wolf

The primary mechanism of direct effect to wolves would be displacement away from the proposed activities into other areas of the analysis area, which would be limited to the short term (when activities are occurring). The effects of this displacement are difficult to quantify, but would likely be minimal given the amount of adjacent suitable habitat.

While impacts to individuals and habitat are expected under this alternative, overall these impacts would not be expected to reduce habitat or adversely impact enough individuals to the point where the viability of Gray Wolves would be reduced. No reductions in prey availability would be expected (See *Big Game* section and other sections where prey species are discussed). Therefore, since the proposed activities may displace individuals, the proposed action "*May impact individuals or habitat, but will not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species.*"

Important to note however, that over the long term after activities have ceased, *No Effect* on gray wolves would be expected.

4.4.1.1.B.3 Peregrine Falcon

As described in chapter 3, presence of Peregrine Falcons is probable within the analysis area, but due to a lack of suitable nesting habitat and other factors, presence within the analysis area would be expected to be minimal, occurring intermittently during foraging activities. No direct impacts from the vegetation management activities would occur.

Further, project activities would in no way be expected to impact Peregrine Falcon prey (primarily small birds) densities or availability, and may improve them over the long term as variability in analysis area age classes improves, potentially improving habitat for small birds. Since No direct impacts to Peregrine Falcons are expected, and there is no potential for Indirect effects (such as impacts to nesting sites or reductions in prey species), there will be *No Impact* to Peregrine Falcons under the Proposed Action.

4.4.1.1.B.4 Bald Eagle

Similar to Peregrine Falcon described above, Bald eagle presence within the analysis area is minimal, expected to be limited to relatively short term presence occurring during foraging or flights through/over the analysis area. No direct impacts to Bald eagles

resulting from the proposed vegetation management activities would occur. No Impacts to winter use areas would occur. Since No direct impacts to Bald eagles would occur, and there is no potential for indirect effects (such as impacts to nesting sites or reductions in prey species), there will be *No Impact* to Bald eagles under alternative 1.

4.4.1.1.B.5 Northern Goshawk

As previously described, there are no known Goshawk nests within the analysis area, and site specific surveys within the project area did not observe any Goshawks, Goshawk nests, or signs of Goshawk nesting (Maps and Data Sheets in the project record).

Goshawks however likely occur within the analysis area during foraging activities, and small portions of the analysis area overlap Post-Fledging Family areas, and the rest of the analysis area is Foraging habitat. Potential direct impacts to Goshawks would be limited to short term displacement from the areas where ground disturbing activities would occur. Indirectly, there is potential for some slight impacts to prey species (through direct impacts by heavy equipment and potential small site specific impacts to their habitat), but these impacts would not be expected to reduce the availability of prey to the point that Goshawk would be impacted. This project would be in compliance with size class distribution requirements and all other criteria described in Table 3.5 on p. 3-30 of the Forest Plan. (Green, D. 2018).

Design features associated with this alternative require additional surveys for Goshawks prior to project implementation, and implementing measures to avoid impacts to Goshawks if new nests are found, further reducing the potential for impacts. Direct impacts to Goshawks would be limited to short term displacement, and only slight impacts to habitat and prey species and their habitat would occur under this alternative, therefore, this alternative *“May impact individuals or habitat, but will not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species.”*

4.4.1.1.B.6 Great gray owl, Flammulated owl, and Boreal owl

While site specific impacts to forested areas will occur within and adjacent to the footprint of the vegetation management activities, the treatment would have enough large trees to serve as habitat for these species over the long term. Some short term displacement away from project activities may occur. There are no known nests in the project area, however as described in the design features, if any potentially active nests are discovered, appropriate mitigations will be incorporated into the project to avoid impacts to the nests, therefore direct impacts to these species are not expected. In the short term, prey species (small mammals) may be temporarily reduced within the footprint of the vegetation management activities, but would be expected to recover quickly after actions have ceased. While site specific impacts will occur potentially impacting individuals, no impact at the population level is expected. Therefore, Alternative 1, *“May impact individuals or habitat, but will not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species.”*

4.4.1.1.B.7 Three-toed woodpecker

In general, given the foraging habits (primarily on wood boring insect larvae) and nesting habits (primarily occurring in standing trees or snags), there is little potential for impacts to Three-toed woodpeckers from the proposed activities. The design features to leave all snags unless they pose a safety hazard will protect most of the existing snags and burning operations and will likely kill some trees which would add snag habitat. Alternative 1, “*May impact individuals or habitat, but will not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species*” for Three-toed woodpeckers.

4.4.1.1.C Big Game

As described in chapter 3, the analysis area contains important spring, summer and transitional habitat for mule deer, elk, and moose.

Big Game Security Areas: As previously described, there are no big game security areas in the analysis area. This will not change under the proposed action.

Open Motorized Route Density (OMRD): Given that there is no change in the miles of motorized trail Under Alternative 1, OMRD would remain at their current 1.2 mi/mi².

The overrepresentation of late-seral communities has been identified as an issue for mule deer in the intermountain west ecosystem, with the late seral vegetation conditions often failing to provide the proper nutritional requirements required for most aspects of deer reproduction and survival (Hayden et al. 2008 p. 17). In the absence of fire, vegetation management (timber harvest) can be a useful tool for creating earlier successional stages and improving foraging conditions (*Id* p.18). Likewise, elk tend to be most productive in habitats that are in a mosaic of plant successional stages (IDFG 2014 p. 29). Evidence suggests this is due to associated vegetation diversity and availability of high quality forage (*Id* p.29). Thus, the introduction, albeit small, of a diversity of forest age classes will be beneficial for mule deer and elk.

The benefits for mule deer and elk would extend to moose as well, creating relatively small areas of disturbance will result in an increase in understory, improving foraging opportunities for moose.

Given that the vast majority of the analysis area will not be impacted by the proposed activities, and that most areas will remain in the mature/late seral age class, benefits that may be provided to mule deer, elk, and moose by these areas (such as snow interception) would remain. Important to note however, that while approximately 460 acres of big game winter range occur in the analysis area, only 1.5 acres of winter range occurs within a unit proposed for vegetation management (“tending” as described in the EIS). No impacts to winter range are expected.

Overall, big game will not be appreciably impacted by the proposed activities, and as vegetation diversity increases, along with potential increases in foraging opportunities (shrubs) and the improvements to aspen, improvements to big game habitat are expected.

Big Game vulnerability during the hunting seasons would not be expected to change measurably, while vegetation management may increase visibility of big game in some

site specific areas, given the small percentage of treatment within the project area, sufficient hiding cover and/or access to untreated/undisturbed areas will remain.

4.4.1.1.D Migratory Birds

While habitat (trees, shrubs) within the areas proposed for management activities would be disturbed, the incremental increase in vegetation diversity, and the improvements to Aspen habitat, would be expected to benefit migratory birds in the long term. Design features help to assure that, to the extent feasible, take of migratory bird nests is avoided. The small amount of habitat managed would not be expected to be sufficient to have any long term adverse impacts to any migratory bird species.

Table 4-6. Resource indicators and measures for Alternative 1

Resource Element	Resource Indicator	Measure	Alternative 1
Wildlife (FS Sensitive Species and those species with State Management Plans occurring in the analysis area)	Total acres moved toward desired conditions as outlined in the Revised Forest Plan / acres of Aspen improvement.	Total Acres treated / Acres of Aspen treated	797 Acres
FS designated Sensitive Species	Effects to FS designated Sensitive Species.	Determination of Effect	"NI" or "MIIH" determinations for all Forest service Sensitive Species

4.4.1.2 Alternative 1- Cumulative Effects

Cumulative impacts result from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions.

If there are no direct or indirect effects of the proposed action, there cannot be any cumulative effects, therefore, for those species with no presence within the analysis area (or with a *No Impact* determination), there will not be any cumulative effects.

The cumulative effects analysis considered the following actions occurring within and adjacent to the analysis area.

Recreation: Recreational activities within the analysis area includes motorized and non-motorized trail uses, cross-country hiking, camping, archery and rifle hunting for big game, upland game hunting, fishing, driving for pleasure, wildlife and bird watching, outdoor photography, gathering forest products, and geo-caching. Off-trail OHV use and/or use of unauthorized OHV trails is known to occur in certain locations in the analysis area. These trails are closed/obliterated as they are discovered and/or as time and funding allow. In the winter the project area hosts non-motorized and motorized winter travel (snowmobiling, skiing and snowshoe travel).

Recreation management activities within the analysis area includes trail construction and maintenance, dispersed camping management, road reconstruction and maintenance,

travel plan enforcement and patrol, hazard tree removal and trail clearing (along designated motorized and non-motorized travel routes).

Other Actions: Fire related activities are generally limited to any necessary fire suppression activities. Grazing management includes allotment administration and fence construction and reconstruction, developing and maintaining facilities for water, salting and authorized grazing of cattle and sheep. Various integrated noxious weed treatments have been on-going for many years.

Future Activities: The on-going processes of population growth, recreation specialization and new technologies have and will continue to shape the uses and conditions of the project area. Virtual technologies could reduce recreation visits to the project area; however, other technologies could encourage additional recreation use of the project area and public lands in general.

4.4.1.2.A Cumulative Effects

The most apparent use within the project area is recreation. Recreational use of the area takes many forms some having no or minimal impact on wildlife (such as geo-caching or dog walking) with others having greater impacts on wildlife (dispersed camping, hiking, motorized trail use, etc.). Recreational impacts include, trampling vegetation and soil disturbances in high use areas, increased potential for the spread of noxious weeds and other non-native invasive species, developments and facilities and general human disturbances. Livestock grazing also occurs, with potential impacts similar to recreation, but managed per FS standards and guidelines to minimize the potential impacts. Fire related activities occurring in the analysis area are expected to have minimal impacts. Any future impact of a “wildfire” would be unknown, with many factors such as the size and intensity dictating the potential impacts it would have on wildlife.

As previously described, the overrepresentation of mature/late seral age classes and the loss of aspen (and the loss of the benefits it provides) within the analysis area is an issue. The purpose of this project, to:

- To move age-class structural diversity on the landscape scale toward RFP desired future conditions (DFC). (RFP 3-17 and 3-18)
- To increase stand resilience and health by reducing density and shifting composition toward seral species by mimicking natural disturbance processes (DFC) (RFP 3-17) (RFP 4-72), and
- To maintain or enhance aspen where it exists (RFP 3-17 & RFP 4-72)

Since this project is designed to support the attainment of DFC's, improve aspen, and help to alleviate the over representation of mature/late seral age classes, while some short term site specific impacts may occur, when considering cumulative effects, this project would have an overall positive impact on the wildlife resource, and no adverse cumulative impacts are expected.

4.4.1.3 Irretrievable/Irreversible Effects

No irreversible commitments of resources are expected. There will be a minor irretrievable loss of habitat as a result of roads and landings. Areas where project activities will occur will eventually return through succession to their existing state (barring the intervention of any other disturbance). Temporary roads and landings will be closed and re-contoured, vegetation will recover, and any associated impacts will ameliorate over time.

4.4.2 Alternative 2- Increased Restoration Alternative

4.4.2.1 Direct and Indirect Effects

The Direct and Indirect Effects of Alternative 2 are identical to those described for Alternative 1, the proposed action. However, given the current lack of diversity (age-class and seral species) within the analysis area and the known positive impacts aspen habitats have on wildlife, due to the treatment of additional aspen acres in this alternative would have increased benefits over Alternative 1. Further, given the known impacts of roads on wildlife (which include displacement, habitat fragmentation, etc. (USDA-FS 2003b p.D-29), the reduction in road densities would be beneficial to wildlife within the analysis area.

Approximately 847 acres of habitat / acres of aspen would be treated. Moving these acres of habitat towards the desired future conditions, would support the wildlife goals as described in the Forest Plan (p. 3-24). This would directly relate upward to the project contributing towards attainment of the desired future conditions for Wildlife. This is 50 acres more than in Alternative 1

As described in the Wildlife DFC, Issues and Indicators Worksheet (Green, D 2018), the determination for all designated Forest Service sensitive species of “*May Impact Individuals or Habitat, but will not likely contribute to a trend towards federal listing or loss of viability to the population or species* (MIIH)” the goal of implementing forest management that maintains habitat and /or precludes sensitive species from being listed is being met.

Table 4-7 Resource indicators and measures for Alternative 2

Resource Element	Resource Indicator	Measure	Alternative 2
Wildlife (FS Sensitive Species and those species with State Management Plans occurring in the analysis area)	Total acres moved toward desired conditions as outlined in the Revised Forest Plan / acres of Aspen improvement.	Total Acres treated / Acres of Aspen treated	847 Acres
FS designated Sensitive Species	Effects to FS designated Sensitive Species.	Determination of Effect	“NI” or “MIIH” determinations for all Forest service Sensitive Species

4.4.2.2 Alternative 2- Cumulative Effects

The Past present and reasonably foreseeable actions under Alternative 2 are identical to those described under Alternative 1.

Cumulative effects of Alternative 2 are the same as those described under Alternative 1. In short, since this project is designed to support the attainment of DFC's, improve aspen, etc. this alternative would have overall positive impacts on the wildlife resource, and no adverse cumulative impacts are expected.

4.4.2.3 Irretrievable/Irreversible Effects

No irreversible commitments of resources are expected. There will be a minor irretrievable loss of habitat as a result of roads and landings. Areas where project activities will occur will eventually return through succession to their existing state (barring the intervention of any other disturbance). Temporary roads and landings will be closed and re-contoured, vegetation will recover, and any associated impacts will ameliorate over time.

4.4.3 Alternative 3 – No Action

4.4.3.1 Direct and Indirect Effects

No vegetation management activities would occur under this alternative. The existing lack of habitat diversity would continue. The current trends and the existing conditions would be maintained. Since no activities would occur there would be no potential for direct or indirect impacts to wildlife, and therefore there would be *No Effect* to North American Wolverine (as a Proposed Species under ESA) and *No Impact* on all other wildlife species.

4.4.3.2 No Action- Cumulative Effects

No cumulative effects would occur under the No Action alternative. The overrepresentation of mature/late seral age classes and the continued loss of aspen would continue. The loss of the wildlife diversity that the younger age classes and the aspen habitats provide would have an overall adverse impact on wildlife within the analysis area. For example, Deer, Elk, and Moose would continue to experience a decline in foraging habitat due to a continued loss of the grass/shrub/forb components.

4.4.3.3 Irretrievable/Irreversible Effects

No irreversible or irretrievable commitments of wildlife is expected.

4.5 Hydrology

Management activities such as timber harvest, road construction, maintenance, and burning have the potential to affect hydrologic function and water quality in the project area. The measures used to describe the effects of these activities on hydrologic function and water quality are: the amount of hydrologic disturbance in the affected sub-watersheds or 6th level Hydrologic Unit Code (here after referred to as watershed or HUC), the miles of motorized routes in the Aquatic Influence Zones (AIZ) and acres of AIZ treated. These measures were selected to summarize the effects analyzed. For more details on the analysis and thought process behind this summary review Laprevote (2018) and other documents found in the project record.

4.5.1 Alternative 1 (Proposed Action)

4.5.1.1 Direct & Indirect Effects

4.5.1.1.A Hydrologic Disturbance

The proposed action treatments described in chapter 2 increase the hydrologic disturbance in each of the affected watersheds by about 2%, bringing the total disturbance to approximately 3% in each (see **Table 4-8** for more details). The hydrologic disturbance for both watersheds is well below the 30% guideline set in the RFP. The activities proposed will have minimal effects on the hydrology of the area.

Table 4-8 Proposed Action Hydrologic Disturbance. This table shows the percent of the each watershed hydrologically disturbed shortly after implementation. It includes disturbance from roads that are closed and the harvest. In 20 years it is anticipated that the hydrologic disturbance will drop back to about 1% as the harvest units and closed roads recover.

Hydrologic Unit Code level 6	Acres	Acres Disturbed	% Disturbance
Bailey Creek (160102010702)	5,444	161 (+102)	3% (+2%)
Johnson Creek (170402070204)	11,850	360 (+220)	3.0% (+1.8%)
Total	17,294	521 (+322)	3.0% (+1.9%)

4.5.1.1.B Motorized Routes in the AIZ

The proposed action treatments described in chapter 2 decreases the motorized routes in the AIZ from 3.7 miles (19,536 feet) to 3.4 miles (17,875 feet) a reduction of 0.3 miles (1,584 feet). This will improve the overall condition of the AIZ's in the project area in the long term. In the short term as the roads are closed there may be a small increase of sediment. This impact is far less than the long term impact of continuing to use the roads in the current location. Additionally, the relocation of the section of 126 below unit 10 would also be beneficial. This section is not in an AIZ but the road in its current location is serving as the ephemeral stream, moving it will improve the condition.

Table 4-9 Proposed Action Miles of open Motorized Routes in AIZ. The proposed action decreases open motorized routes by about 0.3 miles. This table shows the reduction by drainage. The mileages in this table are rounded, so adding the drainages results in a slight difference.

Drainage	AIZ Acres	Miles of Open Motorized Routes
Wood Canyon	56	1.1 (-0.3)
Johnson Creek	204	2.3 (0.0)
Total	260	3.4 (-0.3)

4.5.1.1.C AIZ Forest Vegetation

The proposed action proposes to treat 13.7 acres of AIZ in the Wood Canyon drainage. Two types of treatments are proposed harvest and tending. Tending would occur on all 13.7 acres, harvest would occur on 4.9 acres of the AIZ (~9%). These treatments were proposed because conifer (alpine fir and Douglas-fir) are increasing in size and density and shading out quaking aspen and willow in the AIZ. Most of the harvest acreage is in unit 14 and are east of the ATV trail, resulting in minimal impact to the actual riparian area. The harvest in unit 13 is also well outside the actual riparian area and is on a bench. The harvest is proposed to reduce overstory conifer density allowing space for aspen to be maintained on the site. The tending is proposed to reduce understory density of conifer (a portion of the trees less than 8" diameter will be cut by hand and the resulting material will be hand piled and burned, this will likely be done in stages). These activities were designed to improve the condition of forest vegetation within the AIZ. There may be minor short term impact (loss of shade) from these treatments, but the benefit of maintaining aspen and willow on these sites for the long term far outweigh the short term impacts. Aspen and willow will quickly fill in the openings created by the removal of some of the merchantable trees. Tending will provide desirable trees (aspen and Douglas-fir) with growing space and reduce the ladder fuels, lowering the risk of a crown fire. All of which will improve the overall condition of the Wood Canyon AIZ.



Figure 4-2 Aspen is being shaded out by conifer in the AIZ. In this picture you can see the deep shade that exists in the understory of dense alpine fir. This shade keeps aspen from sending up suckers from their root system, those that do come up, don't survive in the deep shade. The proposed action is to remove part of the overstory conifer with harvest to allow aspen the competitive advantage. Aspen will provide shade for the stream, food for beaver and will allow more sunlight to reach the forest floor which will provide for an increase in density and diversity of grasses and forbs, all of which improves the overall health of the AIZ.

4.5.1.2 Cumulative Effects

The current condition accounts for past activities and there are no foreseeable management actions in either watershed that would add to hydrologic disturbance. Both affected watersheds are well below the guideline set in the RFP. It is not expected that this proposed action added to future actions would put either watershed near the guideline.

There are no foreseeable management actions that will affect the AIZ's in this project area. Recreational use (dispersed camping) will likely increase with population growth, but this impact will be offset by the reduction of motorized routes in the AIZ.

Succession will continue to push forest vegetation toward climax conditions in the absence of disturbance. There is no other foreseeable management actions that will affect forest vegetation in the AIZ.

4.5.1.3 Irrecoverable/Irreversible Effects

The hydrologic disturbance from the gravel source would be irreversible. The 3 acres where the gravel source would be developed would have altered hydrology for a very long time even with the project design feature to store the existing topsoil for future rehabilitation. This impact is largely offset by the hydrologic benefits to graveling roads (reduction of sediment delivered to streams) which is why graveling was proposed.

4.5.2 Alternative 2 (Increase Restoration)

4.5.2.1 Direct & Indirect Effects

The Direct and Indirect Effects of Alternative 2 are similar to those described for Alternative 1, the proposed action. The differences and similarities are highlighted in the subsections below.

4.5.2.1.A Hydrologic Disturbance

This alternative proposes an additional 50 acres of vegetation treatment (10 acres of tending and 40 acres of burning). This results in 20 additional acres of hydrologic disturbance in the Johnson Creek HUC (assumed the burn would remove about 50% canopy).

Table 4-10 Alternative 2 Hydrologic disturbance. This alternative results in an additional 20 acres of disturbance.

Hydrologic Unit Code level 6	Acres	Acres Disturbed	% Disturbance
Bailey Creek (160102010702)	5,444	161 (+102)	3% (+2%)
Johnson Creek (170402070204)	11,850	380 (+240)	3.2% (2%)
Total	17,294	541 (+342)	3.1% (2%)

4.5.2.1.B Motorized Routes in the AIZ

The treatments planned for Alternative 2, as described in Chapter 2, decreases the motorized routes in the AIZ from 3.7 miles (19,536 feet) to 2.2 miles (11,616 feet) a reduction of 1.5 miles (7,920 feet). This is a result of closing road 126 below the intersection with road 176, in addition to the changes in Wood Canyon in the proposed action. A Clean Water Act section 404 and State of Idaho stream alteration permit would need to be obtained for culvert removal or other restoration work below the Ordinary High Water Mark when closing road 126 as proposed in this alternative.

Table 4-11 Alternative 2 Miles of open Motorized Routes in AIZ. This table shows the reduction by drainage. The mileages in this table are rounded so adding the drainages results in a slight difference.

Drainage	AIZ Acres	Miles of Open Motorized Routes
Wood Canyon	56	1.1 (-0.3)
Johnson Creek	204	1.1 (-1.2)
Total	260	2.2 (-1.5)

4.5.2.1.C AIZ Forest Vegetation

The effect Alternative 2 has on forest vegetation in the AIZ is the same as the proposed action. The same acres are proposed and have the same long term benefit (maintaining early seral species (e.g. aspen)) and short term impact (loss of some shade).

4.5.2.2 Cumulative Effects

The current condition accounts for past activities and there are no foreseeable management actions in either watershed that would add substantially to hydrologic disturbance. Both affected watersheds are well below the guideline set in the RFP. It is not expected that this proposed action added to future actions would put either watershed near the guideline.

There are no foreseeable management actions that will substantially affect the AIZ's in this project area. Recreational use (dispersed camping) will likely increase with population growth, but this impact will be offset by the reduction of motorized routes in the AIZ.

Succession will continue to push forest vegetation toward climax conditions in the absence of disturbance. There is no other foreseeable management actions that would affect forest vegetation in the AIZ.

4.5.2.3 Irretrievable/Irreversible Effects

The hydrologic disturbance from the gravel source would be irreversible. The 3 acres where the gravel source is developed would have altered hydrology for a very long time even with the project design feature to store the existing top soil for future rehabilitation. This impact is largely offset by the hydrologic benefits to graveling roads (reduction of sediment delivered to streams) which is why graveling was proposed.

4.5.3 No Action Alternative

4.5.3.1 Direct & Indirect Effects

With the no action the risk of uncharacteristic disturbances from fire would remain unchanged. This increases the risk of a future fire that could move one or both of the watersheds close to the RFP 30% guideline.

The condition and locations of roads within the project area would not improve and would likely continue to degrade and continue to impact water quality.

Forest vegetation within the AIZ's would continue to move toward climax and seral and hydric species would continue to decrease.

4.5.3.2 Cumulative Effects

There are no other foreseeable management actions that would address the hydrologic concerns within this project area. As populations in the West increase, recreational use will also increase. This will put added stress on water resources. Without the relocation of road 1234, it will continue to deteriorate as Forest users try to avoid wet and rutted areas. Without the relocation of road 574, it will continue to be a chronic source of sediment into Johnson Creek.

4.5.3.3 Irretrievable/Irreversible Effects

There will be no direct irretrievable or irreversible effects from the no action. The indirect effect of the no action is that erosion off the road system will continue. Once material is eroded it cannot be put back on the hill. Erosion is irreversible.

4.6 Soils

Management activities such as timber harvest, road construction and maintenance, and burning have the potential to affect soil properties that may reduce long-term soil productivity and increase the potential for erosion in the project area. The effects of management forest management activities on soil productivity are measured by the amount of soil disturbance remaining in each treatment unit after the project is completed and project design features are applied. The effects of the travel system is measured by the acres dedicated to the travel system and the acres reclaimed for each alternative.

4.6.1 Alternative 1 & 2

4.6.1.1 Direct and Indirect Effects

The action alternatives vary slightly, Alternative 2 would have more prescribed burning, but the effects are similar enough that the analysis was combined for simplicity. Direct and indirect effects of the timber harvest, prescribed burning, and road system management proposals are described in the FEIS for the Caribou National Forest Revised Forest Plan Volume II, (USDA Forest Service, 2003b, p. 4-266 through 4-274).

Soil disturbance in the timber harvest units in the short-term is likely to be similar to slightly less than the effects described in local monitoring reports; about 2-14% class 2 disturbance in the short-term, recovering to class 1 disturbances in the mid to long term, and <1% to 4% class 3 disturbances recovering to class 2 in the mid to long term, or prior to the next prescribed ground-based silvicultural treatment (Green, K. (2018), p. 7-8, 17). It is reasonable to expect less disturbance in modern sales compared to sales in the 1980's because we have investigated old harvest units, described conditions, and adapted BMPs.

The effects of the road system are similar, however an additional 5 acres of existing system road would be reclaimed in Alternative 2 compared to Alternative 1. The gravel source is proposed to be expanded to provide a local source for road surfacing material. This would be about 3 acres of additional disturbance adjacent to the existing disturbance. The new source would be utilized for the longer term, and reclaimed with stored topsoil and all access roads closed after economically-feasible material is utilized. See **Table 4-11** for a summary of direct and indirect effects of the proposal using the soil resource indicators.

Table 4-12 Direct/indirect effects of the proposal described using the soil resource indicators.

Resource Element	Resource Indicator	Measure	Proposed Management	Direct/indirect Effect			
				Alt1	Alt2	Class 2	Class 3
Soil Quality and Productivity	Soil Disturbance	% disturbance by unit	Stand Tending	396	406	5%	<1%
			Harvest	401	401	8% (+/- 6%)	2% (+/- 2%)
			Prescribed fire	0	40	<15%	<2%
			Reclaimed	13	18	13 acres Alt 1 18 acres Alt 2	
Productive land base	Acres associated with the travel system	Acres	Dedicated	13	13	13 acres	

4.6.1.2 Cumulative Effects

Sheep grazing and recreational use of the system roads with some incidental camping occur in the analysis area. These actions add negligibly to the soil disturbance in the analysis area.

Where effects from past timber management persist in the proposed timber management units, the anticipated effects of the proposed management are cumulative. These effects are shown in Table 4-12 below, and include negligible additive effect of the past, present and reasonably foreseeable activities described above. The cumulative effects of the Proposed Action road treatments is no net gain or loss of acres dedicated to the travel system, although the reclaimed acres will be less productive in the longer term.

Alternative 2 proposes to reclaim an additional 5 acres of system road disturbance, which is beneficial. As a whole, either alternative improves the long-term sustainability of the road network due to improved road location, drainage, and surfacing on a portion of the system. See Table 4-12 for a summary of the cumulative effects of the project using the soil resource indicators.

Table 4-13 Cumulative effects of the proposal described using the soil resource indicators.

Resource Element	Resource Indicator	Measure	Management	Cumulative Effect	
				Class 2	Class 3
Soil Quality and Productivity	Soil Disturbance	% disturbance by unit	Tending + Past	14% (+/- 8%)	2% (+/- 1%)
			Harvest + Past	17% (+/- 8%)	3% (+/- 2%)
			Harvest no past	8% (+/- 6%)	2% (+/- 2%)
			Prescribed fire	<15%	<2%
Productive land base	Acres dedicated to the travel system	Acres	Travel Routes	56 acres Current 56 acres Alt 1 51 acres Alt 2	

4.6.1.3 Irretrievable/Irreversible Effects

The impacts to the soils from the gravel source would be irreversible. The 3 acres where the gravel source is developed would have soil productivity impacted for a very long time even with the project design feature to store the existing top soil. The soil productivity of the areas used for temporary roads and landings would be irretrievable

4.6.2 Alternative 3 (No Action) Effects

Existing soil conditions would persist in the short-term, and likely in the long-term. As time proceeds without a natural disturbance in the timber harvest units, the forest structure is likely to move further from the desired conditions outlined in the Forest Plan (Beck, 2018). A natural disturbance like a wildfire has a low chance of occurring in any given year, but will happen at some point, and could have effects to the soils ranging from very slight, to pockets of moderate-high burn severity, depending on many factors, including the fuel loading if/when a fire starts, and many weather conditions that affect

fire intensity. The odds of negative effects increase as forest conditions move outside of the historic range of conditions. Graham et al (1994) discusses these longer term disturbance regime considerations when analyzing cumulative effects of a timber or fuels treatment. Where system roads are in poor condition, the existing condition will persist or deteriorate in the long-term.

4.6.2.1 Cumulative Effects

No direct effects to be cumulative to other actions. The indirect effects of lack of disturbance will continue.

4.6.2.2 Irretrievable/Irreversible Effects

No irretrievable or irreversible direct effects of no action, there could be irreversible effects to the soil resource if an uncharacteristic fire was to occur.

4.7 *Other Required Disclosures*

Several laws and executive orders require project-specific findings or other disclosures. These are included here and apply to all alternatives considered in detail in the DEIS.

National Forest Management Act

All project alternatives fully comply with the Revised Forest Plan. This project incorporates all applicable Forest Plan forest-wide standards and guidelines and management area prescriptions and complies with Forest Plan goals and objectives. This includes additional direction contained in all amendments. All required interagency reviews and coordination has been accomplished; new or revised measures resulting from these reviews have been incorporated.

Endangered Species Act

Threatened and endangered species are considered when evaluating projects on the Caribou National Forest, with Canada lynx (which is listed as Threatened) and North American Wolverine (which is listed as Proposed-Threatened), being listed on the IPaC list as potentially occurring in the analysis area. Analysis, disclosure of effects and details of concurrence by US Fish and Wildlife Service (if applicable) is in Chapters 3 and 4.

National Historic Preservation Act

An intensive, complete survey of all areas with high probability of site occurrence was completed following protocols within the Secretary of Interior's Standards and Guidelines, Forest Service Manual 2360, and the State Historic Preservation Office's Guidelines and Procedures for Cultural Resource Review and Consultation in Idaho in compliance with 36 CFR 800, the implementing regulations for Section 106 of the National Historic Preservation Act of 1966 as Amended (2000). The Shoshone-Bannock Tribes have been contacted and public comment encouraged. The Idaho State Historic Preservation Office (SHPO) was consulted regarding the results of the survey and has concurred with the determination of site significance. SHPO also concurred that, as the project design will avoid historic properties, the project will have no effect on any identified historic properties.

Clean Water Act

Project activities have been designed in accordance with Forest Plan standards and guidelines, the Regional Guides, Best Management Practices, and applicable Forest Service manual and handbook direction which all address the Clean Water Act. The Clean Water Act, directs water quality standards and control of discharges to waters and wetlands and disturbances below the Ordinary High Water Mark. Most silvicultural activities such as harvest are exempt from permitting under the act, however work not associated with harvest is not exempt. Therefore, a Clean Water Act section 404 and State of Idaho stream alteration permits would need to be obtained for culvert removal or other restoration work below the Ordinary High Water Mark when closing road 126 as proposed under Alternative 2. Additionally, a Construction General Permit may be required.

Clean Air Act

Emissions anticipated from the implementation of any project alternative will be of a short duration and are not expected to exceed State of Idaho ambient air quality standards (18 AAC 50), due to planned design features.

Executive Orders on Floodplain and Wetlands(No. 11988 & No. 11990)

Implementation of any alternative will result in no net loss of wetlands or rise in flood levels.

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

Implementation of any project alternative with design features is not anticipated to cause or promote the introduction or spread of invasive species. See design features in Chapter 2 and discussion on invasive weeds in Chapter 1.

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

Management objectives from The Idaho Bird Conservation Plan (Version 1.0, January 2000, prepared by: Idaho Partners in Flight) would be met on all alternatives. While habitat (trees, shrubs) within the areas proposed for management activities would be disturbed, the incremental increase in vegetation diversity, and the improvements to Aspen habitat, would be expected to benefit migratory birds in the long term. Design features help to assure that, to the extent feasible, take of migratory bird nests is avoided. The consideration of migratory birds in the planning process and the analysis of potential impacts conducted herein is in compliance with the current USFS/USFWS Memorandum of Understanding on migratory Birds.

Roads Rule, Title 36, Code of Federal Regulations, Part 212.

These rules establish requirements for the administration of the forest development transportation system. A Roads Analysis has been completed for the portion of the project area affected by proposed road building, reconstruction, or obliteration.

Energy Requirements

Because the scope of the proposed action is limited both in terms of geographic area and extent of activities, the proposed project will have little or no effect on current local energy use and offers no opportunity for energy conservation.

Short-term Use vs. Maintenance and Enhancement of Long-term Productivity

Short-term uses are those uses that generally occur annually. Long-term productivity refers to the ability of the land to produce a continuous supply of a resource. Short-term use should not negatively affect long-term productivity. Based on chapter 4 of this document, long-term productivity should be maintained or enhanced.

Possible Conflicts with Plans and Policies of Other Jurisdictions

No conflicts with other jurisdictions are anticipated as a result of this FEIS.

Executive Order 12898 (Environmental Justice)

Federal actions to address Environmental Justice in Minority population and low-income populations, and Departmental Regulations 5600-2, direct Federal agencies to integrate environmental justice considerations into Federal programs and activities. Environmental justice means that, to the greatest extent practicable and permitted by law, all populations are provided the opportunity to comment before decisions are rendered on, are allowed to share in the benefits of, are not excluded from, and are not affected in a disproportionately high and adverse manner by government programs and activities affecting human health or the environment. Public involvement activities in Chapter 2 documents the efforts made to provide the opportunity to comment. Implementation of any project alternative is not anticipated to cause disproportionate adverse human health or environmental effects to minority or low-income populations.

4.7.1 Environmentally Preferred Alternative

The Alternative 2 (Increase Restoration Alternative) is the environmentally preferred alternative. Alternative 2 meets the purpose and need for saw log production, aspen restoration, stand structure composition and improvements to the transportation system. The preferred alternative meets all standards and guidelines in the Revised Forest Plan.

5. Lists – Including Preparer’s, Scoping, and Bibliography

5.1 Interdisciplinary Team (IDT) and Consultants

The following individuals were primarily responsible for developing the analysis and the document.

Wayne Beck	IDT Leader /Forester/Vegetation Specialist
Tahnee Cook	Writer/Editor
Devon Green	Wildlife Biologist
Jim Laprevote	Hydrologist
Kara Green	Soils
Tom Brown	Civil Engineer
Kasey Hill	NEPA Specialist
Cheryl Beck	GIS Specialist
Kevin Parker	Range Management Specialist
Dell Transtrum	Recreation Specialist
Sharon Plager	Archeologist
Rebecca “Roo” Phelps	Fuels Specialist
Rose Lehman	Botanist & Climate Change
Corey Lyman	Forest Fisheries Biologist
Matt Paulsen	Geology
Dominique Brough	Geology

5.2 Public Involvement

The following individuals, agencies, or groups responded to scoping and or commented on the Draft Environmental Impact Statement (DEIS).

Name	Scoping	DEIS	CFI
Alliance for the Wild Rockies	✓		
American Forests Resource Council	✓		✓
Army Corps of Engineers		✓	
Bryce Somsen	✓		✓
Caribou Forest Initiative (CFI)		✓	✓
Dick Artley	✓	✓	
Environmental Protection Agency		✓	
Idaho Conservation League	✓	✓ .	✓
Idaho Department of Parks & Recreation		✓	
Jean Publiee	✓	✓	
Native Ecosystem Council	✓	✓	
Wildlands Defense	✓		
Yellowstone to Uintas Connection	✓	✓	✓

The Caribou Forest Initiative (CFI) is a broad group of stakeholders seeking to improve ecological conditions on the southern half of the Caribou-Targhee National Forest and social and economic conditions in surrounding communities through collaboration and consensus. Members of the CFI that commented on either scoping or the DEIS are shown in the above table. There are many other members of the CFI that are not listed here. Members of the CFI group visited the project area during the summer of 2018 to see the proposed project first hand.

Responses to comments and concerns on the DEIS related to the John Wood Forest Management Project are provided in Appendix A.

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Glossary

Activity Area	An area impacted by a land management activity, excluding specified transportation facilities, dedicated trails, and mining excavations and dumps. Activity areas include such areas as: harvest units within timber sale areas and prescribed burn areas. Riparian and other environmentally sensitive areas may be monitored and evaluated as individual activity areas within larger management areas. It is recommended to describe the Activity Area for soil resources within planning and project implementation documents.
Affected Environment	The natural environment that exists at the present time in an area being analyzed.
Age Class	An age grouping of trees according to an interval of years, usually 20 years. A single age class would have trees that are within 20 years of the same age, such as 1-20 years or 21-40 years and so on.
AIZ	Aquatic Influence Zone
Allowable Sale Quantity (ASQ)	The amount of timber that may be sold from the area of suitable land covered by the Forest Plan for a time period specified by the Plan. This quantity is usually expressed on an annual basis as the "average annual allowable sale quantity."
Alternative	One of several policies, plans or projects proposed for decision-making.
Analysis Area	Geographical area where analysis is focused and is under consideration for possible proposed treatments.
Aquatic Ecosystem.	The stream channel, lake or estuary bed, water, biotic communities and the habitat features that occur therein.
Aquatic Influence Zone	Used in the context of a land management prescription, the area encompassing aquatic and riparian ecosystems and adjacent lands which directly affect the hydrologic, geomorphic, and ecological processes controlling aquatic and riparian ecosystem health and function.
Aspect	The direction a slope faces. A hillside facing east has an eastern aspect.
Bank cutting	Erosion of the sides of a stream channel. Rearrangement and transport of material from the banks of a defined stream
Bark Beetle	An insect that bores through the bark of trees to eat the inner bark and lay its eggs. Most bark beetles are native to the area and play important role in forest succession.
Basal Area	The area of the cross section of a tree truck near its base, usually 4.5 feet above the ground. Basal area is a way to measure how much of a site is occupied by trees. The term basal area is often used to describe the collective basal area of all trees on an acre.
Beneficial Use	Includes beneficial uses officially designated by the State under the authorities of the Clean Water Act plus the native aquatic and riparian dependent resources.
Big Game	Those species of large mammals normally managed for sport hunting.

Glossary

Biological Diversity	The number and abundance of species found within a common environment. This includes the variety of genes, species, ecosystems and ecological processes that connect everything in a common environment.
Biomass	The total weight of all living organisms in a biological community.
Biota	The plant and animal life of a particular region.
Biotic	Living. Green plants and soil microorganisms are biotic components of ecosystems.
BMP (Best Management Practices)	Practice or design feature to prevent or reduce the impact of an activity. Related to water and soil sometimes also referred to as Soil and Water Conservation Practices (SWCPs).
Broadcast Burn	Allowing a prescribed fire to burn over a designated area within well-defined boundaries for reduction of fuel hazard, improve forage for wildlife and livestock, or encourage successful regeneration of trees.
Buffer	A land area that is designated to block or absorb unwanted impacts to the area beyond the buffer. Buffer strips along a trail could block views that may be undesirable. Buffers may be set aside next to wildlife habitat to reduce abrupt change to habitat.
Bulk Density	Soil bulk density is the mass (oven dry weight) of fine earth (particles < 2 mm) per volume of moist (10 kPa) fine earth.
Canopy	The more or less continuous cover of branches and foliage formed collectively by the crown of adjacent trees and other woody growth. It usually refers to the uppermost layer of foliage, but it can be used to describe lower layers in a multi-storyed forest. The percent of a fixed area covered by the crown of an individual plant species or delimited by the vertical projection of its outermost perimeter; small openings in the crown are included.
Canopy Cover	Used to express the relative importance of individual species within a vegetation community or to express the canopy cover of woody species. Canopy cover may be used as a measure of land cover change or trend and is often used for wildlife habitat evaluations. Canopy cover may be expressed in relative terms or literal terms.
Cavity	The hollow excavated in trees by birds or other natural phenomena; used for roosting and reproduction by many birds and mammals.
CCF	Unit: Hundred Cubic Feet. A typical unit of measure of wood volume on Forest Service lands in the Inter-Mountain Region of the Forest Service.
Channel	Natural or artificial waterway that periodically or continuously contains moving water. It has a definite bed and banks that serve to confine water. River, creek, run, branch, fork, and tributary are some of the terms used to describe natural channels. Canal, ditch and floodway are some of the terms used to describe artificial channels.
Clean Air Act	(42 U.S.C. 7609) Section 309 provides authority for the Environmental Protection Agency to review other agency environmental impact statements.

Glossary

Climax	The culminating stage in plant succession for a given site where the vegetation has reached a stable condition.
Cohort	A distinct age class of trees originating from a single natural event or regeneration activity.
Composition	What an ecosystem is composed of. Composition could include water, minerals, trees, snags, wildlife, soil, microorganisms, and certain plant species. Forests and landscapes are often described by species composition that exists.
Concern	(Also management concern.) An issue, problem or condition which constrains the range of management practices identified by the Forest Service in the planning process.
Conifer	A tree that produces cones, such as a pine, spruce, or fir tree.
Connectivity (of habitats)	The linkage of similar but separated vegetation stands by patches, corridors or "stepping stones" of like vegetation. This term can also refer to the degree to which similar habitats are linked.
Contour	A line drawn on a map connecting points of the same elevation.
Corridor	Elements of the landscape that connect similar areas. Streamside vegetation may create a corridor of willows and hardwoods between meadows where wildlife feed.
Council of Environmental Quality (CEQ)	The Council issues regulations binding on all federal agencies, to implement the procedural provisions of the National Environmental Quality Act. The regulations address the administration of the NEPA process, including preparation of Environmental Impact Statements (EIS) for major federal actions which significantly affect the quality of the human environment.
Course Woody Debris	Wood and slash debris found on the ground that are less than 3" in diameter.
Cover	Any feature that conceals wildlife or fish. Cover may be dead or live vegetation, boulders, or undercut streambanks. Animals use cover to escape from predators, rest or feed.
Cover Class	Represents a percentage range for a fixed area covered by the crowns of plants. It is measured as a vertical projection of the outermost portion of the foliage. Cover Class may be classified multiple ways. It might be classified as open or closed or as A = <40% canopy cover; Cover Class B = 40-60% canopy cover; Cover Class C = >60% canopy cover.
Cover type (forested cover type)	A classification of a stand based on the plurality of composition across a given area. Areas described or named based on the plurality of vegetation are useful in communicating what other species may be present. An aspen cover type contains plants distinct from the pinyon-juniper cover type for example. Forest cover types referred to in this document are based on Society of American Forester definitions for the area.

Glossary

Created Opening	An opening in the forest cover created by the application of silvicultural practices. This terminology is typically applied to even-aged silvicultural practices.
Crown Fire	A fire that advances from top to top of trees and shrubs more or less independent of a surface fire.
Cstands	An existing condition GIS coverage developed to track the condition of vegetation on the area covered by the Revised Forest Plan for the Caribou National Forest (RFP). (M.W. Beck, 2016a)
Cumulative Actions	Actions which when viewed with other proposed actions have cumulatively significant impacts.
Cumulative Effects or Impacts	The impact on the environment which results from the incremental impact of an action when added to other past, present and reasonably foreseeable future actions regardless of what agency or person undertakes such other action. Cumulative effects or impacts can result from individually minor but collectively significant actions taking place over a period of time.
DBH	Diameter at breast height. The diameter of a tree measured 4 feet 6 inches from the ground.
Dead and down material	Woody material (logs, etc.) laying on or near the ground. Necessary for soil productivity and wildlife habitat.
Decommissioning	Various levels of treatment leading to stabilization and restoration of transportation facilities that are no longer needed.
Decomposition Class	Any of the five stages of decomposition of logs left in the forest; stages range from essentially sound to almost total decomposition.
DEIS (Draft Environmental Impact Statement)	The draft version of the Environmental Impact Statement that is released to the public and other agencies for review and comment.
Desired AIZ Attributes	Attributes or conditions within the AIZ that maintain or improve riparian and stream channel processes and function. This includes, but not limited to, AIZ desired future conditions (DFC), Goals, Riparian Condition Indicators (RCI), water quality supporting beneficial uses, and aquatic & terrestrial species habitat and population viability.
Desired Future Condition (DFC)	Land or resource conditions that are expected to result if goals and objectives are fully achieved. Best thought of as the long term target that the Revised Forest Plan was designed to attain or move toward.
Detrimental Soil Disturbance	Detrimentally disturbed soil is soil that has been detrimentally displaced, compacted, puddled, or severely burned.
Direct Effects	Effects or impacts that are caused by the action and occur at the same time and place.

Glossary

Dispersed Recreation	Recreation that does not occur in a developed recreation site, such as hunting, camping, backpacking and scenic driving.
Disturbance	Any event, such as a forest fire or insect infestation that alters the structure, composition, or function of an ecosystem.
Diversity	The distribution and abundance of different plant and animal communities and species within the area covered by a land and resource management plan
Early Forest Succession	The biotic (or life) community that develops immediately following the removal or destruction of vegetation in an area. For instance, grasses may be the first plants to grow in an area that was burned.
Ecological Process	The actions or events that link organisms (including humans) and their environment, such as disturbance, successional development, nutrient cycling, carbon sequestration, productivity, and decay.
Ecology	The interrelationships of living things to one another and to their environment, or the study of these interrelationships.
Ecosystem	An arrangement of living and non-living things and the forces that move among them. Living things include plants and animals. Non-living parts of ecosystems may be rocks and minerals. Weather and wildfire are two of the forces that act within ecosystems.
Ecosystem Health	The state of an ecosystem in which the structure and functions are sufficiently resilient, allowing the maintenance of biological diversity over time and through a range of disturbance.
Ecosystem Management	The use of an ecological approach to achieve productive resource management by blending social, physical, economic and biological needs and values to provide healthy ecosystems.
Edge	The margin where two or more vegetation patches meet, such as a meadow opening next to a mature forest stand, or a Douglas-fir stand next to an aspen stand.
Effects	Environmental consequences as a result of a proposed action. Included are direct effects, which are caused by the action and occur at the same time and place, and indirect effects, which are caused by the action and are later in time or further removed in distance, but which are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air, water and other natural systems, including ecosystems.
Effects and impacts	As used in this statement are synonymous. Effects include ecological (such as the effects on natural resources and on the components, structures and functioning of affected ecosystems), aesthetic quality, historic, cultural, economic, social or health whether direct, indirect or cumulative. Effects may also include those resulting from actions that may have both beneficial and detrimental effects, even if on balance the agency believes that the effects will be beneficial (40 CFR 1508.8).

Glossary

Endangered Species	Any species of animal or plant that is in danger of extinction throughout all or a significant portion of its range. Plant or animal species identified by the Secretary of the Interior and endangered in accordance with the 1973 Endangered Species Act.
Endangered Species Act	The Act which requires consultation with U.S. Fish and Wildlife Service if practices on National Forest System lands may impact a threatened or endangered species (plant or animal).
Endemic	1) A plant or animal that occurs naturally in a certain region and whose distribution is relatively limited geographically. 2) Insects and disease belonging or native to a particular area or region.
Environmental Analysis	An analysis of alternative actions and their predictable long and short-term environmental effects. Environmental Analyses include physical, biological, social and economic factors.
Environmental Impact Statement (EIS)	A statement of the environmental effects of a proposed action and alternatives to it. It is required for major Federal actions under Section 102 of the National Environmental Policy Act (NEPA) and released to the public and other agencies for comment and review. It is a formal document that must follow the requirements of NEPA, the Council on Environmental Quality (CEQ) guidelines, and directives of the agency responsible for the project proposal.
Ephemeral Stream	Streams that flow only as the direct result of rainfall or snowmelt. They have no permanent flow, do not flow from groundwater sources, and do not have a clearly defined channel.
Erosion	The wearing away of earth material, usually from the land surface, by chemical reactions, running water, wind, ice, or other geological agents, including such processes as gravitational creep
Fire Behavior	A manner in which fire reacts to the influences of fuel, weather, and topography.
Fire Cycle	The average time between fires in a given area.
Fire Effects	The physical, biological and ecological impacts of fire on the environment.
Fire Regime	The characteristics of fire in a given ecosystem, such as the frequency, predictability, intensity, and seasonality. Fire regimes are typically classified as being non-lethal, mixed or lethal to the dominate shrub or tree.
Fire Regime Condition Classes(FRCC)	A classification of vegetation conditions related to natural fire regimes.
Fire Regime Condition Classes(FRCC)	Vegetation composition, structure, and fuels are similar to those of the natural regime and do not predispose the system to risk of loss of key ecosystem components. Wildland fires are characteristic of the natural fire regime behavior, severity, and patterns.
<u>Condition Class 1:</u>	Disturbance agents, native species habitats, and hydrologic functions are within the natural range of variability.

Glossary

Fire Regime Condition Classes(FRCC)	Vegetation composition, structure, and fuels have moderate departure from the natural regime and predispose the system to risk of loss of key ecosystem components. Wildland fires are moderately uncharacteristic compared to the natural fire regime behaviors, severity, and patterns. Disturbance agents, native species habitats, and hydrologic functions are substantially outside the natural range of variability.
<u>Condition Class 2:</u>	
Fire Regime Condition Classes(FRCC)	Vegetation composition, structure and fuels have high departure from the natural regime and predispose the system to high risk of loss of key ecosystem components. Wildland fires are highly uncharacteristic compared to the natural fire regime behaviors, severity, and patterns. Disturbance agents, native species habitats, and hydrologic function are substantially outside the natural range of variability
<u>Condition Class 3:</u>	
Floodplain	A lowland adjoining a watercourse. At a minimum, the area is subject to a 1% or greater chance of flooding in a given year (100 year flood).
Forest Cover Type	(See cover type.)
Forest Health	A measure of the robustness of forest ecosystems. Aspects of forest health include biological diversity, soil, air, and water productivity, natural disturbances, and the capacity of the forest to provide a sustaining flow of goods and services for people.
Forest Roads and Trails	A legal term for Forest roads or trails that are under the jurisdiction of the Forest Service.
Forest Structure Stage (FSS)	An age-class clarification used to describe forested stands on the Caribou Zone in the Cstands GIS coverage. The classes used in Cstands data are: seed/sapling, young/mid, mature and late seral (or old). This classification system is based on information found in the RFP and RFP-EIS. For more detail see M.W. Beck, 2016a.
Forest Supervisor	The official responsible for administering National Forest lands on an administrative unit, usually one or more National Forests. The Forest Supervisor reports to the Regional Forester.
Fragmentation	The splitting or isolating of patches of similar habitat, typically forest cover, but including other types of habitat. Habitat can be fragmented naturally or from forest management activities, such as clearcut logging.
Fuel Treatment	Manipulation or removal of fuels to reduce the likelihood of ignition and/or lessen potential damage and resistance to control (e.g. lopping, chipping, crushing, piling, and burning).
Fuels	Plants and woody vegetation, both living and dead, that are capable of burning.
Game Species	Any species of wildlife or fish that is harvested according to prescribed limits and seasons.
GIS (geographic information systems)	GIS is both a database designed to handle geographic data as well as a set of computer operations that can be used to analyze the data. In a sense, GIS can be thought of as a higher order map.

Glossary

Ground Cover	Material covering the land surface. It may include live vegetation, standing dead vegetation, litter, cobble, gravel, stones and bedrock. Ground cover plus bare ground would total 100 percent of the area evaluated.
Groundwater	The supply of water under the earth's surface present, typically in layers where water saturates the rocks or soil of those layers.
Group Selection	A method of tree harvest in which trees are removed periodically in small groups. This silvicultural treatment results in small openings that form mosaics of age class groups in the forest.
Habitat	The area where a plant or animal lives and grows under natural conditions.
Habitat Diversity	A number of different types of wildlife habitat within a given area.
Habitat Type	A way to classify land area. A habitat can support certain climax vegetation, both trees and undergrowth species. Habitat typing can indicate the biological potential of a site.
Hard Snag	See Snag.
Harvest	Involves planning harvest and reforestation; cutting trees and moving them to a landing; processing, sorting and loading; and transporting materials.
Hazardous Fuels	Excessive live or dead wildland fuel accumulations that increase the potential for uncharacteristically intense wildland fire and decrease the capability to protect life, property, and natural resources.
Healthy Ecosystem	An ecosystem in which structure and functions allow the maintenance of biological diversity, biotic integrity, and ecological processes over time.
Heritage Resources	The remains of sites, structures, or objects used by humans in the past: historical or archaeological.
Heterogeneity	The quality or state of being diverse in character or content.
Homogeneity	The quality or state of being all the same or all of the same kind.
HRV	Historic Range of Variability, see Range of Variability.
Hydric	Water loving vegetation. Plant species that depend on saturated or moist soil conditions for a large part of the growing season. Typically found in AIZs along or in streams and wetlands.
Hydrologic Unit Code (HUC)	A coding system developed by the U.S. Geological Service to map geographic boundaries of watersheds of various sizes. The higher the HUC index number, the smaller the area (in other words, a HUC-4 is a larger area than a HUC-6). For example, a HUC-4 averages about 700 square miles, while a HUC-6 averages about 40 square miles. A HUC-5 is in-between and averages about 227 square miles.

Glossary

Hydrologically Disturbed Condition	Changes in natural canopy cover (vegetation removal) or a change in surface soil characteristics (such as compaction) that may alter natural streamflow quantities and character. Acres of vegetation within a watershed that are in a non-stocked, seedling, sapling, or first entry category; acres in roads; acres from other types of mechanical treatments and burned acres are included in the calculation of hydrologically disturbed area.
Hydrologically Recovered Condition	Vegetative life form where natural canopy coverage is achieved and subsequent streamflow quantities and character (timing and amount) reflect more natural conditions. Within the forested ecosystem, this equates roughly with the sapling/early pole life form. This life form is achieved at approximately 20 – 30 years of age, depending on cover type and inherent site productivity potentials. Within the non-forested ecosystem, this equates roughly to 80% or pre-fire ground cover, whichever is less, approximately 3-5 years following treatment, depending on inherent site productivity potentials. Roads are considered hydrologically recovered if obliterated or ripped and drained and have 80% or more ground cover.
Hydrology	The science dealing with the study of water on the surface of the land, in the soil and underlying rocks and in the atmosphere.
Idaho Roadless Areas (“Roadless”)	A set of maps maintained at the national headquarters office of the Forest Service for the conservation of inventoried Roadless areas.
Indicator Species	A plant or animal species related to a particular kind of environment. Its presence indicates that specific habitat conditions are also present.
Indirect Effects	Effects that are caused by the action and are later in time and farther removed in distance, but are still reasonably foreseeable.
Interdisciplinary Team (IDT)	A team of individuals with skills from different disciplines that focuses on the same task or project.
Intermediate Cut.	The removal of trees from a stand sometime between the beginning or formation of the stand and the regeneration cut. Types of intermediate cuts include thinning, release, and improvement cuttings.
Intermittent Stream	A stream that flows only at certain times of the year when it receives water from tributary streams, from some surface source such as melting snow or from seasonally high groundwater sources. Intermittent streams generally flow for more than 30 consecutive days per year and have clearly defined channels covered at least partly with re-worked gravels, rounded stones or smoothed bedrock.
Invasive Species	A plant species moving into areas outside of its former range.
Inventoried Roadless Area	(West of the 100th meridian) An area which meets the statutory definition of wilderness, does not contain improved roads maintained for travel by standard passenger-type vehicles, and meets one or more of the following criteria: 1) Contains 5,000 acres or more. 2) Contains less than 5,000 acres, but: 2a) Due to physiography or vegetation, is manageable in a natural condition. 2b) Is a self-contained ecosystem such as an island. 2c) Is contiguous to existing wilderness, primitive area, Administration-endorsed wilderness, or Roadless area in other 3) Federal ownership, regardless of size.

Glossary

Irrecoverable	Applies to losses of production, harvest or commitment of renewable natural resources. For example, some or all of the timber production from an area is irretrievably lost during the time an area is used as a winter sports site. If the use is changed, timber production can be resumed. The production lost is irrecoverable, but the action is not irreversible.
Irreversible	Applies primarily to the use of nonrenewable resources, such as minerals or cultural resources, or to those factors that are renewable only over long time spans, such as soil productivity. Irreversible also includes loss of future options.
Issue	A point, matter or question of public discussion or interest to be addressed or decided or analyzed through the planning process.
Keystone Species	A species on which other species in an ecosystem largely depend, such that if it were removed the ecosystem would change drastically.
Landing	Any place where cut timber is assembled for further transport from the timber sale area.
Landscape	A large land area composed of interacting ecosystems that are repeated due to factors such as geology, soils, climate, and human impacts. Landscapes are often used for coarse grain analysis.
Landscape Ecology	A study of the principles concerning structure, function and change of landscapes, and the use of these principles in the formulation and solving of problems; the body of knowledge pertaining to the structure, function and change of spatial patterns in ecosystems.
Late Forest Succession	The stage of forest succession in which most of the trees are mature or overmature.
Late Seral	The Revised Forest Plan (RFP) for the Caribou National Forest uses the terms late seral, late seral stand, old and old forest interchangeably. In this document the term late seral is used in an attempt to avoid confusion between the terms old and old-growth (which has a different definition in the RFP). The RFP has a guideline for delineating late seral or old forest stands. Where the term late seral is used in this document it refers to the stands that are described in RFP Table 3.2. The guideline says that the definitions in the table are guidelines and that site-specific stand structure should determine delineation of late seral stands. Table 3.2 is included below for quick reference, refer to the RFP for more detail.

RFP Table 3.2 Characteristics of Late Seral Forests by Vegetation Overstory Type.

Forest Type	Age	Trees per Acre	DBH in inches (diameter at breast height)
Lodgepole pine	100+	40+	9+
Mixed Conifer	100+	40+	12+
Spruce/fir	110+	20+	12+
Douglas-fir	140+	25+	14+
Aspen	60+	20+	10+

Glossary

Legal Notice	A notice of a decision which can be appealed that is published in the Federal Register or in the legal notice section of a newspaper of general circulation.
Lek	An area used habitually by grouse species where the males display for the females each spring. Number of males are counted on the lek each spring to establish general population trends.
Lethal Fire	In forests, fires in which less than 20 percent of the basal area or less than 10 percent of the canopy cover remains; in rangelands, fires in which most of the shrub overstory or encroaching trees are killed.
Litter (forest litter).	The surface layer (O-horizon) of fresh and decomposed plant remains, mainly leaves and twigs (branches less than three inches in diameter). Decomposed plant material (Oe and Oa horizon) is sometimes called "duff".
M	Thousand. Five thousand board feet of timber can be expressed as 5M board feet or 5MBF.
Management Prescription	Management practices and intensity selected and scheduled for application on a specific area to attain multiple-use and other goals and objectives.
Masticating	A type of stand treatment that typically involves a tracked machine with a chopping head that moves through the stand chopping or rearranging fuels to decrease the intensity that they would burn.
Mature Forest	1) A FSS classification in the Cstands GIS. 2) Large seral trees dominant the site, crowns are beginning to round and become less vigorous as trees have reached or are near their site potential height. Large flattened lower branches and rough or platey bark become more evident. Climax (shade tolerant) tree species become common in the understory. Snags (class 1), CWD (class 1), and FWD are increasing. Dominate trees are generally less than 12.0" DBH and <100 years old. The growth characteristics of the different tree species have become very evident.
Mature Timber.	Trees that have attained full development, especially height, and are in full seed production. Refers to ages and sizes of dominant trees that are at least at culmination of mean annual increment of tree stand volume growth.
MBF.	Thousand board feet (See board feet.)
Mean Annual Increment of Growth.	The total increase in size or volume of individual trees. Or, it can refer to the increase in size and volume of a stand of trees at a particular age, divided by that age in years.
Mineral Soil.	Soil that consists mainly of inorganic material, such as weathered rock, rather than organic matter.
MIS (management indicator species)	A wildlife species whose population indicate the health of the ecosystem in which it lives and, consequently, the effects of forest management activities to that ecosystem. MIS are selected by land management agencies. (See indicator species.)

Glossary

Mitigate/mitigation	To lessen the severity. Actions taken to avoid, minimize or rectify the impact of a land management practice.
Mixed Stand	A stand consisting of two or more tree species.
MM	Million
MMBF	Million board feet (See board feet.)
Modification	A visual quality objective; management activities may visually dominate the original characteristic landscape, but they must borrow from naturally established form, line, color or texture so that the activity blends with the surrounding area.
Monitoring	The determination of how well project or plan objectives have been met and how closely management practices should be adjusted. (See adaptive management.)
Mortality	Trees that were merchantable and have died within a specified period of time. The term mortality can also refer to the rate of death of a species in a given population or community.
Mountain Pine Beetle	An insect, ranging from 1/8 to 3/4 inch in size, which bores through a pine tree's bark. It stops the tree's intake and transport of the food and nutrients it must have to stay alive, thus killing the tree.
Multiple-Use	The management of all the various renewable surface resources of the National Forest System lands for a variety of purposes such as recreation, range, timber, wildlife and fish habitat, and watershed.
National Environmental Policy Act (NEPA)	This is the basic national charter for protection of the environment. It establishes policy, sets goals and provides means for carrying out the policy.
National Forest Management Act (NFMA)	These are rules that require an integration of planning for National Forests and Grasslands, including the planning for timber, range, fish and wildlife, water, wilderness, recreation resources, together with resource protection activities, such as fire management, and the use of other resources, such as minerals.
Natural Range of Variability	See Range of variability.
Natural Resource	A feature of the natural environment that is of value in serving human needs.
No Action Alternative	The most likely condition expected to exist in the future if management practices continue unchanged.
Nonpoint Source Pollution	Pollution whose source is not specific in location (point source). The sources of discharge are dispersed, not well-defined, or constant. Rainstorms and snowmelt often make this type of pollution worse. Examples include sediments from logging activities, and runoff from agricultural chemicals.

Glossary

Non-Riverine Wetlands	A wetland that is not directly adjacent to a stream or river.
Notice of Intent (NOI)	A notice printed in the Federal Register announcing that an Environmental Impact Statement (EIS) will be prepared.
Noxious Weeds	A plant recognized by law as being especially undesirable, troublesome, and difficult to control.
Objective	A clear and quantifiable statement of planned results to be achieved within a stated time period. Something aimed at or striven for within a predetermined time period. An objective must be achievable, be measurable, have a stated time period for completion, be quantifiable, be clear and its results must be described.
Off-Highway Vehicle (OHV)	Includes all-terrain type 1 ATVs, all terrain type 2 ATVs, and Snowmobiles.
OHWM	The term ordinary high water mark means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas." (33 CFR 328.3(e)).
Old	See <i>Late Seral</i>
Old-Growth	Late seral forests often contain several canopy layers, variety in tree sizes and species, decadent old trees, and standing dead woody material. The RFP has a standard that states document USDA Forest Service 1993 shall be used to define old-growth characteristics.
Open Motorized Route Density (OMRD)	Includes all open roads and open motorized trails. Density may be displayed in miles per square mile for a specified analysis area.
Opening	An opening in the forest canopy created by a silvicultural treatment or a natural disturbance. Openings can range in size from 1/10 of an acre to over 100 acres. Typical opening sizes vary by forest cover types, elevation, aspect and land form.
Opportunities	Ways to address or resolve public issues or management concerns in the land and resource management planning process.
Overstory	The upper canopy layer; the plants below comprise the understory.
Patch	An area of homogenous vegetation, in structure and composition that is less than 4 acres. Homogenous areas large than 4 acres are typically referred to as stands. Stands are made up of patches, patches are made up by clumps and groups of trees.
Perennial Stream	A stream that flows throughout the year and from source to mouth.

Glossary

Piling	A type of stand tending treatment that involves putting surplus large woody debris (greater than 3 inches diameter) and coarse woody debris (less than 3 inches diameter) into piles that are arranged (density and size) conducive to burning later. Piling will generally be done by hand, but where fuel loads warrant track mounted mechanical equipment may be used (e.g. skid steer, dozer)
Plant Species	The major subdivision of a genus or subgenus of a plant being described or measured.
Pole timber.	Live trees at least five inches in diameter at breast height but smaller than the minimum size for sawtimber.
Pole/sapling	The stage of forest succession in which trees are between 3 and 7 inches in diameter and are the dominant vegetation.
Policy	A guiding principle which is based on a specific decision or set of decisions.
Potential Natural Vegetation.	The vegetation that would exist today if man were removed from the scene and if the plant succession after his removal were telescoped into a single moment. The time compression eliminates the effects of future climatic fluctuations, while the effects of man's earlier activities are permitted to stand.
Precommercial Thinning	The practice of removing some of the trees less than merchantable size from a stand so that the remaining trees will grow faster.
Predator	An animal at or near the top of food chains that lives by preying on other animals.
Prescribed Fire	Fire set intentionally in wildland fuels under prescribed conditions and circumstances. Prescribed fire can rejuvenate forage for livestock and wildlife or prepare sites for natural regeneration of trees.
Prescribed Natural Fire.	Naturally ignited fire that burns under specified conditions that allow the fire to be confined to a predetermined area and produce fire behavior and fire characteristics to attain planned fire treatment and resource management objectives.
Prescription	Management practices selected to accomplish specific land and resource management objectives.
Productivity	The ability of an area to provide goods and services and to sustain ecological values; the growth rate of biomass per unit area, usually expressed in terms of weight or energy.
Properly Functioning Condition (PFC)	The condition of a resource or ecosystem at any temporal or spatial scale when they are dynamic and resilient to disturbances to structure, composition and processes of their biological or physical components. Riparian PFC is based on the BLM/FS TR-1737-5, TR-1737-15 & TR-1737-16; upland PFC is based on the Intermountain Region's Rapid Assessment Process.
Proposed Action	A proposal by the Forest Service to authorize, recommend or implement an action.
Purpose and Need	A statement which briefly specifies the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action.

Glossary

PWI Watershed	Project Work Inventory (PWI) Watersheds have been delineated on the Caribou NF and are at approximately the same scale as 5 th level hydrologic unit codes (HUC) which were used in the ICBEMP.
Quadratic Mean Diameter (QMD).	Indicates the diameter of the cross-section of average area. This number is used for determining basal area and volume.
Range (Rangeland)	Land on which the principle natural plant cover is composed of native grasses, forbs, and shrubs that area available as forage for big game and livestock.
Range Management	The art and science of planning and directing range use intended to yield the sustained maximum animal production and perpetuation of the natural resources.
Ranger District	The administrative sub-unit of a National Forest that is supervised by a District Ranger who reports directly to the Forest Supervisor.
RARE II	<i>Roadless Area Review and Evaluation.</i> The national inventory of roadless and undeveloped areas within the National Forests and Grasslands.
Recreation Type: <u>Developed Recreation.</u>	The type of recreation that occurs where modifications (improvements) enhance recreation opportunities and accommodate intensive recreation activities in a defined area.
Recreation Type: <u>Dispersed Recreation.</u>	That type of recreation use that requires few, if any, improvements and may occur over a wide area. This type of recreation involves activities related to roads and trails. The activities do not necessarily take place on or adjacent to a road or trail, only in conjunction with it. Activities tend to be day-use oriented and include hunting, fishing, berry picking, off-road vehicle use, hiking, horseback riding, picnicking, camping, viewing scenery, snowmobiling, and many others.
Reforestation	The natural or artificial restocking of an area with forest trees.
Regeneration	The renewal of a tree crop, whether by natural or artificial means. Also, the young crop itself, which commonly is referred to as reproduction.
Regional Forester	The official of the USDA Forest Service responsible for administering an entire region of the Forest Service.
Relic	A remnant tree that has survived the last major disturbance, usually the last fire cycle.
Residual Stand.	The trees remaining standing after some event such as selection cutting.
Resilience	The ability of an ecosystem to return to or maintain diversity, integrity and ecological processes following disturbance.
Restoration	Actions taken to modify an ecosystem in whole or in part to achieve a desired condition.

Glossary

RFP	The 2003 Revised Forest Plan of the Caribou National Forest. Reference: U.S. Department of Agriculture (USDA), Forest Service.(2003a). Revised Forest Plan for the Caribou National Forest. Retrieved from: https://www.fs.usda.gov/detail/ctnf/landmanagement/planning/?cid=STELPRDB5116356
Riparian Area	Areas along a watercourse, around a lake or pond, or any area that classifies as a wetland.
Riparian Attributes	See AIZ attributes.
Riparian Ecosystem	The ecosystems around or next to water areas that support unique vegetation and animal communities as a result of the influence of water.
Road Density	The miles of road per square mile.
Road System	An alpha code indicating primary systems designation where primary indicates the system under which principle funding and management criteria for operation and maintenance of a road is derived.
ROD	Record of Decision. An official document in which a deciding official states the alternative that will be implemented from a prepared EIS.
Rotation	The number of years required to establish and grow timber to a specified condition of maturity.
Runoff	The portion of precipitation that flows over the land surface or in open channels.
Salvage Harvest	Harvest of trees that are dead, dying, or deteriorating because they are overmature or have been materially damaged by fire, wind, insects, fungi, or other injurious agents before the wood becomes unmerchantable.
Sanitation Harvest.	The harvest of dead, damaged or susceptible trees done primarily to prevent the spread of pests or disease and to promote forest health.
Sapling	1) A loose term for a young tree more than a few feet tall and an inch or so in diameter that is typically growing vigorously. 2) a FSS class used to describe patches and stands where young trees have gained dominance over grasses, forbs and shrubs and are typically less than 5 inches in DBH.
Sawtimber	Trees that are 9 inches in diameter at breast height or larger and can be made into lumber.
Scale	In ecosystem management, scale refers to the degree of resolution at which ecosystems are observed and measured.
Scoping	The on-going process to determine public opinion, receive comments and suggestions, and determine issues during the environmental analysis process. It may involve public meetings, telephone conversations or letters.
Security Area	Security areas are non-linear blocks over ½ mile from an open route and at least 250 acres in size. Cover may be provided by vegetation or topography.

Glossary

Sediment	Solid material, both mineral and organic, transported from its site of origin by air, water, gravity, or ice.
Sedimentation	The accumulation of soil in stream channels, estuaries, and lake bottoms, usually as a result of slowing of sediment laden water. Sediment is usually derived from upland or bank cutting in upstream areas.
Seed Tree Harvest	Removal of the mature timber crop from an area in one cut, except for a small number of seed bearers.
Seedlings/Saplings	A forest structure stage used in Cstands GIS data. Stands and patches are classified to this stage where live trees less than 5 inches in diameter at breast height and the area has been disturbed by a silviculture treatment or natural disturbance that initiated a new cohort in the recent past (time varies by cover type).
Selection	See "Group Selection" and "Individual (Single) Tree Selection."
Sensitive Species	Plant or animal species which are susceptible to habitat changes or impacts from activities. The official designation is made by the USDA Forest Service at the Region level and is not part of the designation of Threatened or Endangered Species made by the U.S. Fish & Wildlife Service.
Seral	The stage of succession of a plant or animal community that is transitional. If left alone, the seral stage will give way to another plant or animal community that represents a further stage of succession. Generally expressed as <i>late, mid, or early</i> .
Shade-Intolerant Plants	Plant species that do not germinate or grow well in shade.
Shade-Tolerant Plants	Plants that grow well in shade.
Shelterwood	A cutting method used in a more or less mature stand, designed to establish a new crop under the protection of the old.
Significance	As used in NEPA, requires consideration of both context and intensity.
Silvicultural System	A planned series of treatments for tending, harvesting and re-establishing a stand. The system is normally named for the number of age classes (coppice, even-aged, two-aged uneven-aged) or the regeneration method (clear-cut, seed tree, shelterwood, selection, coppice, coppice with reserves) used.
Silviculture	The art and science of controlling the establishment, growth, composition, health, and quality of forests and woodlands to meet the diverse needs and values of landowners and society on a sustainable basis.
Single-Tree Selection.	An uneven aged harvest method individual trees of all size classes are removed more or less uniformly throughout the stand, to promote growth of remaining trees and to provide space for regeneration. Synonym individual tree selection.

Glossary

Site Preparation	The general term for removing unwanted vegetation, slash, roots, and stones from a site before reforestation. Naturally occurring wildfire, as well as prescribed fire can prepare a site for natural regeneration.
Skid Trail	Narrow path on which logging equipment travels when moving logs from the forest to a designated landing location.
Skidding	Hauling logs by sliding, not on wheels, from stump to a collection point.
Slash	The residue left on the ground after timber cutting and/or accumulating there as a result of storm, fire, or other damage. It includes unused logs, uprooted stumps, broken or uprooted stems, branches, twigs, leaves, bark and chips.
Smoke Management	Application of fire intensities and meteorological processes to minimize degradation of air quality during prescribed fires.
Snag	A standing dead tree important as habitat for a variety of wildlife species and their prey.
Soil Compaction	A physical change in soil properties that results in a decrease in porosity and increase in soil bulk density and soil strength.
Soil Compaction	The reduction of soil volume. For instance, the weight of heavy equipment on soils can compact the soil and thereby change it in some ways, such as its ability to absorb water.
Soil Productivity	Soil Productivity includes the inherent capacity of a soil under management to support the growth of specified plants, plant communities, or a sequence of plant communities. Soil productivity may be expressed in terms of volume or weight/unit area/year, percent plant cover, or other measures of biomass accumulation.
Soil Quality	Long term soil productivity and soil hydrologic function.
Soil-loss Tolerance	Soil-loss tolerance is the maximum rate of annual soil erosion at which plant productivity can be sustained indefinitely. It is dependent on the rate of soil formation and type of vegetation being managed.
Species at Risk	Species which demonstrate a potential for loss of resilience or sustainability if disturbed.
Stand (Stand of trees)	A group of trees that occupies a specific area and is similar in species, age, and condition.
Stand Density Index (SDI)	A widely used measure developed by Reineke (1933) that expresses relative stand density in terms of the relationship of a number trees to stand quadratic mean diameter. An index that expresses relative stand density based on a comparison of measured stand values with some standard condition.

Glossary

Standards and Guidelines	Requirements found in a Forest Plan which impose limits on natural resource management activities, generally for environmental protection. <ul style="list-style-type: none">• Standards are used to promote the achievement of the desired future condition and objectives and to assure compliance with laws, regulations, Executive Orders or policy direction established by the Forest Service. Standards are binding limitations on management activities that are within the Forest Service to enforce. A standard can be also expressed as a constraint on management activities or practices. (RFP 3-1)• Guidelines are used in the same way as standards but tend to be operationally flexible to respond to variations, such as changing site conditions or changed management circumstances. Guidelines are a preferred or advisable course of action, and they are expected to be carried out, unless site-specific analysis identifies a better approach. (RFP 3-1)
Storage	One of the ways functions are described; resources which are conserved within the system (i.e., sediments and water retained in wetlands, carbon and other nutrient storage in down woody material).
Stream Channel	The defined bed and bank of a watercourse down which water travels.
Streamflow	A measure of the volume of water passing a given point in a stream channel at a given point in time.
Stringer.	A strip of vegetation different from surrounding vegetation, such as a stringer of aspen in an area of spruce.
Structure	1) How the parts of ecosystems are arranged, both horizontally and vertically. These parts include vegetation patches, edge, fragmentation, canopy layers, snags, down wood, steep canyons, rocks in streams, and roads. For example, structure might reveal a pattern, mosaic or total randomness of vegetation. 2) at times used to refer to the arrangement of age-classes by the RFP. This document tries to avoid using this term that way and uses forest structure stages or age-class structure to avoid confusion.
Subwatershed	A drainage delineated for one of the streams within a National Forest System (NFS) watershed, often to analyze the effects of a proposed action. The subwatershed chosen for analysis may depend on the size and anticipated effects of a proposal. Often a HUC-6 is referred to as a subwatershed.
Succession	The natural replacement, in time, of one plant community with another. Conditions of the prior plant community (or successional stage) create conditions that are favorable for the establishment of the next stage.
Successional Stage	A stage of development of a plant community as it moves from bare ground to climax. The grass-forb stage of succession precedes the woody shrub stage and so on.
Surface Erosion	The removal of upper layers of the land surface due to the action of wind, water, or gravity to transport it elsewhere.

Glossary

Surface Fire.	Fire that burns loose debris of the surface, which includes dead branches, leaves and low vegetation.
Sustainability	The ability of an ecosystem to maintain ecological processes and functions, biological diversity, and productivity over time.
Sustainable	The yield that a renewable resource can produce continuously at a given intensity of management is said to be sustainable.
Sustained-Yield	The yield that a renewable resource can produce continuously at a given intensity of management.
Swale	Shallow drainage features in the landscape that may convey water across upland areas during and following storm events. Swales usually occur at the bottoms of slopes and typically are populated with upland vegetation.
Temporary Road	Temporary roads are constructed to aid the harvest process. They are generally short and are usually open for one season.
Tending	Treatment activities that reduce density, change species composition and rearrange forest material (trees, woody debris and brush) that are generally not merchantable size.
Terrestrial	Pertaining to the land.
Thinning	A cutting method used in an immature stand of trees to accelerate growth or improve the form of the remaining trees without permanently breaking the canopy.
Threatened and Endangered Species Habitat	Those areas currently or potentially occupied or utilized by threatened and endangered species. T&E Species habitat generally falls into one of several categories: critical habitat, proposed critical habitat, occupied habitat, or potential habitat.
Threatened Species	Those plant or animal species likely to become endangered species throughout all or a significant portion of their range within the foreseeable future as designated by the U.S. Fish & Wildlife Service under the Endangered Species Act of 1973.
TMDL	Total Maximum Daily Load. A regulatory term in the U.S. Clean Water Act, describing a plan for restoring impaired waters that identifies the maximum amount of a pollutant that a body of water can receive while still meeting water quality standards.
Transportation System	All existing and proposed roads, trails, airfields, and other transportation facilities wholly or partly within or adjacent to and serving the National Forests and other areas administered by the Forest Service or intermingled private lands.
Treatment Area	The site-specific location of a resource improvement activity.
Trend	The direction of change in ecological status of a plant community usually expressed as moving "toward", "away from", or "not apparent".
TSI (Timber Stand Improvement)	Actions to improve growing conditions for trees in a stand, such as thinning, pruning, prescribed fire, or release cutting.

Glossary

Understory	The trees and woody shrubs growing beneath the overstory in a stand of trees.
Uneven-Aged Management	Actions that maintain a forest or stand of trees composed of intermingling trees that differ markedly in age. Cutting methods that develop and maintain uneven-aged stands are single-tree selection and group selection.
Variability	(Natural variability, historic variability, range of variability) The observed limits of change in composition, structure, and function of an ecosystem over time as influenced by frequency, magnitude and pattern of disturbance.
Vegetation Management or Manipulation	Activities designed primarily to promote the health of forest vegetation for multiple-use purposes.
Vegetation Type	A plant community with distinguishable characteristics.
Vertebrate	Species having a backbone or spinal column.
Viability	The ability of a population or species to exist over the long-term in natural, self-sustaining populations distributed throughout their region.
Water Quality Limited Segment (WQLS)	A stream, segment of a stream, lake or pond which has been listed by the State as water quality limited for one or more parameters such as temperature, sediment, contaminants, etc. Also known as an impaired segment. Required by section 303(d) of the Clean Water Act.
Water Quality Limited Stream (WQLS)	Water bodies (or segments of water bodies) listed by the Idaho Department of Water Quality as not meeting State water quality standards and/or not supporting the identified beneficial uses for that water body in the 305(b) Integrated Report submitted to the U.S. Environmental Protection Agency. They are to be monitored to determine if water quality standards are, or are not, being met. On those not meeting standards, TMDLs may be assigned.
Water Table	The upper surface of groundwater. Below it, the soil is saturated with water.
Watershed	The entire region drained by a waterway (or into a lake or reservoir). More specifically, a watershed is an area of land above a given point on a stream that contributes water to the stream flow at that point.
Wetland	Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support...a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. (40 CFR Part 122.2)
Wetlands	Areas that are permanently wet or are intermittently covered with water.
Wildfire	Any wildland fire that is not a prescribed fire.
Wildland/Urban Interface (WUI)	The line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels.

Glossary

Wildlife Habitat Diversity	The distribution and abundance of different plant and animal communities and species within a specific area.
Windthrow	Trees that have been uprooted or broken off by the wind.
Yarding	Moving cut trees to a centralized place (landing) for hauling away from the stand.
Young/Mid	A forest structure stage (FSS) classification used in the Cstands GIS to identify stands that are between seed/sapling and mature. Dominate trees in stands in this class are generally greater than 5 inches DBH and still adding height at a relatively quick pace for the site conditions.

Index

2.8.3 Prescription Area	1-18	Issues	1-21
5.2 Prescription Area	1-5, 1-19	Livestock grazing.....	2-23
Age-class Diversity	4-5, 4-8	Migratory Birds	4-21
Air Quality	1-9, 1-23, 2-19	Monitoring.....	2-23
Alternative 2.....	2-9, 4-7	No Action	2-16, 4-11
Alternatives.....	2-1	Noxious Weeds	1-11, 1-25, 2-20
Alternatives considered but eliminated	2-17	Objectives of Proposed Action	1-6
Aquatic Influence Zone	4-25, 4-26	Operating season.....	2-22
Aspen	1-5, 4-3	Prescribed Fire	2-22
Aspen Health.....	4-5, 4-9	Project area.....	1-1
Climate Change	1-24	Proposed action.....	1-7
Comparison of effects.....	2-24	Proposed Action	2-2, 4-3
Conifer Canopy Cover	4-5, 4-9	Purpose and need.....	<i>See Chapter 1</i>
Cultural resources.....	2-21	Range	1-25
Cultural Resources	1-15, 1-24	Recreation.....	1-14, 1-25
Cumulative Effects	4-6, 4-10, 4-12	Revised Forest Plan direction	1-8
Decision Framework	1-26	Riparian.....	1-10, 3-32, 4-26
Desired future condition.....	1-4	Road proposals	1-7
Douglas-fir Bark Beetle Risk.....	4-6, 4-9	Roadless.....	1-26
Draft Environmental Impact Statement	1-20	Scenery	1-15
Fire Regime Condition Class.1-4, 3-4, 4-3, 4-4, 4-8		Scenic Values	1-26
Fisheries	1-24	Scoping.....	1-20
Forest Plan Direction.....	1-8	Sensitive species	3-22
Forest Structure Stage	3-6	Sensitive Species.....	4-17
Forest Vegetation.....	1-10, 1-22, 2-18, 3-1, 4-1	Soils.....	1-8, 1-23, 2-20, 3-34, 4-30
Forest Vegetation Management....	1-19, 2-2, 2-9	Species composition	3-11, 4-3
Fuels Treated.....	4-6, 4-9	Threatened and Endangered Species	4-17
Geology	1-9	Threatened, Endangered or Sensitive Plant Species	1-24
Gig Game.....	4-20	Timber Management.1-5, 1-15, 1-22, 3-16, 4-12	
GIS data	1-7	Transportation Management	3-17
Grazing Management	1-15	Transportation System ...	1-5, 1-14, 1-22, 2-6, 2-13, 2-17, 2-23, 3-17, 4-14
Hydrologic Disturbance.....	4-25	Tribal Treaty Rights.....	1-15, 1-26
Hydrology	1-10, 1-23, 2-20, 3-31, 4-25	Wildlife.....	1-12, 1-23, 2-22, 3-20, 4-16
Inventoried Roadless Area	1-26		

Appendix A. Response to Comments on the Draft EIS

Issue Summary	Comment Received	FS Response
May Require a 404 permit	As part of our comments on the DEIS we recommend you include in the final EIS notation that the proposed road construction work <u>may</u> require DA, Section 404 Clean Water Act permits.	A 404 permit would be required for road decommissioning, culvert removal and associated stream restoration under alternative 2. No 404 permit would be required for alternative 1. The hydrologist specialist report documents that no road construction under alternative 1 would occur in WOUS. Ephemeral drainages where road construction under alternative 1 would occur are incorrectly shown as intermittent streams on USGS maps.
Future Treatment	The Forest Service should estimate a schedule for future..., watershed restoration work...	A watershed improvement needs project list for the Caribou-Targhee NF is kept on file in the headquarters office and updated annually. This comment does not correspond with the purpose and need for this project.
Grazing	Livestock grazing is the principle factor damaging forest and watershed integrity in the Soda Springs Ranger District. It is the fundamental factor needing to be addressed in the Analysis Area and in the CTNF.	The John/Wood Project area is within the South Soda allotment NEPA decision signed in 2018. It was found through the South Soda decision that grazing is within RFP standards and guides. The concern has been addressed in the South Soda decision. This comment does not correspond with the purpose and need for this project.
Aspen/Grazing	Livestock exclusion in the project area should be incorporated to promote aspen regeneration	The project area is within the North Sulfur and Johnson Creek Sheep allotments. Any sheep exclusion would occur through the Annual Operating Instructions (AOI). As work is completed the permittee will be directed through the AOI on areas to avoid until desired conditions are reached. Restrictions of sheep will not require additional fencing because they have a herder with them at all times. Annual monitoring will occur, and once desired conditions are reached restrictions will be lifted. Desired conditions relative to the work have been addressed in the EA. Current livestock management in the area has already been addressed through the South Soda Sheep Decision which was signed in 2018. Similar work was completed within the Williams
	Monitoring of aspen regeneration is needed showing full stand stocking of saplings reaching 6' height prior to the reinstatement of livestock grazing.	

Issue Summary	Comment Received	FS Response
	<p>Livestock grazing impacts on regeneration of aspen and conifer species must be addressed in the EIS. Y2U does not agree with the Forest Service that livestock grazing impacts on the forest conditions are outside of the scope of this project. NEPA requires a discussion of these impacts.</p> <p>Range management is an issue that must be addressed in the EIS for this project. The EIS should not omit any discussion regarding the impacts of continued grazing on the seedling/sapling age classes.</p> <p>Y2U would request that the Forest Service issue a 5-year versus a 2-year moratorium on livestock grazing in the project Analysis Area to ensure that the stand is fully stocked with saplings and that comprehensive monitoring be implemented to document the regeneration of aspen</p>	Creek drainage, and it was found that herding sheep around plantations was easily done and effective.
BMP	There is no clear outline in the DEIS of how BMP's will be enforced.	The project design features are listed on page 2-18 through 2-23 of the DEIS. These design features, or BMPs, will be carried through to the ROD. When the monitoring activities, listed on page 2-23 of the DEIS, are completed, the monitoring crew(s) will be checking that the design features in the ROD were implemented.

Issue Summary	Comment Received	FS Response
Protection for Goshawk/Great Gray Owl	Even though 2 old growth species are known to be in the landscape, the great gray owl and northern goshawk, there is no "indicator" for conservation of these sensitive species.	The indicator used for Great Gray Owl and Northern Goshawk is the determination of effects as described in the DEIS and Wildlife Specialist report.
	There are no objectives identified for habitat of either the owl or goshawk	The Forest Plan has standards and guidelines associated with Great Gray Owls and Goshawks that will be complied with. As described in the DEIS and wildlife specialist report, habitat for these species will be maintained.
	...these activities will severely reduce common prey species for both the goshawk and the great gray owl, which are snowshoe hares and red squirrels	As described in the DEIS and in the Wildlife Specialist report, only minor temporary impacts to prey for Goshawks and Great Gray Owls(small mammals) are expected.
	It is clear that this project will impact both species by reducing foraging habitat, something that is not identified in the DEIS, in violation of NEPA	Minor temporary site specific impacts to foraging habitat are described in the DEIS and Wildlife Specialist report.
	The Forest Service should provide a map and analysis of Goshawk home ranges.	Maps of delineated Goshawk habitat are located in the Project Record. An analysis of potential impacts on Goshawk and their habitat is included in the DEIS and Wildlife Specialist report.
	Population trends and viability assessments for these species and their habitats must be analyzed in concert with the various activities the Forest Service has implemented and approved throughout the Corridor	With regards to population trends, at the forest scale a recent summary of monitoring data indicates stable Goshawk populations across the Caribou NF (USDA-FS 2016b as referenced in the Wildlife Specialist report). This project is compliant with Forest Plan Standards and guidelines, it was determined forest wide management direction would maintain populations across the Forest (CNF FEIS p. D-132), further population viability analysis is not needed.

Issue Summary	Comment Received	FS Response
	Although no known Northern Goshawk nesting sites occur in the Analysis Area there must be an analysis of the current state of post-fledgling family areas, foraging habitat, forage productivity, livestock utilization of forage and the impact of livestock grazing on Northern Goshawk viability in the project and cumulative effects areas	The ID team did quantify post fledgling, foraging, and nest habitat for Goshawk in the study area. Impacts of Livestock grazing were addressed in the South Soda Allotment NEPA Decision and do not correspond with the purpose and need for this project.
	Y2u would recommend reductions in grazing numbers and season or closures of pastures and allotments within the project area to mitigate the impact of vegetation management on the Northern Goshawk population in surrounding nesting and foraging habitat.	See South Soda Sheep Decision. Effects to Goshawk relative to sheep grazing were addressed in this document.
Big Game Winter Habitat	The moose depends heavily on understories of subalpine fir and other conifers during the winter, and as a result, will be adversely impacted by all 800 acres of proposed treatments. This impact is never disclosed in the DEIS, in violation of the NEPA.	As described in the DEIS, the vast majority of the analysis area will not be impacted by the proposed activities, (and in these areas the understories will not be affected). Where vegetation management activities will be occurring big game will not be appreciably impacted by the proposed activities, and as vegetation diversity increases, along with potential increases in foraging opportunities (shrubs) and the improvements to aspen, improvements to big game habitat are expected. Impacts to big game winter range were analyzed in the wildlife specialist report.
	If the 80+ acres of treatment will actually occur on this winter range, the DEIS failed to provide any actual documentation that this will benefit big game in the winter.	As described in the Wildlife Specialist Report and DEIS, project activities will occur on only 1.5 acres of winter range and the activities occurring on this 1.5 acres will be limited to "tending", as defined in the DEIS.

Issue Summary	Comment Received	FS Response
Big Game Vulnerability	The DEIS notes that there is no current security in the project area, due to a high density of roads. Yet there is no analysis of elk vulnerability in this landscape.	Clarification on the tie between security areas/roads, and elk vulnerability have been added to Wildlife Specialist report, but is seen as a non-issue with this project.
	Road Management could be changed to correct the lack of big game security in the project area.	Acknowledged, but does not meet the purpose and need of this project, which is designed to improve vegetation, not focus on travel management.
	There is no acknowledgement in the DEIS that this project will cause further problems for elk vulnerability, in violation of NEPA.	A line has been added to analysis to describe potential impacts to elk vulnerability, but this area is currently above state objectives for elk populations.
	Also, why isn't there an alternative that would increase and/or create elk security areas in this project area?	Does not correspond with the purpose and need for this project. The focus of this project is to improve vegetation conditions and roads within the analysis area. The purpose and need for this project is to improve vegetation and reduce roads in the analysis area.
	A comparison between what was shown in Maps 13 and 17 with what exists today should be done (referring to security areas that were identified in the CNF RFP FEIS map 13 for Wolverine and Map 17).	Both Maps 13 and 17 in the CNF FEIS show no security habitat in the analysis area. As described in the DEIS and Wildlife Specialist report, there is (still) no security habitat designated within the analysis area. No change in the maps in the vicinity of the project area has occurred.
	The Forest Service should provide a map and analysis of..., security areas,...	Maps showing a lack of security areas within the analysis area/project area added to project record.

Issue Summary	Comment Received	FS Response
Wolverine	There is a clear trade-off between roads/logging and wolverine habitat, a trade-off that is not identified in the DEIS. In addition, forest thinning, including understory treatments, will eliminate prey for the wolverine, including snowshoe hares and red squirrels.	Potential impacts to wolverines are described in the DEIS and Wildlife Specialist Report. In short, the small areas of vegetation management would have no meaningful impact on wolverines, nor would have the potential to substantially reduce, much less eliminate, prey for wolverines.
	Overall, this project is clearly an adverse impact on the wolverine, which means that consultation with the U.S. Fish and Wildlife Service is required	Potential impacts on Wolverine are described in the DEIS and Wildlife Specialist report, also, as described in the DEIS and Wildlife Specialist report, wolverine is a Proposed species, and given that the project has a determination of "Not Likely to Jeopardize the Continued Existence of the Species" conferencing with the USFWS is not required. "Consultation" is a slightly different process under ESA and does not occur with Proposed species.
Snags	As per the NEPA, a project analysis needs to identify that habitat for wildlife dependent upon snags will be reduced by approximately 800 acres, because snag recruitment is being targeted by forest thinning	Snags are not targeted for removal as described in the Wildlife Specialist Report, Vegetation Specialist Report and DEIS. Live tree retention per Forest Plan guidelines will be met ensuring snag recruitment. Our best available data indicates that the Forest and the affected RFP prescription areas are currently meeting snag requirements outlined in the RFP (Snag Report in project record (Beck 2018b)).
	There is current science that indicates that snag habitat is limited within forests, so management activities that further limit snag habitat will most likely significantly reduce associated species. This information was not considered in the DEIS.	Snag/Cavity Nesting requirements outlined in the RFP have been addressed throughout the Wildlife Specialist Report, Vegetation Specialist Report, Snag Report and DEIS . Forest wide data indicates snag numbers are meeting or exceeding objectives.

Issue Summary	Comment Received	FS Response
	The actual number of snags required in the 2 management areas slated for treatment is never even identified in the DEIS.	The number of snags required in the affected prescription areas are outlined in the Revised Forest Plan for the Caribou Nation Forest (RFP) (USDA-FS, 2003b), which was incorporated by reference. Snags are an important ecological structure in forested ecosystems on the Caribou National Forest and were identified as such in RFP and the associated Environmental Impact Statement. However, the team didn't feel that snag habitat was a driving issue in this project. Forest-wide data shows that snag habitat is meeting or exceeding snag levels set in the RFP (Beck, 2018b & Silvey 2018). Stand exam data collected in the area shows an average of 11 snags/acre greater than 6" DBH in the recent mortality category and 9 snags/ac of the same size in the older dead category (total snags/ac >6" = 20). One of the project design features was to mark all snags greater than 12" DBH that were not considered a safety hazard to leave. For these reasons more information was not included in the DEIS.
Veg Management	Another issue in regards to old growth is the DEIS claim that logging the conifers will improve habitat for wildlife by promoting aspen. No actual science was cited to indicate how this was determined.	The benefits of aspen on wildlife is documented in the RFP and associated FEIS. The Objectives, Standards and Guidelines contained in the RFP were designed to maintain habitat for wildlife species found on the Forest. The Wildlife and Vegetation Specialist reports both cite sources explaining the benefits of aspen habitats for wildlife.
	Mixed conifer/aspen stands have some of the highest wildlife values in conifer forests, and logging the conifers out will not improve this for wildlife.	The analysis in the DEIS and in the Wildlife Specialist report acknowledged that mature/late seral forests (which would include areas of conifer/aspen) are valuable habitat. One of the primary objective of this project is to keep stands in an aspen/conifer mixed condition. Aspen is being replaced by conifer as outlined in the Vegetation section of the DEIS and associated report. After treatment, conifer will remain. The objective is not to cut all conifer but to reduce the number of conifer to provide growing space for aspen. This project proposes to introduce small openings and reduce conifer density to maintain aspen and improve the diversity of age classes.

Issue Summary	Comment Received	FS Response
General	Road densities and effects on wildlife must be analyzed for this and other projects proposed and approved by the CTNF.	Open Motorized route densities (OMRDs), which include road densities within the analysis area, are described in the DEIS and in the Wildlife Specialist report. As described in the DEIS and Wildlife Specialist report, the OMRD would remain 1.2 mi/mi ² and thus road densities would remain unchanged.
	An integrated analysis of the effects of roads, human use and habitat fragmentation on...and other species that incorporates this information as well as addressing other species of wildlife should be completed by the CTNF.	The effects of this project, which are generally expected to improve habitat due to improvement of vegetation age class diversity and improvement to Aspen habitat, are described in the DEIS and Wildlife specialist report. Additional factors, including ones mentioned, are included in the cumulative effects analysis.
	Y2U does not believe that there is sufficient security for alternative routes and homing areas for many species impacted by these proposed projects	The small area of potential impacts of the project in relation to the size of the analysis area indicate that large areas will remain unchanged/un-impacted by project activities, providing plenty of area for any needed alternative routes or homing areas for wildlife. This along with the expected benefits to wildlife due to improvement in vegetation age class diversity is well described in the DEIS and in the Wildlife Specialist report.
	Letter and attachments stating opposing views and science of timber sales and logging operations.	The comment letter and attachments received from Mr. Artley were general objections to logging, and not specific to the John Wood project. Specialists on the ID Team have reviewed the comment letter and all attachments for relative information that may help direct the purpose and need or alternatives for the project. Any incorporations that specialists see necessary will be added to the NEPA document. The appellant claims the decision to propose the John Wood project is not based on the best available science. The appellant states the Forest Service is required to use the best available data when deciding to propose a project, citing 36 CFR 219.3. However, 43 CFR 219.3 applies only to National Forest System Land Management Planning, not project-level based NEPA. There is no direct guidance on the use of best available science in general, although the Council on Environmental Quality regulations state that agencies shall insure the professional integrity, including scientific integrity, of the discussions and analyses in environmental impact statements (40 CFR 1502.24). However, there is no clear direction regarding the use of best

Issue Summary	Comment Received	FS Response
		available science while developing project proposals. The decision to propose the project was made to meet a specific purpose and need and therefore is not in error.
	A summary of all monitoring of resources and conditions relevant to the proposal or Analysis Area as a part of the Forest Plan monitoring and evaluation effort is necessary. Additionally, a cumulative effects analysis which includes the results from the monitoring required by the Forest Plan must be included in the EIS.	The Soil Resource section of the DEIS includes a description of past logging in the area, and incorporates a site-specific monitoring report by reference. This monitoring was also used in the cumulative effects analysis. Past treatments and activities were accounted for in the existing condition of the forested resources in the DEIS. For example, past harvest resulted in having some younger age classes. Lack of fire resulted in less aspen and more conifer cover as well as more acres in older age-classes. Past Douglas-fir bark beetle attacks resulted in decreased relicts on the landscape. Information relevant to the decision to be made has been included.
	We recommend that the Forest Service establish a monitoring program for aspen stands and establish some thresholds or triggers for adaptive management.	
	Y2U requests that the Forest Service disclose the level of permittee compliance with terms and conditions of allotment management plans and grazing permits as well as utilization and other monitoring protocols and results	Permittee compliance is outside the scope of the decision to be made. The Forest has required permittees to herd around aspen treatments in the past; most recently the Williams Bear Timber Sale and the adjacent Williams creek prescribed burn. This was very effective. The decision on the general management of livestock in the area was recently made with the South Soda Sheep decision. As disclosed in the DEIS grazing will be restricted in treatment units until objectives are met.
	The Forest Service should provide a map and analysis of..., areas closed to livestock grazing...	

Issue Summary	Comment Received	FS Response
Lynx	An integrated analysis of the effects of roads, human use and habitat fragmentation on lynx... should be completed by the CTNF	A map of Linkage habitat for Lynx is shown on p D-7 of the CNF FEIS. The FEIS for the Forest Plan (D-8) found that linkage habitat would be maintained. Additional discussions regarding the potential for project impacts on Linkage habitat are included in the draft Biological Assessment.
	The Forest Service should provide a map and analysis of the Corridor addressing habitat fragmentation and the presence of core, corridor, Lynx Analysis Units (including the LAUs proposed, but omitted from the RFP for the 2003 RFP and an analysis of their condition then and current conditions)...	A map of Linkage habitat for Lynx is shown on p D-7 of the CNF FEIS. The FEIS for the Forest Plan (D-8) found that linkage habitat would be maintained. Currently the District is designated as Linkage habitat and that is what the effects analysis focuses on.
	This NEPA analysis should take a hard look at the mapped area for lynx linkage and conduct the analysis suggested.	A map of Linkage habitat for Lynx is shown on p D-7 of the CNF FEIS. Additional discussions regarding the potential for project impacts on Linkage habitat are included in the draft Biological Assessment.
Old Growth	There is no information or map in the DEIS as to how much old growth is present in the project area, or where it occurs.	A map of Forest Structure Stages has been added to the FEIS. Additional maps are in the Forest Vegetation project record. There were no stands found in the project area that currently meet Region Four definitions for old-growth. While there is an over-abundance of late seral stands, few stands have the required age and tree sizes to meet the current definition of old-growth. With time some of the late seral stands will age enough to meet R4 definition old-growth, if insects and fire don't get them first. This is part of the reason the project was proposed- to reduce that risk.

Issue Summary	Comment Received	FS Response
	There are no objectives identified for old growth	There was some discussion when the project was being developed whether we should propose some management activities with the objective of moving stands toward old-growth. The decision was made to not include old-growth management in this project, due to the over-abundance of late seral forest, which with time will move toward old-growth. The focus of this project is to create younger age classes and reduce risk of uncharacteristic disturbance. Managing stands toward old-growth can be done in the future, as the main thing they need is time.
	The Forest Service should provide additional details on determining which trees will be considered "legacy" or "relic" trees and not harvested.	The marking crew that will mark the harvest units will be trained in identification of legacy/relic trees. There is some information in the Draft Silviculture Prescription, but these trees are much easier to identify in the woods than they are to describe. Diameter is not a good indicator of age. Height is a much better predictor of age, but it is not perfect. Bark and limb characteristics are often the most useful characteristics to determine if they are relics. Another characteristic is, by definition is that they are left from a previous disturbance and as a result will often have fire scars or evidence of scars that have healed.
	Y2U requests... minimal harvest of R4 classified old growth trees (individuals above a certain size) only when determined to protect the greater R4 stand from disease and fire risks and an enforcement of proper logging protocol to limit soil and hydrological impact.	The R4 old-growth characteristics apply to stands of trees, not individuals. The Draft Silvicultural prescription states that all relics within the treatment units are to be left, unless there is a competing reason not to (typically safety, or on rare occasions to reduce competition between relics). The intent is to leave the older trees.
	Y2U would like to see an increase in the percentage of R4 Old Growth left standing following the treatment versus what is described in Table 3-2.	The stands proposed for treatment do not meet R4 old-growth characteristics. Only time can create old-growth. Changing the RFP standard is outside the purpose and need of the project decision.

Issue Summary	Comment Received	FS Response
	There is not sufficient information on what R4 Old Growth will be included in the harvest within the DEIS.	See above responses.
	Current old growth status should be mapped and compared to both the pre-Hamilton definition and that resulting from applying the Hamilton definition in the CNF RFP.	The RFP decided what definition would be used to define old-growth characteristics. The RFP FEIS discusses the definition to be used. This request does not meet the purpose and need for the project and would not contribute to a better more informed decision on this project.
Past Logging	There is no reference to past logging areas in the DEIS.	The Soil Resource section of the DEIS (p. 3-32), includes a description of past logging in the area, and incorporates a site-specific monitoring report by reference.
Prescription	The Forest Service should consider using gaps, clumps, and skips to benefit wildlife and meet timber production needs.	The silvicultural prescriptions for treated stands are either irregular shelterwoods or selection systems. Gaps, skips and clumps is an implementation method for a selection (uneven-aged) silvicultural system, typically used in ponderosa pine systems. While these terms are not used in the draft silvicultural prescription, the results will be similar.
Logging is not beneficial to the environment	Opposing Views Science Attachment #1 The following compelling, indisputable Science reveals commercial Timber harvest activities will inflict major, Tragic damage to the natural resources in and downstream from the sale area	The Soil Resource section of the DEIS (p. 3-32), includes a description of past logging in the area, and incorporates a site-specific monitoring report by reference.

Issue Summary	Comment Received	FS Response
USFS employees enable timber sales	The USFS systematically transforms well-meaning natural resource specialists into timber sale enablers	<p>Dear Mr. Artley,</p> <p>We received your email and have reviewed the attachments provided. While it did not specifically reference a specific project, we (the interdisciplinary team), felt we should acknowledge receiving your email and attachments. We are responding to you in this project since your email came during the comment period for the John Wood Forest Management Project. Our response is below.</p> <p>The Caribou National Forest developed its Revised Forest Plan to follow the laws pertinent to the management of the National Forest Lands (RFP 1-2). Prior to the plan being signed, the Forest went through an extensive public review process, where all the different uses the public wanted were brought forward and considered. In 2003 the RFP was published based on a decision made in the NEPA process, a process where an attempt was made to provide a balance of products and services that the public wanted. The decision for the plan and the RFP clearly outlined that timber was one or multiple uses that would be provided on the Caribou N.F.. Further it designated prescription areas, each with a different emphasis. One of the prescriptions areas was called "Forest Vegetation Management" or 5.2. In this prescription area the emphasis "is on scheduled wood-fiber production, timber growth, and yield while maintaining or restoring forested ecosystem processes and functions to more closely resemble historical ranges of variability with consideration for long-term and forest resilience." As identified in the DEIS for this project, this project area is in RFP prescription area 5.2. Timber production is allowed and encouraged in this area. We, the IDT that developed this project, worked hard to balance all the resource needs and concerns that were identified. The team worked to develop action alternatives that addressed the purpose and need for the project as well as balanced all the needs and wants identified in the RFP, other previous decisions, and concerns brought forward in the scoping process. The IDT worked hard to use and understand the latest science and technology and how it related to this piece of this Forest. We have worked as a team to carry out the directions given to us by Congress and the people we serve. We appreciate your concern and acknowledge that at</p>

Issue Summary	Comment Received	FS Response
		<p>times interdisciplinary teams can become dysfunctional. However, in discussing your concerns, we did not feel that our team had any of the issues you identify. In the end we have developed and analyzed three alternatives. We have presented the effects to the best of our abilities. It is now up to the decision maker to decide which alternative is selected. He can select either of the action alternatives that we developed or he can choose the no action. That is his burden, ours was to develop alternatives to address the purpose and need of the project and to disclose effects. We feel good about the work we have done.</p> <p>Sincerely,</p> <p>The John Wood IDT</p>
USFS uses NEPA tricks to get through the NEPA process	The Truth about USFS Timber Sale Planning that most Agency Specialists know and ignore to Maintain their Promotional Potential	See above responses.
USFS uses timber sales only as a source of revenue and not for resource benefit	The Experts with no interest in volume speak out: Forests manipulated by humans for money do not improve the proper functioning of the countless natural resources there.	See above responses.
Road Construction damages resources	Opposing Views Attachment #4. This Attachment contains scientific conclusions from research by scientists not affiliated with the USFS. They all show that Road Construction Damages (and sometimes destroys) the Proper Ecological Functioning of some essential natural resources in the forest	There are no new permanent roads proposed, just new locations for existing roads. As disclosed in the DEIS the existing roads in the project area are creating some resource concerns due to their location. This is why the IDT proposed relocating them to better locations. The IDT spent a lot of time in the field finding the best locations for the roads that were of concern. The roads proposed for relocation are needed to provide user access and will provide for resource (timber) removal. Best management practices will be used, which will reduce the risk of unforeseen effects.

Issue Summary	Comment Received	FS Response
The general public does not except logging	Polls about whether the public accepts logging on national forests.	Since you have worked in the Forest Service you are aware that the Multiple Use Sustained Yield Act directs that “the national forests are established and shall be administered for outdoor recreation, range, timber, watershed and wildlife and fish purposes.” The RFP was developed to follow all applicable laws to National Forests, including the Multiple Use Sustained Yield Act. We accept that some people do not like logging on the National Forest. The RFP addressed this issue and established where timber harvest was acceptable. It also established Standards and Guideline related to timber harvest. As described in the DEIS this project is compliant with the direction in the RFP. Whether logging should be allowed on National Forests or not does not meet the purpose and need for this document.
Winter Logging	Winter logging over sufficient snow can greatly reduce soil impacts. The Forest Service should also consider allowing this option if suitable conditions occur and if winter logging would not interfere with use of the groomed snowmobile route.	One of the design features included was to not allow snow plowing between December 15th and April 15 to avoid the conflict with the snowmobile route. The soil monitoring on past harvest units helped make this decision. The monitoring showed that on these soils compaction and other soil impacts should not be an issue.
Monitoring	The Forest Service needs to prioritize a monitoring program for harvest activities, forest health, bark beetle activity, ...	The DEIS identifies the monitoring that will be implemented for the action alternatives.
Future Entries	The Forest Service should estimate a schedule for future..., aspen enhancement efforts, ..., and timber harvests.	The cutting cycle for the selection harvests is planned for every 30 to 40 years depending on conditions. The stands being treated with irregular shelterwood will be harvested every 60 to 80 years depending on conditions. This information is outlined in the draft silvicultural prescription.
Revenue	...it is clear that the only purpose for logging conifers out of aspen is to provide commercial wood products	The proposed treatments target reducing conifer cover from stands that have aspen as a component, the objective is not to remove all conifer. The RFP and associated FEIS highlighted the important of maintaining aspen on the landscape because of its important to many wildlife species. This was

Issue Summary	Comment Received	FS Response
	The Forest Service wants to turn this open space...into a lumberyard so they can sell the lumber and put more money into their bank account to give themselves higher salaries...	<p>highlighted in both the wildlife and forest vegetation sections and reports. Bartos (2001) and others have said that aspen is considered a keystone species because of its ecological importance. Further, Cambell and Bartos (2001) stated that stands with 25% conifer cover can be considered at risk, while stands with greater than 50% canopy cover should be considered at high risk. One of the objectives of this project is to keep stands out of the high risk category, it is not to convert aspen conifer stands to pure aspen stands. The RFP has a guideline for prescription area 5.2 (which this project is mostly in) that: Where aspen exists, it should be maintained or enhanced as a component through restoration. Once again the RFP states that the emphasis for prescription area 5.2 is on scheduled wood-fiber production, timber growth, and yield while maintaining or restoring forested ecosystem processes and functions to more closely resemble historic ranges of variability with considerations for long-term forest resilience.</p> <p>So, you are partially correct, providing commercial wood products is one of the purposes of this project as identified in the purpose and need section of the DEIS. Where you are wrong is that it is not the only purpose. Wood products are a by-product of treatments that are designed to restore ecosystem processes and functions and provide for long term resilience.</p>
Hunting	Public recreation is clearly an important use of these public lands, and the impact of this project on public hunting activities needs to be fully assessed.	Recreation impacts are identified in Chapter 1 of the DEIS. The IDT did not feel that these impacts were an issue that would drive an alternative or contribute to the decision to be made, based on scoping comments. Design features were included to reduce impacts. Additionally, the RFP identifies that forest visitors can expect these types of impacts in prescription area 5.2 (which is where most of the treatment occurs).
Roads/Trails Decommissioning	Where roads will be relocated or decommissioned, we recommend working in advance with user groups on education and outreach efforts.	Design criteria including construction BMP's are considered during both the design and implementation phases of road work and decommissioning efforts. Applicable BMP's are determined and utilized on a case by case scenario. Implementation of the proposed action will include pertinent Sediment and

Issue Summary	Comment Received	FS Response
	<p>The decommissioning of 1.5 miles of road 126 is separate from timber management and should be accomplished with retained receipts or other funding sources.</p> <p>We also recommend documenting and decommissioning any unauthorized routes discovered within the project area that are posing resource risks.</p> <p>Effective closure of decommissioned roads, speed limit signs... are needed. ... to meet Forest Guideline of "<i>people visiting the National Forest enjoy a broad range of recreation opportunities amid natural settings. Recreation experiences and settings meet public expectations of quality and variety, while complimenting other resource objectives.</i>" (DEIS - p1-14)</p> <p>The EIS needs to outline how this road decommissioning will be accomplished as well as provide a monitoring and enforcement plan to insure the integrity of such closures</p>	<p>Erosion Control Measures as deemed necessary through Forest Service Manual 7700 and 7709 Handbooks guidance as well as industry standards including American Association of State Highway and Transportation Officials (AASHTO), Federal Highways Administration (FHWA), and the US Department of Agriculture-Technology and Development Program References and Guides. The DEIS outlines how non-system routes will be decommissioned on page 2-6. The funding for the road decommissioning work is OTS. Page 4-21 of the DEIS describes how unauthorized OHV trails are closed/obliterated as they are discovered and/or as time and funding allow.</p>
Roads/Trails Closures	The Forest Service may want to describe the underlying reason for such closures and clarify that these areas are still open to foot travel for hunting, berry picking, and other uses.	The Caribou National Forest Plan, Roads Analysis, Forest Service Manual 7700 and 7709 Handbooks are the primary references utilized to determine the road classification needs for transportation management.

Issue Summary	Comment Received	FS Response
	<p>We would like to see more route closures in future project proposals</p> <p>Y2U would like to see a plan included in the EIS for road closures (legal, illegal, open, temporary, closed, and other classifications, not just ORMD), in addition to the 5 miles proposed in Alternative 2, as mitigation for the cumulative effects of mining, timber, grazing and OHV/ATV use in the region and to create security areas in the project Analysis Area.</p> <p>The CTNF, along with the mining companies in the region, could begin doing the same to partially mitigate the cumulative effects of mining activities in the region and offset some of their impacts by mapping illegal trails and roads, and using their equipment and staff to assist in closing these in the CEA and Corridor.</p> <p>Y2U would like the Forest Service to consider closing the portion of the groomed snowmobile trail occurring in the project area for the entire period of the proposed treatment</p>	

Issue Summary	Comment Received	FS Response
	Winter use should be closed or severely limited in the Corridor so that lynx, wolverine and other far-ranging species (elk, deer) have an opportunity to migrate and have security cover during all seasons	
Roads/Trails TMP	<p>The Forest Service needs to prioritize a monitoring program for... compliance with updating the travel plan,</p> <p>Y2U requests a reduction in overall route density to create security areas for big game species including deer, elk, and moose.</p> <p>Road density and the status of all roads and OHV/ATV trails (legal, illegal, open, temporary, closed, user created and other classifications), not just OMRD, should be mapped and the density per square mile determined and compared to the best available science. This should be done at the project level by Mountain Range Block for the Block (s) affected and watersheds affected as depicted in the GEIS for the CNF RFP, Map 3 (pD-31) and Map 4 (pD-32). This analysis should determine additional closures necessary to provide security areas for wildlife such as deer, elk, and moose as well as the migration corridors for Canada Lynx, wolverine, and bears.</p>	The Caribou National Forest Plan, Roads Analysis, Forest Service Manual 7700 and 7709 Handbooks are the primary references utilized to determine the road classification needs for transportation management.

Issue Summary	Comment Received	FS Response
	Roads and Trails, including illegal, user-created routes, must be mapped and sound contours plotted showing the distance and aerial effects on wildlife security areas and 'quiet' users. How much of the Analysis Area is protected from these sound levels?	
Roads/Trails Future Maintenance	The Forest Service should consider future maintenance needs for roads in and around the project area.	The Caribou National Forest Plan, Roads Analysis, Forest Service Manual 7700 and 7709 Handbooks are the primary references utilized to determine the road classification needs for transportation management.
Project System Trails	This project should incorporate at least one of these design features to protect the system trails: 1. As a part of the planning process, consider designing trail corridors to protect the integrity of the trails. 2. Relocate the trails around the logging activity on either a temporary or permanent basis. 3. Provide recreationists on the trails with an alternate route around the sale during the logging activity. 4. Require in the sale contract that trails be re-established upon completion of the logging.	See above responses.

Issue Summary	Comment Received	FS Response
Noise/Dust	<p>Logging traffic can contribute to noise, dust and traffic accidents. We recommend posting signs informing the public about logging traffic, not hauling on popular holidays, the day before or of hunting seasons, limiting truck speeds and managing dust as needed.</p> <p>The Forest Service should also evaluate the effects of rock crushing activities at this site in terms of noise, dust and emissions and create design features to avoid, minimize and mitigate impacts</p> <p>...enforcement to reduce noise and dust pollution is needed.</p> <p>What are the effects of increased dust levels due to OHV/ATV activity on the naturalness of the Forest, RWA, IRA, CEA, Corridor</p> <p>The Forest Service should provide a map and analysis of..., Roadless Areas, Wilderness Areas, NRAs,...</p> <p>The impact of rock crushing activities at this site in terms of noise, dust and emissions at the proposed gravel pit needs to be addressed in the EIS.</p>	<p>Design criteria including construction BMP's are considered during both the design and implementation phases of road work and decommissioning efforts. Applicable BMP's are determined and utilized on a case by case scenario. Implementation of the proposed action will include pertinent Sediment and Erosion Control Measures as deemed necessary through Forest Service Manual 7700 and 7709 Handbooks guidance as well as industry standards including American Association of State Highway and Transportation Officials (AASHTO), Federal Highways Administration (FHWA), and the US Department of Agriculture-Technology and Development Program References and Guides.</p>
Gravel Pits	<p>...gravel pits opened for road improvement projects often turn into OHV playgrounds which further fragments the corridor.</p>	<p>The proposed gravel pit is an expansion of an old abandoned pit that currently has an effective OHV closure. A description of the planned reclamation is on page 2-6 of the DEIS.</p>

Issue Summary	Comment Received	FS Response
	Alternatively, a comprehensive plan to close and reclaim the excavated areas and prohibit unauthorized OHV/ATV use should be included in the EIS.	
	The Forest Service should estimate the volume of gravel needed for this project and make sure that the proposed gravel source has suitable material and capacity.	The idea of reclaiming a portion of the old pit is not a bad idea. Remove the topsoil and direct-place on the old scar. A description of the planned reclamation of the gravel pit is on page 2-6 of the DEIS.
	The Forest Service may want to consider managing a portion of this gravel pit for a longer-term use and fully reclaiming the remaining portion.	
	Because there are multiple mining operations in the surrounding area, the Forest Service should examine whether there are alternative sources of suitable material that may be available within a reasonable haul distance.	
	Y2U would like to see the Forest Service examine whether there are alternative sources of suitable material that may be available within a reasonable haul distance.	
	There is not a clear outline in the DEIS of how the proposed gravel pit will be reclaimed.	

Issue Summary	Comment Received	FS Response
	Y2U requests a comprehensive reclamation plan for the proposed gravel pit including how the Forest Service will prohibit OHV/ATV use at the gravel pit be included in the EIS	
Fencing	To address browsing, the Forest Service could consider stacking felled conifers around the aspen stand to serve as natural fencing, setting up temporary fencing around stands, or having the grazing permittee modify herding practices in these areas until objectives are met.	The John Wood project area is within the North Sulfur and Johnson Creek sheep allotments. Upon completing work, herders will be directed to stay out of areas until objectives are met. Directions to herding outside of the units will be addressed in the Annual Operating Instructions. This method has been used in the past and has been proven effective.
Weeds	It is also important to monitor and control noxious weeds at gravel pits to prevent spreading noxious weeds when resurfacing roads.	These tops were addressed in the Rangeland Management Specialist report under Best Management Practices (BMP). The BMPs were also carried over to the EIS. Gravel pits will be monitored and any gravel hauled for road construction will need to come from a certified weed free gravel pit.
	The Forest Service needs to prioritize a monitoring program for..., and noxious weeds.	
	It is also important to monitor and control noxious weeds at gravel pits to prevent spreading noxious weeds when resurfacing roads.	
Forest Health	The proposed action does not consider the impact on forest health from livestock grazing. Livestock grazing has negative effects on forest health in regard to accelerating succession of aspen to conifers and increases the fire hazard in conifer forests.	The IDT is confident that implementing the project as designed will provide the results described in the DEIS. The impacts of grazing does not correspond with the purpose and need for this project other than how they relate to the proposed treatments, which have been addressed through project design. This project recently went through the NEPA process and a decision was made that directs livestock management in this area. (South Soda Sheep)

Issue Summary	Comment Received	FS Response
	There needs to be more analysis of the effects of grazing on forest health and the adverse consequences to fuels, fire cycles, fire intensity, insect infestations, infiltration and nutrient cycling in the EIS for this project as well as other proposed grazing and timber projects in the CTNF>	
AIZ	Again, livestock grazing negatively impacts AIZ or riparian zones as well as willow and aspen regeneration; this must be addressed in the EIS. Y2U does not agree with the Forest Service that livestock grazing impacts on the AIZ conditions are outside the scope of this project and a discussion of these impacts should not be dismissed in the EIS.	Grazing standards and guides were recently addressed within the South Soda Sheep EA Decision, which was signed in 2018. AIZ, riparian zones and levels of use within the project area have been addressed in the document and can be used in reference for these concerns. With this knowledge there is no reason to address this issue in the assessment.
	Browsing of willows is a problem that needs to be addressed in riparian areas.	
Slash	Slash piles at landings should be managed and burned carefully to reduce the likelihood of permanently sterilizing soils	Burning of slash piles would occur when moisture is present to prevent piles from creeping as well as reducing soil sterilization. Landing piles will be reclaimed after burning.
Future Treatment	The Forest Service should estimate a schedule for future prescribed burn treatments...	This will be addressed in the silvicultural prescription.

Issue Summary	Comment Received	FS Response
Smoke	Special care should be taken to minimize impacts of smoke on public health by working in advance with air quality, public health agencies and communities and by announcing burn schedules in multiple media outlets as far in advance as possible	The air quality standards will comply with air quality regulations, and will be approved by the Montana/Idaho Smoke Monitoring Group. Prior to ignitions the public will be notified in advance of project details via local outlets and government outlets.
Disturbance	Initial construction or temp roads can cause more disturbance than skid trails, but based on the amount of trees to come out may result in less disturbance because of the number of skids needed to get logs out vs. hauling on a truck. (Paraphrased)	Design criteria including construction BMP's are considered during both the design and implementation phases of road work and decommissioning efforts. Applicable BMP's are determined and utilized on a case by case scenario. Implementation of the proposed action will include pertinent Sediment and Erosion Control Measures as deemed necessary through Forest Service Manual 7700 and 7709 Handbooks guidance as well as industry standards including American Association of State Highway and Transportation Officials (AASHTO), Federal Highways Administration (FHWA), and the US Department of Agriculture-Technology and Development Program References and Guides. Since both result in soil disturbance, the design features include minimizing skid trails and temporary roads on page 2-20 through 2-21 of the DEIS.
Corridor	The regional and nationally significant Corridor in which this project lies must be addressed in the EIS	Connectivity was addressed in the RFP and associated FEIS. The proposed treatments will result in timber stand conditions that are within the historical range of variability that wildlife in the area evolved with, and are with standards and guidelines identified in the RFP.