United States Department of Agriculture

Forest Service

Northern Region

December 2016

Ten Lakes Travel Management Project

Draft Environmental Impact Statement

Kootenai National Forest, Fortine Ranger District

Lincoln County, Montana

In accordance with Federal civil rights law and U.S. Department of Agriculture (USDA) civil rights regulations and policies, the USDA, its Agencies, offices, and employees, and institutions participating in or administering USDA programs are prohibited from discriminating based on race, color, national origin, religion, sex, gender identity (including gender expression), sexual orientation, disability, age, marital status, family/parental status, income derived from a public assistance program, political beliefs, or reprisal or retaliation for prior civil rights activity, in any program or activity conducted or funded by USDA (not all bases apply to all programs). Remedies and complaint filing deadlines vary by program or incident. Persons with disabilities who require alternative means of communication for program information (e.g., Braille, large print, audiotape, American Sign Language, etc.) should contact the responsible Agency or USDA's TARGET Center at (202) 720-2600 (voice and TTY) or contact USDA through the Federal Relay Service at (800) 877-8339. Additionally, program information may be made available in languages other than English. To file a program discrimination complaint, complete the USDA Program Discrimination Complaint Form, AD-3027, found online at http://www.ascr.usda.gov/complaint_filing_cust.html and at any USDA office or write a letter addressed to USDA and provide in the letter all of the information requested in the form. To request a copy of the complaint form, call (866) 632-9992. Submit your completed form or letter to USDA by: (1) mail: U.S. Department of Agriculture, Office of the Assistant Secretary for Civil Rights, 1400 Independence Avenue, SW, Washington, D.C. 20250-9410; (2) fax: (202) 690-7442; or (3) email: program.intake@usda.gov. USDA is an equal opportunity provider, employer, and lender.

Ten Lakes Travel Management Project
Draft Environmental Impact Statement
Lincoln County, Montana

Lead Agency:	**USDA Forest Service**
Responsible Official:	**Bryan L. Donner** **Fortine District Ranger** **949 US Hwy 93 S** **Eureka, MT 59917**
For Information Contact:	**Moira McKelvey** **Interdisciplinary Team Leader** **949 US Hwy 93 S** **Eureka, MT 59917** **406-296-2536**

Abstract: In 1977, Congress passed the Montana Wilderness Study Act designating the Ten Lakes Wilderness Study Area. The act requires the Forest Service to administer these acres to "maintain their presently existing wilderness character and potential for inclusion in the National Wilderness Preservation System," meaning the Forest Service must maintain the character that existed in 1977 when the Act was passed. In a 2007 lawsuit settlement agreement with the Montana Wilderness Association, the Forest Service agreed to develop travel plans for the Ten Lakes Wilderness Study Area. The project area is located north and east of Eureka, Montana and includes 64,177 acres. The project boundary contains the Ten Lakes Wilderness Study Area (WSA) but is larger than the study area to capture common entrance points to the WSA.

It is important that reviewers provide their comments at such times and in such a way that they are useful to the Agency's preparation of the EIS. Therefore, comments should be provided prior to the close of the comment period and should clearly articulate the reviewer's concerns and contentions. The submission of timely and specific comments can affect a reviewer's ability to participate in subsequent administrative review or judicial review. Comments submitted anonymously will be accepted and considered; however, anonymous comments will not provide the respondent with standing to participate in subsequent administrative or judicial reviews.

Please submit project-specific comments on this document by mail to Bryan Donner, District Ranger, Eureka Ranger Station, 949 Highway 93 N, Eureka, MT 59917, personal delivery between the hours of 8:00 a.m. and 4:30 p.m., faxed to (406) 296-7188, or e-mailed to the following address: comments-northern-kootenai-fortine@fs.fed.us . Comments will be accepted for 45 days following the publication of the Notice of Availability of the DEIS in the Federal Register. Please include "Ten Lakes Travel Management" in the subject line. Comments should be substantive and specific to the proposed activities and area being analyzed. They should include: 1) name, address, e-mail address, telephone number, and organization represented, if any; 2) title of the document for which the comment is being submitted; 3) specific facts and supporting reasons for the Responsible Official to consider; and 4) signatures. Legal advertisements will be placed in *The Missoulian* to notify the public of the availability of the DEIS.

This page intentionally left blank.

Summary

The Kootenai National Forest proposes to develop an over-snow and mechanized travel plan for the Ten Lakes area. The area affected by the proposal includes the Ten Lakes WSA and areas with common entrance points to the WSA. This action is needed to satisfy the terms of the 2007 settlement agreement with the Montana Wilderness Association and to meet MA1c direction found in the 2015 Kootenai National Forest Plan.

A range of alternatives was developed with varying levels of over-snow motorized and mechanized use. Based upon the effects of the alternatives, the responsible official will decide:

- Whether to implement restrictions or prohibitions on the use of over-snow vehicles within the project area;
- Whether to implement restrictions or prohibitions on the use of mechanized travel within the project area;
- What, if any, specific design criteria or mitigation measures are needed;
- What specific project monitoring requirements are needed to assure design features are implemented and effective, or to evaluate the success of project objectives?

The Forest Service has prepared this Draft Environmental Impact Statement (DEIS) in compliance with the National Environmental Policy Act (NEPA) and other relevant Federal and state laws and regulations. This DEIS discloses the direct, indirect and cumulative environmental impacts that could result from the proposed action and alternatives. The document is organized into three chapters with maps and appendices at the end:

Chapter 1 – Purpose and Need: This chapter characterizes the project area, describes the purpose and need for the project, the agency's proposal for achieving that purpose and need, and a description of the process used to develop this proposal. It also explains the scope of the analysis and the decisions to be made.

Chapter 2– Alternatives: This chapter details how the Forest Service informed the public of the proposal, how the team identified the issues that drove alternative development, and other alternatives that were considered but not analyzed in detail. It provides a detailed description of the agency's proposed action and presents alternatives for achieving the stated purpose and need. This section provides a summary table of how each alternative addresses the purpose and need and the key issues. It also includes design features developed for the action alternatives to help protect resources.

Chapter 3 – Affected Environment and Environmental Consequences: This chapter describes the affected environment and the environmental effects of implementing the proposed action and other alternatives. This analysis is organized by resource and contains required agency disclosures.

Chapter 4 – Preparation and Distribution: This chapter contains the list of preparers and a list of those receiving notification of the availability of the DEIS.

Appendices – The appendices provide the maps, literature cited, and other supporting information for this DEIS.

This page intentionally left blank.

Contents

Summary ..... **i**
Chapter 1. Purpose of and Need for Action **1**
Introduction 1
Background 1
Desired Condition 2
Purpose and Need for Action 2
Proposed Action 2
Project Scope 3
Relationship to the Forest Plan 3
Decision Framework 5
Public Involvement 5
Issues 5
Chapter 2. Alternatives, Including the Proposed Action **7**
Introduction 7
Alternatives Considered in Detail 7
Comparison of Alternatives 15
Alternatives Considered but Eliminated from Detailed Study 17
Design Features 19
Chapter 3. Affected Environment and Environmental Consequences **20**
Introduction 20
Past Actions 20
Ongoing and Reasonably Foreseeable Actions 23
Roadless Areas: Inventoried Roadless Areas, Recommended Wilderness, and Wilderness Study Area 25
Recreation 83
Wildlife 115
Economics 235
Hydrology 270
Soils 282
Invasive Plant Species 288
Proposed, Threatened, Endangered, and Sensitive Plants 300
Cultural Resources 310
American Indian Rights and Tribal Consultation 316
Other Required Disclosures 321
Chapter 4. Preparation and Distribution **325**
List of Preparers and Contributors 325
Distribution of the DEIS 325
Appendix 1 ..... **329**
Effect of OSV Use on Resources Cited in Minimization Criteria 329
Harassment of Wildlife and Significant Disruption of Wildlife Habitat 330
Conflicts between Motorized Over-snow Vehicle Use and Existing Proposed Recreational Uses of NFS Land or Neighboring Federal Lands 333
Appendix 2 ..... **336**
Literature Cited 336
Appendix 3 ..... **354**

Glossary 354
Appendix 4 363
Maps 363

List of Tables

Table 1. Management Areas within the Ten Lakes Travel Management Project Area 4
Table 2. Over-Snow and Mechanized Travel (Alternative 1 – No Action) 8
Table 3. Over-Snow and Mechanized Travel (Alternative 2 – Proposed Action) 9
Table 4. Mechanized Trail Management by Trail (Alternative 2 – Proposed Action) 10
Table 5. Over-Snow and Mechanized Travel (Alternative 3) 11
Table 6. Mechanized Trail Management by Trail (Alternative 3) 12
Table 7. Over-Snow and Mechanized Travel (Alternative 4) 13
Table 8. Mechanized Trail Management by Trail (Alternative 4) 14
Table 9. Comparison of Alternatives 15
Table 10. Trails open to mechanized use by alternative (all trails would be open to stock and hiking). 16
Table 11. How each alternative addresses the Purpose and Need for the Project, and the Issues identified in Chapter 1. 17
Table 12. Design Features 19
Table 13. Timber Harvest and Vegetation Management by Decade 21
Table 14. Ongoing and Reasonably Foreseeable Actions 24
Roadless Table 1. Type of Areas Analyzed Within Project Area 25
Roadless Table 2. Wilderness Attributes or Qualities, Roadless Characteristics 27
Roadless Table 3.Wilderness Quality Indicators and Measures in WSA 31
Roadless Table 4. WSA Quality Indicators for 1977 and Existing Condition (WSA ONLY) 47
Roadless Table 5. Vegetative Management in WSA 48
Roadless Table 6. WSA Quality – Solitude and Opportunities for Primitive Recreation: Use Indicators and Measures for 1977 and Existing Condition in WSA 54
Roadless Table 7. Comparison of Roadless Characteristics in IRAs by Alternative 60
Roadless Table 8. Comparison of 1977 WSA Qualities by Alternative 60
Roadless Table 9. Effect to Measures of Solitude and Primitive Recreation (use) Quality in WSA by Alternative 62
Roadless Table 10. WSA Quality Solitude and Primitive Recreation Type of Use Measures in WSA Alternative 1 67
Roadless Table 11. WSA Quality Solitude and Primitive Recreation, Type of Use Measures in WSA, Alternative 2 69
Roadless Table 12. WSA Quality Solitude and Opportunities for Primitive Recreation, Type of Use Measures in WSA, Alternative 3 72
Roadless Table 13. WSA Quality Solitude and Primitive Recreation, Type of Use Measures in WSA, Alternative 4 74
Roadless Table 14 Summary Comparison of How the Alternatives Address the Purpose and Need 81
Roadless Table 15. Summary Comparison of How the Alternatives Address the Key Issues 82
Recreation Table 1. Recreation and Travel Management Indicators and Measures for Assessing Effects 86
Recreation Table 2. Trails in Project Area, Existing Condition Alt 1 Summer Type of Use .. 93
Recreation Table 3. Sno-Trails in Project Area, Existing Condition Over-Snow Type of Use 94
Recreation Table 4. Effect to Measures of Recreation and Travel Management by Alternative 96
Recreation Table 5. Summary Comparison of How the Alternatives Address the Purpose and Need 114

Recreation Table 6. Degree to Which the Alternatives Address the Issues.....114
T, E, & P Species Table 1. Threatened, Endangered, and Proposed Terrestrial Wildlife Species in the Ten Lake Travel Management Project Area.....116
T, E, & P Species Table 2. Resource Indicators and Measures for Assessing Effects (inside the recovery zone).....119
T, E, & P Species Table 3. Existing Condition of Motorized Over-snow Use within Most Common Use Area and Overlap of modeled grizzly bear denning habitat within the Project Area 124
T, E, & P Species Table 4. Acres of Allowable Over-Snow Area by Alternative in Season 2; And the Acres and % of Total Modeled Grizzly Bear Denning Habitat That Overlap With Allowable Over-Snow Area by Alternative in Season 2 130
T, E, & P Species Table 5. Resource Indicators and Measures for Assessing Effects 143
T, E, & P Species Table 6. Existing lynx habitat conditions by LAU within the Ten Lakes Travel Management Project Area. 146
T, E, & P Species Table 7. Project Area effects by alternative of acres of over-snow areas, miles of routes and miles of groomed routes. 150
T, E, & P Species Table 8. Resource Indicators and Measures for Assessing Effects on Lynx Critical Habitat..... 162
T, E, & P Species Table 9. Existing critical habitat PCE conditions[1] within the TLTM project area LAUs..... 165
T, E, & P Species Table 10. Project Area Effects by Alternative of Acres of Over-Snow Areas, Miles of Routes and Miles of Groomed Routes..... 168
T, E, & P Species Table 11. Resource Indicators and Measures for Assessing the Ability of the Analysis Area to Support Wolverines 177
T, E, & P Species Table 12. Resource Indicators and Measures for the Existing Condition 180
Sensitive Species Table 1. Sensitive Wildlife Species on the KNF and Status in the Ten Lakes Travel Management Project Area 190
Sensitive Species Table 2. Resource Indicators and Measures for Assessing Effects..... 193
Sensitive Species Table 3. Resource Indicators and Measures for indirect and direct effects to Bighorn Sheep Habitat..... 198
Big Game Table 1. Resource Indicators and Measures for Assessing Effects 218
Big Game Table 2. Acres of Allowable Over-Snow Area by Season, and Alternative within the Ten Lake Travel Management Project Area..... 225
Big Game Table 3. Acres/percentage of Moose winter range affected by over-snow area use by alternative, seasons 1 and 2 within the Ten Lake Travel Management Project Area. 226
Big Game Table 4. Acres/Percentage of Mule Deer Winter Range Affected by Over-Snow Area Use by Alternative, Seasons 1 and 2 Within the Ten Lake Travel Management Project Area. 226
Economics Table 1. Economic and Social Indicators and Measures for Assessing Effects.. 236
Economics Table 2. Demographic and Social Indicators by County and US (2014) 242
Economics Table 3. At Risk Social Indicators by County and U.S. (2014)..... 243
Economics Table 4. Tourism Private Employment by County 249
Economics Table 5. National Forest Visitor Spending Patterns by Spending Segment and Category (2016 dollars spent per party)..... 258
Economics Table 6. Estimated Number of Visits by Activity and Spending Segment 259
Economics Table 7. Estimated Total Annual Spending by Activity and Segment 260
Economics Table 8. Estimated Total Recreation Economic Impact by Effect Type 261
Economics Table 9. Estimated Total Recreation Economic Impact by Industry 261
Economics Table 10. Increase in permanent registration of off highway and snowmobile vehicles in Lincoln and Flathead, County. 264

Economics Table 11. Costs and Benefits of Final Travel Management Rule 267
Water Table 1. Stream Channel Types and Associated Attributes (Rosgen, 1996) 273
Water Table 2. Bed Material Size Categories (Rosgen 1996) 274
Water Table 3. WQLS in the Ten Lakes Travel Management Analysis Area[1] 277
Water Table 4. Stream Survey Data Compared to Reference Stream Data..... 278
Weeds Table 1. Weed Survey Summary 293
Weeds Table 2. Comparison of Alternatives by Miles of Trail 294
Weeds Table 3. Invasive Plants Present Along Trails in the Analysis Area with Proposed Future Use..... 294
Weeds Table 4. Comparison of Over Snow Alternatives 296
PTES Plants Table 1. Sensitive Plant Species, Status, Occurrence, and Habitat Guilds in TLTM Analysis Area..... 304
PTES Plants Table 2. Plant Species of Special Concern, Status, Occurrence, and Habitat Guilds in TLTM Analysis Area 304
PTES Plants Table 3. Habitat Guilds with Key Stressors 305
PTES Plants Table 4. Comparison of Alternatives by Miles of Trail..... 306
Table 15. Interdisciplinary Team Members..... 325

List of Figures

Roadless Figure 1. Ten Lakes 1975 and 2015..... 50
Economics Figure 1. The Ten Lakes Travel Management Plan Economic Impact Area 237
Economics Figure 2. Economic Impact Area Population by County..... 244
Economics Figure 3. Flathead County, Population and Employment Trends (1970-2014).. 244
Economics Figure 4. Lincoln County, Population and Employment Trends (1970-2014) ... 245
Economics Figure 5. Economic Segments in Proportion by County..... 246
Economics Figure 6. Flathead County, Employment Diversification (1970-2014)..... 247
Economics Figure 7. Lincoln County, Employment Diversification (1970-2014) 248
Economics Figure 8. Flathead County, Income and Labor Earnings Trends 1970-2014..... 250
Economics Figure 9. Lincoln County, Income and Labor Earnings Trends 1970-2014..... 250
Economics Figure 10. Kootenai National Forest Visitor Activity Participation, NVUM round 3 data..... 253
Economics Figure 11. Kootenai National Forest Visitor Main Activity, NVUM round 3 data 254
Economics Figure 12. Kootenai National Forest Total Annual Visits by Type, NVUM round 3 data..... 255
Economics Figure 13. Kootenai National Forest Total Annual Visitor Type Spending, NVUM round 3 data 256
Economics Figure 14. Kootenai National Forest Total Visitor Spending by Category, NVUM round 3 data 257
Economics Figure 15. Flathead County, OHV and Snowmobile New Registrations (2011-2015) 262
Economics Figure 16. Lincoln County, OHV and Snowmobile New Registrations (2011-2015) 263
Economics Figure 17. Total Kootenai National Forest Budget in Non-inflation Adjusted and Real (inflation adjusted) Dollars by FY (Thousands of dollars)..... 265
Economics Figure 18. Resource Restoration budget for the Kootenai National Forest in nominal and inflation adjusted dollars by FY (Thousands of dollars)..... 266

Chapter 1. Purpose of and Need for Action

Introduction

The Kootenai National Forest, Fortine Ranger District, has proposed specific changes to existing over-snow and mechanized use (including bicycles) on public access routes (roads and trails), areas, and prohibitions within the Ten Lakes Travel Management Project area. Changes to over-snow motorized use and mechanized use is generally referred to as travel management throughout the document.

Travel management changes include allowing access, prohibiting access, and restricting access to certain times of the year. No changes are proposed to the existing wheeled motorized designations as shown on the Motor Vehicle Use Map (MVUM), the focus of this analysis is over-snow motorized and mechanized use. The Ten Lakes Travel Management Project Draft Environmental Impact Statement analyzes the physical, biological, social, and economic effects of the proposed changes to designated uses on the trail system and areas.

The Forest Service has prepared this environmental impact statement in compliance with the National Environmental Policy Act (NEPA) and other relevant Federal and State laws and regulations. This draft environmental impact statement discloses the direct, indirect, and cumulative environmental impacts that would result from the proposed action and alternatives.

Background

The Ten Lakes area has been a popular recreation destination for local area residents and visitors for many decades and in all seasons. Alpine glaciers shaped much of the rugged scenery. As the glaciers grew they carved deep scallops, or cirques, and high, rim-rocked basins sheltering the many lakes of the area. Trails provide access to alpine lakes and mountain peaks throughout the area. The high elevation, open alpine, and snow pack that remains into spring have made it a popular place to snowmobile. The area sees the most use in summer with hikers, backpackers, mountain bikers and other recreational uses. Currently, there are no restrictions to over-snow motorized and mechanized use in the project area.

The project area includes the 34,000 acre Ten Lakes Wilderness Study Area (WSA), designated by Congress in the Montana Wilderness Study Act of 1977. Section 3(a) states that these areas will be “administered so as to maintain their presently existing wilderness character and potential for inclusion in the National Wilderness Preservation System.” Presently existing wilderness character includes solitude or the type and level of use that occurred in the WSA in 1977 when the act was passed.

The Ten Lakes Travel Management Project is in response to a settlement agreement negotiated between the Montana Wilderness Association and the United States Forest Service. Litigation brought against the Forest Service regarding management of Montana’s WSAs resulted in a settlement agreement in March of 2007. The terms of the agreement state “The Forest Service agrees to use its good faith best effort to issue travel management decisions (including decisions covering both winter and summer use) for all WSAs by December 31, 2009…” (Montana Wilderness Association, Inc. et al. v. U.S. Forest Service, et al. Appeal No. 01-35690 and 01-35713). Ten Lakes is included in the list of WSAs under this settlement agreement. While not required by the settlement agreement to include winter motorized and mechanized use outside the WSA, the analysis was expanded to include common access points to the WSA.

In February of 1977, in response to Executive Order 11644, the Kootenai National Forest developed its first forest-wide travel plan (1977 Travel Map). Much of the Ten Lakes area had restricted access to motorized vehicles from April 1 to November 30, only allowing motorized use on designated routes. This map provides one piece of the puzzle in determining the wilderness character as it existed in 1977 by showing where and when motorized uses were allowed in the project area.

The Ten Lakes Travel Management Project is in accordance with the 2005 Travel Management Rule (36 CFR 212, 251, 261: Travel Management; Designated Routes and Areas for Motor Vehicle Use, Final Rule). The designation of routes and areas for motor vehicle use is required to comply with the national framework as well as direction specified in the Kootenai National Forest's Land Management Plan (Forest Plan). National Forests should provide access for both motorized and non-motorized users in a manner that is environmentally sustainable over the long term. The National Forest System is not reserved for the exclusive use of any one group, nor must every use be accommodated on every acre; it is entirely appropriate for different areas of National Forest to provide different opportunities for recreation.

Although the 2005 Travel Management Rule states "At this time, the Department [Forest Service] does not see the need for regulations requiring establishment of a system of routes and areas designated for non-motorized uses." In the settlement agreement the FS agreed to address both summer and winter travel management, and the Montana Wilderness Study Act requires the Forest Service to consider wilderness character. Motorized and non-motorized recreation experiences are linked in the sense that one affects the other, particularly when assessing wilderness character and maintaining that character as it existed in 1977. Mechanized use can effect wilderness character, and is included in this analysis. The Travel Management Rule also states "Local Forest Service officials may choose to designate routes and areas for non-motorized uses and enforce those designations with an order issued under 36 CFR part 261, subpart B."

The project area for the Ten Lakes Travel Management Project is the northwest portion of the Fortine Ranger District including the Ten Lakes WSA and associated access routes. The project area totals approximately 64,177 acres. Please refer to Map 1 for a project Vicinity Map.

Desired Condition

The desired condition for the Ten Lakes WSA is to maintain the wilderness character and the potential for inclusion in the National Wilderness Preservation System that existed in 1977 when the Montana Wilderness Study Act of 1977 (Public Law 95-150) was passed.

Purpose and Need for Action

The purpose of this project is to develop a travel management plan (over-snow and mechanized) for the Ten Lakes Wilderness Study Area to comply with the terms of the 2007 Settlement Agreement with the Montana Wilderness Association and to maintain wilderness character and the potential for inclusion in the National Wilderness Preservation system that existed in 1977 (MA1c-DC-AR-01). This action responds to the goals and objectives outlined in the 2015 Forest Plan, and helps move the project area towards desired conditions described in that plan

Proposed Action

Alternative 2, the Proposed Action, includes over-snow and mechanized travel management use allowances and restrictions to meet the purpose and need as stated above. This alternative

includes over-snow vehicle travel and mechanized transport. See Chapter 2, Alternative Descriptions for more detailed information.

Over-snow vehicle travel contains two distinct seasons. Season 1 (December 1 – March 31) proposes to allow over-snow motor vehicle and mechanized travel on 36,700 acres and 51.6 miles of designated over-snow motorized routes. Approximately 15,840 of those acres are within the WSA, or 46 percent of the WSA. Season 2 (April 1 – May 31) proposes to allow over-snow motor vehicles mechanized travel on 43.2 miles of designated motorized over-snow vehicle routes, with no travel off designated routes. No over-snow motorized travel would occur within the WSA during the second season. Season 3 (June 1 – November 30) proposed to allow 17.0 miles of trail for mechanized use, with 8.7 miles within the WSA. All trails would allow primitive uses such as hiking, snowshoe and stock. No changes are proposed to wheeled motorized use. Over snow motorized uses would not be allowed.

Section 4 (c) of the Wilderness Act discusses three forms of mechanization that degrade wilderness character; motor vehicles, motorized equipment, and mechanical transport. Mountain bike use, or mechanical transport, is a new use in the Ten Lakes area since 1977. The mountain bike as we know it was not developed and mass produced until the mid-1980. However, under R1 FSM 2300-2008-1, mountain bike use can be aggregated with 1977 motor-bike use if the 1977 wilderness character is maintained; "*Mountain bikes may be allowed on trails that had established motor-bike use in 1977, or on non-motorized trails as longs as the aggregate amount of mountain bike and motorcycle use maintains the wilderness character of the WSA as it existed in 1977 and the area's potential for inclusion in the National Wilderness Preservation System*". In other words if 10 miles of trail was open and had motorized use in 1977, a total of 10 miles of trail could be opened to mechanized use as long as the wilderness character and potential for inclusion in the NWPS is maintained. This proposal includes 17.0 miles of trail available for mechanized use, with 8.7 miles of trail within the WSA. All trails would allow non-motorized and non-mechanized uses such as hiking and horses. No changes are proposed to the Motor Vehicle Use Map (wheeled motorized use).

Project Scope

Section 40 CFR 1508.25 of the NEPA implementing regulations provides guidance in determining the proper scope of an Environmental Impact Statement.

Geographic Scope: The District has prepared this DEIS to document the analysis and disclose the environmental effects of a proposed project on National Forest System lands in the Ten Lakes Travel Management project area.

Temporal Scope: The action alternatives would result in changes to public motorized and mechanized use within the project area. Changes would be implemented following the signing of the Record of Decision (ROD).

Administrative Scope: Alternatives to the proposed action were developed. The No Action Alternative was also analyzed and reflects the current status, administrative activities and public use within the project area. The potential effects to resources are disclosed in Chapter 3.

Relationship to the Forest Plan

Management direction for this project comes from the 2015 Kootenai National Forest Land Management Plan, which sets the forestwide direction (goals, desired conditions, objectives, standards, and guidelines) for managing the resources of the Forest (Forest Plan, Chapter 1). The 2015 Forest Plan embodies the provisions of the National Forest Management Act (NFMA), its

implementing regulations, and other guiding documents. Where appropriate, this DEIS tiers to the 2015 Forest Plan Final Environmental Impact Statement and Record of Decision in compliance with 40 CFR 1502.20.

The 2015 Forest Plan groups NFS lands into seven major management categories called management areas (MAs). Within each category are different MA prescriptions, desired conditions, standards, and guidelines (2015 Forest Plan, Chapter 3). This area has several overlapping management areas (MA). The plan states that the direction for MA1c takes precedence for those areas within the MA1c boundary. The majority of the remainder of the area is designated as MA5b (Backcountry – Motorized Year Round) with a small portion of MA 5a (Backcountry – Non-motorized Year Round) and a small portion of MA6 (General Forest). (MA Map 2)

Table 1. Management Areas within the Ten Lakes Travel Management Project Area

Management Area	Acres
MA 1c (Ten Lakes Wilderness Study Area)	34,092
MA 1b (Ten Lakes Recommended Wilderness)*	26,000
MA 3 (Special Areas – Ten Lakes Scenic Area and Therriault Pass Geologic Area)**	15,438
MA 5a (Backcountry – non-motorized year round)	2,955
MA 5b (Backcountry – motorized year round)	23,127
MA 6 (General Forest)	3,761

*The Ten Lakes Recommended Wilderness acres are described in the 1985 Legislative Report to Congress. MA1c direction takes precedent. These acres are overlaid on MA1c.

**MA 3 acres overlaid on other MAs.

While the forestwide desired conditions describe management direction for the entire Forest, individual places (geographic areas) across the Kootenai National Forest have their own distinct characteristics and conditions. The Ten Lakes Travel Management project area falls within the Tobacco Geographic Area (2015 Forest Plan, Chapter 4) and includes a more detailed set of resource specific desired conditions. Compliance with the 2015 Forest Plan is discussed in various sections of this DEIS, including resource-specific effects analyses in Chapter 3.

To be consistent with the goals and desired conditions of the 2015 Forest Plan, a project or activity must be designed to meet one or more of the following conditions:

- Maintain or make progress toward one or more of the desired conditions of the Plan without adversely affecting progress toward, or maintenance of, other desired conditions; or
- Be neutral with regard to progress toward Plan desired conditions; or
- Maintain or make progress toward one or more of the desired conditions over the long term, even if the project or activity would adversely affect progress toward or maintenance of one or more desired conditions in the short term; or
- Maintain or make progress toward one or more of the desired conditions over the long term, even if the project or activity would adversely affect progress toward other desired conditions in a minor way over the long term.

The project documentation identifies which of these four criteria are being met and how they are being met.

Decision Framework

Given the purpose and need, the responsible official reviews the proposed action, the other alternatives, and the environmental consequences in order to make the following decisions:

- Whether to implement restrictions or prohibitions on the use of over-snow vehicles within the project area;
- Whether to implement restrictions or prohibitions on the use of mechanized travel within the project area;
- What, if any, specific design criteria or mitigation measures are needed;
- What specific project monitoring requirements are needed to assure design features are implemented and effective, or to evaluate the success of project objectives?

Public Involvement

The Ten Lakes Travel Management Project was originally part of the Galton Project. Pre-scoping efforts began in January 2008, and Galton Project Proposed Action was released in June of 2009. The comments received for the Galton Project that pertain to Ten Lakes Travel Management are included in the project record. In 2015, the Forest Supervisor decided that this merits its own analysis process and split it from the Galton project. The Ten Lakes Travel Management Project was scoped in April of 2015. Over 200 comments were received in response to the scoping package. In response to the comments received, the Responsible Official determined that preparation of an environmental impact statement was appropriate.

The Notice of Intent (NOI) was published in the Federal Register on April 13, 2016. The NOI asked for public comment on the proposal from April 13 to May 13, 2016. Eleven comments were received in response to the NOI.

Throughout the project development process, the IDT has shared information about proposed activities with the Confederated Salish and Kootenai Tribes (CSKT) and the Kootenai Tribe of Idaho. Using the comments from the public and other agencies, the interdisciplinary team developed a list of issues to address.

Issues

Issues serve to highlight effects of unintended consequences that may occur from the proposed action or alternatives. Issues were identified through the scoping process. Significant issues were defined as those directly or indirectly caused by implementing the proposed action, may involve potentially significant effects, and could be meaningfully and reasonably evaluated and addressed within the scope of this proposal[1]. Alternatives were developed around those significant issues

[1] Some issues have already been considered through broader programmatic NEPA (e.g. NRLMD FEIS). In these cases, the issues here focus on evaluating the effects unique to and commensurate with the decisions being considered here.

that involved unresolved conflicts concerning alternative uses of available resources (40 CFR 1500.2(e)).

The Forest Service identified the following significant issues in scoping that drove the development of alternatives:

Issue: Effects to Wilderness Character
Congress designated the Ten Lakes WSA in the 1977 Montana Wilderness Study Act (PL 95-150). The WSA is administered to maintain the wilderness character as it existed in 1977, and the potential for inclusion in the National Wilderness Preservation System. Since 1977, changes in both the intensity and types of recreation have occurred. For example, mountain biking did not exist in the project area in 1977 and changes in vegetation have changed snowmobile use patterns. These changes may lead to effects to wilderness character that do not meet the criteria of the Montana Wilderness Study Act. This issue contributed to the development of the action alternatives. The indicator for this issue includes maintaining, degrading, or improving wilderness character from the 1977 condition.

Issue: Effects to the Relationship of People with this Environment
The changes in use over time of the recreational activities currently occurring in the WSA compared to those that occurred in 1977 and what is proposed in the alternatives may result in effects to the relationship of people with this environment. The indicators for this issue will be the number of acres of open area and number of miles of routes/trails designated for various types of use.

Issue: Effects to Wildlife
Effects to wildlife, including grizzly bear, Canada lynx, and wolverine are analyzed for each alternative in Chapter 3. The indicator for this issues is the number of acres of habitat affected by project activities.

Chapter 2. Alternatives, Including the Proposed Action

Introduction

This chapter describes and compares the alternatives considered for the Ten Lakes Travel Management Project. It includes a description and map of each alternative considered. This section also presents the alternatives in comparative form, sharply defining the differences between each alternative and providing a clear basis for choice among options by the decision maker and the public.

Alternatives Considered in Detail

The Forest Service developed four alternatives, including the No Action and Proposed Action alternatives, in response to issues raised by the public.

Alternative 1

No Action

Under the no action alternative, current management would continue. No changes to public motorized or mechanized use would be implemented. Map 3 represents the No Action Alternative.

Motorized over-snow vehicle travel would continue to have no established start or end dates, limited only by snow cover. All 64,177 acres, or 100 % of the project area, would be open to over snow vehicle use, including all 34,000 acres of the WSA. There would be 60.4 miles of designated routes available with 33.8 miles of those routes groomed for over-snow travel in the project area. No grooming would be allowed after April 1. There would be no restrictions on over-snow mechanized use.

Mechanized use would be unrestricted in this alternative. The 88.4 miles of trail in the project area, including 54.6 miles of trail in the WSA would remain open to mechanized use. The Indian Creek Trail (#340) and Independence Mine Spur (#340A) would continue to be visible on future forest and district maps but would not be maintained. Currently there is little use on these trails, and there is no public access at the lower end. These trails used to be the primary access to several patented mining claims (private), which have since been acquired by the Forest Service. There is only one patented mining claim remaining in the project area near Green Mountain. Individuals that currently use these trails would still have access on the route; there would be no changes to existing allowed uses. All areas would remain open for mechanized cross country use.

Table 2. Over-Snow and Mechanized Travel (Alternative 1 – No Action)

Season and Use [1]		Alternative 1 No Action
Over-snow Season 1 December 1 to March 31	Area Open to Motorized Over-snow use(Acres)	64,177
	Percent of Project Area Open to Motorized Over-snow use	100
	Area Open to Motorized Over-Snow use in WSA (Acres)	34,000
	Percent of WSA Open to Motorized Over-snow use	100
	Designated Over-snow Routes Open to Motorized use (Total Miles) Miles Groomed for Over-snow Travel	60.4 33.8
	Designated Over Snow Routes Open to Motorized in WSA	0
	Area Open to Mechanized Over-Snow use (Acres)	64,177
	Percent of Project Area Open to Mechanized Over-snow use	100
	Area Open to Mechanized Over-Snow use in WSA (Acres)	34,000
	Percent of WSA Open to Mechanized Over-snow use	100
	Over-snow Routes Open to Mechanized use (Total Miles) Miles Groomed for Over-snow Travel	60.4 33.8
Over-snow Season 2 April 1 to May 31	Area Open to Motorized Over-snow use (Acres)	64,177
	Percent of Project Area Open to Motorized Over-snow use	100
	Area Open to Motorized Over-Snow use in WSA (Acres)	34,000
	Percent of WSA Open to Motorized Over-snow use	100
	Designated Over-snow Routes Open to Motorized use (Total Miles) Miles Groomed for Over-snow Travel	33.8 0
	Designated Over Snow Routes Open to Motorized in WSA	0
	Area Open to Mechanized Over-Snow use (Acres)	64,177
	Percent of Project Area Open to Mechanized Over-snow use	100
	Area Open to Mechanized Over-Snow use in WSA (Acres)	34,000
	Percent of WSA Open to Mechanized Over-snow use	100
	Designated Over-snow Routes Open to Mechanized use (Total Miles) Miles Groomed for Over-snow Travel	33.8 0
Season 3 June 1 to November 31	Total Miles of Trail in the Project Area	88.4
	Trail Miles Open to Mechanized Use in Project Area	88.4
	Total Miles of Trail in the WSA	54.6
	Trail Miles Open to Mechanized Use in the WSA	54.6
	Areas Open to Cross Country Mechanized use in the Project Area	64,177
	Areas Open to Cross Country Mechanized use in the WSA	34,000

The term designated route, is specific to the Travel management Rule, and is used here to be consistent with action alternatives.

Alternative 2 - The Proposed Action

Alternative 2, the Proposed Action, includes a mix of areas and routes open and closed to motorized over-snow vehicle travel and limits on routes open to mechanized use. This alternative was designed to maintain the wilderness character of the WSA in 1977. This alternative, with some modifications to Season 2 of over snow vehicle travel and the inclusion of over-snow mechanized use, was presented for public comment in the spring of 2015.

Over-snow vehicle travel contains two distinct seasons. Season 1 (December 1 – March 31) proposes to prohibit motorized over-snow vehicle travel on 27,474 acres, or 57 percent, throughout the project area. Motorized over-snow vehicle travel would be allowed on 36,703 acres and 48.8 miles of designated over-snow motorized routes. Open areas would include all routes (trail, road, cross country) travel. Designated routes through open areas are also identified, as this would be the basis for over snow visitor maps, interactive GIS maps, etc. Approximately 15,838 of those acres are within the WSA, or 47 percent of the WSA. A designated motorized over-snow route of 0.7 miles would be within the WSA. Grooming would be allowed on 33.8 miles of snow trail (on open roads) in the project area. Map 4 displays Season 1 of Alternative 2.

Season 2 (April 1 – May 31) proposes to prohibit motorized over snow vehicle travel areas and would allow motorized over-snow vehicles on 43.2 miles of routes, with motorized cross country travel prohibited off designated routes. Off-route motorized over-snow travel would be prohibited within the WSA. Grooming of over-snow motorized routes would not be allowed. These routes were chosen as they were designated on the 1977 travel map. The April 1 date matches uses allowed on the 1977 Travel Map or presently existing 1977 wilderness character. May 31 was chosen as the end date to allow for popular late winter recreational use to the lakes and cabins. Map 5 displays Season 2 of Alternative 2.

Over-snow mechanized use would be allowed within the areas shown on Maps 4 and 5.

Motorized over-snow vehicle use would be prohibited in Season 3 from June 1 to November 30.

Designation is specific to travel management (Travel Management Rule), or motorized travel. Designated routes for motor vehicle use (trails or roads) are specifically shown on maps.

Mechanized use on routes is not specifically shown on maps, but accounted for in trail miles in tables. Where a route (trail or road) is in an area open to mechanized uses, the trail is also open.

Table 3. Over-Snow and Mechanized Travel (Alternative 2 – Proposed Action)

		Alternative 2 Proposed Action
Over-snow Season 1 December 1 to March 31	Area Open to Motorized Over-snow use (Acres)	36,703
	Percent of Project Area Open to Motorized Over-snow use	57
	Area Open to Motorized Over-Snow use in WSA (Acres)	15,838
	Percent of WSA Open to Motorized Over-snow use	47
	Designated Over-snow Routes Open to Motorized use (Total Miles) Miles Groomed for Over-snow Travel	48.8 33.8
	Designated Over Snow Routes Open to Motorized in WSA	0.7
	Acres Open to Mechanized	45,948
	Percent of Project Area Open	72
	Acres Open to Mechanized Over-Snow use in WSA	15,838
	Percent of WSA Open	47
	Miles mechanized over-snow Trails Roads Miles Groomed for Over-snow	 64.7 48.8 33.8
Over-snow Season 2 April 1 to May 31	Area Open to Motorized Over-snow use(Acres)	0
	Percent of Project Area Open to Motorized Over-snow use	0
	Area Open to Motorized Over-Snow use in WSA (Acres)	0
	Percent of WSA Open to Motorized Over-snow use	0
	Designated Over-snow Routes Open to Motorized use (Total Miles) Miles Groomed for Over-snow Travel	41.4 0
	Designated Over Snow Routes Open to Motorized in WSA	0
	Acres Open to Mechanized	30,081
	Percent of Project Area Open	47
	Acres Open to Mechanized Over-Snow use in WSA	0
	Percent of WSA Open	0
	Miles mechanized over-snow Trails Roads Miles Groomed for Over-snow	 33.6 43.2 0
Season 3 June 1 to November 31	Total Miles of Trail in the Project Area	83.9
	Trail Miles Open to Mechanized Use in Project Area	17.0
	Total Miles of Trail in the WSA	50.1
	Trail Miles Open to Mechanized Use in the WSA	8.7
	Areas Open to Cross Country Mechanized use in the Project Area	30,177
	Areas Open to Cross Country Mechanized use in the WSA	0

Under Northern Region Forest Service Manual Supplement No. 2300-2008-1, section 2329 (Management of Wilderness Study Areas) mountain bikes use can be aggregated with 1977 motor-bike use if the 1977 wilderness character and potential for inclusion in the NWPS is maintained. Approximately 15.9 miles of trail in the area that would become the WSA were open to motor vehicles yearlong in 1977. This alternative proposes to prohibit mechanized use on 71.4 miles of trail in the project area. This alternative proposes to allow mechanized use on 17.0 miles of trail, with 8.7 miles of trail open to mechanized use within the WSA.

All trails would allow primitive uses such as hiking and horses. The Cat #333 and Gibraltar #335 Trails were chosen as they provide a loop route for mechanized users. Map 6 displays Season 3 trail management for Alternative 2.

No changes are proposed to the Motor Vehicle Use Map (wheeled motorized use.). During Season 3, cross country mechanized use would be allowed outside of the WSA, on 30,177 acres.

Indian Creek Trail #340 and the Independence Mine Spur #340A would no longer be maintained as NFS trails. Currently there is little use on these trails, and there is no public access at the lower end. These trails used to be the primary access to several patented mining claims (private), which have since been acquired by the Forest Service. There is only one patented mining claim remaining in the project area near Green Mountain. Individuals that currently use these trails

would still have access on the route; there would be no restriction to use. However, the trails would not be maintained or appear on future District or Forest visitor maps.

Table 4. Mechanized Trail Management by Trail (Alternative 2 – Proposed Action)

* Prohibited indicates mechanized use would be prohibited on these trails. Hiking and stock use would continue.

Trail Name	Trail #	Total Miles	Alternative 2 Proposed Action
Foundation/Camp	77	10.1	Prohibited
Clarence/Rich	78	4.7	Prohibited
Stahl Creek	80	2.1	Prohibited
Stahl Peak	81	4.9	Prohibited
Stahl Peak Spur	81A	0.1	Prohibited
Clarence Ness	82	2.4	Prohibited
Bluebird	83	2.1	Prohibited
Wolverine Lakes	84	2.5	Prohibited
David Nesbitt	84A	0.9	Prohibited
Little Therriault Lake Loop	85	0.9	Prohibited
Big Therriault Lake Loop	86	1.5	Prohibited
Therriault Pass	87	1.3	Prohibited
Sinclair Creek	88	4.1	Prohibited
Rainbow	89	4.5	Prohibited
Blacktail	92	8.6	7.0 Miles Open
Big Therriault/Highline	190	0.9	Prohibited
Horse Camp	306	0.2	Prohibited
Miistakiistsi	308	1.1	Prohibited
Cat Creek	333	3.2	Open
Gibraltor Ridge	335	9.8	6.8 Miles Open
Highline	339	15.1	Prohibited
Little Therriault/Highline	341	0.5	Prohibited
Otter Creek	554	1.8	Prohibited
Paradise Lake	555	0.2	Prohibited
Weasel Lake Accessible	557	0.1	Prohibited
Horse Camp/Highline	560	0.5	Prohibited
Indian Creek	340	4.0	No longer maintained, remove from NF system
Independence Mine Spur	340A	0.5	No longer maintained, remove from NF system

Alternative 3

Alternative 3 was developed in response to comments requesting more of the project area open for over-snow and mechanized use.

Over-snow travel includes two seasons. Season 1 (December 1 – March 31) includes areas within the project boundary proposed by the Ten Lakes Snowmobile Club. During Season 1, this alternative would prohibit motorized over-snow vehicle travel on 15,572 acres or 24% of the project area. Motorized over snow vehicle would be allowed on 48,605 acres, or 76% of the project area. Open areas would include all routes (trail, road, cross country) travel. Designated routes through open areas are also identified, as this would be the basis for over snow visitor maps, interactive GIS maps, etc. Approximately 22,516 of those acres are within the WSA, or 66% of the WSA. This alternative proposes 49.9 miles of motorized over-snow designated route including 1.1 mile within the WSA. Grooming of over-snow motorized routes would be allowed on 33.8 miles of trail in the project area. Map 7 displays Season 1 for Alternative 3.

During Season 2 (April 1 – May 31), this alternative would prohibit motorized over-snow vehicle travel on 59,797 acres, or 93 % of the project area. Motorized over-snow vehicles would be allowed on approximately 4,380 acres of area, or 7% of the project area. Of those acres, 2,980 would be within the WSA or 9% of the WSA. Designated motorized over-snow vehicle use would be allowed on routes totaling 36.8 miles. None of these designated routes would be within the WSA. Grooming would be prohibited. The April 1 date matches uses allowed on the 1977 Travel Map or presently existing 1977 wilderness character. May 31 was chosen as the end date to allow for popular late winter recreational use to the lakes and cabins. Map 8 displays Season 2 for Alternative 3.

Over-snow mechanized use would be allowed within the areas shown on Maps 7 and 8.

Motorized over-snow vehicle travel would be prohibited in Season 3 from June 1 to November 30.

Designation is specific to travel management (Travel Management Rule), or motorized travel. Designated routes for motor vehicle use (trails or roads) are specifically shown on maps.

Mechanized use on routes is not specifically shown on maps, but accounted for in trail miles in tables. Where a route (trail or road) is in an area open to mechanized uses, the trail is also open.

Table 5. Over-Snow and Mechanized Travel (Alternative 3)

		Alternative 3
Over-snow Season 1 **December 1 to March 31**	Area Open to Motorized Over-snow use (Acres)	48,605
	Percent of Project Area Open to Motorized Over-snow use	76
	Area Open to Motorized Over-Snow use in WSA (Acres)	22,516
	Percent of WSA Open to Motorized Over-snow use	66
	Designated Over-snow Routes Open to Motorized use (Total Miles) Miles Groomed for Over-snow Travel	49.9 33.8
	Designated Over Snow Routes Open to Motorized in WSA	1.1
	Acres Open to Mechanized	52,653
	Percent of Project Area Open	82
	Acres Open to Mechanized Over-Snow use in WSA	22,516
	Percent of WSA Open	66
	Miles mechanized Over-snow Trail Road Miles Groomed for Over-snow	 81.7 49.9 33.8
Over-snow Season 2 **April 1 to May 31**	Area Open to Motorized Over-snow use(Acres)	4,380
	Percent of Project Area Open to Motorized Over-snow use	7
	Area Open to Motorized Over-Snow use in WSA (Acres)	2,980
	Percent of WSA Open to Motorized Over-snow use	9
	Designated Over-snow Routes Open to Motorized use (Total Miles) Miles Groomed for Over-snow Travel	36.8 0
	Designated Over Snow Routes Open to Motorized in WSA	0
	Acres Open to Mechanized	33,062
	Percent of Project Area Open	52
	Acres Open to Mechanized Over-Snow use in WSA	4,380
	Percent of WSA Open	13
	Miles mechanized Over-snow Trail Road Miles Groomed for Over-snow	 46.4 36.8 0
Season 3 **June 1 to November 31**	Total Miles of Trail in the Project Area	83.9
	Trail Miles Open to Mechanized Use in Project Area	41.0
	Total Miles of Trail in the WSA	50.1
	Trail Miles Open to Mechanized Use in the WSA	16.2
	Areas Open to Cross Country Mechanized use in the Project Area	30,177
	Areas Open to Cross Country Mechanized use in the WSA	0

Mechanized use would be prohibited on 47.4 miles of trail across the project area. Mechanized use would be allowed on 41.0 miles of trail within the project area, with 16.2 miles of trail within the WSA. This is similar to the aggregate number of miles that was open to motorized uses in 1977 in the WSA. All trails would allow non-motorized and non-mechanized uses such as hiking and horses. Several comments received in scoping felt that the Wolverine trail was a desirable route for mechanized users. Several comments also requested allowing mechanized travel to the Mt. Wam rental lookout and the addition of loop routes. Map 9 displays trail management for Alternative 3.

Indian Creek Trail #340 and the Independence Mine Spur #340A would no longer be maintained as NFS trails. Currently there is little use on these trails, and there is no public access at the lower end. These trails used to be the primary access to several patented mining claims (private), which have since been acquired by the Forest Service. There is only one patented mining claim remaining in the project area near Green Mountain. Individuals that currently use these trails would still have access on the route; there would be no restriction to use. However, the trails would not be maintained or appear on future District or Forest visitor maps.

No changes are proposed to the Motor Vehicle Use Map (wheeled motorized use.)

Table 6. Mechanized Trail Management by Trail (Alternative 3)

* Prohibited indicates mechanized use would be prohibited on these trails. Hiking and stock use would continue.

Trail Name	Trail #	Total Miles	Alternative 3
Foundation/Camp	77	10.1	Open
Clarence/Rich	78	4.7	Prohibited
Stahl Creek	80	2.1	0.8 Miles Open
Stahl Peak	81	4.9	Prohibited
Stahl Peak Spur	81A	0.1	Prohibited
Clarence Ness	82	2.4	Open
Bluebird	83	2.1	Prohibited
Wolverine Lakes	84	2.5	Open
David Nesbitt	84A	0.9	Open
Little Therriault Lake Loop	85	0.9	Open
Big Therriault Lake Loop	86	1.5	Open
Therriault Pass	87	1.3	Prohibited
Sinclair Creek	88	4.1	Prohibited
Rainbow	89	4.5	Prohibited
Blacktail	92	8.6	Open
Big Therriault/Highline	190	0.9	Prohibited
Horse Camp	306	0.2	Open
Miistakiistsi	308	1.1	Open
Cat Creek	333	3.2	Open
Gibraltor Ridge	335	9.8	6.8 Miles Open
Highline	339	15.1	Prohibited
Little Therriault/Highline	341	0.5	Prohibited
Otter Creek	554	1.8	Open
Paradise Lake	555	0.2	Prohibited
Weasel Lake Accessible	557	0.1	Open
Horse Camp/Highline	560	0.5	Prohibited
Indian Creek	340	4.0	No longer maintained, remove from NF system
Independence Mine Spur	340A	0.5	No longer maintained, remove from NF system

Alternative 4

Alternative 4 was developed in response to comments requesting more primitive activities, and less motorized and mechanized use within the WSA.

Over-snow motorized vehicle travel is proposed for one season. During Season 1 (December 1 – March 31), motorized over-snow vehicle travel would be prohibited on 63,232 acres, or 99% of the project area. This alternative would allow over-snow vehicle travel on 945 acres, or 1% of the project area. None of those acres are within the WSA. This alternative proposes 38.4 miles of designated motorized over-snow routes of which 1.6 miles would be within the WSA. This alternative limits over-snow motorized use to designated routes along existing yearlong open roads, Trail #82, a route from Stahl Creek to Therriault Lakes, and areas around Therriault Lakes, Weasel Cabin, and Weasel Lake. Grooming would be allowed on 31.0 miles of trail. Grooming would be prohibited on the Clarence Creek Trail, as suggested by two commenters during scoping. Map 10 displays Season 1 for Alternative 4.

Over-snow mechanized use would be allowed within the areas shown on Maps 10 and 11.

Motorized over-snow vehicle use would be prohibited during Season 2 (April 1 – May 31) and Season 3 (June 1 to November 30).

Designation is specific to travel management (Travel Management Rule), or motorized travel. Designated routes for motor vehicle use (trails or roads) are specifically shown on maps.

Mechanized use on routes is not specifically shown on maps, but accounted for in trail miles in tables. Where a route (trail or road) is in an area open to mechanized uses, the trail is also open.

Table 7. Over-Snow and Mechanized Travel (Alternative 4)

		Alternative 4
Over-snow Season 1 **December 1 to March 31**	Area Open to Motorized Over-snow use (Acres)	945
	Percent of Project Area Open to Motorized Over-snow use	1
	Area Open to Motorized Over-Snow use in WSA (Acres)	0
	Percent of WSA Open to Motorized Over-snow use	0
	Designated Over-snow Routes Open to Motorized use (Total Miles) Miles Groomed for Over-snow Travel	38.4 31.0
	Designated Over Snow Routes Open to Motorized in WSA	1.6
	Acres Open to Mechanized	30,089
	Percent of Project Area Open	47
	Acres Open to Mechanized Over-Snow use in WSA	0
	Percent of WSA Open	0
	Miles mechanized Over-snow Trail Road Miles Groomed for Over-snow	 34.1 38.4 31.0
Over-snow Season 2 **April 1 to May 31**	Area Open to Motorized Over-snow use(Acres)	-
	Percent of Project Area Open to Motorized Over-snow use	-
	Area Open to Motorized Over-Snow use in WSA (Acres)	-
	Percent of WSA Open to Motorized Over-snow use	-
	Designated Over-snow Routes Open to Motorized use (Total Miles) Miles Groomed for Over-snow Travel	-
	Designated Over Snow Routes Open to Motorized in WSA	-
	Acres Open to Mechanized	30,081
	Percent of Project Area Open	47
	Acres Open to Mechanized Over-Snow use in WSA	0
	Percent of WSA Open	0
	Miles mechanized Over-snow Trail Road Miles Groomed for Over-snow	 34.1 0 0
Season 3 **June 1 to November 31**	Total Miles of Trail in the Project Area	83.9
	Trail Miles Open to Mechanized Use in Project Area	25.9
	Total Miles of Trail in the WSA	50.1
	Trail Miles Open to Mechanized Use in the WSA	3.5
	Areas Open to Cross Country Mechanized use in the Project Area	0
	Areas Open to Cross Country Mechanized use in the WSA	0

In this alternative, mechanized use would be prohibited on 62.5 miles of trail Mechanized use would be allowed on 25.9 miles of trail across the project area, with 3.5 miles of trail within the WSA. All trails would allow non-motorized and non-mechanized uses like hiking and horses. Map 12 displays trail management for Alternative 4.

Mechanized use would be allowed from April 1 to November 30 (Season 3) on trails outside of the WSA, and 3.5 miles of Foundation Camp Trail #77 in the WSA. Trail #77 provides a loop opportunity and access to Wam Lookout. While in the WSA, Trail #77 and Wam Lookout are outside of the Ten Lakes Recommended Wilderness (Forest Plan MA1b).

No changes to the Motor Vehicle Use Map are proposed (wheeled motorized use).

Indian Creek Trail #340 and the Independence Mine Spur #340A, a spur off Trail #340, would no longer be maintained as NFS trails. Currently there is little use on these trails, and there is no public access at the lower end of Trail #340. These trails used to be the primary access to several patented mining claims (private), which have since been acquired by the Forest Service. There is only one patented mining claim remaining in the project area near Green Mountain. Individuals that currently use the trails would still have access on the route; there would be no restriction to use. However, the trails would not be maintained or appear on future District or Forest visitor maps.

Table 8. Mechanized Trail Management by Trail (Alternative 4)

* Prohibited indicates mechanized use would be prohibited on these trails. Hiking and stock use would continue.

Trail Name	Trail #	Total Miles	Alternative 4
Foundation/Camp	77	10.1	Open
Clarence/Rich	78	4.7	Prohibited
Stahl Creek	80	2.1	0.8 Miles Open
Stahl Peak	81	4.9	Prohibited
Stahl Peak Spur	81A	0.1	Prohibited
Clarence Ness	82	2.4	Open
Bluebird	83	2.1	Prohibited
Wolverine Lakes	84	2.5	Prohibited
David Nesbitt	84A	0.9	Prohibited
Little Therriault Lake Loop	85	0.9	Open
Big Therriault Lake Loop	86	1.5	Open
Therriault Pass	87	1.3	Prohibited
Sinclair Creek	88	4.1	Prohibited
Rainbow	89	4.5	Prohibited
Blacktail	92	8.6	7.0 Miles Open
Big Therriault/Highline	190	0.9	Prohibited
Horse Camp	306	0.2	Open
Miistakiistsi	308	1.1	Open
Cat Creek	333	3.2	Prohibited
Gibraltor Ridge	335	9.8	Prohibited
Highline	339	15.1	Prohibited
Little Therriault/Highline	341	0.5	Prohibited
Otter Creek	554	1.8	Open
Paradise Lake	555	0.2	Prohibited
Weasel Lake Accessible	557	0.1	Open
Horse Camp/Highline	560	0.5	Prohibited
Indian Creek	340	4.0	No longer maintained, remove from NF system
Independence Mine Spur	340A	0.5	No longer maintained, remove from NF system

In addition, this alternative proposes construction of a pavilion at Big Therriault Lake. A pavilion could become a destination outside of the WSA, instead of Wolverine Cabin, which is within the WSA. The pavilion would also address safety concerns raised during scoping. The pavilion would be designated as day use only and be suitable for both summer and winter seasons.

Comparison of Alternatives

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

Table 9. Comparison of Alternatives.

		Alternative 1 No Action	Alternative 2 Proposed Action	Alternative 3	Alternative 4
Over-snow Motorized Season 1 **December 1 to March 31**	Acres Open to Motorized	64,177	36,703	48,605	945
	Percent of Project Area Open	100	57	76	1
	Acres Open to Motorized over-snow in WSA	34,000	15,838	22,516	0
	Percent of WSA Open	100	47	66	0
	Miles Over-snow Routes Miles Groomed for Over-snow	60.4 33.8	48.8 33.8	49.9 33.8	38.4 31.0
	Designated Over Snow Routes Open to Motorized in WSA	0	0.7	1.1	1.6
Over-snow mechanized Season 1 **December 1 March 31**	Acres Open to Mechanized	64,177	45,948	52,653	30,089
	Percent of Project Area Open	100	72	82	47
	Acres Open to Mechanized Over-Snow use in WSA	34,000	15,838	22,516	0
	Percent of WSA Open	100	47	66	0
	Miles mechanized over-snow Trails Roads Miles Groomed for Over-snow	 88.4 95.0 33.8	 64.7 48.8 33.8	 81.7 49.9 33.8	 34.1 38.4 31.0
Over-snow Motorized Season 2 **April 1 to May 31**	Acres Open to Motorized	64,177	0	4,380	0
	Percent of Project Area Open	100	0	7	0
	Acres Open to Motorized Over-Snow use in WSA	34,000	0	2,980	0
	Percent of WSA Open	100	0	9	0
	Miles of over-snow Routes Miles Groomed for Over-snow	60.4 0	41.4 0	36.8 0	0
	Miles Over-Snow route in WSA	0	0	0	0
Over-Snow Mechanized Season 2 **April 1 to May 31**	Acres Open to Mechanized	64,177	30,081	33,062	30,081
	Percent of Project Area Open	100	47	52	47
	Acres Open to Mechanized Over-Snow use in WSA	34,000	0	4,380	0
	Percent of WSA Open	100	0	13	0
	Miles mechanized Over-snow Trail Road Miles Groomed for Over-snow	 88.4 88 0	 33.6 43.2 0	 46.4 36.8 0	 34.1 0 0
Over-snow Motorized Season 3 **June 1 to November 30**	Acres Open to Motorized	Limited only by snow cover	0	0	0
	Acres Open to Motorized in WSA	Limited only by snow cover	0	0	0
Mechanized Season 3 **June 1 to November 30** **(see table 10 below for trail by trail comparison)**	Miles Trail in Project Area	88.4	83.9	83.9	83.9
	Miles Trail Open to Mechanized in Project Area	88.4	17.0	41.0	25.9
	Miles Trail in WSA	54.6	50.1	50.1	50.1
	Miles Trail Open to Mechanized in WSA	54.6	8.7	16.2	3.5
	Acres open to mechanized	64,177	30,177	30,177	0
	Acres open to in the WSA	34,000	0	0	0
	Construction of Pavilion	No	No	No	Yes

Table 10. Trails open to mechanized use by alternative (all trails would be open to stock and hiking).

Trail Name	Trail #	Total Miles	Alternative 1 No Action	Alternative 2 Proposed Action	Alternative 3	Alternative 4
Foundation/Camp	77	10.1	Open	Prohibited	Open	Open
Clarence/Rich	78	4.7	Open	Prohibited	Prohibited	Prohibited
Stahl Creek	80	2.1	Open	Prohibited	0.8 Miles Open	0.8 Miles Open
Stahl Peak	81	4.9	Open	Prohibited	Prohibited	Prohibited
Stahl Peak Spur	81A	0.1	Open	Prohibited	Prohibited	Prohibited
Clarence Ness	82	2.4	Open	Prohibited	Open	Open
Bluebird	83	2.1	Open	Prohibited	Prohibited	Prohibited
Wolverine Lakes	84	2.5	Open	Prohibited	Open	Prohibited
David Nesbitt	84A	0.9	Open	Prohibited	Open	Prohibited
Little Therriault Lake Loop	85	0.9	Open	Prohibited	Open	Open
Big Therriault Lake Loop	86	1.5	Open	Prohibited	Open	Open
Therriault Pass	87	1.3	Open	Prohibited	Prohibited	Prohibited
Sinclair Creek	88	4.1	Open	Prohibited	Prohibited	Prohibited
Rainbow	89	4.5	Open	Prohibited	Prohibited	Prohibited
Blacktail	92	8.6	Open	7.0 Miles Open	Open	7.0 Miles Open
Big Therriault/Highline	190	0.9	Open	Prohibited	Prohibited	Prohibited
Horse Camp	306	0.2	Open	Prohibited	Open	Open
Miistakiistsi	308	1.1	Open	Prohibited	Open	Open
Cat Creek	333	3.2	Open	Open	Open	Prohibited
Gibraltor Ridge	335	9.8	Open	6.8 Miles Open	6.8 Miles Open	Prohibited
Highline	339	15.1	Open	Prohibited	Prohibited	Prohibited
Little Therriault/Highline	341	0.5	Open	Prohibited	Prohibited	Prohibited
Otter Creek	554	1.8	Open	Prohibited	Open	Open
Paradise Lake	555	0.2	Open	Prohibited	Prohibited	Prohibited
Weasel Lake Accessible	557	0.1	Open	Prohibited	Open	Open
Horse Camp/Highline	560	0.5	Open	Prohibited	Prohibited	Prohibited
Indian Creek	340	4.0	Open	No longer maintained, remove from NF system	No longer maintained, remove from NF system	No longer maintained, remove from NF system
Independence Mine Spur	340A	0.5	Open	No longer maintained, remove from NF system	No longer maintained, remove from NF system	No longer maintained, remove from NF system

The following table demonstrates if or how each alternative meets the purpose and need for the project, and how each alternative addresses the issues identified in Chapter 1.

Table 11. How each alternative addresses the Purpose and Need for the Project, and the Issues identified in Chapter 1.

		Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4
Meets the Purpose and Need					
Maintain 1977 Wilderness Character?		No	Yes	No	Yes
Develop Travel Plan for WSA?		No	Yes	Yes	Yes
Issue 1: Effects to Wilderness Character	Trend in Wilderness Character – summary of all WSA qualities	Degrade	Maintain	Degrade	Improve
Issue 2: Effects to the relationship of people with this environment	Primitive Season 3				
	Primitive (open)[1]	None	None	None	None
	Primitive (quiet)[2]	None	Increase	Increase	Increase
	Mechanized	None	Reduce	Reduce	Reduce
	Primitive Over-snow				
	Primitive (open)[1]	None	None	None	None
	Primitive (quiet)[2]	None	Increase	Increase	Increase
Change in recreation opportunity (area/miles available)	Mechanized Over-snow				
	Season 1	None	Reduce	Reduce	Reduce
	Season 2	None	Reduce	Reduce	Reduce
	Motorized Over-snow				
	Season 1	None	Reduce	Reduce	Reduce
	Season 2	None	Reduce	Reduce	Reduce
Issue 3. Effects to Threatened and Endangered Wildlife[3]	Grizzly Bear	**MALAA**	MANLAA	**MALAA**	MANLAA
	Canada Lynx	MANLAA	MANLAA	MANLAA	MANLAA
	Canada lynx Critical habitat	MANLAA	MANLAA	MANLAA	MANLAA
	Wolverine	WNJCE	WNJCE	WNJCE	WNJCE

1 Primitive (open) included all routes or areas, as there are no restrictions in the project area on primitive uses.
2 Primitive (quiet) are routes or areas which are closed to motorized uses, with only primitive uses allowed.
3 Determination Key: MALAA = May Affect, Likely to Adversely Affect; MANLAA = May Affect, Not Likely to Adversely Affect; and WNJCE = Would Not Jeopardize the Continued Existence.

Alternatives Considered but Eliminated from Detailed Study

Federal agencies are required by NEPA to rigorously explore and objectively evaluate all reasonable alternatives and to briefly discuss the reasons for eliminating any alternatives that were not developed in detail (40 CFR 1502.14). Public comments received in response to the Proposed Action provided suggestions for alternative methods for achieving the purpose and need. Some of these alternatives may have been outside the scope of the project, duplicative of the alternatives considered in detail, or determined to be components that would cause unnecessary environmental harm. Therefore, a number of alternatives were considered, but dismissed from detailed consideration for reasons summarized below.

A. Eliminate all motorized over-snow travel in the Wilderness Study Area.

This alternative was eliminated from detailed study as the MWSA states WSA are to be "be administered by the Secretary of Agriculture so as to maintain their presently existing wilderness character and potential for inclusion in the National Wilderness Preservation System." Over-snow vehicle travel was part of the presently existing wilderness character in 1977. Eliminating over-snow travel would improve wilderness character in the Ten Lakes WSA. However allowing some level of over-snow use would maintain the 'presently existing wilderness character' of 1977. This alternative would very closely resemble Alternative 4 resulting in near duplication of alternatives.

B. Eliminate all mechanized use in the Wilderness Study Area.

Alternative 4 eliminates nearly all mechanized use in the WSA. An alternative that eliminates all mechanized use nearly duplicates Alternative 4 and therefore this alternative was eliminated from detailed study. Further, as the MWSA states WSA are to be "be administered by the Secretary of Agriculture so as to maintain their presently

existing wilderness character and potential for inclusion in the National Wilderness Preservation System." Mountain bikes use, aggregated with motor-bike use, was part of the presently existing wilderness character in 1977. Eliminating motorized/mechanized use trails would improve wilderness character in the Ten Lakes WSA. However allowing some level of aggregated motorized/mechanized use on trails would maintain the 'presently existing wilderness character' of 1977.

C. Expand the project area to the Whitefish Divide portion of the KNF

This alternative was eliminated from detailed study because it does not meet the purpose and need for this project. The purpose of this project is to develop a travel management plan for the Ten Lakes Wilderness Study Area to comply with the terms of the 2007 Settlement Agreement with the Montana Wilderness Association and to maintain wilderness character and the potential for inclusion in the National Wilderness Preservation system that existed in 1977 (MA1c-DC-AR-01). The KNF is committed to completing travel planning in the Whitefish Divide, but feels a more pressing need to meet the terms of the 2007 Settlement Agreement.

D. Begin over-snow motorized season on the Friday after Thanksgiving

This alternative was eliminated from detailed study because it would not maintain the "presently existing wilderness character." In 1977, all motorized vehicles were restricted to designated routes from April 1 to November 30. Also, having a date that changes each year rather that one set date could be confusing for users.

E. Eliminate over snow grooming in total or eliminate grooming on the Stahl, Clarence, Wolverine, and Bluebird roads; and on the Therriault Lakes road beyond the turn to Weasel.

Elimination of grooming on the Clarence Road was included in Alternative 4, and would not be allowed after April 1 in any alternative. All grooming is performed outside of the Wilderness Study Area boundary on roads open yearlong to motorized vehicles. Elimination of over snow grooming, while occurring outside of the WSA, would improve wilderness character by potentially reducing the number of over snow vehicles. Over-snow motorized use outside of the WSA on the groomed routes, maintains the "presently existing wilderness character."

F. Add wheeled motorized use on trails in the project area.

Comments received during scoping requested to add wheeled motorized use in the project area. Wheeled motorized use cross country and on trails has been restricted since 1983. Opening the area to wheeled motorized use would introduce a new user group to the Ten Lakes, in an area with very limited opportunity.

G. Create a winter motorized recreation area west of Trego in the Salish Range.

This alternative was eliminated from detailed study because it does not meet the purpose and need for this project. The purpose of this project is to develop a travel management plan for the Ten Lakes Wilderness Study Area to comply with the terms of the 2007 Settlement Agreement with the Montana Wilderness Association and to maintain wilderness character and the potential for inclusion in the National Wilderness Preservation system that existed in 1977 (MA1c-DC-AR-01). This area is not part of or adjacent to the Ten Lakes WSA.

H. Establish a daily rider quota (for both motorized and mechanized use) or institute a lottery system for use.

Other management strategies (restriction of areas or trail, season of use) instead of quota were utilized to address intensity or number of users relating to Solitude and Opportunities for Primitive Recreation. Management and enforcement of a quota or lottery system would likely be confusing, and difficult to implement and enforce due to multiple entry points and limited ability to implement. A quota system would require intensive daily management.

I. Alternate days of use with days of non-use for both motorized over snow and mechanized use.

This alternative was eliminated from detailed study. Other management strategies (restriction of areas or trail, season of use) instead of alternative days were utilized to address intensity or number of users relating to Solitude and Opportunities for Primitive

Recreation. In addition, it would most likely be confusing for users and difficult to implement and enforce.

J. Create mechanized travel corridors through the WSA. Specifically, allow mechanized use on Bluebird (#83), Therriault Pass (#87), Stahl Peak (#81), Gibralter (#335), and Highline (#339) trails.

Mechanized use to varying degrees in the WSA is address in each alternative, with the goal of maintaining wilderness character as it existed in 1977.

K. Prohibit hiking and equestrian use on an equivalent number of trails that have prohibitions of mechanized use.

This alternative was eliminated from detailed study as the MWSA states WSA are to be "be administered by the Secretary of Agriculture so as to maintain their presently existing wilderness character and potential for inclusion in the National Wilderness Preservation System". Primitive uses (hiking and stock) was part of the presently existing wilderness character in 1977. Reduction or prohibition of primitive uses to an equivalent number as mechanized use would reduce wilderness character by limiting Opportunities for Primitive Recreation.

L. Designate the Ten Lakes as Wilderness or conversely, remove the Wilderness designation from the Ten Lakes.

The Ten Lakes is a Wilderness Study Area, not designated Wilderness. The Montana Wilderness Study Act of 1977 is a federal law enacted by the United States Congress. Only Congress has the authority to change the law. The Forest Service cannot effect changes to law. Changes to the Montana Wilderness Study Act are beyond the scope of the project.

Design Features

The ID Team incorporated the following design features to minimize or avoid impacts associated with motorized and mechanized uses. The design features listed are based upon standard practices and operating procedures that have been employed and proved effective in similar circumstances and conditions.

Table 12. Design Features

Objective	Design Feature
Minimize impacts to water quality, especially 303(d)-listed streams; achieve State water quality and assigned beneficial uses and Minimize soil disturbance and reduce soil compaction	• Set dates for snowmobile season opening and closure • Ensure adequate maintenance of bridges and culverts on routes tohelp prevent erosion during spring run off.
Minimize introduction and spread of invasive plants	Reduce the introduction of new invaders, reduce the expansion of established infestations of existing invaders, maintain an effective dynamic educational program, and involve citizens in invasive plant management.
Protect cultural resources	Protect known archaeological sites. If previously unknown sites are discovered during implementation, devise mitigation or avoidance measures in consultation with Tribal Preservation Officers and the State Historic Preservation Office.
Recreation	Follow Best Practices for over-snow uses (Fat Biking Vol 4-59), and motorized (Vol. 4-83) including: • manage recreational use conflict through a well-planned and enforced system of routes and areas that separate motorized and non-motorized uses as much as possible • Separate motorized and non-motorized temporally, thereby granting all users some opportunity for use while minimizing conflict. • Undertake proactive and systematic outreach programs in order to facilitate increased compliance of closures and reduce user conflicts. • Provide free digital and paper maps that clearly show routes, areas, and watersheds open and closed to snowmobiles (OSVUM).

Chapter 3. Affected Environment and Environmental Consequences

Introduction

Chapter 3 describes the environment (including its human elements) in and around the project area and discusses the environmental consequences that may result from implementation of each alternative. It provides the scientific and analytic basis for the comparison of alternatives presented in Chapter 2. Maps and appendices referred to in the analyses presented in Chapter 3 are located at the end of this document.

The Council on Environmental Quality (CEQ) Regulations recognizes three types of effects:

Direct effects are caused by an action and occur at the same time and place.

Indirect effects are caused by an action but occur later in time or farther removed in distance.

Cumulative effects result 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 the actions (40 CFR 1508.7 and .8).As past actions are already included in the affected environment, the cumulative effects analysis builds upon this existing condition assessment by considering the incremental addition of direct and indirect effects of the proposed action as well as ongoing and reasonably foreseeable actions.

Past Actions

The environmental analysis required under National Environmental Policy Act is forward-looking in that it focuses on the potential impacts of the proposed action. Past and present activities and natural events have contributed to creating the existing condition and trends across the Kootenai National Forest. In order to understand the contribution of past actions to the cumulative effects of the proposed action and alternatives, this analysis relies to a large extent on an examination of the current environmental conditions in order to highlight the impacts of past actions. This method is useful because existing conditions reflect the aggregate impact of all prior human actions and natural events that have affected the environment and might contribute to cumulative effects. Additionally, some of these activities, as well as reasonably foreseeable activities, may continue to produce environmental effects that overlap in time and space with issues or resources relevant to the proposal.

The cumulative effects analysis in this DEIS is consistent with regulations within the Code of Federal Regulations (CFR) at 36 CFR 220.4(f) (July 24, 2008) in accordance with CEQ Memorandum, *Guidance on the Consideration of Past Actions in Cumulative Effects Analysis*, which state, in part:

> "The analysis of cumulative effects begins with consideration of direct and indirect effects…agencies look for present effects of past actions that are, in the judgment of the agency, relevant and useful because they have significant cause-and-effect relationship with the direct and indirect effects of the proposal for agency action and its alternatives. CEQ regulations do not require the consideration of the individual effects of all past actions to determine the present effects of past actions. Once the agency has identified those present effects of past actions that warrant consideration, the agency assesses the extent that the effects of the proposal for agency action or its alternatives will add to,

> modify, or mitigate those effects. The final analysis documents an agency assessment of the cumulative effects of the actions considered (including past, present, and reasonably foreseeable future actions) on the affected environment. With respect to past actions, during the scoping process and subsequent preparation of the analysis, the agency must determine what information regarding past actions is useful and relevant to the required analysis of cumulative effects. Cataloging past actions and specific information about the direct and indirect effects of their design and implementation could in some contexts be useful to predict the cumulative effects of the proposal. The CEQ regulations however, do not require agencies to catalogue or exhaustively list and analyze all individual past actions. Simply because information about past actions may be available or obtained with reasonable effort does not mean that it is relevant and necessary to inform decision making. (40 CFR 1508.7)"

This section lists known past activities on NFS and adjacent lands as identified by resource specialists, documentation, other agencies, etc. There are marked differences between past and current land management practices and policies. The evolution that has occurred in land management practices is the result of science, our ongoing monitoring results, and changing public values.

During the scoping process and subsequent analysis of this project, the Forest Service determined that the following past activities, decisions, information, and environmental documents are applicable to all or portions of the National Forest System lands included in the analysis area for this DEIS, and considered them during the cumulative effects analyses discussed in this chapter.

Timber Harvest

Table 13. Timber Harvest and Vegetation Management by Decade

Decade	Intermediate Harvest (Acres)	Regeneration Harvest (Acres)	Prescribed Fire (Acres)	Total Acres
1950-1959	345	1,786	0	2,131
1960-1969	167	2,901	0	3,068
1970-1979	305	849	0	1,154
1980-1989	151	669	549	1,369
1990-1999	195	2	856	1,053
2000-2009	390	32	362	784
2010-current	0	0	0	0

Wildfires and Fires Suppression

Records document that known wildfires have affected about 12,180 acres in the Ten Lakes Travel Management project area since 1889. Larger wildland fire events occurred in 1889, 1910, 1917, 1929, 1934, and 1994. The first recorded wildland fire events within the project area occurred in 1889. The 1910 Fires burned about 3,077 acres in the project. From 1911-1925 wildland fires burned approximately 2,052 acres. During the time period from 1926 to 1934 about 3,467 acres were affected by wildfire. In 1994, the High One fire burned 740 acres. Since 2005, approximately 69 acres were burned in wildfires on Gibraltar Ridge (2005) and Barnaby (2015).

A series of fires in 1910 burned about 3 million acres in Washington, Idaho and Montana. The 1910 fires were the impetus for a national policy of wildland fire suppression, and in 1935 the

Forest Service established a policy to suppress fires by 10 a.m. on the day following the initial fire detection report.

The policy-driven suppression of wildland fire has contributed to a vegetative pattern in the forest different from conditions that were present prior to fire suppression. Fuels that would have been consumed by numerous non-lethal or mixed-lethal fires have accumulated and remained on site. Fire exclusion has also allowed trees with low fire resistance to become more prevalent on sites where they would have had lower representation than tree species adapted to fire over the millennia.

It can be assumed that had the smaller, naturally occurring, fires in the project area not been suppressed, fire would have played a more active role in the ecological process across the landscape.

Mining

Beginning in the 1880's, there were several hard rock mining claims in the project area. Mining claims were located in Blacktail Creek, Indian Creek, toward Not Grizzly Bear Mountain (now Independence Mountain), Ksanka Peak, Poorman Basin, and Bluebird Basin

All of the patented claims in the area except the Bluebird Mine were acquired by the Forest Service in the 1980's through land exchanges. The Forest Service withdrew the mineral entry rights so no future claims can be made on these sites. The Bluebird Mine, located in the Bluebird Basin, is the only remaining patent in the area.

Structures

Following the fires of 1910, lookout cabins were constructed on Stahl Peak, Poorman, and Mount Wam. The Poorman Cabin burned down. Stahl Peak Lookout is available to forest users on a first come, first serve basis. Mount Wam is available for use through the cabin rental program.

The Bluebird snow course was established in 1936. Due to the difficult access, the Forest Service decided to construct cabin in the Bluebird Basin in 1939. The Bluebird Snow Course was replaced in 1957 with one on Weasel Divide. Bluebird Cabin continued to be used by trappers and others until it burned down in the 1970's. Weasel Cabin, constructed in 1943, is also available on a first come, first serve basis.

The Sons of Rest Cabin was completed in 1933. In 1948, a snow slide destroyed the cabin. Wolverine Cabin was constructed as a stopover for the U.S. Customs Border Horse Patrol in 1944. The cabin is available on a first come, first serve basis.

The pavilion at Birch Creek Recreation Area serves dual purpose as home to the groomer in the winter and a picnic shelter in the spring, summer, and fall. The toilet was installed at Birch Creek in the mid-1980's and the pavilion was built in 2009.

The Stahl SNOTEL Site was established in 1975 and has been reporting weather data since that time.

Road Management

Within the project area there are 106.4 miles of existing National Forest System Road. Of that, 2.3 miles of road are open seasonally, 61.7 miles are open yearlong, and 42.4 miles are restricted yearlong.

Between 1979 and 1987, 12.4 miles of road were converted to trail and 52.7 miles of road were decommissioned in the Project Area.

Recreation

The Ten Lakes project area provides forest users a variety of recreation opportunities from developed campgrounds to dispersed, remote, backcountry opportunities. Developed sites include Big and Little Therriault Campgrounds (16 campsites), Horse Camp, Birch Creek Recreation sites, Mount Wam Lookout Rental, Weasel Cabin, and Wolverine Cabin. There is an additional lookout on Stahl Peak. Several dispersed sites along Grave Creek Road #114 include but are not limited to: Bunchgrass, Clarence Creek, Meadow, Weasel Lake, and Weasel Creek. In 2010, twenty seven dispersed sites were inventoried in Ten Lakes IRA (Vol 4-25). Of the twenty seven campsites in Ten Lakes IRA, most (67%) were located around Wolverine Lakes and Bluebird Lake. No sites were inventoried in Tuchuck IRA.

Recreation users (including hikers, mountain bikers and snowmobilers) access the higher peaks and ridges for the challenge of doing so and for the views those locations provide. Popular destinations include; Poorman Mountain, Green Mountain, Mount Wam, Stahl Peak, St. Claire Peak, two peaks of Therriault Pass, Mount Gibralter, Deep Mountain, and the ridges associated with them. These peaks are accessed via existing trails or are relatively close to existing trails. Less accessible peaks include; Independence Peak, Ksanka Peak, Mount Barnaby, Mount Scotty, and Bald Mountain. These peaks appeal to the more adventurous recreationists. Subalpine larch and White bark pine can be found at these higher locations.

There are approximately 88 miles of National Forest System trail in the Project Area. All 88 miles are open to hiking, stock, and mechanized use (mountain biking). Hiking is the dominant use, followed by stock. Mountain biking is a minor but popular use. Trails within the project area that are popular bicycle loop trails are shared with hikers and horse riders. Trails specifically mentioned in comments as “exemplary trails” by mountain bike users include; Stahl and Wam lookouts (Trails 77, 81), and Wolverine/Bluebird lakes (Trails 84, 339, 83).

Snowmobiling, snow-shoeing, and dog sledding, as well as back-country and cross-country skiing, are winter uses within the analysis area. The entire project area is open to over-snow motorized use. The Grave Creek Road is plowed approximately 4 miles to a parking area located at Birch Creek. The Ten Lakes Snowmobile club grooms approximately 33.8 miles of open road in the project area, in partnership with the Kootenai National Forest and Montana Fish and Game, in Grave, Stahl and Clarence Creeks. Grooming may occur from December 1 through April 1.

Ongoing and Reasonably Foreseeable Actions

Ongoing actions are those actions initiated in the past which continue to take place. Reasonably foreseeable actions include those management activities that are proposed or imminent, as well as those from other agencies or persons. These activities may occur regardless of which alternative is selected for implementation.

Ongoing and reasonably foreseeable actions within and/or adjacent to the project area which were determined to be appropriate for consideration in the analysis of environmental effects are shown in the following table.

Table 14. Ongoing and Reasonably Foreseeable Actions

Activity	Description	C	F
Vegetation Management and Fuels Reduction Activities	The Galton Vegetation Management Project includes the entire Ten Lakes Travel Management project area. No harvest activities will occur within the WSA boundary. The following are potential harvest acres within the Ten Lakes boundary for two alternatives that could be selected. Alternative 1: 6,150 acres of Ecosystem Burning, 178 acres of Regeneration Harvest, and 43 acres of Vista cutting units along the Grave Creek Road. Alternative 3: 899 acres of Ecosystem Burning, 168 acres of Ecosystem Burning designed to benefit whitebark pine, and 74 acres of Regeneration Harvest		X
	Pre-Commercial Thinning approximately 50 acres/year. No pre-commercial thinning would occur in the WSA.	X	X
	Tree Planting approximately 50 acres/year	X	X
	Blowdown Salvage (as needed after appropriate analysis) Estimate 20 acres /year. No blowdown salvage would occur in the WSA.	X	X
Noxious Weed Treatment	Efforts to treat present infestations of noxious weeds and to eradicate infestations of new invaders are ongoing. Most herbicide treatments are conducted along existing roads; a few treatments occur in timber harvest units. All activities will comply with the Kootenai National Forest Invasive Plant Management ROD (2007).	X	X
Fire Suppression	Control of wildfires will follow Forest Plan standards for the affected Management Areas. Activities may include construction of fire lines, safety zones and helispots by hand and equipment.	X	X
Road Management	Routine road maintenance will continue to occur in the project area	X	X
	Administrative use in the project area will be ongoing. Use is associated with road maintenance, permit administration, noxious weed control, data collection, monitoring, and general administration of public lands. Road use will follow Forest and/or District policies.	X	X
	Stahl Slide project will stabilize road 7021 and the associated slide to prevent further failure of the road.	X	X
Recreation Maintenance	Approximately 85 miles of trail are maintained each year within the project area. Routine trail maintenance activities may include brushing; removing blowdown, debris, and hazard trees; repairing or adding waterbars, repairing treads; repairing or replacing signs; and improving vistas. Maintenance of Weasel Cabin and Stahl and Wam Lookouts which include repairing or replacing broken and worn items.	X	X
Recreation	The Pacific Northwest National Scenic Trail, designated by Congress in 2009, includes trails in the project area.		X
Special Uses	One Outfitter and Guide special use permit for a hunting guide is administered in the project area.	X	X
Recreation Event Permits	The Ten Lakes Snowmobile club, authorized through a recreation event permit, has held a fun ride since 2013.		X
	The Trans Montana Snowmobile ride has been authorized through a recreation event permit. since the 1990's (multi-forest permit).		X
Public Use	Recreational use of the Project Area is expected to include but is not limited to hiking, camping, fishing, hunting, photography, berry picking, other forest product gathering, Christmas tree cutting, firewood gathering, driving for pleasure, mountain biking, sightseeing, wildlife viewing, cross country skiing, snowshoeing, trapping and snowmobiling.	X	X
	Christmas tree cutting and Bough gathering approximately 20 acres/year	X	X
Other Agency	Fish Wildlife and Parks continues to stock fish in Big and Little Therriault Lakes and Wolverine Lake	X	X
	This project is adjacent to the US/Canada Border and receives a great deal of use year round by the Department of Homeland Security and Forest Service Law Enforcement. This use is expected to continue in the area.	X	X
Forest Plan Amendment	The Northern Continental Divide Ecosystem (NCDE) Grizzly Bear Conservation Strategy is currently in a draft form, and would be incorporated as an amendment to the Forest Plan once the the grizzly bear in the NCDE is delisted.		X

Roadless Areas: Inventoried Roadless Areas, Recommended Wilderness, and Wilderness Study Area

Introduction

The scope of this analysis is for year round or seasonal motorized and mechanical transport use designation on system roads, trails, and areas within the Ten Lakes Travel Management Project area. This analysis looks at the effects of those designations on inventoried roadless areas (IRAs); the Ten Lakes recommended wilderness area (RWA), and wilderness study area (WSA). The purpose of this project is to develop a travel plan (over-snow and mechanized) for the Ten Lakes Wilderness Study Area, no alternative proposes changes to Forest Plan Management Area (MA) allocations such as recommended wilderness.

This section describes the potential effects of travel management decisions to roadless characteristics of the IRAs. IRAs are mapped and managed according to the 2001 Roadless Area Conservation Rule. Individual IRAs may or may not be managed for their wilderness character depending on the management area allocation in the Kootenai Forest Plan.

This section also describes the potential effect of travel management decisions to the wilderness character and potential for inclusion in the National Wilderness Preservation System of the Ten Lakes RWA and WSA. RWAs are Management Area (MA) 1b, and the WSA is Management Area (MA) 1c in the Forest Plan. There is no designated Wilderness in the project area.

The IRAs, RWA, and WSA in the project area are listed in Roadless Table 1. Some areas are "nested" or overlap, such as the Ten Lakes IRA #693, which also has a portion of it designated as RWA, as well as WSA. The Ten Lakes Scenic Area (MA 3) overlaps the northern part of the IRA and WSA. See Map 2 for location of each of the special designated areas in the project area.

Roadless Table 1. Type of Areas Analyzed Within Project Area

Acres[1]	Inventoried Roadless Areas (IRAs)	Recommended Wilderness (RWAs) MA1b[3]	Wilderness Study Area (WSA) MA1c	Other Management Areas
Ten Lakes IRA #683	48,510	26,000	34,000	14,732
Tuchuck IRA[2] # 492	2,335	0	0	2,335
TOTAL	50,845	26,000	34,000	17,067

[1] Acres in this table is from the Forest Plan, Appendix C.
[2] KNF only, additional 17,520 acres on Flathead National Forest
[3] MA1b overlaps with MA1c

Both the Ten Lakes RWA and WSA are directly related to the purpose and need to develop summer and winter travel plans for the Ten Lakes WSA. In addition, effects to wilderness character was identified as an issue in public scoping.

While the Wilderness Act of 1964 does not specifically define "wilderness character," the framers of the Act appear to have incorporated three mutually reinforcing societal ideals that are integral

to the historical purpose of wilderness and to an understanding of wilderness character (Kaye 2000, 2002) and Scott (2002):

- Natural environments relatively free from modern human manipulation and impacts
- Personal experiences in natural environments that are relatively free from the encumbrances and signs of modern society
- Symbolic meanings of humility, restraint, and interdependence in how individuals and society view their relationship to nature.

Wilderness character may be described as the combination of biophysical, experiential, and symbolic ideals that distinguishes wilderness from other lands. These ideals combine to form a complex and sometimes subtle set of relationships among the land, its management, and the meanings people associate with wilderness. The terms attribute and characteristics, used in WARS and R1 FSM 2329, are not used in this analysis (Vol 4-1). The term WSA quality is used, except in direct quotes. WSA qualities are taken from phrases in the Wilderness Act of 1964, the 1977 Wilderness Attribute Rating System (WARS VOL 4-2), R1 FSM 2329, and Keeping it Wild 2 (VOL 4-1). The definitions in this analysis may differ from those within the National Wilderness Preservation System.

With this analysis, proposed travel management changes within IRAs, as well as RWA and WSAs, are being considered. A cross walk between wilderness attributes (1977) and wilderness characteristics (FSM 2329), wilderness qualities (2015), and roadless characteristics is presented in Roadless Table 2 below. These attributes are used to evaluate existing conditions and to compare the effect of alternatives. Many of these qualities are specific to resource issues that are elsewhere in the document (soils, wildlife, vegetation), and will not be reiterated in this section.

Roadless Table 2. Wilderness Attributes or Qualities, Roadless Characteristics

Wilderness Attributes or characteristics (1977)	Wilderness Qualities (2015)	Roadless Characteristics FSH 1909.12 72.1
Natural integrity. The extent to which long-term ecological processes are intact and operating.	**Untrammeled**. Unhindered and free from intentional action of modern manipulation. **Natural.** Ecological systems are substantially free from effects of modern civilization.	High quality or undisturbed soil, water, and air. Source of public drinking water. Diversity of plant and animal communities. Habitat for threatened, endangered, candidate, proposed, and sensitive species dependent on large areas.
Apparent naturalness. Environment looks natural to most people.	**Undeveloped.** Without permanent improvements, sights and sounds of modern human occupation	Natural appearing landscapes with high scenic quality.
Solitude and primitive recreation. Personal subjective value defined as the isolation from the sights, sounds, and presence of others and the developments of man.		Primitive, semi-primitive non-motorized, semi-primitive motorized ROS classes of dispersed recreation.
Remoteness. Primitive Recreation provides the opportunity - Perceived condition of being secluded, inaccessible, and out of the way.	**Solitude or Primitive and Unconfined Recreation**. Outstanding opportunities for recreation in an environment relatively free from encumbrances of modern society	
Unique features. Unique and/or special geological, biological, ecological, cultural, or scenic features.	**Other Features of Value.** Important ecological, geological, or other features of scientific, education, scenic, or historical value.	Other locally identified unique characteristics. Traditional cultural properties and sacred sites.

The WSA qualities used in this analysis, based on the R1 FSM 2329 definition taken from the 1977 WAR, are; **natural integrity**, **apparent naturalness**, **solitude and opportunities for primitive recreation**. Remoteness is included in solitude. Unique features do not change by alternative.

Regulatory Framework

Applicable Laws, regulations, and policy that govern the management of Inventoried Roadless Areas, recommended wilderness area, and Wilderness Study Area are as follows:

Laws

The Montana Wilderness Study Act (PL 95-150) S393 - passed by Congress, required the study of certain lands to determine their suitability for designation as Wilderness in accordance with the Wilderness Act of 1964. These lands are referred to as wilderness study areas (WSA). One of the nine areas identified in the MWSA was the 34,000 acre Ten Lakes WSA located on the Kootenai National Forest. MWSA includes "*the wilderness study areas designated by this Act shall, until Congress determines otherwise, be administered by the Secretary of Agriculture so as to maintain their presently existing wilderness character and potential for inclusion in the National Wilderness Preservation System*".

Regulation and Executive Orders (EO)

36 CFR Part 294 Special Areas, Roadless Area Conservation; Final Rule - Inventoried Roadless Areas are those areas designated as Inventoried Roadless Areas pursuant to 36 CFR 294 Subpart B, §294.11 (2001 Roadless Area Conservation Rule- RACR).

Policy and Direction

Forest Service Handbook id_1909.12-2005-8
Forest Service Manual 2320 Wilderness
R1 Forest Service Manual 2329 – provides clarification of the MWSA's "*Manage Montana Wilderness Study Areas (MWSA) to maintain wilderness character as it existed at time of designation (1977) and potential for inclusion of the area in the National Wilderness Preservation System (NWPS*)" (Vol 4-3).
Forest Service Handbook 1909.17
Kootenai National Forest Plan – MA1a Wilderness, MA1b RWA, MA1c WSA- conditions, guidelines and standards (2015).
Forest Service Manual Supplement id_2300-2005-1

KNF Land Management Plan (USDA Forest Service 2015)

The forest plan provides overall guidance for the management of the lands on the KNF. It describes the goals, desired conditions, and objectives toward which the management of the land should be directed. And it establishes standards and guideline to help achieve or maintain the desired condition or conditions, to avoid or mitigate undesirable effects, or to meet applicable legal requirements.

The plan components which provide specific IRA, RWAs and WSAs resource direction relevant to this project include:

FW-STD-IRA-01. Within inventoried roadless areas, outside of the state of Idaho, the 2001 Roadless Area Conservation Rule (36 CFR 294 Subpart B, published at 66 Fed Reg. 3244-3273) shall apply.

FW-GDL-IRA-01. Wilderness potential will be maintained on 16 percent of the inventoried roadless areas on the Forest. (This refers to those IRAs that are allocated to RWA or MA1b).

MA1b-STD-AR-01. Motor vehicle use is not allowed.

MA1b-STD-AR-02. Mechanized use is not allowed (e.g., mountain bikes and other wheeled equipment).

MA1b Ten Lakes RWA is entirely within MA1c WSA, they share much of the same boundary. Regardless of policy or Forest Plan direction, the Ten Lakes WSA will be managed in accordance with language found in the1977 Montana Wilderness Study Act, awaiting Congressional action. Management area hierarchy in the Forest Plan is that MA1c, based on the 1977 legislation, supersedes any conflicting direction in any other MA. The project will be consistent with Forest Plan standard if it is designed in accordance with standards and guidelines for MA1c.

MA1c-DC-AR-01. This area primarily offers opportunities for primitive recreation, although uses established and allowed prior to the legislation are retained if they maintain the wilderness character and the potential for inclusion in the National Wilderness Preservation System that existed in 1977.

MA1c-STD-AR-01. Motor vehicle use (excluding over-snow vehicle use) is not allowed. Over-snow vehicle use is not allowed except where it maintains the wilderness character as it existed at the time of designation (1977) and the potential for inclusion in the National Wilderness Preservation System.

MA1c-STD-AR-02. Mechanized use is not allowed (e.g., mountain bikes and other wheeled equipment), except where it maintains the wilderness character as it existed at the time of designation (1977) and the potential for inclusion in the National Wilderness Preservation System.

The Kootenai National Forest Plan provides the foundation for the current travel management plan including forestwide goals to "manage large areas on the Forest that accommodate opportunities for solitude, and self-reliance", and forestwide desired conditions "a variety of motorized and non-motorized winter and summer recreation opportunities are available" and "Motor vehicle use designations are complete, accurate signing is in place, and motorized vehicle use maps are available" (Goal-AR-01, FW-DC-AR-05, FW-DC-AR-08).

Resource Indicators and Measures

The following analysis will compare the effects of the proposed alternatives on roadless characteristics within IRAs, and WSA qualities within RWAs, and WSAs. Wilderness character is a holistic concept based on the interaction of (1) biophysical environments primarily free from modern human manipulation and impact, (2) personal experiences in natural environments relatively free from the encumbrances and signs of modern society, and (3) symbolic meanings of humility, restraint, and interdependence that inspire human connection with nature. Taken together, these tangible and intangible values define wilderness character (Vol 4-1).

Below is summary of resource indicators and measures for qualities of wilderness character used in this analysis. Regional 1 supplement FSM 2329 (Vol 4-3) includes a definition of required qualities of wilderness in WSA.

> **Natural Integrity** – This indicates the extent to which long-term ecological processes are intact and functioning. Impacts to natural integrity are measured by the presence and magnitude of human-induced change to an area. Such impacts include physical developments (for example, roads, trails, utility rights-of-way, fences, lookouts, cabins, recreation developments, livestock grazing, mineral developments, wildlife/fisheries management activities, vegetative manipulation, and fire-suppression activities).
>
> **Apparent Naturalness -** The environment looks natural to most people using the area. It is a measure of importance of visitors' perceptions of human impacts to the area. Even though some long-term ecological processes of an area may have been interrupted, generally the area landscape appears to be affected by forces of nature. If the landscape has been modified by human activity, the evidence is not obvious to the casual observer, or it is disappearing due to natural processes.
>
> **Solitude** – This indicated isolation from sights, sounds, presence of others and developments of man, focusing on features of the area that offer users outstanding opportunities for solitude; size of the area, presence of vegetation and topographic screening.
>
> **Opportunities for Primitive Recreation Experience -** The area provides opportunities for isolation from evidence of man, a vastness of scale, feeling a part of the natural environment, having a high degree of challenge and risk, and using outdoor skills

characterized by meeting nature on its own terms without comfort or convenience of facilities.

Measures for WSA qualities were developed based on the definitions in R1 FSM 2329, and may not be what is currently used in the National Wilderness Preservation System. For example the wilderness quality of Undeveloped means '*essentially without permanent improvements or the sights and sounds of modern human occupation*', with the signs and sounds of modern human occupation being affected by non-conforming uses (Vol 4-1). The WSA quality '*isolation from sights and sounds*' is described under both Solitude and Opportunities for Primitive Recreation. In addition, individual measures (such as mile of trail) may be used in more than one WSA quality. A trail is a physical development (natural quality), as well as a measure of use, such as miles of trail open to mechanized use (solitude).

The R1 FSM 2329 also provides additional direction regarding WSA's (VOL 4-3).

1. a) *When making project level decisions (for example, trail maintenance, relocation, improvement, construction, reconstruction, permitted uses, and closures), the line officer must consider the effect of the decision on the wilderness character as it existed in 1977 (see Exhibit 01 for definition of wilderness characteristics).*

Effects of the proposed travel management on wilderness character within the WSA will be measured against the 'presently existing (1977) wilderness character' and potential for inclusion in the National Wilderness preservation system as listed in Table 3. The additional wilderness quality of features of values does not change by alternative and is not addressed.

Roadless Table 3.Wilderness Quality Indicators and Measures in WSA

Wilderness Quality	Resource Indicator	Measure	Used to address:	Source
Natural Integrity	Human induced change to an area Physical development	Vegetative Acres treated Miles of NFS road Miles of NFS trail Private mining claims Number of standing structures	Purpose and need	Wilderness Act, Montana Wilderenss Study Act, R1 FSM 2329, Forest Plan MA1c, Keeping It Wild2 Wilderenss Character Monitoring Strategy
Apparent naturalness	Looks natural to most people	Impact of vegetative treated acres and physical development	Purpose and need	Same as above
Solitude and opportunities for primitive recreation	Physical features Use	Size of area Screening, Perimeter to core Intrusions Type of use Intensity/ amount Miles of trail Acres open/ used	Purposeand need Issue	Same as above
Potential for inclusion in the National Wilderness Preservation System	Suitability	Capability of Area Other considerations	Issue	Wilderness Act, Montana Wilderness Study6 Act, FSM 1909

The 1977 WARS evaluation did not differentiate by season. In this analysis, these qualities will be measured for both over-snow (Season 1-2) and summer (season 3) for solitude and opportunities for primitive recreation.

Methodology

The alternatives were evaluated using GIS technology and spatial data to determine location of boundaries, mileage and acreage differences between 1977, existing condition, and travel management options for routes within these areas. Effects for each IRA, WSA, and RWAs, are described for those discrete areas. Travel management decisions do not alter the IRA's, RWA or WSA boundaries, or the spatial extent of these areas. No alternative will affect the boundaries and boundary management relationship of future designation as Wilderness. Please refer to the maps of the alternatives for the locations of the IRAs, RWA and WSA. These documents can also be viewed on the Kootenai National Forest's web site: http://www.fs.usda.gov/kootenai.

The effects analysis is both quantitative and qualitative. That is, the reduction or increase in road and trail miles by alternative provides a quantitative look at project effects. The extent of effects on travel routes and other recreation opportunities is necessarily a qualitative assessment based on: visitor use patterns, historic documents, court determinations, and professional judgment.

The WSA wilderness character, as it existed in 1977, was determined from a variety of sources including but not limited to Forest Service records, State of Montana records, past documentation,

newspaper articles, and public input over time. See project file (Vol 4-4) for an index of documentation as of May 2016 assembled and reviewed regarding the Ten Lakes WSA. Only documents referenced in this report are included in the project record (over 100 records). All other documentation reviewed (over 500 records) are available upon request.

The trend in wilderness character was derived by combining the trends from all of the WSA qualities, following the 2015 *Keeping It Wild 2* interagency strategy to monitor trends in wilderness character (Vol 4-1). Once trend in each quality was determined, the overall trend in wilderness character was derived.

Assumptions and Limitations

The majority of the records used to determine the '*presently existing (1977) wilderness character and potential for inclusion in the National Wilderness Preservation System*' are qualitative in nature, and subject to interpretation. Documentation from the 1970's and 1980's was used to paint a picture of the 1977 wilderness character, as Ten Lakes wilderness character was not specifically documented in 1977.

The terms attribute and characteristics, used in WARS and R1 FSM 2329, are for the most part not used in this analysis (Vol 4-1). The term wilderness qualities is used, except in direct quotes.

Some of the documentation and information reviewed was inconsistent, not supported by data, or contradicted other information. For example a 1987 letter states that the Ten Lakes Recommended Wilderness area receives some snowmobile use (100-125 snow-machines per year Vol 4-5). Other documentation indicates 550 over-snow and cycling days (Vol 4-6) in 1974 and up to 1000 snowmobiles in 1993 in Stahl Creek in what would be the recommended wilderness area (Vol 4-7).

In addition, some of the inventory systems used, such as 1970-1980's Recreation Visitor Days (RVDs), has been found to be inaccurate or incomplete. There was no standard protocol for estimating use and the increasing use reported over time have not been substantiated (Vol 4-8).

Only information referenced in this document is included in the project record. All other use documentation reviewed but not specifically used in this report is listed in (Vol 4-4).

Estimates of use are rough and based on a variety of documentation. The magnitude of the change in relative terms is more accurate than the actual estimates of use. The rationale and documentation for estimates of over-snow use is described in Vol 4-9. Estimates of use for over-snow include both season 1and 2 combined, there is not sufficient information to estimate use after April 1 (season 2). Descriptive terms such as high or low use are used only for comparing use within the project area.

Over-snow use is dependent on adequate snow depth for that use. Over-snow uses are described within each season, regardless of snow depth that year. This is to provide certainty in what uses are allowed when. For example idea conditions for fat tire biking (frozen ground with 5 inches of snow) may occur in in May, but could be restricted in an alternative. Conditions for over-snow use may occur year round, especially in the Ten Lakes area which is known for late season snow.

Section 4 (c) of the Wilderness Act discusses three forms of mechanization that degrade wilderness character; motor vehicles, motorized equipment, and mechanical transport. Mountain bike, or mechanical transport, use is a new use in the TLTM area since 1977. The mountain bike as we know it was not developed and mass produced until the mid-1980. However, under R1 FSM 2300-2008-1, mountain bike use can be aggregated with 1977 motor-bike use if the 1977

wilderness character is maintained; "*Mountain bikes may be allowed on trails that had established motor-bike use in 1977, or on non-motorized trails as longs as the aggregate amount of mountain bike and motorcycle use maintains the wilderness character of the WSA as it existed in 1977 and the area's potential for inclusion in the National Wilderness Preservation System*" (Vol 4-3). In other words if 10 miles of trail was open and had motorized use in 1977, a total of 10 miles of trail could be opened to mechanized use as long as the wilderness character and potential for inclusion in the NWPS is maintained.

Affected Environment

Spatial and Temporal Context for Effects Analysis

Spatial and temporal boundaries set the limits for selecting the actions most likely to contribute to effects analysis (FSH 1909.15, 15.2).

The spatial boundaries for analyzing the effects to IRAs are the Forest Plan IRA boundaries. Forest Plan IRA's are those areas designated as Inventoried Roadless Areas pursuant to 36 CFR 294 Subpart B, §294.11, the 2001 Roadless Area Conservation Rule- RACR.

The spatial boundaries for analyzing the effects to the RWA are the Forest Plan RWA boundaries. One of the fundamental components of the programmatic decision made in the Forest Plan is the revision of recommendations to Congress for additions to the National Wilderness Preservation System (36 CFR 219.17(a)). Public opinion regarding wilderness recommendation varies widely. After considering the public value of wilderness and reviewing the suitability evaluations forestwide, the 1985 recommendation to Congress for addition to the National Wilderness Preservation System were carried forward in the Forest Plan. The Ten Lakes area was allocated in the Forest Plan to Recommended Wilderness MA1b. Recommended wilderness revisions to Congress is not part of purpose and need for this project, is not a proposed action, and is not analyzed in this report.

The spatial boundary for analyzing the effects to Ten Lakes WSA is the WSA boundary. The Montana Wilderness Study Act of 1977 (PL 95-150) map defines the WSA spatial boundary. This is an act authorized by Congress, Forest Service direction or policy cannot change this boundary.

There is no policy or regulation requiring a buffer around the WSA (or designated Wilderness) boundary. The Wilderness Act is silent on the issue of buffer zones around wilderness areas to protect the designated areas. However, language in subsequent wilderness bills has prohibited buffer zones restricting uses and activities on federal lands around the wilderness area. The first explicit language was enacted in 1980 in P.L. 96-550; 105 states; Congress does not intend that the designation of wilderness area… lead to the creation of protective perimeters or buffer zones around each wilderness area. The fact that non-wilderness activities or uses can be seen or heard from areas within the wilderness shall not, or itself, preclude such activities or uses up to the boundary of the wilderness area (Vol 4-10).

However under the 1964 Wilderness Act, the agency responsibility in 'preserving the wilderness character of the area' extends to activities that occur outside wilderness boundaries but nonetheless impact the character of designated wilderness (Vol 4-94). Using court interpretations of the Wilderness Act, protection encompass activities that occur outside a wilderness area – if that activity impacts the wilderness's character –the Act does not bar agency activity simply because that activity has some effect on adjoining wilderness (VOL 4-11).

The temporal boundaries for travel management decision are long term, typically in effect for 5-20 years or longer. Implementation of decision regarding travel management can take up to five years to become effective. Research has shown the most effective way to change behavior of forest visitors is through; information, education, warning and when necessary citations (Vol 4-12, 4-13).

This section addresses three resources; IRA's, RWA, and WSA.

Existing Condition: IRA

Inventoried Roadless Areas (IRAs) are National Forest System lands which have been reviewed by the Forest Service for possible inclusion in the National Wilderness Preservation System. The original inventory of roadless lands took place in the early 1970s through the RARE I (Roadless Area Review and Evaluation) process, and then again in the late 1970s during RARE II. The RARE process evaluated the potential for roadless areas to be included in the National Wilderness Preservation System.

Currently IRAs are those areas designated pursuant to 36 CFR 294 Subpart B, §294.11. This includes areas identified in a set of inventoried roadless area maps, and included in the Forest Plan Appendix C. The Department of Agriculture, Forest Service adopted the Roadless Area Conservation Rule in 2001 (36 CFR 220 Subpart B) with the purpose "to establish prohibitions on road construction, road reconstruction, and timber harvesting in inventoried roadless areas on National Forest System lands. The intent of this final rule is to provide lasting protection for inventoried roadless areas within the National Forest System in the context of multiple-use management."

Region 1 provides additional guidance for roadless area analysis in a draft document titled "Our Approach to Roadless Area Analysis and Analysis of Unroaded Lands Contiguous to Roadless Areas" (Vol 4-14). In summary this paper is based on court history regarding the Roadless Area Conservation Rule. The "Our Approach" document states that "projects on lands contiguous to roadless areas must analyze the environmental consequences, including irreversible and irretrievable commitment of resources on roadless area attributes, and the effects for potential designation as wilderness under the Wilderness Act of 1964. This analysis must consider the effects to the entire roadless expanse – that is both the roadless area and the unroaded lands contiguous to the roadless area."

The roadless expanse analyzed includes IRAs, the RWA and WSA. In the 2015 forest planning process, existing (1987) IRA's were reviewed and other unroaded areas evaluated. This evaluation resulted in an addition of 11 areas and 235,870 acres from the 1987 Forest Plan IRAs. The updated inventory was included in the Roadless Area Conservation Rule, Final Environmental Impact Statement, volume 2, dated November 2000. The evaluation added 7,900 acres to the 1987 Ten Lakes Contiguous IRA #683a increasing it to 14,700 acres. The contiguous area (IRA #683a) is now included as part of Ten Lakes IRA #683. The evaluation added unroaded lands contiguous to IRA #683 including; the lower to mid slopes in Drip, Divide, Camp, Wam and Rich Creek. Individual IRAs may or may not be managed for their wilderness character depending on the management area allocation in the Kootenai Forest Plan.

Travel management actions proposed include change in type of use and season only. No road constructed, reconstruction or changes to physical road structure is proposed. The road prisms for some roads that were once part of the National Forest System of roads but have since been decommissioned or converted to non-motorized trails are located within the IRAs. Those old road prisms might include erosion control devices and road closure devices.

Wheeled-motorized use is not allowed cross-country or on NFS trails in the IRAs, or project area. There has been limited evidence of illegal wheeled-motorized vehicles. Given the amount of vegetation in the project area this use is usually confined to existing trails and old roads but in some cases may be cross-country. When such use occurs it might leave tracks or other indications this use is occurring. These tracks and indications can lead other members of the public to believe that such use is allowed, thereby potentially increasing that type of illegal use.

The IRAs in the project area hold special values for many individuals. These roadless areas are home to wildlife, water sources for the communities of Eureka and Fortine, native fisheries, primitive recreation opportunities, beautiful scenery, and unique geologic, historic, and cultural features. This combination of attributes and roadless area create a unique setting in a world where ever-increasing urbanization, population increases, and modification of the natural environment are more the norm.

Ten Lakes IRA #683

RARE I included the Ten Lakes Scenic Area #275 and Ksanka Peak/Gibralter/Mt. Wam #170. RARE II was expanded to the area identified in the Ten Lakes Montana Wilderness Study Act (1977) and the IRA number changed to #683. The 1985 Report to Congress identified and 1987 Forest Plan included 6,800 acres of contiguous area, identified as Ten Lakes contiguous area #682a. In the forest planning review, an additional 7,900 contiguous acres were identified. The 2001 Roadless Area Conservation Rule, Ten Lakes IRA #683 was increased by these 14,700 contiguous acres, for a total of 48,510. There is no longer a separate IRA #683a.

A total of 34,000 acres of Ten Lakes IRA #683 is allocated as Management Area 1c WSA, and under MA1c, is managed for its wilderness character as it existed in 1977, and potential for inclusion in the National Wilderness Preservation System. See WSA section for description of affected environment and effects. In addition to MA1c, 26,000 acres of IRA#683 is allocated to MA1b Recommended Wilderness.

The remaining 14,372 acres of IRA #683 include several smaller areas surrounding the WSA including: Blacktail Basin in the northwest corner; the Eureka Face; a portion of the upper basin of Griffith Creek; upper Stahl Creek; Bluebird Basin just above the Therriault Lakes; and areas to the north east in Wickiup Creek, Divide Creek, and Drip Creek.

Blacktail basin area, approximately 2800 acres, is surrounded on three sides by the WSA and the Canadian Border on the north. The south west border with the WSA parallels Road #1001, which is managed as part of Trail #92. Portions of this area were harvested, with associated roads and skid trails, in the1950-1970s. The majority of Blacktail Basin is in MA5a. Use through this area is low, and includes; snowmobile, hiking, stock, and mountain biking.

Currently most motorized over-snow use in the project area is accessed via the Grave Creek – Trail Creek Road #114 and Therriault Lake Road #319 and other roads off these main routes. Some access via the Burma/Blacktail area also occurs.

Portions of the Foundation-Camp Trail #77, Sinclair Trail #88 and Highline Trail #339 and all of the Blacktail Trail #92 have been identified as part of the Pacific Northwest National Scenic Trail designated by Congress in 2009. This national trail designation brings with it increased knowledge of the trail and increased use. The national trail designation increased the potential for users to come from farther away, thereby increasing the potential trail user base.

Eureka Face area, approximately 1,077 acres, is a narrow strip between Ten Lakes WSA and private property. This area is primarily in MA 6. The lower section of Indian Creek Trail #340, goes through this area, and can only be accessed through private property.

Griffin Creek area, approximately 1,400 acres, includes a narrow strip between Ten Lakes WSA and Road #756. Much of this area was harvested, with associated roads and skid trails, in the 1950-1970's. Therriault Pass Trail #87 goes through this area. This area is primarily in MA 6. Recreation use through this area includes snowmobile, hiking, stock, and mountain biking.

Upper Stahl area, approximately 800 acres, includes a narrow strip adjacent to Ten Lakes WSA. Portions of this area were harvested, with associated roads and skid trails, in the 1950-1970s. This area is primarily MA5b. Use through this area is moderate and includes; snowmobile, hiking, stock, and mountain biking.

Bluebird Basin area includes an area adjacent to Ten Lakes WSA. Portions of this area were harvested, with associated roads and skid trails, in the1950-1970s. This area is primarily in MA5b. Use through this area is high and includes; snowmobile, hiking, stock, and mountain biking.

Wickiup, Divide, Drip Creek area includes a strip between the Ten Lakes WSA and NFS Road #319. This area includes five miles of NFS Road # 7121 and 7102, now managed as part of NFS Trail #77. Trail #77 is a loop route which accesses Wam Lookout cabin rental. Portions of this area along NFS Road #319 were harvested, with associated road and skid trail, in the 1950-1970's. This area is primarily in MA 5b. Use through this area is moderate and includes; snowmobile, hiking, stock, and mountain biking

Tuchuck IRA #482

Tuchuck Roadless Area is located in the north end of the Kootenai and Flathead National Forests (FNF), 3 miles south of the Canadian border. The majority of the IRA lies on the FNF. Tuchuck IRA is one of seven roadless areas located in what is often referred to as the "North Fork" or Whitefish Divide area.

The portion of Tuchuck on the KNF borders roads and timber harvest land on the west, the FNF the east, Grave and Lewis Creek Roads on the south. The site is accessed by the North Fork Road from Columbia Falls and by Grave Creek Road #114 from the west.

Tuchuck Mountain (7,724 feet) and Review Mountain (7,286 feet) on the border with the Flathead National Forest are the two highest peaks. Topography consists of typical steep, narrow alpine, glaciated canyons with glacial cirque headwalls, glacial trough walls, high elevation slab rock, and glacial tills. The KNF portion of this area includes the upper reaches of Otter Creek, Snowslide Creek, and Weasel Creek.

Tuchuck IRA is bounded in part by all or portions of National Forest System roads #114 and #7110. Approximately 1/10 mile of Otter Creek Trail #554 goes through this IRA. All of Tuchuck IRA 482 is allocated to MA5b.

Assessment of Roadless Characteristics of IRA's #683 (outside of the WSA) and #482

The **Natural Integrity** of Ten Lakes and Tuchuck IRA's are high. The areas appear as natural, with 50 years of vegetative recovery in the 1950-1970's areas harvested. Several roads have been closed to motorized use since the 1980's, and are now managed as part of the trail system.

As a whole, the Ten Lakes and Tuchuck IRA's have retained much of their **Apparent Naturalness**. Man's influence is evident primarily through trails, roads managed as trails, a cabin, and roads.

Opportunity for Solitude is low for much of Ten Lakes s IRA#683 outside of the WSA. Eureka face and Griffith areas are lower to mid slope areas facing the Tobacco Valley surrounded by increasing private development. Griffith area is also adjacent to open road #756. Bluebird Basin includes high use trails #83 and #84, and is adjacent to three developed campgrounds. Use through this area includes, but is not limited to, snowmobile, hiking, stock, and mountain biking. In Blacktail basin, upper Stahl Creek, and Wickiup, Divide, and Drip Creeks opportunity for solitude is moderate with broken topography and vegetative screening and adjacent to moderate to high use trails or roads.

Opportunity for Solitude is moderate to high for Tuchuck IRA #482. While the area is bounded in part by roads, vegetation and topography provide screening. There is only 1/10 mile of trail within the area.

Opportunities for Primitive Recreation are moderate in Ten Lakes IRA outside of the WSA and Tuchuck IRA. Both of these areas and associated trails, while closed to wheeled motorized use, are open to over-snow motorized and mechanized use. Trails #92, 87, 335, 77, 83 and 84 are used by snowmobiles and/or mountain bikers. Areas used by snowmobiles, identified through public input, include Bluebird Basin, Divide area, and much of Tuchuck IRA.

Existing Condition: RWA

A portion of the Ten Lakes Area is allocated in the Forest Plan as MA1b Recommended Wilderness, totaling 26,000 acres. After study, analysis, and evaluation of public comments, the Ten Lakes Wilderness Study Areas Report and Draft Environmental Impact Statement was completed in 1985 (Vol 4-15). This report was an administrative recommendation to Congress for the land allocation and management of the area. The report included recommendation that 26,000 of the total of 32,000 acres of IRA #683 be managed as wilderness. The Forest Plan Record of Decision carried forward the 1985 Report to Congress that recommended 26,000 acres of the 34,000 acre Ten Lakes Wilderness Study Area as Wilderness. This is a standalone recommended wilderness area, not adjacent to a designated wilderness.

The Ten Lakes RWA lies completely within the Ten Lakes WSA, excluding the north eastern 'lobe' of the WSA from Wam Mountain north (including portions of Clarence, Drip, Foundation, Divide, Camp, Wam and Riche Creeks), and a portion of Sinclair Creek. Ten Lakes RWA provides a variety of opportunities for recreation, including hiking, backpacking, horseback riding, fishing, hunting, creek kayaking, biking, backcountry skiing, camping, snowmobiling, and enjoying nature.

While the Forest Plan allocated the Ten Lakes RWA to overlapping Management Areas (MA1b, MA1c, MA3), standards and guidelines for MA1c Wilderness Study Area takes precedent. Standards and guidelines in MA1c follow direction set forth in Law (1977 MWSA); compliance with Law supersedes Forest Plan direction, eliminating conflict between Management Area directions. MA1c standards include; motor vehicle use (excluding over-snow vehicle use) is not allowed. Over-snow vehicle and mechanized use is not allowed except where it *"maintains the wilderness character as it existed at the time of designation (1977) and the potential for inclusion in the National Wilderness Preservation System"*.

The Ten Lakes WSA is a unique situation, and differs from congressionally designated Wilderness areas, Inventoried Roadless Area policy and direction in the Forest Plan such as

recommended wilderness. Regardless of policy or Forest Plan direction, the Ten Lakes WSA will be managed in accordance with language found in the 1977 Montana Wilderness Study Act, awaiting Congressional action (Vol 4-16).

A 2009 District Court found the Forest Service had violated the MWSA which directed the agency to maintain the Wilderness Character as it existed in 1977 stating "While the Service has squarely met its administrative mandate to balance competing uses of public lands in a manner that is not arbitrary, it has not reached an accord with its statutory duty to preserve the Wilderness Character of the area" (Vol 4-17). Analysis of the effects to recommended wilderness by alternative is covered under effects to Ten Lakes WSA.

The 1985 Ten Lakes MWSA Final Report & Proposal (Legislative Report to Congress) recommendation of 26,000 acres of the Ten Lakes MWSA as wilderness was a preliminary administrative recommendation that will receive further review and possible modification by the Chief of the Forest Service, Secretary of Agriculture, and the President of the United States. Congress has reserved the authority to make final decisions on wilderness designation.

Existing Condition: WSA

The Montana Wilderness Study Act (MWSA) of 1977 (PL 95-150) passed by Congress, required the study of certain lands to determine their suitability for designation as Wilderness in accordance with the Wilderness Act of 1964. These lands are referred to as Wilderness Study Areas (WSA). One of the nine areas identified in the MWSA was the 32,000 acre Ten Lakes Wilderness Study Area located on the Kootenai National Forest.

While several bills have been proposed in the last 30 years, Congress has not successfully acted on the Ten Lakes WSA. Language in the 1977 Act requires that the areas be managed to maintain their presently (1977) existing wilderness character and potential for inclusion in the National Wilderness Preservation System.

In 1996 the Montana Wilderness Association filed an eleven count complaint that this part of the Act had been violated (Vol 4-18). Four counts were carried forward to decision; the others were dismissed or were considered superfluous. On May 20, 2001, U. S. District Court Chief Judge Molloy made a ruling that ordered one count dismissed and had orders for the remaining count.

Count I (the remaining count) alleged that the actions and inactions of the Forest Service resulted in substantially increased motorized use of the WSAs, which resulted in increased environmental damage, all in derogation of their potential for wilderness designation and Congress' management mandate. Judge Molloy enjoined the Forest Service from taking any action that would diminish the wilderness character of a WSA as it existed in 1977, or that diminished the area's potential for inclusion in the National Wilderness Preservation System. He further ordered that the Forest Service should take reasonable steps to restore the wilderness character as it existed in 1977 if the areas' wilderness character or its potential for inclusion in the National Wilderness Preservation System has been diminished since 1977 (Vol 4-18).

In March 2007, the Forest Service, the Montana Wilderness Association, West Fork Property Owners, Blue Ribbon Coalition, and other entities entered into a settlement agreement regarding the 1996 complaint (Vol 4-19). All parties agreed that new travel management plans would address management of the WSAs. The agreement states that travel management decisions shall address summer and winter use of trail and off trail areas within each WSA, based upon applicable law and policy including policy currently set forth in FSM Section 2329; and that pending completion of the travel management plans for the WSAs, the Forest Service shall

manage the WSAs in accordance with applicable law and policy including but not limited to the Montana Wilderness Study Act PL 95-150;91 Stat 1243 (1977) and FSM Section 2329 (Vol 4-3).

The purpose and need for this project is to develop a travel management plan (winter and summer) for the Ten Lakes WSA to comply with the terms of the 2007 Settlement Agreement with the Montana Wilderness Association and to maintain wilderness character as it existed in 1977 and the potential for inclusion in the National Wilderness Preservation System.

As part of the settlement a Northern Region supplement to the Forest Service Manual was published in 2008 which provided clarification for management of WSA's (Vol 4-3). Forest Service Manual id2300-2008-1, Section 2329 (Management of Wilderness Study Areas) includes: "1. Manage Montana Wilderness Study Areas (MWSA) to maintain wilderness character as it existed at time of designation (1977) and potential for inclusion of the area in the National Wilderness Preservation System (NWPS)".

In the 1977 MWSA, 1985 Report to Congress, and previous (1987) Forest Plan there was the expectation that Congress would act on the recommendation in a timely manner. In 2009, the District Court (Vol 4-17) was sympathetic to the "untenable" position the agency finds itself in:

> "The MTWSA was enacted in the context of Congress's expectation that further legislation determining the status of the affected areas would be timely signed into law. The legislation was never enacted. The historical moment the Service could have used to create a baseline for 1977-era wilderness character against which modern changes could be evaluated has long since passed. Political inaction or impossibility leaves a void the Forest Service understandably attempts to fill and that some exploit to complicate the Service's efforts – some bona fide, other not – at forest management. The Court is in turn placed in the position of being asked to fill in the void the political branches have left, a void that has burdened the Forest Service with the Sisyphean challenge of forest management under the MTWSA. It is simply not within the providence of this Court to furnish the long overdue resolution of this issue that the agency, the parities, and the public need and deserve. Absent a Promethean Act of Congress, the Forest Service will continue to be confronted with a Sisyphean challenge."

No action is not the desired outcome Congress had in 1977, or what the Forest Service wants to manage for. It has disenfranchised users; allowed 1977 non-conforming uses to continue, and imposed 1977 existing conditions on today's users.

Wilderness Character

The wilderness character of the Ten Lakes WSA has been described over the last forty years using a variety of measures and definitions, and from a variety of perspectives. These assessments include; RARE I study in the early 1970s, 1975 Eureka-Grave Creek Planning Environmental Statement, RARE II Wilderness Attribute Rating System (WARS) in 1978, 1985 Ten Lakes MWSA Final Report & Proposal, 1987 Kootenai National Forest Plan, 2003 Ten Lakes Wilderness Study Area Wilderness Character Assessment, 2010 University of Montana wilderness character monitoring, 2015 Kootenai National Forest Plan (Vol 4-20 through 25). In addition to these assessments, there are various letters, memos, reports and documentation which have descriptions of the Ten Lake wilderness character through time.

The effort to describe and measure wilderness values is an ongoing process. Keeping It Wild: An Interagency Strategy for Monitoring Wilderness Character across the National Wilderness Preservation System (Vol 4-26) was published in 2008. This document provided additional guidance on how to determine and measure the wilderness character for designated wilderness. The fall of 2015 this effort was updated with Keeping It Wild 2 Wilderness Character Monitoring

Strategy (VOL 4-1). The scope of the 2015 National Strategy applies to areas designated by Congress as wilderness, and also areas that are not designated as wilderness but are managed under law or agency policy to maintain wilderness character and the potential for future designation as wilderness.

Measures of wilderness values continues to evolve from RARE I, 1977 Wilderness Attribute Rating System (WARS), multiple court cases, to the 2015 Keeping it Wild2. The indicators and measures from WARS, while using similar terms, are different than what is measured today in some cases. For example the WARS rating for Solitude and Primitive Recreation included only physical indicators (ex. distance to core), while today indicators include use (number and type of user, perceptions of solitude). This assessment includes and expands upon the past efforts to describe both the existing 1977 condition and todays wilderness qualities. When possible the terms as defined in the 2015 Strategy are used (ex. wilderness qualities is used instead of wilderness characteristics).

Ten Lakes History

Establishing the wilderness character of the 34,000-acre Ten Lakes WSA as it existed in 1977 is no small task. Through court decisions and national strategies the ‘measure of the values’ for wilderness qualities continues to evolve. We are tasked with incorporating historical documentation and information into and comparing it with the most recent ‘measure of the values’.

Agency and publics on all sides of the issue (wilderness, motorized or mechanized use advocates) have their own opinions and recollections as to the conditions in the area in 1977. To help establish some meaningful understanding and comparison of conditions in 1977 a considerable number of records were researched (Vol 4-4). While all of the records were reviewed, only specific documents quoted or from which data is used is included in the project record.

Below is a brief summary of key recreation or travel points over time for the Ten Lakes WSA. This information helped to build the 1977 existing condition. The majority of the records used to determine the ‘presently existing (1977) wilderness character and potential for inclusion in the National Wilderness Preservation System’ are qualitative in nature, and subject to interpretation.

The history presented below is not complete year by year, point by point. The purpose and need for this project is focused on over-snow motorized and mechanized travel and the analysis focuses mainly on wilderness qualities affected by this travel. . Information was utilized from the 1970’s and 1980’s to describe the existing 1977 condition. There was no definitive agency documentation of wilderness character in 1977, as the expectation was after the Forest completed a report and recommendation in 1985 Congress would act. Indicators and measures of WSA qualities used may be from descriptions in documentation, analysis, and records prior to or after 1977.

The Ten Lakes area has been recognized as a special place since the 1960’s. Efforts began to preserve the area, and in 1964 the Ten Lakes Scenic Area (northern portion of the WSA area) was designated by the Regional Forester. In 1966, the 6,542 acre scenic area was closed to motorized use (wheeled and over-snow) year round under U Regulations (Vol 4-21, 4-27). The 1964 Ten Lakes Scenic Area Establishment, and Classification Report and Management Plan for Ten Lakes Scenic Area include the description of ‘*a small area of beautiful alpine and subalpine scenery with a high potential for recreation. Local interest is increasing rapidly’* (VOL 4-28).

In 1972, the Forest Service embarked on a nationwide evaluation of roadless areas to identify and recommend suitable areas for wilderness designation. The first effort was called the Roadless

Area Review and Evaluation process, and later became known as RARE I. The objective of RARE I was to select roadless areas for further study as potential candidates for Wilderness.

In the RARE I review (Vol 4-29), what was to become the Ten Lakes IRA and WSA, included three areas:

> **Ksanka Peak-Mt. Gibralter-MT. Wam (#170)**. This 23,500 acre unit was north and west of Graves Creek, along the Burma Face to Ten Lakes Scenic area, with a lobe east to Mt. Wam area. The unit divides naturally into three segments: Ksanka peak (12,900 acres), Clarence and Wam (4,380 acres), and Gibralter Ridge (6,240 acres). Under RARE I evaluation system this area rated as 119 out of 200 points. Under the Northern Region 100 point system the three 'lobes' were rated as; northwest 64, south 44, and northeast 50.
>
> **Krinklehorn Peak-Deep Creek (#171).** This 10,400 acre unit was located north of Deep Creek with Krinklehorn peak, Deep Mountain and Mt. Petery forming the backbone of the area. (When rated the area was called Krinklehorn-Gibralter-Mt. Wam roadless area #170).
>
> **Ten Lakes Scenic Area (#275).** The 6,540 acre Ten Lakes Scenic Area designated by the Regional Forester in 1964. Under RARE I evaluation system this area rated highest on the forest of 140 out of possible 200 points.

A 1973 newspaper article in the Tobacco Valley News (Vol 4-30) included "*The best known area and the one probably most used by snowmobilers, is the Stahl basin, Wigwam and Weasel Lake area. Snowmobilers from all over western Montana use this as a western recreation area. Some stay overnight or over the weekend at Wesel cabin, fishing at Weasel Lake or Frozen Lake is only a short distance away. Another nice trip is through Stahl basin into Therriault Pass, down to Therriault Lake and on through the Wigwam…*" Another article in 1973 notes "*Now figuring approximately four hundred snowmobilers in this area and if an average of 250 of these people go out snowmobiling once a week…*"

Snowmobile areas most commonly used in the 1970's were mapped from documentation and public responses (Vol 4-112). Scoping comments included 'areas used not just open'. In addition the Courts have elaborated that areas used must be considered, not just areas that are open (Vol 4-17). Seventeen responses (Vol 4-31, 4-32, 4-95 through 4-110) to a 2009 request noted use areas from the 1970's to 2000. Some of the responses included "*Most of our riding took place right around Weasel cabin. At that time you could ride anywhere in the clear cuts just to the northeast of the cabin. … made a trip to the wolverines that weekend also. The snowcats at that time didn't go as good as the modern ones today. We had to do most of our riding in the morning....* (Vol 4-31); "*After the prom 1977; …. The next day we all took our prom dates snow catting. There was a bunch of us this trip. We only made it to about as far as where the 3rd clear cut on Stahl is now. The snow was too deep and we couldn't go any farther that day.....*" Includes a list of 16 names (Vol 4-31); "*I started snowmobiling in the Grave Creek area in 1968. The machines didn't have the power they do today, so we liked for spring when the snow got hard and we could go anyplace we wanted. We spent hours in Therriault Pass playing on the slides. Everybody lived to get up to Wolverine lakes in the spring*" (list of 30 plus names) (Vol 4-32). The 1977 areas indicated as being used correlate with the existing harvest units and open roads, and destinations such as Wolverine Cabin and Weasel Lake.

In a 1974 review and field trip by multiple agency personal, the area was described by University of Montana Wilderness Institute. The description included; "*The two roadless areas (170 & 245)*

form a star with major road and timber harvesting intrusions between the points. It is high lake country with some gentle, timbered slopes, and some spectacular, high, and long escarpments and numerous meadow." Timber harvesting from the late 1950's was noted 'extensive' in many drainages, with the harvest - very noticeable and substantial detracts from one's esthetic enjoyment'. Recreation use was estimated as light, noting the hike into Wolverine Lakes as being short 'and the cabin there attracts use'. Trails were noted as being 'fairly primitive' (Vol 4-33, 4-34).

The 1975 Eureka-Grave Creek Planning Unit Environmental Statement included:

> Recreation use in the Eureka-Grave Creek Planning Unit is quite varied in the summer and fall months and includes such dispersed activities as fishing, hunting, sightseeing, picnicking, huckleberry picking, hiking and camping. These activities take place during the period from June through October, with the peak use being in July and August. There are developed campgrounds at both Big and Little Therriault Lakes, which receive moderate to heavy use during the latter part of July and August. There are also a number of popular undeveloped sites used by campers and fishermen. The Ten Lakes Scenic Area is used by increasing numbers of people for its scenic qualities such as mountain lakes, wildlife, cliffs, and unusual rock outcrops and vegetation. Traffic counts indicate that an average of 180 vehicles per week use the Grave Creek Road for recreation purposes during the peak of the summer season. Grave Creek, its primary tributaries, and the Wigwam River area receive extensive use by snowmobilers during the winter months. The snow-filled roads and clear-cuts provide good access and popular play areas.
>
> Recreation use of the planning unit is primarily by local people from northeastern Lincoln County and Flathead County. During the peak season from July 4 through Labor Day, weekly use is estimated at 630 people. The heaviest use is weekends and holidays…. The Grave Creek drainage with its tributaries and Wigwam River area receive extensive use by snowmobilers during the winter months.
>
> Both local and pleasure driving have increased significantly in recent years. This is true for State Highway 93 as well as on the Grave Creek-Wigwam River Road. There has also been a dramatic increase in winter visits to the unit with the increased availability and popularity of over-snow machines (Vol 4-21).

In this 1975 Eureka Grave Creek Statement the decision regarding the area closure in the Ten Lakes Scenic Area was modified to allow snowmobile use during the period of December 1 to April 15. Motorized use had been occurring in the 1964 Ten Lakes Scenic Area closure, the northern portion of the Ten Lakes WSA (Vol 4-35). Beginning in 1976, over-snow vehicle use was allowed from December 1 to April 15 (Vol 4-29). The change in area closure on the KNF was also shown on the first KNF Travel Map printed in February 1977 (Vol 4-36). While motorized use was not allowed in the Scenic Area from 1964 to 1976, use information from this period is used in this analysis. As information specific to 1977 is not available, use prior that does indicate patterns of use.

The 1975 Eureka-Grave Creek Multiple Use Plan indicated that "*The Grave Creek drainage with its tributaries and Wigwam River area receive extensive use by snowmobilers during the winter months. Most of this activity is confined to the roaded portions of the unit, since snow filled roads and clearcuts provide good access and excellent play areas*" (Vol 4-21). In 1976 it was noted that

within the Ten Lakes area being considered for the Montana Wilderness Area Study Bill there were; over 1,000 acres of 'existing developments' of old clear cuts, approximately 600 acres under a timber sale contract in Sinclair Creek, and six miles of 'existing major work roads and 10-15 miles of minor work roads' within the area (Vol 4-6).

The 1972 RARE I evaluation process suffered from several deficiencies. Inventory criteria was too general, the public was not involved early in the process, and the criteria followed 'pure' interpretation of the Wilderness Act –eliminating suitable areas. Because of numerous criticisms of RARE I a new process was needed. In 1977 a second study, RARE II, with a new inventory and different criteria for evaluating qualities of wilderness was initiated (Vol 4-37, 4-2).

Federal off-road vehicle (ORV) policy was established by Executive Order (EO) 11644 in 1972, (and amended by EO 11989 in 1977) to "… ensure that the use of off-road vehicles on public lands will be controlled and directed so as to protect the resource of those lands, to promote the safety of all users of those lands and minimize conflicts among the various users of those lands." In response to this EO and regulations from 36 CFR 295 (1973), the KNF published its first Travel Plan in February 1977. See Appendix 3. The Travel plan shows all of the project area, including the WSA open to over-snow use from December 1 through March 31 (season 1), and most of the project area and WSA closed to motorized use except on designated routes from April 1 through November 31 (season 2).

During this time, Congress passed the Montana Wilderness Study Act (VOL 4-38) in November 1977, which identified 9 areas in Montana, including the Ten Lakes WSA on the KNF. The intent of this act was the study of certain lands to determine their suitability for designation as Wilderness in accordance with the Wilderness Act of 1964.

A House of Representatives Report on Montana Wilderness Study Areas Bill, dated September 1977, elaborated on the use of off-road vehicles. While generally prohibited in designated wilderness areas, the report stated off-road vehicle use was entirely appropriate in wilderness study areas, including the nine areas contained in S. 393. *"Nothing in S. 393 (MWSA) will prohibit the use of off-road vehicles, unless in the normal Forest Service planning process and travel planning process…. It is the intent of the committee that the areas in S. 393 (and other wilderness study areas) remain open to off-road vehicle use unless and until they are formally designated as wilderness." (Vol 4-39).*

The 1977 RARE II process utilized the Wilderness Attribute Rating System (WARS) to assess wilderness characteristics. The process focused on four distinct factors identified in the Wilderness Act of 1964; natural integrity, apparent naturalness, opportunity for solitude, and opportunity for a primitive recreation experience. The WARS system was developed to replace the deficiencies in the RARE I process. WARS worksheets 1-3 for the Ten Lakes RARE II area #683 was completed on January 10, 1978 (Vol 4-22). The Ten Lakes RARE II area #683 included the areas of RARE I #170, 171, and 275, or the entire Ten Lakes Montana Wilderness Study Area. The 1978 WARS rating was determined to be 20 (out of a possible score of 28) for wilderness attributes. Indicators in the WARS rating for some of the wilderness attributes or qualities may be different than current indicators and measures (Vol 4-1). However WARS has been found by the courts to be a starting place in describing the 1977 Wilderness Character (Vol 4-18).

A summary of the 1978 Ten Lakes WARS rating (Vol 4-22) included the following WSA qualities. Note the bolded text '**influence'** or specific impact that was rated low indicated there was little effect on that quality, and the quality rating would then be high. This is different than how qualities are rated now.

Natural Integrity – the **influence** on natural integrity was rated as very low (6 out of 7 – areas with highest numerical rating are the most natural). The presence of roads, facilities, trails, mineral development, recreation, and vegetative manipulation was noted. However, the area where integrity is impacted was less than 1 percent, with a high feasibility of correction. Specific mention was made of the St. Clair and Clarence Creek timber sales, the cabin near Wolverine Lakes, Patented mining claims, recreation around Wolverine and Blue Bird Lakes, Tramway to Independence mine (permitted but never developed), and Stahl Peak Lookout (Wam lookout while existing, was not mentioned).

Apparent Naturalness – the **influence** on apparent naturalness was rated as low (5 out of 7 – areas with highest numerical rating are the most natural). The area appeared natural to most visitors, with low to moderate influence except for extreme vegetative manipulation.

Opportunities for Solitude –was rated a **moderate** (no components rated in bottom category, none in top category). Components noted include: many permanent off site intrusions- roads and heavy logging to east and west, Grave Creek road and logging to the south; moderate distance (1-3 miles) from perimeter to core; moderate vegetative screening; and high topographic screening.

Opportunities for Primitive Recreation – was rated as **high** (three components rates in top category, non in bottom category). The area rated high potential for topographic screening, as noted as very diverse. Vegetative screening, challenge, and absence of facilities were rated as moderate potential. Distance from perimeter to core was rated as low potential. It was noted that Solitude was not good along high ridges and slopes facing the Tobacco Plains.

Supplementary attributes – Ten Lakes was rated as outstanding for rare and endangered species and outstanding scenic values.

In a 1979 letter regarding S.393, public issues were identified in situation statements. The reviewers concluded that the area rated highly in naturalness and natural integrity, but that opportunities for solitude were limited in portions of the area because of roads and heavy logging activity adjacent to the study area, and the Grave Creek Road. In the letter it was noted that '*the area received much visitor use; approximately 9,200 visitor days in 1976 and 3,600 visitor days in 1978. Most of the use is in the form of non-motorized/undeveloped, and hunting and fishing. Snowmobiling has been permitted in the Scenic Area since 1976, from December 1 to April 15th, and this form of use is increasing'* (Vol 4-29). No explanation is given for the drop in visitor days from 1976-1978

Beginning in 1985, with the Fortine Ranger District Road Management Plan (Vol 4-40), the area closures to motorized vehicles on the 1977, 1978 and circa 1980 Travel Maps was removed (Vol 4-41). From 1985 to present there have been no over-snow vehicle restriction in the project area, with the exception of Blacktail Trail #92 or Road #1001.

In 1985, the Kootenai National Forest prepared the Final Report and Draft Environmental Impact Statement, Ten Lakes Montana Wilderness Study Act Area (Vol 4-23). This report recommended 26,000 of the total 34,000 acres as wilderness. The Kootenai National Forest Plans (1987 and 2015) brought forward the 1985 recommendation, including 26,000 acres of the Ten Lakes area IRA #683 as recommended wilderness.

Comments on wilderness attributes in the 1985 report include; ‘Opportunities for solitude are good within the core of Ten Lakes but range from poor to moderate in the remainder of the area. This because of the open ridges that face out into developed areas which tends to detract from the opportunities for solitude.’, and ‘Good opportunities for primitive recreation exist such as hiking, camping, and wildlife observation’, and Current use of the area is moderate with most activity focused in campgrounds immediately outside the roadless boundary from where day hikes into the area are made. Some snowmobile use occurs primarily in the Wolverine and Bluebird Basin’s and across Therriault Pass.’ (Vol 4-23)

In 2001, as a result of the Tri-State Off Highway Vehicle EIS, motor vehicle use (except for over-snow) was prohibited cross country (Vol 4-42) in the project area. From 2001 to present cross country motor vehicle use (wheeled) has been prohibited in the project area (Vol 4-43).

In January of 2003, a Ten Lakes Wilderness Study Area Wilderness Character Assessment was prepared to help gather what information was available regarding the 1977 wilderness character of the Ten Lakes WSA (VOL 4-24). The 2003 assessment described the WSA qualities as:

> The **natural integrity** (very high) has not changed in the past two decades. The overall natural appearance (high) has not changed since 1977 and the area still looks natural to most users except along the WSA boundary where road construction or timber harvest has occurred.
>
> The **opportunity for solitude** in the summer remains high for the area (1978 WARS and 1985 report ratings were poor to moderate). Although the opportunity is reduced somewhat due to the increase in use, it is possible to recreate in the area without seeing another party. During the winter, the opportunity for solitude is still consider high although it has received a greater reduction since snowmobiles are still allowed in the WSA and snowmobile use has increased more than the other use.
>
> The **opportunity for a primitive recreation experience is high** for the entire Ten Lakes WSA during all four seasons and is basically unchanged since 1977. While use has increased, it is still possible to recreate in the WSA without seeing or hearing other people also recreating in the WSA.

See VOL 4-44 for a comparison of wilderness character evaluations over time, recognizing that the measures may have changed and there are inconsistencies. For example, the 1978 rating for Solitude and Primitive Recreation referenced above was moderate, not high as the 2003 report summarized. In 2010, the Kootenai National Forest partnered with the Wilderness Institute at the University of Montana to complete wilderness character monitoring in the Ten Lakes and Whitefish Divide areas (VOL 4-25, 4-33).

Information on roads and trails, and how visitors choose to recreate in the Ten Lakes area, found during the forest planning process and this travel management process, have been extensively researched. See Vol 4-4 for a complete listing of that documentation. Only documents specifically referenced in this analysis are included in the project record. Additional documentation listed in Vol 4-4 is available at the Eureka Ranger Station.

Ten Lakes WSA Wilderness Character

The WSA area is entirely National Forest, except for one 19 acre patented mining claim near Green Mountain. The Ten Lakes WSA is located in the northeast corner of the Forest, bordered

on the north by Canada. The core area is mountainous, with talus slopes, several lakes, rock outcroppings, and bare ridges common in the upper elevations.

Mountains within the WSA include Poorman, Green, Independence, Ksanka, St. Clair, Barnaby, Gibralter, Scotty, Therriault Pass, Stahl, and Wam. The headwaters of Blacktail, De Rozier, Ksanka, Indian, Dry Gulch, Lemonade Springs, Sinclair, Glen, Therriault, Griffith, Sherman, Mud, Birch, Cat, Stahl, Clarence, Drip, Foundation, Divide, Camp, Wickiup, Wam, Rich, Robin, Wolverine, and Bluebird Creeks are located within the WSA. Some of these are major tributaries to the Wigwam River (flowing north to Canada) and Grave Creek. Rainbow, Wolverines, Bat, Bluebird, Paradise, Baboon, and numerous other unnamed lakes are also located in the WSA. Unique scenic values include panoramic views from and into Glacier National Park and into Canada.

The Ten Lakes area is generally surrounded by signs of past forest management activities, roads, or population centers. The Ten Lakes WSA is directly west of the Thompson-Seton and Tuchuck roadless areas (separated by Grave Creek Road) and overlooks the Tobacco Valley where the towns of Rexford, Fortine, and Trego are located. Many of the basins surrounding the WSA were roaded and logged during the spruce bark beetle infestation in the early 1950s, which explains the “finger” configuration of the Ten Lakes MWSA area.

Assessment of Wilderness Character

In his May 2001 order, Judge Molloy stated that the 1977 Wilderness Attribute Rating System (WARS) provides a benchmark for prospective management and specific criteria to guide the agency’s exercise of its discretion (Vol 4-18). The WARS rating was based on attributes derived from language in the Wilderness Act of 1964: natural integrity, apparent naturalness, outstanding opportunities for solitude, and outstanding opportunities for primitive recreation. These definitions may differ from those within the National Wilderness Preservation System. In addition, the system provided for rating four supplemental attributes*:* outstanding ecological, geological, scenic, and historic features.

A review of the attributes of WARS, indicators in Keeping It Wild 2, and other documentation was used to assess changes in the Ten Lakes WSA qualities between 1977 and 2016. A trend of stable, offsetting stable, upward, or downward is derived for each measure based on the data values and the threshold for significant change. This significant or meaning full threshold has been defined in this case by the Montana Wilderness Study Act as ‘presently existing (1977) condition’ (Vol 4-1). R1 FSM 2330 provides additional direction in that wilderness character as it existed in 1977 must be considered and if degraded restored to 1977 conditions.

a. When making project level decisions (for example, trail maintenance, relocation, improvement, construction, reconstruction, permitted uses, and closures), the line officer must consider the effect of the decision on the wilderness character as it existed in 1977 (see Exhibit 01 for definition of wilderness characteristics).
b. If wilderness characteristics (qualities) have been degraded, restore the area to 1977 conditions. That is, if a trail was single track and has evolved into two-track, close the trail to two-track use and restore it to single track use, or allow natural restoration where effective. If conflicting uses are occurring, consider separating the uses geographically through an appropriate planning process. That is, identify areas for snowmobiling and areas for cross-country skiing and snowshoeing.

Measures for four of the five WSA qualities that make up wilderness character in the WSA are displayed in Table 4 for the 1977 and the existing condition. Solitude and opportunities for

primitive recreation indicators in Table 6 are for the physical measures as described in the WARS. Additional use indicators for solitude and opportunities for primitive recreation are displayed in Table 6.

Roadless Table 4. WSA Quality Indicators for 1977 and Existing Condition (WSA ONLY)

WSA Quality	Resource Indicator	Measure[1]	Existing Condition 1977	Existing Condition Alt 1	1977 WSA quality maintained
Natural Integrity	Human induced change to an area Physical development	Vegetative Acres treated Miles of NFS road Miles of NFS trail Private mine claims Number of standing structures	750-1600 10-19 55.04 6 4	158 2 55.44 1 3	Yes, improved
Apparent naturalness	Looks natural to most people	Impact of vegetative treated acres and physical development	High same measures as above	High, same measures as above	Yes, stable
Solitude and Opportunities for primitive recreation	Physical features-	Size of area Screening, Perimeter to core Intrusions	34,000 good 1-3 miles several	34,000 improved 1-3 miles Increased	Yes, Stable
Solitude and Opportunities for primitive recreation	Use	See Roadless Table 6	See Roadless Table 6	See Roadless Table 6	No, degraded

1 In order to compare 1977 with 2016, miles and acres were determined using GIS and current locations, which may be different than previous maps or other data.

Natural Integrity

Natural integrity is the extent to which long-term ecological processes are intact and operating. The 1978 WARs documentation rated Natural Integrity as very high and Apparent Naturalness as high. The presence of roads, facilities, trails, mineral development, recreation, and vegetative manipulation was noted in 1978. However, the area of WSA where integrity was impacted was less than 1 percent, with a high feasibility of correction. Specific mention was made of the St. Clair and Clarence Creek timber sales, cabin near Wolverine Lakes, patented mining claims, recreation around Wolverine and Blue Bird Lakes, tramway to Independence mine (permitted but never developed), and Stahl Peak Lookout. The area ‘appeared natural to most visitors, with low to moderate influence, except for extreme vegetative manipulation’ (Vol 4-22).

There was considerable vegetation management, surrounding but outside of the Ten Lakes WSA prior to 1977. In 1976 there was noted over 1000 acres of clear cut or partial cutting within the WSA (Vol 4-6). Areas inside and outside of the WSA have since revegetated appearing natural - not as ‘*extreme vegetative manipulation*’ as noted in 1978. Since 1977 there have been fewer than 158 acres of vegetation managemen.t The 27 acres of regeneration and 82 acres of intermediate harvest in 1978 were likely the result of a contract awarded prior to 1977 (Vol 4-6). The other acres appear to be made up of small unintentional incursions into the WSA due to unidentifiable boundaries. Table 5 lists the acres of documented vegetation management in the WSA.

Roadless Table 5. Vegetative Management in WSA

Activity Type	In WSA Prior to 1977	In WSA After 1977
Regeneration Harvest	1000 acres	40 acres
Intermediate Harvest	183 acres	93 acres
Pre-Commercial Thinning	0 acres	25 acres
TOTAL	**1183 acres**	**158 acres**

In 1977, there was up to 6 miles of 'major' road, and 10-15 miles of 'minor' road within the WSA open to motor vehicles (VOL 4-6). Currently there are two open roads within the WSA, NFS Road #7077 and #7036, totaling less than one mile. In 1977, there were 6 patented mining claims in the WSA. All but the Bluebird claim have been acquired by the Forest Service. A manual snow course site located in Bluebird basin, within the WSA, was measured from 1937 to 1957. A snow course near Stahl Peak, just outside of the WSA, was established in 1961continues to operate.

The international border between Canada and the USA, an approximately 20 foot wide long linear clearing, bounds the norther edge of the WSA. The border was originally cleared prior to 1977, and has been maintained over time. The border and its management are under the authority of Homeland Security.

Structures in 1977 included Wolverine Cabin, Wam Lookout, Stahl Lookout, Poorman Cabin, and remains of at least 5 collapsed mining cabins (Vol 4-24). All the cabins, except for Poorman which burned down, are eligible for the National Register of Historic Places, and have been stabilized. Wolverine Cabin, an old border patrol cabin, while not on the cabin rental program, has been used by the public as a cabin/shelter since at least the 1970's. Wam lookout was manned for fires from the 1930's to the 1950's. Between 1999 and 2001, Wam Lookout was restored and placed in the cabin rental program for public use. Stahl lookout was manned for fires from 1926 to 1969. While Stahl is not in the cabin rental program, it is used by the public.

In 1977, there was approximately 53.6 miles of National Forest System (NFS) Trails within the WSA. Currently there is 54.6 miles of NFS trail within the WSA. The difference in trail miles between 1977 and today is the addition of Trails #85 and 87 portions of which are within the WSA. Therriault Creek Trail #87 while shown on earlier maps is not on the 1977 or 1978 travel plans, or 1978 Trail Inventory (Vol 4-45). The trail was likely abandoned at some point due to harvest units crossing it. Therriault Pass trail #87 was re-established (VOL 4-46) and shows up again on the 1986 Travel Map (as Trail #91, then #87 later). Paradise Lake trail #555, is also not shown on the 1977 or 1978 travel maps, however it was an established trail to a packer camp (Vol 4-33). All trail miles are measured by GIS with the current trail location, which may be slightly different than previous map locations.

In the 2010 Wilderness Monitoring by the University of Montana, 22 non-system trails were recorded, of which 17 were located inside the Ten Lakes WSA boundary. Seventeen were created by foot travel (77%), three were primarily horse travel (14%), and the remaining two were unclear as to their type. There was no evidence of non-system trails originating from motorbike or ATV use. Fourteen (64%) of the non-system trails surveyed were a result of new routes created

by recreational use, while the remaining originated from old routes for mining, fire access, or logging activities (Vol 4-25).

Overall climate change is expected to reduce expected season length and the likelihood of reliable winter recreation seasons. Some areas may become unsuitable for snow-based recreation due to warmer temperatures or increased likelihood of precipitation as rain. Higher elevation sites may not experience as large a transition to more precipitation as rain, but sites will see greater variability in season length. Warmer temperatures and increased precipitation as rain may increase availability of water in the near term during winter, but warmer temperatures may also reduce the number of days per season when snowmaking is viable.

Snow-based recreationists have moderate capacity to adapt to changing conditions given the relatively large number of winter recreation sites in the region. For non-developed or minimally developed site activities (e.g., cross-country skiing, backcountry skiing, snowmobiling, snowshoeing), recreationists may seek higher elevation sites with higher likelihoods of viable seasons. Although developed downhill skiing sites are fixed improvements, potential adaptations include snowmaking, higher elevation development, and new run development. Changes to Northern Rockies sites relative to other regions may also be important; if other regions see greater relative effects of climate on snow-based recreation, recreationists may view Northern Rockies sites as a substitute for sites in other regions (e.g., the Southwest) (Vol 4-88).

The WSA quality of Natural Integrity in the Ten Lakes WSA overall has improved since 1977, with fewer human induced changes. Miles of trail has increased by approximately 1 mile. However the acres of vegetation treatment, miles of NFS road, number of mining claims, and number of cabins is less, which would be an upward trend in Natural Integrity.

Apparent Naturalness

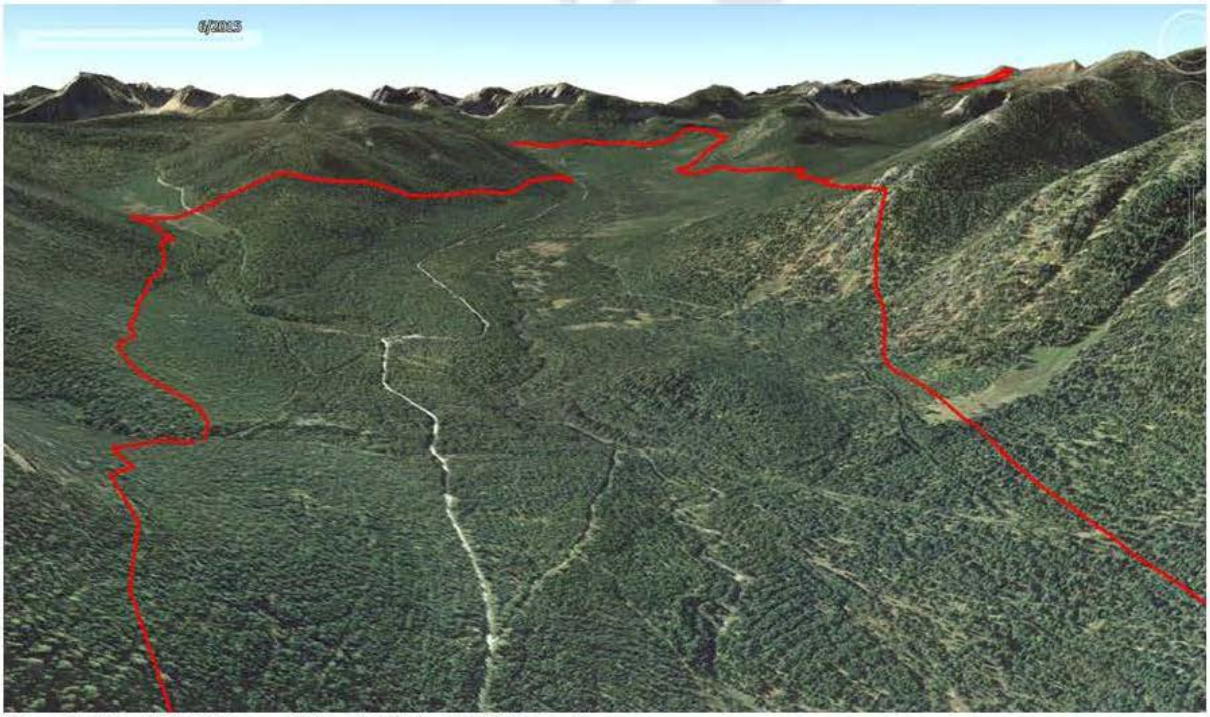
Apparent naturalness means that the environment looks natural to most people using the area. It is a measure of the importance of visitors' perceptions of human impacts to the area. Even though some of the long-term ecological processes of an area may have been interrupted, the landscape of the area generally appears to be affected by the forces of nature. If the landscape has been modified by human activity, the evidence is not obvious to the casual observer, or it is disappearing due to natural processes.

The impacts of roads and timber harvest surrounding but outside the Ten Lakes WSA were readily apparent in 1977 and played a factor in the location of the Ten Lakes WSA boundary 'roads have been built from all sides to the center of this area until all that remains untouched is an octopus-shaped piece of land with slender arms and a center less than a mile and a half in diameter' (VOL 4-34). While there were between 700-1000 acres of harvest units and 6 miles of NFS roads within the WSA in 1977, the majority of the Ten Lakes WSA appeared natural.

The indicator of 'looks natural to most people' for apparent naturalness in the WSA has improved from 1977 to 2016 primarily due to the reduction of total open roads, and the revegetation of the '*extreme vegetative manipulation'* within and surrounding the WSA in 1977. This can be seen in Roadless Figure 1, which shows a view looking south into Wigwam drainage from 1975 and a 2015 Google Earth photo.

1975 Planning Unit page 16c

- Wigwam basin looking southwest toward Therriault Lakes from Canadian boundary. Stahl Pk upper left, St. Clair Pk, top center, Ten Lakes Scenic Area in upper right.



Google Earth 2015 – red line is IRA #683 boundary

Roadless Figure 1. Ten Lakes 1975 and 2015

Travel management planning decisions that may affect this quality are largely confined to trail disturbances (either through reconstruction or change in use type), and accompanying weed infestations, visual impact from trails, and displacement of or effects to wildlife. Altering the physical engineering of trails (that is converting single-track to double track) would also affect water movement, soil displacement and vegetation.

The WSA quality of Apparent Naturalness in the Ten Lakes WSA overall has improved since 1977. The acres of vegetation treatment, miles of NFS road, miles of trail, number of mining claims, and number of cabins is down, which would be an upward trend in Apparent Naturalness.

Solitude and Primitive Recreation (Physical)

The meaning of solitude and primitive recreation has been the topic of much debate. A review of research suggests that solitude encapsulates a range of experiences, including privacy, being away from civilization, inspiration, self-paced activities, and a sense of connection with times past. Primitive recreation has largely been interpreted as travel by non-motorized and non-mechanical means that reinforces our connection with our heritage, and reliance on personal skills to travel and camp in an area, rather than reliance on facilities or outside help (Vol 4-1).

Opportunities for **solitude** were gauged during the Roadless Area Review and Evaluations (RARE I and II) process using the Wilderness Attribute Rating System, based primarily on physical features of the area: size, presence of vegetative or topographic screening, distance from civilization and so forth. Travel management decisions would not change the physical indicators relating to solitude in the WSAs in any alternative. However, travel decisions do have the potential to affect the use, or peoples' perception of solitude at the time and place they are experiencing them. The presence, amount, and type of other users have been identified through research and court decisions as affecting the personal subjective sense of solitude. All of these effects are temporary in nature, and do not affect the physical attributes of an area that create a sense of solitude.

Evaluating effects to **opportunity for primitive recreation** was measured for physical and use resource indicators. The physical indicators are similar to solitude indicators of an area that foster a sense of remoteness, including an area's size, distance from roads, visibility of lights, and sounds associated with civilization. These indicators would not change with travel management decisions about appropriate uses of trails in any alternative. When evaluating effects to opportunities for primitive and unconfined recreation the use aspect of how people travel within an area is an effect often discussed (Vol 4-1). Use resource indicators, such as the type and number of users, were not part of the WARS. Use indicators have been included in this analysis, using a variety of past document for the 1977 existing condition.

WARS focused on those intrinsic features of roadless areas that offer users outstanding opportunities for solitude–size of the area, presence of topographic screening, vegetative screening, distance from the perimeter to the core, and the degree of permanent off-site intrusions perceived from the area. Noise and human density, though important, can be changed by management decisions, and were not included in the 1978 WARS rating (e.g. by future closing or opening of trails or campsites, controlling uses, etc.) (Vol 4-2).

However, Court decisions have interpreted that the intensity of use should be considered when determining the WSA quality of solitude, as it existed in 1977 (Vol 4-47). In addition the Courts have indicated that the areas actually used, not just open to use should be reviewed. This indicator therefore includes the number, type of use, and mode of travel, and description of areas used. The Solitude and Opportunities for Primitive Recreation quality is preserved or improved by management actions that reduce visitor encounters, reduce signs of modern civilization inside

wilderness, remove agency provided recreation facilities, or reduce management restrictions on visitor behavior (Vol 4-1).

In areas that have historically been accessed by primitive means, non-conforming uses can compromise the traditional users' perception of solitude, remoteness, challenge, and risk. At the same time in areas that have historically been accessed by non-conforming uses, restrictions can limit the challenge, risk and desired experience from these user groups.

Size of Area

Size of the WSA in combination with other criteria is an important component of an area's overall potential for solitude. A large area has more potential for solitude than a small one (Vol 4-2). The four-part rating scale ranges from very low to high The original WARS rating for Size of Area is moderate (30,000-80,000 acres in Region 1) (Vol 4-22).

The size of the WSA has not changed since 1977. However the area of recommended wilderness outside of the WSA changed between the 1987 and 2015 Forest Plans (reduced by 6,800 acres surrounding, but outside of the WSA). The effects of change in recommended wilderness area was addressed in the Forest Plan FEIS and ROD, was not an existing condition in 1977, and is not addressed in this document.

Topographic Screening

The assumption here is that diverse relative relief in the WSA enhances opportunities for solitude by increasing opportunities for screening (Vol 4-2). The four-part rating scale ranges from minimal/none to high. The original WARS rating for topographic screening is high (contains a diversity of highly dissected topography that easily screens people from one another within short distances) (Vol 4-22). Topographic screening in the WSA has not changed since 1977.

Vegetative Screening

This component represents the collective vegetative cover that offers opportunities for screening parties from one another. In areas where vegetative cover is heavy, the sight of other people is reduced (Vol 4-2). The four-part rating scale ranges from minimal/note to dense. The original WARS rating for vegetative screening is moderate (vegetative screen is good in at least half the area, screening people easily within a quarter mile of one another; limited or no screening available in remainder) (Vol 4-22).

The vegetative screening has improved since 1977, with recovery of vegetation (1950-70's harvest of spruce budworm) within the WSA (**Error! Reference source not found.**). Vegetative screening along roads in Grave Creek, Clarence and Stahl Creek, and outside of the WSA has also recovered providing vegetative screening of intrusions outside of the WSA from within the WSA.

Distance from Perimeter to the Core

The distance from the perimeter of the roadless area to the core or approximate geographic center is a measure of the potential for solitude and escape from the evidence of man (Vol 4-2). The four-part rating scale ranges from low to outstanding. The original WARS rating for distance from perimeter to the core was a moderate (from 1-3 miles from the core to the perimeter) (Vol 4-22). The distance from Perimeter to the core has not changed since 1977.

Permanent Off-Site Intrusions

This includes off-site evidence of man's activities likely to be seen, heard, or smelled by visitors from within the area such as from a transportation corridor (Vol 4-2). The three-part rating system

used ranges from minimal/none to many. The original WARS rating for permanent off-site intrusions was many (off-site intrusion are close-by and permanent). Components noted include: 'many permanent off site intrusions, roads and heavy logging to east and west, Graves Creek road and logging on south'. It was noted that 'Solitude was not good along high ridges and slopes facing the Tobacco Plains' (Vol 4-22).

Permanent off-site intrusions have changed since 1977 with the development of private property in the Tobacco Plains. Though roads outside of the WSA are now better screened by vegetative regrowth. There has been no new road or structures built in the WSA since 1977. Open roads outside of the WSA, including the Grave Creek road, continue to have heavy traffic. Traffic noted in 1977 included administrative, logging and recreation, although it is now primarily recreation related. From the 2010 UM wilderness character survey 'Cities and towns were visible to the west from trails along ridgelines, while dirt roads were primarily visible from the trails in the eastern portion of the WSA' (VOL 4-25). Permanent off-site intrusions have increased since 1977, mainly on private property.

In 1978, opportunities for solitude was rated a moderate, while opportunities for primitive recreation was rated as high (Vol 4-22). There were several elements evaluated in 1978 that contributed to these ratings. The physical resources for solitude and opportunities for primitive recreation in the Ten Lakes WSA overall has been stable from the existing 1977 to 2016 for this WSA quality. The size of area, topographic screening, and distance from perimeter to core have been preserved, permanent off-site intrusions has degraded, while topographic screening has improved.

Solitude and Primitive Recreation (Use)

In his May 2001 order, Judge Molloy stated that the Wilderness Attribute Rating System (WARS) provides a benchmark for prospective management and specific criteria to guide the agency's exercise of its discretion (Vol 4-18). In 2011, a Court affirmed the finding that while the preservation of the area's physical measures are necessary; it also concluded "an area's ability to provide solitude, as required by the Wilderness Act, depends on a current user's perception of other users around him" (Vol 4-47), defined by the number or intensity of users.

Wilderness character is a holistic concept, with all five qualities equally important. In WSAs the 'bar' or significant meaningful change to quality has been determined by law and the Courts as '*the presently existing (1977) condition'*. Travel management decisions will have the most effect on use indicators, or perceptions of solitude, and are the focus of this analysis. In Table 6 use indicators for Solitude and Opportunities for Primitive recreation are shown for seasons 1-3, displaying variations in recreation user patterns and their effect on wilderness character from season to season.

Season 1 (December 1 through March 31) is specific time frames as shown in the 1977 Travel Map under Area 21 restrictions (Vol 4-36) and the bear year. These dates were first described in the 1975 Environmental Report (Vol 4-21). Season 2 (April 1 through May 31) was identified through scoping for late season over-snow uses. Season 3, or summer-fall, when snow is not likely, is defined as June 1 through November 30.

Roadless Table 6. WSA Quality – Solitude and Opportunities for Primitive Recreation: Use Indicators and Measures for 1977 and Existing Condition in WSA

Resource Indicator	Measure[1]	1977 Existing Condition	Existing Condition Alt 1	Maintain 1977 condition
Primitive Season 3 (June 1- November 30)	Type of use Intensity or amount Miles of trail	All primitive high use 53.6	All primitive high use 54.6	Yes-use remain high around Wolverine, number of encounters similar elsewhere
Non- conforming (mechanized) Season 3 (June 1 – November 30)	Type of use Intensity (visitors) Miles of trail Acres open Acres used[2]	Motor bike Low (<100) 15.9 9,000 N/A	Mountain Bike[3] Low(<500) 54.6 34,000 low	No- intensity of use miles of trail and acres open greater than 1977
Over-snow Non- conforming (mechanized) All seasons	Type of use Intensity or amount Miles of trail Acres open Acres used[2]	Motor bike n/a 15.9 9,000 0	Winter bike[3] Low <100 54.6 34,000 low	No- bike use in shoulder season new, miles of trail greater than 1977
Over-snow Primitive (season 1 & 2)	Type of use Intensity or amount Miles of trail Acres open	All primitive Low <100 53.6 34,000	All primitive Low <100 54.6 34,000	Yes- intensity of use remains low
Over-snow Non- conforming (motorized) Season 1 Dec. 1-March 31	Type of use Intensity or amount Miles of snow trail Acres open Acres used[2]	Motorized 1000-2000 n/a 34,000 3,900	Motorized 2000-3500 n/a 34,000 7,000	No – intensity of use and acres used greater
Over-snow Non- conforming (motorized) Season 2 - 3 (April 1 –November 30)	Type of use Intensity or amount Miles of snow trail Acres open	Motorized Low <500 n/a 9,000	Motorized Low <500 n/a 34,000	No- acres open greater, acres used less

1 In order to compare 1977 with 2016 miles of trail were determined using GIS, which may not be the same previous maps or other data.

2 Acres used are those most commonly used based on public input (Vol 4-31, 4-32, 4-95 through 4-110). Public input also indicates that there are few areas in the WSA where some snowmobilers have gone.

3 R1 FSM accommodates for new use of mountain biking, allowing possible aggregate miles of motor bike and mountain bike where wilderness character is maintained

Uses that have been documented in the WSA in 1977 include both primitive recreation and non-conforming uses. Primitive recreation has largely been interpreted as travel by non-motorized and non-mechanical means that reinforces our connection with our heritage (Vol 4-1). In this analysis primitive recreation opportunities include but are not limited to; hiking, camping, fishing, hunting, cross-country skiing, nature study and stock use.

Non-conforming uses are defined as motorized and mechanized including but not limited to; wheeled motor vehicle, over-snow motor vehicle, and mechanical such as mountain bikes, carts, and other wheeled transport devices. Mechanical uses can include both non-snow and over-snow uses (mountain bike use during summer or fat tire bike over-snow). Mobility impaired devices (wheel chairs) are considered primitive (Vol 4-49).

Season 3 Primitive (June 1 – November 30)

The 1978 WARS for Ten Lakes identified that 'some of the characteristic primitive type recreation activities are hiking, camping, fishing, hunting, cross-country skiing, winter camping and nature study' (VOL 4-2). Summer primitive use in Ten Lakes WSA continues to be high on Wolverine and Bluebird trails.

In the 1978 NF Transportation Plan for Trails (Vol 4-45), of the 109 miles of trail listed for the Fortine Ranger District, only one trail was listed with a traffic class of Heavy. This was the Wolverine Lakes Trail #84. Voluntary trail head registers are not reliable for indicating total amount of use, but can indicate the number of encounters one would expect within the WSA. Trail registers from 1970's indicate that "Bluebird and Wolverine Trails showed 236 people hiked and 19 people rode horse over these two trails in 1970" (Vol 4-50) for a total of 255 registered visitors. In 1974, it was noted that "Trail users do not seem to be registering. We saw over ten hikers in two days; another party reported encountering sixteen the previous weekend. Yet we found that no parties had registered during the entire month of July at the registration box just west of Little Therriault Lake" (Vol 4-34).

In 2003, it was noted that trailhead registration for "Wolverine Trailhead, the average number of people to register at wolverine trailhead over the last seven (7) years was 215 per year (Vol 4-51) and "Bluebird trailhead, for the years of 00-01 there was an average of 184 sign-ins per year" (Vol 4-52). This would be a total of approximately 399 registered visitors in early 2000's. In 2013 trail registration indicated 155 registered visitors at Wolverine Trailhead (Vol 4-53) and 400 at Bluebird Trailhead (Vol 4-54) for a total of 555 registered visitors that registered. While the number of visitors registering is not reliable as a use estimate, it does indicate that these trails had considerable use in the 1970-2000's.

Use on the 4 miles of Wolverine and Bluebird trail continues to be high. Reviewing visitor registration day by day for these two trails, the anticipated current user's perception of other users around him or encounters would be similar to that in 1977. In a September 1970 trip to Wolverine Lake, 19 other people were noted (Vol 4-114). Notes from 1974 indicate 10 and 19 other people encountered (Vol 4-34). Trail registers for Wolverine in 2013 indicate group size of 1-17 people during July and August (Vol 4-53).

The remaining 50 miles of trail in the WSA continues to have considerably lower use, with little registration or other use information available. Anecdotal information includes a 1974 report by the University of Montana in a two day trip (approximately 15 miles). The group noted three parties with a total of 10 hikers. One of the parties reporting they had seen 16 hikers the previous weekend (VOL 4-34, 4-55). There was also evidence of recent stock use. In 2010, the UM survey noted during four trips (approximately 78 miles) 28 separate encounters, totaling 68 people. Most groups consisted of 2 or fewer people (71%), and the largest group size was 8. The majority of people encountered were hiker/backpackers (78%). The majority of encounters both in 1974 and 2010 were clustered around Big Therriault Lake, Bluebird Lakes, and Wolverine Lakes. (Vol 4-25)

Average number of encounters with visitors in the WSA by forest trail crews is 7-10 parties during the entire season. The measure for season 3 primitive uses is stable, with the number of

visitors continued to be high around Wolverine and Bluebird, but considerable lower in the remainder of the WSA.

The National Trails System was established in 1968 (Public Law 90-543). The Act, as amended, also provided for the addition of trails, one of which was a Pacific Northwest Trail. The proposed trail route in the 1970's included Foundation Creek # 77, Highline #339, and Sinclair Creek #88 (Vol 4-56). The 1980 Final National Scenic Trail Study Report issued found the trail to be scenic and recreational, but concluded that its construction was neither feasible nor desirable (Vol 4-57). However, interest continued and the Pacific Northwest National Scenic Trail was designated by Congress in 2009 (VOL 4-58). Completion of a management plan is under way.

Yearround Non-Conforming (mechanized use)

Non-conforming mechanized uses considered in this analysis include mountain biking and fat biking (winter mountain biking). In discussion of new uses or activities, the R1 Manual Supplement provides guidance in that "*Mountain bikes may be allowed on trails that had established motor-bike use in 1977, or on non-motorized trails as long as the aggregate amount of mountain bike and motorcycle use maintains the wilderness character of the WSA as it existed in 1977 and the area's potential for inclusion in the National Wilderness Preservation System*" (Vol 4-3).

Mountain biking developed as a sport in the 1970's with the first mass produced mountain bike "Specialized Stump jumper" in 1981. Winter fat bikes have wider tires, less tire pressure, typically travel over 1-5" snow or in frozen conditions, or groomed routes (Vol 4-59). This type of biking increased in popularity in the 1980's for trail riding and racing in sub-arctic Alaska and on the Iditarod Trail. There was no documentation found from the 1970's indicating mountain bike or fat biking use in the WSA. However, there is indication of motor bike use in the 1970's within the WSA (Vol 4-60).

In the 1975 Grave Creek EA summer (season 3) recreation opportunities noted include minor motorcycle or scooter, with 300 anticipated (30 year average) visitor days (VOL 4-21). While this number was the anticipated 30 year average, it indicates that use was occurring. There is no current user data on mountain or fat biking, but it is estimated to be 500 visitors or less. In this analysis use under 500 people or vehicles was considered as low. While low, mountain bike use has increased in the last few years. The measure of non-conforming mechanized use continues to be low.

In 1977 from April 1 to November 30 (season 2 and 3), 74 percent of the WSA was closed to cross country motorized use (Vol 4-36). Motorized use was only allowed in areas or trails that were outside of the 1977 area closure. In 1977 in the WSA all or portions of 17 National Forest System Trails, totaled 53.6 miles, with 15.9 miles open to motorized use (outside of the 1977 Travel Map area 21 Closure). There was an aggregate of 15.9 miles motorized or mechanized trail in the WSA in 1977.

In 2001, cross country motor vehicle (wheeled) use was restricted forestwide, in the project area and WSA in most areas and on most trails. Where motorized use currently is allowed is shown on the 2015 Motor Vehicle Use Map (MVUM). Restricting cross country and trail motorized use has increased this resource indicator for opportunities for primitive recreation, increasing the perception of 'sense of remoteness' cross country in the non-snow season.

There are references that some level of motorized use did occur on trails in the WSA during the 1970's (Vol 4-114, 4-111). Currently there is 54.6 miles of trail in the WSA, all of which are closed to motorized use, which is a reduction of 100% from 1977. However, all 54.6 miles of

trail are open to mechanized use which is an increase of 345% from the aggregated 15.9 miles in 1977. Allowing mechanized use on all trails in the WSA, and the noted increases in biking, has decreased the perception of 'sense of remoteness' on trails in the WSA.

Over-snow Primitive (Season 1-2, December 1 – May 31)

In the 1975 Grave Planning Area EA over-snow primitive recreation opportunities noted include minor snowshoe and cross country skiing, with 300 anticipated (30 year average) visitor days (Vol 4-21). There is no current user data for over-snow primitive recreation use, but it is estimated to be 100 visitors or less. There has been no change in over-snow primitive measure since 1977. Cross country ski trails adjacent but outside of the WSA were developed in the 1980's, at Birch Creek and Griffith Road area (Therriault Creek Trail #87), have not been groomed in several years.

Over-snow Non-conforming (motorized Season 1, December 1 –March 31)

One of the observations repeated over time has been that 'use has increased' particularly snowmobiling. While snowmobiles have been around since 1920's, sled sales did not began to grow significantly until the late 1960's and early 1970's. A letter in 1968 regarding recreation management in the Ten Lakes Scenic Area stated for winter use "*The number of snowmobilers has increased tremendously in the past several years* (in general) …" Starting in the mid-1970's snowmobile sales peaked at 500,000 sleds nationwide (Vol 4-61). Information provided during scoping was that there was multiple snowmobile retailers in Eureka in the 1970's, was likely a result of this boom. Snowmobile use mentioned in other documentation also supports the boom in the 1960-1970's (Vol 4-9, 4-62). In 2011 there were just four long-term manufacturer survivors with an estimated 52,000 annual sale of sleds nationwide (Vol 4-61).

The 1978 WARS rating for Ten Lakes did not include separate season or any winter use numbers. Several other sources have been used to determine the 'presently existing 1977 condition'. See Vol 4-63, a list of all the WSA use information reviewed. Most of the information used in this report to establish use numbers is anecdotal (etc. newspaper clippings, other agency letters, or observations). Use data (Recreation Visitor Days, grooming grant applications) from the 1970-1980's was also reviewed. The use of Recreation Visitor days (RVD) started in the 1970's, with an RVD being one person for twelve hours. There was no standard protocol in determining RVDs. RVDs were used to allocate funding, and as a result were often increased with no supporting data. By the 1990's nationally RVDs had increased to an unrealistic level of 850 million visitors. The RVD was replaced in 2000 by the National Visitor Use Monitoring Program, which indicated the actual number in the 1990's was approximately 205 million visitors (Vol 4-8).

Documentation reviewed indicates that the intensity or number of over-snow motorized uses has increased from 1977 to today in the project area, including within the WSA. The documentation reviewed indicates a one to two fold increase for the entire project area for over-snow motorized uses. Of the estimated 1000-2000 users in 1977 and 2000-3500 visitors today in the project area, it estimated that between 30-50% of those visitors enter the WSA. The use estimate for 1977 was based on a 1973 newspaper article, "Now figuring approximately 400 snowmobiles in this area, and if an average of 250 of these people go out snowmobiling once a week…" (Vol 4-30), adjusting for the length of season. A draft Ten Lakes Usage Report, prepared by the citizens of Eureka, Fortine and Trego, supports this number with a list of over 260 individuals known to have snowmobiled in the Ten Lakes WSA in the 1970's (Vol 4-62).

The current 2000-3500 estimated number of users was based on observation (Vol 4-115) and use reported by the Ten Lakes Snowmobile Club to the State for grooming (Vol 4-64, 4-65). The 30-

50% of users that enter the WSA estimate is from anecdotal descriptions (users were or were not able to get into Wolverine) and estimated use that 500 snowmobilers entered the WSA in 1974 and 1991 (Vol 4-6, 4-66).

The opportunity for solitude exists twenty-four hours a day, seven days a week. The effects of increased use are analyzed across the entirety of the season, instead of simply portions of the season or week (Vol 4-11). Opportunity for solitude was rated as moderate in 1977 (WARS). In 1977, over-snow use averaged 5-10 snowmobiles per day (1000-2000 divided by typical season December 1 through June 15 or 200 days). Currently over-snow use averages 10-18 snowmobiles per day (2000-3500 dived by typical season December 1 through June 15 or 200 days). Groups of 16 were documented in 1977 (Vol 4-31). While over-snow motorized use is a non-conforming use, it was a presently existing condition in 1977.

In Season 1 (December 1 through March 31), the same acres of WSA are open to over-snow motorized use today as in 1977. The Courts have indicated that the areas actually used be considered, not just areas where use is allowed (Vol 4-47). The areas used, mapped from public comment and documentation, indicate where most of the over-snow motorized visitors travel. The areas used were mapped based on anecdotal information, using the documentation available. Although this represents where most users travel, there are few areas that experienced or skilled snowmobilers have not traveled in the WSA in 1977 or currently. Areas that are used have changed slightly in size and location since 1977. This is mainly due to vegetation changes, with revegetation of clearcuts, other areas opening up due to insect or disease, and improvements in snowmobile technology allowing users to access difficult terrain such as around Stahl Peak. The area used has increased by approximately 3,100 acres within the WSA since 1977.

During Season 1, there has been an increase in the number of over-snow motorized users and acres used by most, with the number of acres available remaining the same. The increase in snowmobile use and acres used has decreased the perception of solitude and opportunity for primitive recreation during this season.

Over-snow Non-conforming (motorized Season 2 and 3, April 1 – November 30)

Over-snow motorized use estimates in Season 2 and 3 (April 1 through November 30) are included in the use estimated presented above for Season 1. The Ten Lakes area holds persistent snow later, and is known for its late season opportunities. However, historic and current use information is not detailed enough to break out use before and after April 1. Use estimates for 1977 and currently in Season 2 are estimated to be low, with less than 500 visitors. This estimate was based on; snowmobile grooming typically has not occurred after April 1, snow conditions late in the season require more skilled riders, and there are other competing recreation opportunities. Currently grooming is not authorized after April 1.

The 9,000 acres that were open to over-snow motorized use after April 1 in 1977 were on steep slopes, in areas that were not accessible for the average snowmobiler. The area closure would have provided solitude and opportunities for primitive recreation in the core areas of the WSA. Areas where over-snow use was allowed in 1977 included the Eureka face area and the southern lobe of the WSA which includes Mt. Gibralter. The 1970s areas used, as indicated by public comment, did not overlap for the most part with the areas open in Season 2. Of the 10,370 acres identified in 1977 as used, the majority (9,600 acres) was within the 1977 Area 21 Closure. Any over-snow non-conforming uses in 1977, except for the 770 acres in open area, would have been illegal use. There is little to no record of enforcement of this area closure after April 1 in the 1970’-1980’s by the Forest Service.

The Fortine District completed a Road Management Plan in 1985, which made changes in access to comply with the proposed (1987) Forest Plan. On the 1985 Travel Map the entire 34,000 acres of WSA was opened to over-snow use after April 1 (Vol 4-67, 4-41). The entire 34,000 acres of WSA continues to be open to over-snow use.

The increase in number of acres open to over-snow non-conforming use, and change in location between the 1977 areas open and 2015 areas used, has decreased the perception of solitude and opportunity for primitive recreation in the WSA.

Environmental Consequences

The following analysis will compare the effects of the proposed alternatives on roadless characteristics within IRA's, Wilderness Character within RWA's and WSA's, and determine to what extent is might affect future designation as Wilderness under the Wilderness Act of 1964.

Gauging effects **to natural integrity** and **apparent naturalness** are relatively straightforward. It is accomplished by measuring the presence and magnitude of human-induced change to an area (physical impacts like roads and fences). Apparent naturalness is tracked by how the landscape appears to people, even though there may have been some minor human modifications. Travel management planning decisions that may affect these attributes are largely confined to trail disturbances (primarily through reconstruction), and accompanying weed infestations, visual impact from trails, and displacement of or effects to wildlife.

Opportunities for **Solitude** were gauged during the Roadless Area Review and Evaluations (RARE I and II) process using the Wilderness Attribute Rating System, based primarily on physical features of the area: size, presence of vegetative or topographic screening, distance from civilization and so forth. The RARE process evaluated the potential for roadless areas to be included in the National Wilderness Preservation System. Travel management decisions would not change these physical parameters relating to solitude in the RWA or WSA in any alternative. However, travel decisions do have the potential to affect peoples' perception of solitude at the time and place they are experiencing them. The presence, volume, and type of other users and the sounds and smell have all been identified as affecting the personal subjective sense of solitude. All of these effects are temporary in nature, and do not affect the attributes of an area that create a sense of solitude.

Evaluating effects to opportunity for **Primitive Recreation** are typically tracked for two parameters: physical and use. The physical parameters of an area that foster a sense of remoteness, including an area's size, distance from roads, visibility of lights, and sounds associated with civilization, would not change with travel management decisions about appropriate uses of trails in any alternative. When evaluating effects to opportunities for primitive and unconfined recreation the use aspect of how people travel within an area is an effect often discussed (Vol 4-1). Use resource indicators, such as the type and number of users, which were not addressed in the 1978 WARS, have been estimated for 1977 and included in this analysis.

Following is a brief summary of effects by alternative, Tables 7-9, for each of the three resources analyzed IRA, RWA, and WSA. Each resource is then described in detail. The analysis for IRA is based on roadless characteristics affected by travel management. The IRA analysis is for portions of the Ten Lakes IRA #683 outside of the WSA, and Tuchuck IRA #842.

Roadless Table 7. Comparison of Roadless Characteristics in IRAs by Alternative

Roadless characteristic	Alt 1	Alt 2	Alt 3	Alt 4
Natural Integrity	High	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1
Apparent naturalness	High	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1
Opportunities for Solitude (physical)	High	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1
Opportunities for primitive recreation (use)	Moderate	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1

The analysis of the RWA is based on wilderness character and the potential for inclusion as designated Wilderness affected by travel management. As outlined earlier, management direction for the WSA and Law supersede management direction for RWA. Until action by Congress regarding the MWSA, the Ten Lakes RWA will be managed as MA1c Wilderness Study Area.

The analysis for WSA is based on wilderness character and the potential for inclusion as designated Wilderness affected by travel management and issues identified during scoping. An effect identified was to define the Ten Lakes WSA '1977 presently existing' wilderness character; including number of users and areas of use (not just what was legally open). The 1977 presently existing wilderness character is described under Ten Lakes WSA Wilderness Character section.

Below is a table summarizing the measures of WSA quality, and whether the quality has improved, degraded or has been maintained at the WSA '*1977 presently existing condition*' by alternative. Individual measures which are used to determine the quality compared to 1977 are described in detail by alternative.

Roadless Table 8. Comparison of 1977 WSA Qualities by Alternative

WSA Quality	Alt 1	Alt 2	Alt 3	Alt 4
Natural Integrity	Maintain	Maintain	Maintain	Maintain
Apparent naturalness	Maintain	Maintain	Maintain	Maintain
Solitude and Opportunities for primitive recreation (physical)	Maintain	Maintain	Maintain	Maintain
Solitude and Opportunities for primitive recreation (use)	**Degrade**	**Maintain**	**Degrade**	**Improve**
Potential for inclusion in National Wilderness Preservatin System	Suitable 1987 FP	Suitable 2015 FP	Suitable 2015 FP	Suitable 2015 FP

No alternative proposes vegetation management, or other changes in human introduced or physical measures within the RWA or WSA. The **Natural Integrity** is maintained the same across all alternatives with no vegetative treatment proposed, fewer miles of road, fewer mining claims, and one less structure from the 1977 condition. The **Apparent Naturalness** is

maintained the same across all alternatives as vegetation and old road recover. See existing condition. These WSA qualities are not described in detail or further analyzed.

The Solitude and Opportunities for Primitive Recreation physical qualities remain the same in all alternatives, with this quality being maintained in all alternatives. The physical qualities are not described in detail or further analyzed. See existing condition. The Solitude and Opportunities for Primitive Recreation *use* qualities vary by alternative, and are the focus of this analysis.

The Ten Lakes WSA and RWA remain suitable for inclusion in the National Wilderness Preservation System across all alternatives. Travel management proposed actions would slightly improve the capability evaluation for Opportunities for Primitive Recreation (FP appendix C), with reductions in over-snow motorized routes or area. The 1977 MWSA directs the forest to maintain the 'presently existing (1977) condition'. This condition, as outlined in the Ten Lakes History related to Travel Management section, included over-snow non-conforming uses. Maintaining non-conforming uses as existed in 1977, has continued a constituency with strong propensity to wilderness designation. However, if designated as wilderness non-conforming uses could be restricted.

The first issue identified in public scoping was do the alternatives increase, decrease or align with 1977 uses. This issue is specific to the use indicators for WSA quality of Solitude and Opportunities for Primitive Recreation. This issue includes different type of uses, and measures were analyzed for multiple uses and seasons. Specific names, such as snowmobile, are not used. As technology develops the mode of transportation may change, such as snow bikes (motor bike with front ski). Therefore the types of use are described by primitive or non-conforming and season to be all inclusive.

The measures for this issue are estimated amount of use, miles of trail open or acres open to each type of use, and miles of trail or acres used that are within area open to that use. Table 9 displays effects to the use measures for Solitude and Opportunities for Primitive Recreation WSA qualities. Specific information on each measure is detailed by alternative.

Roadless Table 9. Effect to Measures of Solitude and Primitive Recreation (use) Quality in WSA by Alternative

Type of Use	Measure	1977 Existing Condition	Existing Condition (Alt 1)	Alt 2	Alt 3	Alt 4
Primitive Season 3 (June 1-Nov 30)	Type of use	All primitive	All primitive	Same as alternative 1	Same as alternative 1	Same as alternative 1
	Intensity or amount	High Tr. #83/84 Low all others	High Tr. #83/84 Low all others			
	Miles of trail	53.6	54.6	50.1	50.1	50.1
Non-conforming Season 3 (June 1 – Nov 30)	Type of use	Motor bike	Mechanized	Mechanized	Mechanized	Mechanized
	Intensity or amount	Low (<100)	Low (<500)	Low (<300)	Moderate (<700)	Low (<100)
	Miles of trail	15.9	54.6	8.7	16.2	3.5
	Acres open	12,874	34,000	0	34,000	0
Over-snow Primitive (Season 1-2)	Type of use	All primitive	All primitive	All primitive	All primitive	All primitive
	Intensity or amount	Low (<200)	Low (<200)	Low (<200)	Low (<200)	Low (<200)
	Miles of trail	53.6	54.6	50.1	50.1	50.1
	Acres open	34,000	34,000	34,000	34,000	34,000
Over-snow Non-conforming Season 1 Dec. 1-March 31	Type of use	Motorized	Motorized /mechanized	Motorized/ mechanized	Motorized/ mechanized	Motorized/ mechanized
	Intensity/Amount[2]	1000-2000	2000-3500	2000-3000	2000-4000	2000-2500
	Acres open	34,000	34,000	15,838	22,516	0
	Acres used in open	3,911	7,055	6,628	7,043	0
	Miles designated route	n/a	0[1]	0.7	1.1	1.6
Over-snow Non-conforming Season 1	**Outside of WSA**					
	Groomed Route	0	33.8	33.8	33.8	31.0
	Recreation Event Permit	0	2	2	2	2
Over-snow Non-conforming Season 2- 3 April 1 – Nov. 30	Type of use	Motorized	Motorized /mechanized	Motorized /mechanized	Motorized /mechanized	Motorized /mechanized
	Intensity or amount	Low <500	Low <500	0	Low <500	0
	Acres open	21,256	34,000	0	2,980	0
	Acres used in open	<100	7,055	0	2,817	0

1 Miles identified as NFS Snow trail, designated routes are specific to 36 CFR 212. All routes open (over-snow use not restricted)

2 Use in project area, Use in WSA estimated to be 30-50% of total use

IRA Effects Common to All Alternatives

No alternative proposes vegetation management, road building or reconstruction, temporary road, or trail construction. There is no effect from proposed actions to Roadless Characteristics of Natural Integrity or Apparent Naturalness in any alternative.

Motorized vehicle travel on routes outside of the IRA and surrounding activities (chain saw, shooting) will contribute to noise, which has the potential to impact opportunities for solitude

associated with roadless characteristics. This could affect some visitors' recreation experiences. Hiking and the use of livestock would not be restricted in any alternative. Continued use by foot and stock users may cause some minor effects where trails erode or weeds become established.

RWA Effects Common to All Alternatives

The Ten Lakes WSA is a unique situation, and differs from congressionally designated Wilderness areas, Inventoried Roadless Area policy and direction in the Forest Plan such as MA 1b Recommended Wilderness. Regardless of policy or Forest Plan direction, the Ten Lakes WSA will be managed in accordance with language found in the 1977 Montana Wilderness Study Act, awaiting Congressional action (Vol 4-16).

The analysis of the effects to recommended wilderness by alternative is included under effects to Ten Lakes WSA.

RWA and WSA Direct Effects Common to All Alternatives

No alternative proposes vegetation management, or other changes in human introduced or physical measures within the RWA or WSA. The **Natural Integrity** is maintained the same across all alternatives with no vegetative treatment, fewer miles of road, fewer mining claims, and one less structure than 1977. The **Apparent Naturalness** improves the same across all alternatives as vegetation and old roads continue to recover (see Roadless Table 8).

WSA qualities of **Solitude and Opportunities for Primitive Recreation** measures for primitive uses are the same across all alternatives. Season 3 use continues to be high on the four miles of the two most popular trails (#83 and 84) in the RWA and WSA. While primitive uses have increased on these two trails since 1977, the extent of increase has not changed these WSA qualities. Descriptions from 1977 and currently describe similar experiences or encounters. Use continues to be low across the remaining 50 miles of trail in the WSA in all alternatives. The total miles of trail in the WSA is reduced by 4.5 miles across all alternatives, with placement of Indian Creek Trail #340 and #340a (a spur off #340) in non-active status. These trails receive little use and there is no public access on the western end. This trail has not been maintained for several years, and would no longer be managed as a NFS trail.

Hiking and the use of livestock would not be restricted in any alternative. Continued use by foot and stock users may cause some minor effects to where trails erode or weeds become established.

RWA and WSA Indirect Effects Common to All Alternatives

Over-snow motorized (non-conforming is only within RWA or WSA) use patterns include both inside and outside of the WSA. The Ten Lakes WSA is not a solid block of area, but has several lobes with a small core area. Ridges and higher elevations are within the WSA and managed for the 1977 wilderness character, while valleys and lower elevations are in MA 5 or 6 are not managed for wilderness character. The impacts of roads and timber harvest surrounding but outside the Ten Lakes WSA were readily apparent in 1977, and played a factor in the location of the Ten Lakes WSA boundary 'roads have been built from all sides to the center of this area until all that remains untouched is an octopus-shaped piece of land with slender arms and a center less than a mile and a half in diameter' (Vol 4-34).

Activities or actions outside of the WSA, or off-site, can indirectly change use and affect WSA qualities of Solitude and Opportunities for Primitive Recreation within the WSA. There is no policy or regulation requiring a buffer around the WSA (or designated Wilderness) boundary. The Wilderness Act is silent on the issue of buffer zones around wilderness areas to protect the

designated areas. However, language in subsequent wilderness bills has prohibited buffer zones restricting uses and activities on federal lands around the wilderness area. The first explicit language was enacted in 1980 in P.L. 96-550; 105 states; Congress does not intend that the designation of wilderness area… lead to the creation of protective perimeters or buffer zones around each wilderness area. The fact that non-wilderness activities or uses can be seen or heard from areas within the wilderness shall not, or itself, preclude such activities or uses up to the boundary of the wilderness area (Vol 4-10).

Prior to 1977 over-snow motorized vehicles accessed the project area through roads and extensive clearcutting of spruce budworm killed trees that were harvested in the 1950-1960's. Much of the vegetation in the basins immediately adjacent to any road was removed, in effect created a wide swath, which was then available for over-snow travel (Roadless Figure 1). While there was no grooming in 1977, this wide swath made snowmobile access easier, as there was more room to negotiate hazards and the route traveled could vary with snow conditions or the destination of the user. These wide swaths along the roads provided access into and through the WSA including Wolverine Cabin and over Therriault Pass (Vol 4-30). From aerial photography, and Google Earth photos in the 1990's, skid trails and harvesting can be seen within the WSA in Wolverine Creek and Upper Stahl Creek towards Therriault Lake. Because of the configuration of the WSA with arms or lobes on the ridges, a 1977 user in the core of the WSA would have seen and heard over-snow vehicles on road outside of the WSA (Roads #114, 319, 7086, 7116, 7022, 7021, and 1001) and clearcuts surround the roads.

As vegetation regrew, the wide swaths narrowed back down to the roadway, limiting the options for users to vary routes based on hazards, snow conditions, or the destination. At the request of the District, beginning in 1985 the main roads in the project area were groomed. The grooming provided safer and easier access into the project area including Weasel Cabin, Frozen Lake, and Therriault Lakes (Vol 4-68, 4-69, 4-70). The groomed routes also provided easier access into and through the WSA including Wolverine Cabin and over Therriault Pass. Snowmobile grooming has allowed similar access into or the through the WSA that existed in 1977 due to harvesting. Snowmobile grooming on roads outside of the WSA has not significantly changed the extent of access into or through the WSA. All alternatives allow for some snowmobile grooming from December 1 through March 31.

Over-snow and non-conforming uses affects solitude and the opportunity for primitive recreation since it introduces a form of motorized or mechanized travel and the noise disrupts the natural quiet important to the opportunity to experience solitude (Vol 4-17). It is the "opportunity" for solitude that must be maintained under the Wilderness Act. Even with the development of four-stroke snowmobiles, noise remains a major detriment to the peace, quiet and natural sounds that are an integral part of the experience backcountry skiers, snowshoe and other quiet users seek on public lands (Vol 4-71).

Motorized sounds from outside of the WSA could be heard within the WSA in 1977 and continue today. In 1978 " many permanent off site intrusions- roads and heavy logging to east and west, Graves Creek road and logging on south; moderate distance (1-3 miles) from perimeter to core" and "that Solitude was not good along high ridges and slopes facing the Tobacco Plains" (1978 WAR). And in 2010 "Most noises were heard clearly or were loud and close (65%), while the remaining 35% were barely audible or variable… The configuration of the WSA, with lobes extending out on ridge lines, creates the situation where noise outside of the WSA, can be heard from the ridge top" (Vol 4-25).

Noise from both within and outside of the WSA would continue to affect some visitors' recreation experiences. A Visitor's expectation of isolation and solitude was moderate in 1977 (WARS 1978), and would continue to be moderate across all alternatives.

Technology improvements over the years in general have helped reduced the noise, or decibel level, of motorized vehicles. Sound from a 1970's logging truck or snowmobile would have been louder and carried much further than a passenger vehicle or snowmobile from today. Snowmobiles produced since 1975 are certified to emit no more than 78 decibels from a distance of 50 feet while traveling at full throttle. Comparatively pre-1969 snowmobiles emitted sound levels as high as 102 decibels. Since sound levels are logarithmic, this means sound levels for snowmobiles have been reduced 94% from early models (Vol 4-72).

Until the 1990s, snowmobiles were generally restricted to packed trails and roads as the earlier machines would easily become bogged down in deep snow. In the mid-1990s, the development of the "powder sled" vastly changed the pattern of snowmobile use. As stated by the International Snowmobile Manufacturer's Association, "today's snowmobiles bear little resemblance to earlier models" (Vol 4-71). These advances in technology have also allowed skilled and average riders access to areas they may not have gone with heavier or less powerful machines. In addition newer developments such as motor bikes with front skis can travel through smaller opening than traditional snowmobiles. And finally, while the population of Lincoln County snowmobile registration and percent participation has remained similar (Vol 4-63), closure of surrounding areas such as on the Flathead National Forest (Vol 4-73) has increased the number of out of county users to the project area.

Two over snow recreation events have occurred consistently in the project area. The Ten Lakes Snowmobile club, authorized through a recreation event permit, has held a fun ride since 2013. The event may have occurred prior to 2013, however was not under a permit. This event's authorized route is outside of the WSA on the groomed route, with between 80-200 participants annually. While the number of users in one day is higher than documented in the 1970's, this is a one day event occurring outside of the WSA. The event authorized requires collection of a card at several stations along the groomed route both going into Therriault Lake and coming back out. The requirement to collect a card on the way back from Therriault Lake on the groomed route discourages participants from crossing through the WSA. Though they may enter the WSA during the one day event, it would not change the overall extent of use in the WSA. The number of participants that go through the WSA, instead of back out the groomed route is estimated to be low.

A second recreation event permit in the project area has been authorized for the Trans Montana Snowmobile ride since the 1990's (multi-forest permit). In 2014, the route approved for this event was reduce to the groomed trail up to Weasel Lake. With the maximum number of participants of 50, and restricting the route to groomed trails outside of the WSA, this event would not change the overall extent of use in the WSA.

Alternative 1 – No Action

By definition, direct and indirect effects (40 CFR 1508.8), and cumulative effects (40 CFR 1508.7) result from the proposed action, and thus are not germane to the No Action alternative. This condition would develop from not implementing the proposed action.

The condition for **Natural Integrity, Apparent Naturalness**, physical measures and type of use measures for non-snow and over-snow primitive uses for **Solitude and Opportunities for Primitive Recreation** are addressed in effects common to all alternatives.

IRA

Outstanding opportunities for solitude or primitive unconfined recreation – Solitude is a personal, subjective value defined as the isolation from sights, sounds, and presence of others and from developments and evidence of humans. Primitive recreation is characterized by meeting nature on its own terms, without comfort and convenience of facilities.

The Ten Lakes IRA #683 areas outside of the WSA have low potential for solitude in the Eureka face, Griffith, and Bluebird Basin areas, with moderate potential in Blacktail, Upper Stahl and Wickiup, Divide, and Drip Creek areas. The areas with low potential for solitude have several intrusions including; private development outside of the IRA, adjacent open roads, and developed campgrounds or trails with high use. This limits the opportunity to experience isolation from sights, sounds, and the presence of others.

The Tuchuck IRA #482 has moderate to high potential for solitude, with few intrusions, one adjacent road, and no recreation developments or trails.

All of Ten Lakes IRA #683 outside of the WSA and Tuchuck IRA #482 are open to over-snow and mechanized uses year round, providing semi-primitive motorized recreation opportunities. During the over-snow season opportunities for primitive recreation are moderate in both IRA as they are open to over-snow motorized uses. In season 3 opportunities for primitive recreation are moderate in Ten Lakes IRA #683, with all trails in the IRAs open to mechanized use. Tuchuck IRA has few miles of trail and opportunities for primitive recreation would be high.

WSA

The Ten Lakes WSA is a unique situation, and differs from congressionally designated Wilderness areas, IRA policy, and direction in the Forest Plan such as recommended wilderness. Regardless of policy or Forest Plan direction, the Ten Lakes WSA will be managed in accordance with language found in the 1977 Montana Wilderness Study Act, awaiting Congressional action (Vol 4-16).

Alternative 1 environmental consequences focus on use measures for solitude and opportunities for primitive WSA Qualities. Many of these qualities have not been maintained at the ‘presently existing (1977) condition’ as required under the Montana Wilderness Study Act and MA1c direction. Roadless Table 10 displays measures by type of use, and the comparison or trend from the ‘presently existing (1977) condition’ as outlined in the Ten Lakes Wilderness character section.

In WSAs, the bar for significant or meaningful change for qualities has been determined by Law and the Courts as ‘the presently existing (1977) condition’. Travel management and mechanized decision will have the most effect on use measure for Solitude and Primitive Recreation WSA qualities and are the focus of this analysis. A trend of stable, offsetting stable, upward, or downward is derived for each measure based on the data values and the threshold for significant change. A downward trend indicates that the current wilderness quality of Solitude for the type of use has declined from the 1977 condition.

Roadless Table 10. WSA Quality Solitude and Primitive Recreation Type of Use Measures in WSA Alternative 1

Type of Use	Measure	1977 Existing Condition	Existing Condition Alt 1	Measure of Trend 1977 to current	Type of Use trend from 1977 to current
Primitive[1] Season 3 (June 1 – Nov 30)	Type of use Intensity or amount Miles of trail	All primitive High Tr. #83/84 Low all others 53.6	All primitive High Tr.#83/84 Low all others 54.6	 Stable Stable Downward	**Stable**
Non-conforming (mechanized) Season 2-3 (June 1 – Nov 30)	Type of use Intensity or amount Miles of trail Acres Open	Motor bike Low (<100) 15.9 12,874	Mechanized Low (<500) 54.6 34,000	 Downward Downward Downward	**Downward**
Over-snow Primitive[1] (Season 1-2)	Type of use Intensity or amount Miles of trail Acres open	All primitive Low <100 53.6 34,000	All primitive Low <100 54.6 34,000	 Stable Downward Stable	**Downward**
Over-snow Non-conforming (motorized/ mechanized) Season 1 (Dec. 1-March 31)	Type of use Intensity or amount[2] Miles designated route Acres open Acres used in open	Motorized 1000-2000 n/a 34,000 3,911	Motoirzed/ mechanized 2000-3500 0 34,000 7,055	 Downward Stable Stable Downward	**Downward**
Over-snow Non-conforming (motorized/ mechanized Season 2-3 (April 1 – Nov. 30)	Type of use Intensity or amount Acres open Acres used in open	Motorized Low <500 21,256 <100	Motorized/ mechanized Low <500 34,000 7,055	 Stable Downward Downward	**Downward**
Overall Trend	**In Wilderness**	**Quality**			**Downward**

1 See WSA effects common to all alternative

2 Amount of use is within the project area, estimated 30-50% would be within WSA

Overall the trend in WSA quality for solitude and opportunities for primitive recreation (use) in Alternative 1, or the existing condition gone down from 1977.

Type of Use Measure Non-Conforming (Mechanized)

Over all this measure has a downward trend, with amount of use likely to continue to increase as mountain and fat biking continues to grow. The miles of trails open to mechanized uses exceeds the aggregate miles open in 1977. Trails open to motorized uses in the WSA in 1977 were portions of Indian Creek #340, Sinclair Creek #88, Gibraltar Ridge #335 and Cat Creek #333. In Alternative 1 all trails are open to mechanized use. Indian Creek Trail #340 and #340A is no longer managed as a NFS trail. This use occurs year round.

Type of Use Measure Over-Snow Non-Conforming (Motorized) Season 1 (12/ 1-3/ 31)

Overall this measure has a downward trend, with an increase in amount of use and an increase in the acres used since 1977 continuing. The acres used in the WSA have slightly increased since 1977, primarily due to vegetation and technology changes. The number of users has likely increased by one third to one half since 1977 (Vol 4-9). These use number are for the entire project area, with an estimated 30 to 50 percent of total users entering the WSA.

Type of Use Measure Over-Snow Non-Conforming (Motorized) Season 2-3 (4/ 1 – 11/ 30)

Overall this measure has a downward trend, as over-snow non-conforming uses are allowed in areas that were restricted within the WSA in 1977. In the 1977 Travel Plan area (closure area 21) motorized use was restricted except on designated routes outside of the WSA, and approximately 9,000 acres of the Eureka face and the southern portion of the WSA below Mt. Gibraltar. These areas are steep and heavily vegetated, and not typically used by snowmobilers.

Snowmobile use on designated route (open roads), outside of the WSA, continues to be allowed as in 1977.

Alternative 2 – Proposed Action

Alternative 2 was the starting point for scoping the project and assessing public opinion. In Season 3 non-conforming mechanized uses, this alternative allows use on two routes in the project area. Mechanized use would be allowed in the WSA on 8.7 miles of trail, a reduction of 7.2 miles from 1977. Of the two routes, only one (Trail #333 and #335) is within the WSA. Mechanized use would be allowed on roads outside of the WSA (See Recreation section)

In Season 1 (motorized from December 1 through March 31) this alternative allows for continued over-snow non-conforming use in areas identified as most used. The exception would be over Therriault Creek route (Trail #87). Over-snow non-conforming (motorized) uses would be allowed in 15,840 acres in the WSA, a reduction of 18,160 acres from 1977.

In Season 2-3 (motorized from April 1 through November 30) over-snow non-conforming uses would not be allowed in this alternative, except on designated routes which are outside of the WSA. This is a reduction of approximately 9,000 acres open to over-snow motorized use in 1977 in WSA.

Direct and Indirect Effects: IRA

Following is the direct and indirect effects of Alternative 2 to roadless characteristics of the IRAs that vary by alternative. See Affected Environment, Existing Condition: IRA, for additional information. The term non-conforming uses only apply to WSAs; the terms of motorized and mechanized are use in the IRA analysis.

Solitude and opportunities for primitive recreation in portions of Ten Lakes IRA #683 outside of the WSA (Blacktail Basin, Eureka Face, and Griffith Creek) would improve slightly, as areas open to over-snow motorized use, and miles of trail open to mechanized uses would be restricted. Solitude in the upper slopes of Tuchuck IRA #482 would also improve slightly with the restriction of over-snow motorized and mechanized uses.

Direct and Indirect Effects: WSA

Following is the direct and indirect effects of Alternative 2, WSA quality measures that vary by alternative. See Affected Environment, Existing Condition: WSA, for additional information.

In WSAs the bar for significant or meaningful change for qualities has been determined by Law and the Courts as 'the presently existing (1977) condition'. Travel management decision will have the most effect on use measure for Solitude and Primitive Recreation WSA qualities and are the focus of this analysis.

Roadless Table 11. WSA Quality Solitude and Primitive Recreation, Type of Use Measures in WSA, Alternative 2

Type of Use	Measure	1977 Existing Condition	Alt 2	Trend of Measures 1977 to Alt 2	Trend of type of use 1977 to Alt 2
Non-conforming (mechanized) Season 3 (June 1 – Nov 30)	Type of use Intensity or amount Miles of trail Acres open	Motor bike Low (<100) 15.9 12,874	Mechanized Low (<300) 8.7 0	 Downward Upward Upward	**Upward**
Over-snow Non-conforming (motorized/ mechanized) Season 1 Dec. 1-March 31	Type of use Intensity or amount Type of use Intensity of amountAcres open Acres used in open	Motorized 1000-2000 Mechanized n/a 34,000 3,900	Motoirzed 2000-3500 Mechanized <100 15,838 6,600	 Downward Downward Upward Downward	**Downward**
Over-snow Non-conforming Season 2- April 1 – May 31	Type of use Intensity or amount Acres open Acres used in open	Motorized Low <500 12,874 <100	Motorized 0 0 0	 Upward Upward Upward	**Upward**
Overall Trend	**In Wilderness**	**Quality measures**			**Upward**

Overall Alternative 2 maintains or has an upward trend in Solitude and Opportunities for Primitive Recreation use WSA quality measure from 1977. The measures having downward trends are increase in number of non-conforming users, and acres used in the WSA in season 1.

Type of Use Measure Non-Conforming (Mechanized)

Over all these measure would be stable, even as biking continues to grow in general. The miles of trail open to aggregated mechanized use is reduced by half from 1977. Trails open in season 3 to motorized uses in the WSA in 1977 were portions of Indian Creek #340, Sinclair Creek #88, Gibraltar Ridge #335 and Cat Creek #333. In Alternative 2, the portion of Gibraltar Ridge #335 and Cat Creek #333 that create a loop opportunity are the only trails that would be open in the WSA, and Blacktail Creek Trail #92 outside of the WSA. Indian Creek Trail #340 and #340a will no longer be managed as a NFS trail. In 1977, only the lower elevations of Sinclair Creek Trail #88 were in area open to this use.

Over-snow mechanized uses (e.g. winter biking) would be restricted to the same areas and routes (trails #333 and #335) in the WSA from April 1 through November 30. Over-snow mechanized uses (such as winter fat tire biking) is a new use in the WSA and is a downward trend from 1977

uses. The State of Montana Motorized trail pass, implemented in 2015, includes uses such as winter biking

In season 3 he loop route open (Gibraltar/Cat) is more technical and not as desirable as the route noted as used in the 1970's and identified in scoping (Bluebird, Wolverine). Overall the number of users would remain similar to 1977 aggregate of motorized and mechanized by restricting use to the less desirable routes. However, this would concentrate non-conforming use in an area where there is currently little use. This would provide a core area in the northern part of the WSA where only primitive uses would be allowed.

Cross country mechanized use in Season 3 would be restricted in the WSA. Over-snow non-conforming mechanized uses would be allowed on the same areas as motorized.

Type of Use Measure Over-Snow Non-Conforming (Motorized and Mechanized) Season 1 (December 1 – March 31)

In over-snow in Season 1, approximately one half of the WSA area would be available only for primitive uses, where as in 1977 the entire WSA area was open to non-conforming uses. The areas that would allow over-snow non-conforming uses in the WSA are basins surrounding the groomed route in Stahl, Clarence, and Bluebird Creeks. The boundary between primitive and non-conforming areas roughly being on ridge tops. Mechanized uses (e.g. winter biking) would be restricted to the same area as motorized in Season 1.

Overall, these measures would have a downward trend in this WSA quality, with the increased amount of use and an increase in the acres used since 1977 continuing. The increased amount of use since 1977 would remain the same as Alternative 1, as most of the currently used areas remain open. Although the total number of acres open is reduced, the areas that would be restricted were not those identified as being most used currently. The exception to this would be the route along Therriault Pass trail #87. This route, which was identified as being used currently, would be restricted. The total acres used in the WSA have increased since 1977, primarily due to technology changes in over-snow machines allowing more users to access difficult terrain.

Type of Use Measure Over-Snow Non-Conforming (Motorized and Mechanized) Season 2-3 (April 1 – November 30)

Overall this measure would have an upward trend, as over-snow non-conforming uses would be restricted after March 31 within the WSA. In the 1977 Travel Plan area (closure area 21), motorized use was restricted except on designated routes, after April 1. Areas outside of the 1977 Travel Plan closure area, where use was allowed in 1977, included approximately 9,000 acres of the Eureka face and the southern portion of the WSA below Mt. Gibraltar. These areas are steep and heavily vegetated, and not typically used by most snowmobilers. In Alternative 2, these areas would be closed to over-snow non-conforming use, providing opportunities for primitive recreation throughout the WSA.

Over-snow non-conforming uses would be restricted in Season 2, restoring the 1977 WSA quality measures of solitude and opportunities primitive recreation.

Snowmobile use on 33.8 miles of designated route, outside of the WSA, would continue as in 1977. However, access would be restricted in the WSA in areas of late season high elevation snow that Ten Lakes is known for. Destinations such as Bluebird Basin and Wolverine Cabin would not be available. The lower elevation designated routes outside of the WSA, would not be as desirable to some, likely resulting in a decrease in use outside of the WSA.

Alternative 3

Alternative 3 was developed in response to multiple-use advocates and individuals wanting more of the project area open for over-snow and mechanized use. This alternative would allow for 16 miles non-conforming mechanized uses on trails in the WSA, and all trails outside of the WSA. This is similar to the aggregate number of miles that was open to motorized uses in 1977 in the WSA.

In Season 1 (motorized from December 1 through March 31), this alternative allows 22,516 acres over-snow non-conforming uses in the WSA. This is a reduction of 11,484 acres from 1977, and an increase of 6,678 acres from Alternative 2.

In season 2-3(motorized from April 1 through November 30), this alternative allows 2,980 acres over-snow non-conforming uses in the WSA. This would be a reduction of 6,020 from 1977, an increase of 2,980 acres from Alternative 2.

Direct and Indirect Effects: IRA

Following is direct and indirect effects of Alternative 3 to roadless characteristics that vary by alternative. See Affected Environment, Existing Condition: IRA, for additional information. Non-conforming uses only apply to the WSA; the terms of motorized and mechanized are used in the IRA analysis.

Solitude and opportunities for primitive recreation in portions of Ten Lakes IRA #683 (Blacktail Basin, Eureka Face, and Griffith Creek) would improve slightly but not as much as in Alternative 2. Acres of over-snow motorized use, and miles of trails open to mechanized uses would be restricted. Solitude in the upper slopes of Tuchuck IRA #482 would remain the same.

Direct and Indirect Effects: WSA

Following is the direct and indirect effects of Alternative 3 WSA Quality measures that vary by alternative. See Affected Environment, Existing Condition: WSA, for additional information.

In WSA's, the bar for significant, meaningful change for qualities has been determined by Law and the Courts as 'the presently existing (1977) condition'. Travel management decisions will have the most effect on use indicators, or perceptions of solitude, and are the focus of this analysis.

Roadless Table 12. WSA Quality Solitude and Opportunities for Primitive Recreation, Type of Use Measures in WSA, Alternative 3

Type of Use	Measure	1977 Existing Condition	Alt 3	Trend of Measure 1977 to Alt 3	Trend of type of use 1977 to Alt 3
Non-conforming (mechanized) Season 3 June 1 – Nov 30	Type of use Intensity or amount Miles of trail Acres open	Motor bike Low (<100) 15.9 12,874	Mechanized Moderate (<500) 16.2 34,000	 Downward Stable Downward	**Downward**
Over-snow Non-conforming (motorized/ mechanized) Season 1 Dec. 1-March 31	Type of use Intensity or amount Type of use Intensity of amount Acres open Acres used in open	Motorized 1000-2000 Mechanized N/A 34,000 3,911	Motorized 2000-4000 Mechanized <100 22,516 7,043	Downward Downward Upward Downwared	**Downward**
Over-snow Non-conforming Season 2 April 1 – May 31	Type of use Intensity or amount Acres open Acres used in open	Motorized Low <500 21,256 <100	Motorized/ mechanized Low <500 2,980 2,817	 Stable Upward downward	**Off set** **Stable**
Overall Trend	**In Wilderness**	**Quality**			**Downward**

Overall Alternative 3 degrades the solitude and opportunities for primitive recreation WSA Quality measure, with an increase in number of users in non-conforming activities in all seasons since 1977.

Type of Use Measure Non-Conforming (Mechanized)

Over all, this measure would trend downward, with amount of use having increased since 1977, and likely to continue increasing as biking continues to grow. The aggregate miles of trail open to mechanized use is similar to mileage open to motorized use in 1977.

However, the location of the specific trails open between 1977 and Alternative 3 was changed to allow for desirable loop opportunities. This would provide a core area, smaller than in Alternative 2, in the WSA where only primitive uses would be allowed.

Trails open to motorized uses in the WSA in 1977 were portions of Indian Creek #340, Sinclair Creek #88, Gibraltar Ridge #335 and Cat Creek #333. In Alternative 3, loop routes would be allowed; from Little Therriault Lake to Blacktail (Trails #84 and #92 in WSA), to Wam Mountain (Trail #77), and the Gibralter/Cat loop as in Alternative 2 (Trails #335 and #333). Indian Creek Trail #340 and #340A will no longer be managed as a NFS trail. In 1977 only the lower elevations Sinclair Creek Trail #88 was in the area open to this use.

Over-snow Season 1 mechanized uses (e.g. winter biking) would be restricted to the same routes and areas as motorized in the WSA. Over-snow mechanized uses is a new use in the WSA and is a downward trend from 1977 uses.

The core area created in the WSA with only primitive uses would be from Green Mountain down to Mt. Gibralter, and up to Wam Mountain. Non-conforming uses would be allowed in the Bluebird Basin and Wolverine cabin area (areas restricted in 1977), and to Wam Mountain.

Type of Use Measure Over-Snow Non-Conforming (Motorized) Season 1 (December 1 – March 31)

Overall this measure would have a downward trend, with the increased amount of use and an increase in the acres used since 1977 continuing. The increased amount of use since 1977 would remain the same, as all of the currently used areas remain open. Although the total number of acres open is reduced, the areas that would be restricted are not those identified as being most used.

Type of Use Measure Over-Snow Non-Conforming (Motorized) Season 2 and 3 (April 1 – November 30)

Overall this measure would have a stable trend, as over-snow non-conforming uses would be restricted to 2,980 acres after March 31 within the WSA. Snowmobile use on 36.8miles of designated route, outside of the WSA, would continue as in 1977. There would continue to be use within the WSA, concentrating users around Wolverine, Therriault lakes, and Stahl Creek. Access would be restricted in areas of late season high elevation snow that Ten Lakes is known for. The lower elevation designated routes outside of the WSA may not be as desirable to some, resulting in a slight decrease in use within the WSA.

Alternative 4

Alternative 4 was developed in response to wilderness advocates and individuals wanting more primitive recreation opportunities. For season 2-3 non-conforming uses (e.g. mechanized or biking from April 1 through November 30), this alternative allows use on trails outside of the WSA, and 3.5 miles of Foundation Camp Trail #77 in the WSA. Trail #77 provides a loop opportunity and access to Wam Lookout. While in the WSA, Trail #77 and Wam Lookout are outside of the Ten Lakes Recommended Wilderness area MA1b.

In Season 1 (motorized from December 1 through March 31) this alternative limits over-snow non-conforming use to designated routes along open roads, Trail #82, a route from Stahl Creek to Therriault Lakes, and areas around Therriault Lakes, Weasel Cabin, and Weasel Lake.

In addition, in this alternative construction of a day use only, four season pavilion at Therriault Lake is proposed. A pavilion would become a destination outside of the WSA, instead of Wolverine Cabin which is within the WSA. The pavilion would also address safety concerns raised during scoping.

In Season 2-3 (motorized from April 1 through November 30) over-snow non-conforming use would not be allowed in this alternative, within the project area. No over-snow use would be allowed after April 1 in the WSA. In the 1977 Travel Plan motorized use was restricted after April 1, except on designated routes outside of the WSA.

Direct and Indirect Effects: IRA

Following is the direct and indirect effects of Alternative 4 to roadless characteristics that vary by alternative. See Affected Environment, Existing Condition: IRA, for additional information. Non-conforming uses only apply to the WSA; the terms of motorized and mechanized are use in the IRA analysis.

Solitude and opportunities for primitive recreation the Ten Lakes IRA #683, except in Blue Bird and Stahl areas, would improve more than any other alternative. Acres of over-snow motorized uses, and miles of trail open to mechanized uses would be restricted more than any other alternative. Solitude in the upper slopes of Tuchuck IRA #482 would improve with the restriction of over-snow uses.

Direct and Indirect Effects: WSA

Following is the direct and indirect effects of Alternative 4 on WSA Quality measures that vary by alternative. See Affected Environment, Existing Condition: WSA, for additional information.

In WSAs, the bar for significant, meaningful change for qualities has been determined by Law and the Courts as 'the presently existing (1977) condition'. Travel management decisions will have the most effect on use indicators, or perceptions of solitude, and are the focus of this analysis.

Roadless Table 13. WSA Quality Solitude and Primitive Recreation, Type of Use Measures in WSA, Alternative 4

Type of Use	Measure	1977 Existing Condition	Alt 4	Trend of Measures 1977 to Alt 4	Trend of type of use 1977 to Alt 4
Non-conforming (mechanized) Season 3 June 1 – Nov 30	Type of use Intensity or amount Miles of trail Acres open	Motor bike Low (<100) 15.9 12,874	Mechanized Low (<100) 3.5 0	Stable Upward Upward	**Upward**
Over-snow Non-conforming (motorized/ mechanized) Season 1 Dec 1-March 31	Type of use Intensity or amount Type of use Intensity of amount Acres open Acres used in open	Motorized 1000-2000 Mechanized N/A 34,000 3,911	Motorized 2000-2500 Mechanized <100 0 0	Downward Downward Upward Upward	**Off set** **Stable**
Over-snow Non-conforming Season 2 April 1 – May 31	Type of use Intensity or amount Acres open Acres used in open	Motorized Low <500 21,256 <100	Motorized/ mechanized 0 0 0	Upward Upward Upward	**Upward**
Overall Trend	**In Wilderness**	**Quality**			**Upward**

Overall, Alternative 4 has an upward trend in Solitude and Opportunities for Primitive Recreation measure, with a reduction in number of users, areas, and routes for over-snow non-conforming uses from the 1977 condition.

Type of Use Measure Non-Conforming (Mechanized)

Over all this measure would trend upward, with the miles of trail available in the WSA reduced to 4.3 miles to Wam Mountain. While in the WSA, this route is not within the RWA MA1b, and was

one identified by the mountain biking community. Restricting use to this one route in the WSA would likely keep use levels low or similar what was occurring on the 16 miles open to motorized use in 1977. Mountain biking would still be allowed on routes outside of the WSA. However, use would not be allowed to destinations and on desirable loops such as Wolverine and Bluebird lakes. The aggregate miles of trails open to mechanized uses would be considerably less than what was open to motorized use in 1977.

This alternative would improve solitude and opportunities for primitive recreation within the WSA than in 1977, as only primitive uses would be allowed within the WSA with the exception of Trail #77 to Wam Mountain.

Type of Use Measure Over-Snow Non-Conforming (Motorized) Season 1 (December 1 – March 31)

Overall this measure would have an upward trend, with a likely decrease in amount of use, and decrease in areas and routes where non-conforming use would be allowed in the WSA in comparison to 1977. The only non-conforming uses allowed in the WSA would be from Therriault Lakes, along a designated route, to Stahl Creek. This would allow for a loop ride, but would restrict use of nearly all of the WSA that was open in 1977 Over-snow mechanized use would be restricted to the same routes as motorized uses in the WSA.

While this alternative has more miles of designated route in the WSA (1.9 mile), the area available is reduced by ninety nine percent from 1977 and Alternative 1. There would be opportunity for primitive recreation throughout the WSA, with the exception of the route from Stahl Creek to Therriault Lakes.

Type of Use Measure Over-Snow Non-Conforming (Motorized) Season 2 -3 (April 1 – November 30)

Overall, this measure would have an upward trend, as over-snow non-conforming uses would be restricted after March 31 within the WSA, and the project area. This would be a reduction of 33.8 miles of designated route, outside of the WSA, that allowed use in the 1977 Travel Plan area. This would be a reduction of 9,000 acres where use was allowed in 1977, in the Eureka face and the southern portion of the WSA below Mt. Gibraltar. These areas are steep and heavily vegetated, and not typically used by snowmobilers.

There would be no over-snow non-conforming uses within or adjacent to the WSA in season 2, improving solitude and opportunities for primitive recreation for this WSA Quality measure from 1977.

Cumulative Effects

Spatial and Temporal Context for Cumulative Effects Analysis

The spatial boundaries for analyzing the cumulative effects to IRA's, RWA and WSA are the project area because these boundaries are established as distinct area by Law, regulation, and the Forest Plan. This analysis area is appropriate to analyze any incremental effects from the actions of this project, in combination with past, present, and reasonably foreseeable activities, because effects of implementing travel planning decisions within the project area would be negligible to IRA's, RWA or WSA outside this analysis area.

The temporal boundaries for use decision are long term, typically in effect for 5-20 years or longer. Implementation of decision regarding travel management can take up to five years to become effective. Past, Present, and Reasonably Foreseeable Activities Relevant to Cumulative Effects Analysis

Past actions have contributed to the existing condition and trends for the IRAs, RWA, and WSA, which is described in the Affected Environment sections and under the No Action alternative.

Past, present, and reasonably foreseeable forest and other activities which, when combined with the activities proposed in the Travel Management Planning Project, could result in cumulative effects to the roadless resources.

In 2009 Congress designated the Pacific Northwest National Scenic trail (PNNST), including routes that are within IRAs, RWA, and the WSA. While the designation did not occur until 2009, the PNNST was first identified in the 1970's (Vol 4-56, 4-57), and has been traveled by cross country user since then. Primitive uses on this trail can be expected to increase over time.. The designation as a National Scenic Trail will likely increase use.

Summer or Season 3

Some activities have no effect on WSA qualities for the following reasons:

The activity's disturbance is too small and isolated to produce an effect
Project design features are applied to limit an activity's effects to a negligible level

Examples of forest activities, which, when carried out consistent with existing regulations, produce no cumulative effects to IRAs, RWA or the WSA resources include:

Personal use firewood cutting;
Personal use Christmas tree harvesting
Special uses\Permits
Invasive Plants management

There are forest activities that could result in cumulative effects to IRAs, RWA, and the WSA including:

Timber Harvest, Prescribed Burning, and Associated Activities

The sights and sounds of timber harvest and associated activities, such as chain saws and other mechanized equipment including skidders, forwarders, de-limbers, and trucks hauling timber, outside of the WSA could carry into areas of Ten Lakes RWA and WSA. Intrusions such as these activities outside of the WSA were identified in 1977 as well as the 2010 UM monitoring as affecting solitude. These areas are located relatively close to development, National Forest

System roads, and active management areas, resulting in possible short term adverse effects on roadless characteristics and wilderness character, particularly opportunities for solitude.

Fuel treatment projects are proposed across the Forest, including within Ten Lakes IRA, RWA, and WSA (Galton Vegetation EIS). Treatments of fuels prior to burning could result in short term impacts to apparent naturalness, where stumps and slash piles are obvious. During pre-treatment and burning operations, short-term impacts to opportunities for solitude could be expected where visitors encounter crews working with chainsaws, helicopters, etc. Treating fuels could result in short-term exposure to invasive plants infestations in burned areas, impacting natural integrity.

In the long term, fuel treatments would benefit natural integrity by restoring a more natural fire regime to areas where wildfires have long been suppressed. Recommended wilderness guidelines include MA1b-GDL-FIRE-02; planned ignitions may be used as a tool for ecosystem restoration purposes where the need is linked to human-induced changes caused by factors such as fire suppression and/or the introduction of non-native species.

Wildfire Suppression

Noise associated with wildfire suppression in Ten Lakes RWA and WSA could have a temporary impact on opportunities for solitude. Additionally, fire lines, helispots, and safety zones, if created by machinery, can remain on the landscape for many years, and could impact natural integrity and apparent naturalness in those areas.

In the Forest Plan, suppression of wildfires in both RWA and WSA is addressed to provide for the preservation of wilderness values. Recommended Wilderness (MA 1b) includes; MA1b-DC-FIRE-01. Fire plays an increased role as a natural disturbance agent; and MA1b-GDL-FIRE-01. Natural, unplanned ignitions may be managed to meet resource objectives. Fire activities can affect the recreation experience by temporarily restricting or closing access to IRAs, the RWA and WSA.

Road and Trail Management

Noise associated with road maintenance and use, by both the public and Forest Service personnel, could carry into certain areas of the Ten Lakes IRA, RWA, WSA and Tuchuck IRA. These areas are located relatively close to development, National Forest System roads, and active management areas. Motorized uses outside of these areas could have an adverse effect on roadless characteristics and wilderness character, particularly for solitude and opportunities for primitive recreation.

Hiking and the use of stock would continue. The continued use of routes by foot and stock would cause minor effects to the landscape’s natural integrity and apparent naturalness WSA qualities where trail erode or weeds become established.

Natural Disturbance Events

Events such as floods, large wind events, and blizzards can create large areas of disturbance resulting in blocked trails or routes, drainage or erosion issues to trail treads, and hazardous conditions, as occurred during the 2015 Marston Fire Complex. Consequently, recreation activities, such as wildlife viewing and accessing trails for hiking, biking, camping, and riding ATVs, may be temporarily prohibited for safety reasons.

Over-Snow

Many roads and trails would be snow covered during the winter months, which would limit their use by motorized vehicles, both by the public and Forest Service personnel. Subsequently, personal use firewood cutting and personal use Christmas tree harvesting, as well as forest management activities, including road and trail management, and invasive plants management, would not occur.

The sights and sounds of timber harvest and associated activities, such as chain saws and other mechanized equipment including skidders, forwarders, delimbers, and trucks hauling timber, could carry into the Ten Lakes WSA, RWA and IRA, the Tuchuck IRA. These areas are located relatively close to development, National Forest System roads, and active management areas, resulting in possible adverse effects on roadless characteristics and wilderness character, particularly opportunities for solitude. Reduced over-snow vehicle opportunities on adjacent public lands, including the Flathead National Forest and Stillwater State Forest, could result in increased use in the project area, with associated effects including conflicts of uses, concentration, or displacement of users.

Cumulative Effects from the Implementation of the Alternatives

Alternative 1

Several of the above-listed present and reasonably foreseeable activities could result in cumulative effects to the roadless resources (WSA, RWA, and IRA) during the summer months, in combination with the activities proposed in the Ten Lakes Travel Management Project; timber harvest projects could have cumulative effects on over-snow use.

Alternative 2

Several of the above-listed present and reasonably foreseeable activities could have cumulative effects on the roadless resources during the summer months, in combination with the activities proposed in the Ten Lakes Travel Management Project; timber harvest projects could have cumulative effects on over-snow use.

Alternative 3

Several of the above-listed present and reasonably foreseeable activities could have cumulative effects on the roadless resources during the summer months, in combination with the activities proposed in the Ten Lakes Travel Management Project; timber harvest projects could have cumulative effects on over-snow use.

Alternative 4

Several of the above listed present and reasonably foreseeable activities could have cumulative effects on the roadless resources during the summer months, in combination with the activities proposed in the Ten Lakes Travel Management Project; timber harvest projects could have cumulative effects on over-snow use.

Cumulative Effects Finding

There could be cumulative effects to the roadless resources from present and reasonably foreseeable actions including timber harvest, prescribed burning, and associated activities; wildfire suppression; road and trail management; and activities on private, state, and federal lands in association with the activities in **Alternatives 1, 2, 3,** and **4** during season 3. There could be cumulative effects from timber harvest projects and activities on private, state, and federal lands

in combination with the activities proposed in **Alternatives 1, 2, 3, and 4** during seasons two and three.

Regulatory Framework Findings

Land and Resource Management Plan

The Kootenai National Forest Land and Resource Management Plan (LRMP) provides desired conditions, objectives, standards, and guidelines for IRAs, RWA, and the WSA. This project is consistent with the relevant Forestwide, MA, and/or GA goals and desired conditions listed in the introductory regulatory framework and below. The following are applicable to the actions in this project:

FW-STD-IRA-01. Within inventoried roadless areas, outside of the state of Idaho, the 2001 Roadless Area Conservation Rule (36 CFR 294 Subpart B, published at 66 Fed Reg. 3244-3273) shall apply.

How addressed: The project is designed in exact accordance with the standard, as no timber harvest or road building is proposed.

FW-GDL-IRA-01. Wilderness potential will be maintained on 16 percent of the inventoried roadless areas on the Forest. (This refers to those IRAs that are allocated to RWA or MA1b).

How addressed: The project is designed in accordance with this guideline, maintaining the wilderness potential in the Forest Plan allocated recommended wilderness area MA1b. The Ten Lakes WSA and RWA remain suitable for inclusion in the National Wilderness Preservation System across all alternatives. Travel management proposed actions would slightly improve the capability evaluation or Opportunities for Primitive Recreation (FP appendix C), with reductions in over-snow motorized routes or area.

MA1b-STD-AR-01. Motor vehicle use is not allowed and

MA1b-STD-AR-02. Mechanized use is not allowed (e.g., mountain bikes and other wheeled equipment).

How Addressed; Ten Lakes RWA is entirely within MA1c WSA, they share the same boundary except in the northeast lobe. Regardless of policy or Forest Plan direction, the Ten Lakes WSA will be managed in accordance with language found in the1977 Montana Wilderness Study Act, awaiting Congressional action. Management area hierarchy in the Forest Plan is that MA1c, based on the 1977 legislation, supersedes any conflicting direction in any other MA. The project will be consistent with Forest Plan standard if it is designed in accordance with standards and guidelines for MA1c.

MA1c-DC-AR-01. This area primarily offers opportunities for primitive recreation, although uses established and allowed prior to the legislation are retained if they maintain the wilderness character and the potential for inclusion in the National Wilderness Preservation System that existed in 1977.

How Addressed; Alternative 1 degrades the wilderness character that existed at the time of WSA designation (1977) primarily due to uses established (over-snow vehicle) are currently allowed after April, which was not allowed in 1977. Alternatives 2, 3 and 4 propose changes to the type of uses allowed, and to what extent they are allowed during the year. Alternatives 2, 3 and 4 make progress towards offering a variety of primitive recreation opportunities and uses established and

allowed prior to 1977, including mechanized and over-snow motorized uses. Proposed changes maintain or make progress toward this desired condition over the long term, even though the project or activity would adversely affect progress toward other desired conditions (see recreation section).

MA1c-STD-AR-01. Motor vehicle use (excluding over-snow vehicle use) is not allowed. Over-snow vehicle use is not allowed except where it maintains the wilderness character as it existed at the time of designation (1977) and the potential for inclusion in the National Wilderness Preservation System and

MA1c-STD-AR-02. Mechanized use is not allowed (e.g., mountain bikes and other wheeled equipment), except where it maintains the wilderness character as it existed at the time of designation (1977) and the potential for inclusion in the National Wilderness Preservation System.

How Addressed: No alternative includes wheeled motor vehicle use (non-conforming motorized). The current 2015 MVUM displays all allowed wheeled motor vehicle uses. All alternatives are compared to the 'presently existing (1977) condition for other types of uses. Alternatives vary in their consistency with the Montana Wilderness Study Act, to maintain the 'presently existing (1977) condition. Alternative 1 and 3 have a downward trend in solitude and opportunities for primitive recreation from the 'presently existing (1977)' wilderness character of the area. Alternative 2 has a stable trend in solitude and opportunities for primitive recreation from the 'presently existing (1977) wilderness character, primarily due to restrictions in over-snow motorized use past April 1. Alternative 4 has an upward trend in solitude and opportunities for primitive recreation quality.

The outputs of this Travel Management planning project will be an over-snow vehicle use map (OSVUM), and special orders for mechanized uses. The effectiveness of travel management decisions relies upon education, voluntary compliance, monitoring uses of the area, and re-evaluation if non-compliance occurs.

Federal Law

- The Montana Wilderness Study Act of 1977 (PL 95-150) S393
- Pacific Northwest National Scenic Trail (Omnibus Act of 2009 PL 111.11)

The Ten Lakes WSA has been carved out by Congress for special protection. Public demand for motorized or mechanized uses, the balancing of competing interests, and "managed growth" are not the governing standards under the Montana Wilderness Study Act. Instead, Congress has directed the Forest Service to maintain the 1977 wilderness character of the area. That is the primary duty of the Forest Service, and it must guide all decisions as the first and foremost standard of review for any proposed action (Vol 4-17).

Once it is determined that the proposed action will maintain that 1977 wilderness character, and only at that point, the Forest Service may engage in its traditional balancing-of-interests analysis (Vol 4-17). Wilderness Character is described as improved, preserved, or degraded by the actions managers take or not take (Vol 4-1). WSA quality measures for each alternative, include the no action, were evaluated against the 'presently existing (1977) existing condition.

The Pacific Northwest National trail designation brings with it increased knowledge of the trail and increased use. The national trail designation increased the potential for users to come from farther away, thereby increasing the potential trail user base.

Regulation and Executive Orders

Regulation and Executive Orders (EO):

- 36 CFR Part 294 Special Areas, Roadless Area Conservation; Final Rule
- Executive order 11644, as amended by Executive Order 11989
- 36 CFR Part 212 Travel Management

No alternative proposes any vegetation management, road construction or reconstruction. All alternatives therefore comply with 36 CFR 294 Roadless Area Conservation rule.

When designating public off-road motor vehicle use on National Forest System trails and areas on National Forest System lands, the 2005 Travel Management Rule requires Forests to consider effects on National Forest System natural and cultural resources, public safety, provision of recreational opportunities, access needs, conflicts among uses of National Forest System lands, the need for maintenance and administration of roads, trails and areas that would arise if the uses under considerations are designated; and the availability of resources for that maintenance and administration.

Irreversible and Irretrievable Commitments Common to Action Alternatives

An “irreversible” commitment of resources refers to the loss of production or use of a resource due to a land use decision that, once executed, cannot be changed. An “irretrievable” commitment of resources applies to losses of production or use of renewable resources for a period of time. The Ten Travel Management Plan would not result in any irreversible or irretrievable commitment of roadless character, as no road construction or reconstruction is proposed.

Degree to Which the Purpose and Need for Action is Met

The resources being discussed are part of the purpose and need for action. Below is the degree to which the alternatives meet the purposed and need for action relevant to the resource.

Roadless Table 14 Summary Comparison of How the Alternatives Address the Purpose and Need

Purpose and Need	Indicator/Measure	Alt 1	Alt 2	Alt 3	Alt 4
Maintain presently existing (1977) wilderness character	Trend in Wilderness Character – summary of all WSA qualities	No, Degrade	Yes, Maintain	No, Degrade	Yes, Improve
Potential for inclusion in the NWPS	Capability (FP Appendix C)	Suitable	Suitable	Suitable	Suitable
Develop summer and winter travel plans for WSA	Travel Plan MVUM, OSVUM, and special orders	No OSVUM	Complete	Complete	Complete

Degree to Which the Alternatives Address the Issues

Below is a summary of the degree to which the alternatives address the issue(s) relevant to the resource. The indicator of use is one element of WSA quality of Solitude and Opportunities for Primitive Recreation, and may not reflect the overall trend in the WSA quality.

Roadless Table 15. Summary Comparison of How the Alternatives Address the Key Issues

		Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4
Issue 1: Effects to Wilderness Character	Trend in Wilderness Character – summary of all WSA qualities	Degrade	Maintain	Degrade	Improve

Recreation

Introduction

This analysis addresses the potential effects of Travel Management on recreation opportunities in the project area. The primary access to the Project Area (PA) includes various access points off the Grave Creek Road #114 and Therriault Lakes Road #319, Sinclair Road #7077 and Blacktail Trail #92. Recreation activities in the project area include but are not limited to hiking, fishing, stock, biking, camping, hunting, gathering forest product, snowmobiling and cross country skiing.

Recreation opportunities are directly related to the purpose to develop a travel management plan (winter and summer) for the Ten Lakes Wilderness Study Area. The type of access (motorized, mechanized, or primitive) directly effects the recreation opportunities available. Issues identified includes effect to the relationship with people with this environment and how changes in use will affect different users.

Issues surrounding the way people recreate on public lands in the Ten Lakes area has been ongoing since the 1940-60's, after harvesting and road building due to a Spruce budworm epidemic. In 1962, the Ten Lakes Scenic Area (6,600 acres) was designated by the Regional Forester, it was noted that "The Ten Lakes is a small area of beautiful alpine and subalpine scenery with a high potential for recreation. Local interest is increasing rapidly" (Vol 4-28). The Scenic Area was expanded in both the 1987 and 2015 Forest Plans, and includes 15,438 acres today. Also see Roadless Ares section.

Regulatory Framework

Federal laws regulations, and policy that guide access, or road and trail management, of the Kootenai National Forest in the project area include:

- **National Trails System Act of 1968** (P.L.90-543), (82 Stat.919, as amended, 16 U.S.C. 1241 (Note), 1241-1249. The act establishes a National Trail System containing national recreation, scenic, historic, and connecting or side trails for the purpose of providing trail recreation opportunities. It also encourages the use of volunteers in the trail program.
- **National Forest Roads and Trails Act** (78 Stat.1089, as amended; 16 U.S.C. 532-538). This act recognizes that construction and maintenance of an adequate system of roads and trails within and near National Forests is essential to meeting the increasing demands for timber, recreation, and other uses.
- **The Montana Wilderness Study Act** (PL 95-150) S393 - passed by Congress, required the study of certain lands to determine their suitability for designation as Wilderness in accordance with the Wilderness Act of 1964.
- **Pacific Northwest National Scenic Trail** (Omnibus Act of 2009 PL 111.11) designated by Congress as the Pacific Northwest National Scenic Trail in 2009. The Congressional designated route includes trails in the project area. Completion of a management plan is currently under way.
- **Surface Transportation Assistance Act of 1978**, as amended (23 U.S.C.101a, 201-204; P.L.95-599). This act establishes criteria for Forest highways and defines Forest roads and Forest development roads and trails.
- **36 CFR 261** (provides the current legal foundation for restricting different uses and occupancy of the National Forests).

- **Forest Service Manual 2350** (Trail, River and Similar Recreation Activities) and 7723(Trails).
- **Forest Service Handbook 2309.18** (Trails Management Handbook).
- **Forest Service Handbook 2309.13** (Recreation Management)
- **36 CFR Part 212 Travel Management (TM)** – Regulations concerning the use of motorized vehicles.

When designating public off-road motor vehicle use on National Forest System trails and areas on National Forest System lands, the 2005 Travel Management Rule requires Forests to consider effects on National Forest System natural and cultural resources, public safety, provision of recreational opportunities, access needs, conflicts among uses of National Forest System lands, the need for maintenance and administration of roads, trails and areas that would arise if the uses under considerations are designated; and the availability of resources for that maintenance and administration. TM includes motorized (subpart B) and over-snow motorized (subpart C) The TR implements both Executive Order (EO) 11644, as amended by EO 11989 and other authorities we have for managing public use on roads.

Federal off-road vehicle (ORV) policy was established by Executive Order (EO) 11644 in 1972, (and amended by EO 11989 in 1977) to "… ensure that the use of off-road vehicles on public lands will be controlled and directed so as to protect the resource of those lands, to promote the safety of all users of those lands and minimize conflicts among the various users of those lands." In response to this EO and regulations from 36 CFR 295 (1973), the KNF published its first Travel Plan in February 1977. This travel plan identified 'National Forest land designated open', 'Area closed to all motorized vehicles', and 'area with restrictions or closures', as well as designated roads open or with restrictions to motor vehicle use. The Travel plan index listed reasons for restrictions including: elk calving, winter game range, primitive recreation, and fragile soils. The 1977 and 1978 Travel Plans included public involvement and displayed location where motor vehicles could be operated without fear of damaging forest resources (Vol 4-93).

Use of Motor vehicles regulations were updated in 1978 to include publication of maps and monitoring effects of vehicle use off forest development roads. Forest Supervisors in the Northern Region were delegated the responsibility to monitor the effect of off-road vehicle use in 1979. Comments on a draft copy of the KNF off-road vehicles (ORV) monitoring plan indicate little ORV use, and little resource or public safety concerns with ORV use at that time. These early Travel Plans are used to define the 'presently existing 1977' condition.

KNF Land Management Plan (USDA Forest Service 2015)

The forest plan provides overall guidance for the management of the lands on the KNF. It describes the goals, desired conditions, and objectives toward which the management of the land should be directed. And it establishes standards and guideline to help achieve or maintain the desired condition or conditions, to avoid or mitigate undesirable effects, or to meet applicable legal requirements.

The Kootenai National Forest Plan provides the foundation for the current travel management plan. The Forest Plan identifies both Forestwide and management area (MA) goals and standards for recreation management. Forestwide desired conditions include:

FW-DC-AR-05. A variety of motorized and non-motorized winter and summer recreation opportunities are available. Well-designed and maintained trailheads exist and offer adequate

parking and turnaround areas. Trails are designed and maintained for the given users (saddle stock, snowmobiles, OHV users, hikers, mountain bikers, etc.).

FW-DC-AR-08. Motor vehicle use designations are complete, accurate signing is in place, and motorized vehicle use maps are available. User conflicts are reduced. Loop opportunities are a part of both the road and trail systems. Community involvement is promoted and user awareness programs (educational and informational) enhance the recreational experience. Partnerships are developed with various interest and user groups to participate in evaluation, planning, and maintenance programs for both roads and trails. Easements are obtained to help provide access to NFS lands.

MA specific desired conditions and standards or guidelines that apply include:

MA1c-DC-AR-01. This area primarily offers opportunities for primitive recreation, although uses established and allowed prior to the legislation are retained if they maintain the wilderness character and the potential for inclusion in the National Wilderness Preservation System (NWPS) that existed in 1977.

MA1c-STD-AR-01. Motor vehicle use (excluding over-snow vehicle use) is not allowed. Over-snow vehicle use is not allowed except where it maintains the wilderness character as it existed at the time of designation (1977) and the potential for inclusion in the National Wilderness Preservation System.

MA1c-STD-AR-02. Mechanized use is not allowed (e.g., mountain bikes and other wheeled equipment), except where it maintains the wilderness character as it existed at the time of designation (1977) and the potential for inclusion in the National Wilderness Preservation System.

MA3-DC-AR-05. Recreational, Geological, and Scenic Areas provide motorized and non-motorized recreation opportunities. These areas provide opportunities for non-motorized use, motor vehicle use on designated roads and trails, and over-snow vehicle use.

MA3-GDL-AR-02. Motor vehicle use is allowed in Geological, Recreational, and Scenic Areas.

MA3-GDL-AR-04. Mechanized use (e.g., mountain bikes and other wheel equipment) is allowed in Geological, Recreational, and Scenic Areas.

MA5a, b, c-DC-AR-01. These areas provide more remote and undeveloped recreation experiences largely through the management of the various trail systems (i.e., motorized and non-motorized).

MA5a-GDL-AR-02. Additional routes and areas should not be designated for motor vehicle use in MA5a.

MA5a, b, c-GDL-AR-05. Mechanized use is allowed (e.g., mountain bikes and other wheeled equipment).

Resource Indicators and Measures

The 2005 Travel Management Rule changed the legal mechanism for regulating off-route travel by designating routes and areas for motor vehicles. The rule mandates that all national forests complete a travel management review for summer and over snow motorized road and trail uses, identify the appropriate class of vehicles for use on specific roads and trails, and specifically designate which routes are open to motor vehicles. Implementation of the Travel Management

Rule is accomplished through completion of travel management revision through a public process, and published a motor vehicle use map (MVUM) or over-snow motor vehicle use map (OSMVUM) (36 CFR 212.56). After the Record of Decision, an OSMVUM and Special Orders for mechanized uses would be published.

According to the terms of a 2007 settlement agreement between various entities and the US Forest Service regarding the Agency's management of Montana's Wilderness Study Areas, "*The Forest Service agrees to use its good faith best effort to issue travel management decisions (including decisions covering both winter and summer use) for all WSAs [wilderness study areas] by December 31, 2009*". Mechanized uses are also addressed, as they effect wilderness qualities of the WSA (see Roadless Areas section).

The 2015 Rexford/Fortine MVUM addresses summer wheeled motorized uses. There are no changes proposed to the current summer motorized road and trail designations in the Ten Lakes Travel Management Project.

Recreation Table 1. Recreation and Travel Management Indicators and Measures for Assessing Effects

Resource Element	Resource Indicator	Measure	Used to address:	Source
Recreation	Mechanized Type of use and season allowed	Miles of trail by type of use Acres by type of use	Issue	Montana Wilderness Study Act MA1c-STD-AR-2 MA3-GDL-AR-4 MA5a,b,c-GDL-AR-5 Scoping
Travel Management	Over-snow motorized Type of use and season allowed	Miles of trail by type of use Acres by type of use	Purpose and need Issue	Travel Management Rule FW-DC-AR-08 MA1c-STD-AR-1 MA3-GDL-AR-2 MA5a-GDL-AR-2 Scoping

This analysis will address over-snow motorized uses under the Travel Management Rule (36 CFR 212), and mechanized uses year round. While there are no changes proposed to primitive (hiking, stock, snow shoe) or wheeled motorized uses, they are displayed in tables in Chapter 3 for comparison.

Methodology

This analysis displays the effects of proposed changes to over snow motorized and mechanized routes and areas in the Ten Lakes Project Area. Analysis methods include the use of Forest Service databases and geographic information system (GIS) coverage for road and trail information, as well as information from the public. Maps and details on individual trails are available at the Eureka Ranger Station.

In 2009 the Galton Project ID Team utilized a screening process developed to be consistent with the criteria for designation of roads, trails and areas, contained in Section, §212.55 of the 2005 Travel Management Rule and E.O. 16446. The Travel Analysis Report (Vol 4-87) documented

information and analyses used to identify opportunities for motorized use on roads, trails and areas.

The Travel Analysis Report identified benefits and risks for the larger Galton project area associated with; motorized over-snow vehicle use, wildlife security, NFS Trails, minimum road system, motorized OHV trails, intermittent stored roads, designating routes for motorized use. Opportunities were then identified that addressed the risks and benefits. Some of the opportunities identified, relating to the purpose and need for the Ten Lakes Project, from the Travel Analysis Report are carried forward in alternatives. In 2016 the travel management interdisciplinary team updated information on routes and areas for over snow uses (Vol-4-74).

Until route designations are completed and over-snow areas identified for the Project area, the Rexford/Fortine MVUM and existing travel management policies, restrictions, and orders remain in effect (Vol 4-43, 4-75).

Assumptions and Limitations

Acres and miles used in the analysis are from GIS, and may not necessarily match other sources. For example the GIS length of a trail may be different than a wheeled or GPS length.

Travel management in this analysis that may affect soil, watershed, vegetation, and other forest resources is largely confined to trail disturbances (change in use type), and accompanying weed infestations, visual impact from trails, and displacement of or effects to wildlife. Change in type of use is addressed in this analysis. See Wildlife section for effects to wildlife. No alteration or physical engineering of trails (relocation, reconstruction, or improvements) which may affect water movement, soil displacement and vegetation is proposed in the TLTM project.

The 2009 Travel Analysis Report (TAR) was based on 1987 Forest Plan desired conditions, standards and guidelines, which may no longer apply. Information presented in the TAR on resources remains valid.

Estimates of use numbers and intensity, while based on the best information available, are rough; the magnitude of the change in relative terms is more accurate than the actual number estimated for use. Descriptive terms such as high or low use, compares use within the project area only.

Some of the historic documentation and information reviewed was inconsistent, not supported by data, or contradicted other information. Specific documents used in this analysis is cited and included in the project record. All documents reviewed, but not specifically cited is available for review at the Eureka Ranger Station.

Winter biking is a relative new use in Montana. According to the International Mountain Biking Association (Vol 4-59), groomed routes and areas with frozen conditions with between 1-5 inches of snow are the best conditions.

Designated National Forest Trails may include both trails, closed roads, or open roads. Some routes are dual designated as a road and trail. For example NFS Trail #77 Foundation Creek includes portions of Closed Roads #7121 and 7035. NFS Sno-Trail 314, includes portions of both Open Road #114 and 319.

Designation is specific to travel management (TM Rule), or motorized travel. Designated routes for motor vehicle use (trails or roads) are specifically shown on maps. Mechanized use on routes is not specifically show on maps, but accounted for in trail miles in tables. Where a route (trail or road) is in an area open to mechanized uses, the trail is also open.

Primitive *open* is used to indicate routes and areas where primitive uses area allowed. Primitive *quiet* is used to indicate routes and areas where only primitive uses are allowed, or motorized uses are restricted. Large quiet areas (with no motorized uses) may enhance the recreation experience for many user groups such as hunters, fisherman, hikers, stock users, and mountain bikers. These areas allow the user to experience solitude and quiet in a more remote recreation setting. Many non-motorized recreation users feel that their expectations for a quiet recreation experience cannot be met in areas where motorized recreation occurs.

The 'type of use' terms used in this analysis are defined in the glossary. The season dates used are: season 1 (December 1 – March 31) and season 2 (April 1 –May 31) are specific to this analysis and come from two sources; the 1977 Travel Map (WSA existing condition) and public scoping for late season over-snow opportunity. Season 3, or summer-fall, (June 1 – November 30), is when there is no snow, or snow depths are not typically adequate for uses. While snow may remain past June 1, or the end of the over-snow season, the dates of the season are what the OSMVUM or Special Closure Order would be written for. In other words the calendar date of the season determines which uses could occur, not whether or not there is snow on the ground.

Affected Environment

Spatial and Temporal Context for Effects Analysis

The spatial boundary for analyzing the effects to recreation is the project area because the project area is isolated, with relatively few access points. The temporal boundaries for travel management decision are long term, typically in effect for 5-20 years or longer.

Existing Condition

The Analysis Area has been strongly influenced by alpine and continental glaciers. At the higher elevations, alpine glaciers created steep bedrock headwalls, valley troughs, cirque basins, and rocky ridges. At the lower elevations, continental glaciers generally scoured the ridge tops and noses and filled the side-slopes and valleys. Terraces and rolling topography exist along the base of the mountains. Elevation ranges from less than 2600 feet near the town of Eureka to 7830 feet at the top of Poorman Mountain near the Canadian Border.

The abundance of lakes also draw users to the project area including; Baboon, Paradise, Bluebird, Wolverines, Rainbow, Big and Little Therriault, and Weasel lake. Several smaller unnamed lakes, rivers (portions of the Tobacco and the United States portion of the Wigwam), major streams (Grave Creek and its tributaries), and numerous smaller streams scattered throughout the Project Area. These lakes, rivers, and streams offer a variety of recreation opportunities and are often a destination for forest visitors. Access by open road to high mountain lakes (5500 feet plus in elevation) such as Big and Little Therriault and Weasel Lakes is a unique feature of the area.

Primary use of the Project Area is by local residents, with regional (primarily Flathead Valley), and international (Canadian) visitors. Communities near the planning area such as Rexford, Eureka, Fortine, Stryker, and Trego have strong traditional ties with use of the Ten Lakes Area. Data from the National Visitor Use Monitoring (NVUM) surveys (Vol 4-76, 4-77, 4-78) indicate that the majority of KNF visitors (over 90 percent) are satisfied with their recreation experiences. However, there can be exceptions when users with different recreation expectations interact.

Conflicts over the use of National Forest System lands arise from differing opinions about appropriate uses on these lands. The nature of conflicts represented by "physical" confrontations between users in the field is not common. In the 2009 TAR conflict, or safety issues between snowmobilers and cross-country users was noted. There was noted infrequent encounters, such

as hikers or stock user being surprised by a fast moving mountain bike. In the 2010 monitoring, three instances of motorized evidence were recorded on Trail #339, which closed to motorized use. All were identified as single track motorbike. A single record of mechanized use was observed (Vol 4-29).

However, this is generally not the nature of use conflict as it relates to travel planning. Conflict in travel planning is more about forest users and their personal values. Personal values shape preferences of which activities are appropriate, desirable or important to those visitors.

Based on these preferences, some Forest visitors would tend to feel that their experience is disrupted by activities that they do not feel are appropriate or desirable. Conversely, other Forest visitors would feel offended or defensive when the activities they enjoy are identified as inappropriate or undesirable by others. The conflict related to travel management planning is most often characterized as motorized uses versus non-motorized or quiet uses. The discussion of mechanized uses in WSAs, recommended wilderness, and Wilderness has also increased.

Executive Order 11644, as amended by E.O. 11989, referenced in the 2005 Travel Management Rule, requires the Forest Service to consider the impacts of noise in the management of motorized recreation. Additionally, the Travel Management Rule requires that decisions to designate roads, trails, and other areas for motorized use consider the compatibility of motor vehicle use with existing conditions in populated areas, including sound (Vol 4-79).

The Forest Service has the authority to enforce noise standards set by other federal agencies (typically EPA or OSHA), and by states according to 36 CFR 261.15 (d). The Forest Service also has the authority to set specific limitations through Special Order 36 CFR 261.55 (d); however, there are currently no special orders in place for noise restrictions. Montana State Code 23 2 634 regulates snowmobile noise. National Forest roads and trails are considered public travel ways under this law, and are covered by this requirement.

Travel management decisions have the potential to change the types of vehicles that use certain on trails or areas in the project area. Motorized vehicles can impact the quality of users' experience, detracting from the natural setting they wish to enjoy. Many people enjoy recreating on public land to escape the noise of modern civilization. The natural sound-scape and tranquility is a condition that they seek as part of their recreational experience. The project area is affected by noise in some way, whether it is ambient noise from wind in the trees, water flowing over rocks, or human created noise from airplane flights, motorized vehicles and equipment, or the sounds of gunshots. In 2010 monitoring (summer only), the majority of noises recorded were from airplanes (59%), followed by gunshots (18%). Most noises were heard clearly or were loud and close (65%), while the remaining 35% were barely audible or variable. Gunshots and chainsaws were the only types of noise that lasted more than 10 minutes, with the majority of intrusions lasting for 1-5 minutes (53%) (Vol 4-25).

Noise carries differently in the natural environment depending on topography, vegetative cover, ambient conditions, and snowpack. Flat terrain with little vegetative cover and crusty snowpack creates conditions for sound to carry longer distances than does terrain with more relief, vegetative cover and either fresh snow or no snow cover (Vol 4-80).

Currently trails and roads are maintained and administered by district and forest crews. Restrictions of wheeled motor vehicle on trails and cross country have been in place since 2001, and in general are well known. Illegal motor vehicle use on trails, while infrequent, does occur. In 2010 monitoring noted single track motor bike tracks. Education and enforcement of restriction is primarily through the MVUM, district offices, field crews, and the Intranet.

Effects to natural and cultural resources, as well as soil, watershed, vegetation, and wildlife are address in other reports.

Recreation

The Ten Lakes project area provides forest users a variety of recreation opportunities from developed campgrounds to dispersed, remote, backcountry opportunities. Developed sites include Big and Little Therriault Campgrounds (16 campsites), Horse Camp, Birch Creek Recreation sites, Mount Wam Lookout Rental, Weasel Cabin, and Wolverine Cabin. There is an additional lookout on Stahl Peak. Several dispersed sites along Grave Creek Road #114 include but are not limited to: Bunchgrass, Clarence Creek, Meadow, Weasel Lake, and Weasel Creek. In 2010, twenty seven dispersed sites were inventoried in Ten Lakes IRA (Vol 4-25). Of the twenty seven campsites in Ten Lakes IRA, most (67%) were located around Wolverine Lakes and Bluebird Lake. No sites were inventoried in Tuchuck IRA.

The pavilion at Birch Creek Recreation Area serves dual purpose as home to the groomer in the winter and a picnic shelter in the spring, summer, and fall. A toilet was installed at Birch Creek between the years of 1983-1987, with the pavilion constructed in 2009. Mount Wam Lookout is a managed recreation cabin rental, and is available for reservation. Stahl Lookout is not managed as a recreation cabin rental but is used by public on a first come, first serve basis. Both Stahl and Mount Wam are accessed by five mile (one-way) hikes. The interconnected trail system makes it possible to take multiple routes to access the two lookouts.

Weasel and Wolverine cabins are not managed as recreation rentals, but are used by the public on a first-come, first-serve basis. This use is year round. Weasel Cabin is easily accessed by road. Wolverine cabin is accessed by a 2.5 mile (one-way) hike.

Those with disabilities have the opportunity to participate in programs that are open to all. Federal agencies are not required to fundamentally alter programs to facilitate such participation. All people, including the elderly or those with disabilities, may use their motor vehicles on roads, trails, and areas designated for such use and identified on the MVUM. Restrictions on motorized use that are applied consistently to everyone are not discriminatory. A wheelchair or mobility device, including one that is battery-powered, is a device that is designed solely for use by a mobility-impaired person for locomotion and that is suitable for use in an indoor pedestrian area (Title V, sec. 507c, of the ADA;36 CFR 212.1). A disabled person who requires use of a wheelchair or mobility device may use a wheelchair or mobility device that meets the definition in the preceding paragraph anywhere foot travel is permitted (FSM 2353.05 and Title V, sec. 507c, of the ADA). Wheelchairs and mobility devices are not defined as motor vehicles under Forest Service regulations (36 CFR 212.1) (Vol 4-81).

Recreation facility and trail work is reviewed annually, and prioritized according to needs across the district and in the project area. The priorities considered include health and safety concerns, public use, lookout or cabin access, and they can change depending on annual situations. Health concerns in the project area could include cleanliness of restrooms. Recreation facilities in the project area are inspected yearly to identify and address safety concerns, such as hazard trees in developed sites or within recent burn areas.

The project area includes a high percentage of summer primitive and semi-primitive non-motorized Recreation Opportunity Spectrum (ROS). The only summer motorized uses allowed (2015 MVUM) within the project area are on roads open to all motor vehicles. Most of the forest was closed to cross country wheeled motorized uses, including the project area, in 2001 through a region wide OHV EIS and Special Forest Orders.

In addition nearly one half of the project area is in MA1c Montana Wilderness Study Area and MA1b Recommended Wilderness. MA1c guidelines include; summer recreation opportunities and experiences are consistent with the ROS classification of semi primitive non-motorized. The project area includes a high percentage of winter semi-primitive motorized ROS. MA1c guidelines include; winter recreation opportunities and experiences are consistent with the ROS classification of semi primitive motorized (MA1c-DC-AR-03).

Overall warming is expected to reduce expected season length and the likelihood of reliable winter recreation opportunities. Some areas may become unsuitable for snow-based recreation due to warmer temperatures or increased likelihood of precipitation as rain. Higher elevation sites may not experience as large a transition to more precipitation as rain, but sites will see greater variability in season length. Warmer temperatures and increased precipitation as rain may increase availability of water in the near term during winter, but warmer temperatures may also reduce the number of days per season when snowmaking is viable.

Snow-based recreationists have moderate capacity to adapt to changing conditions given the relatively large number of winter recreation sites in the region. For non-developed or minimally developed site activities (e.g., cross-country skiing, backcountry skiing, snowmobiling, snowshoeing), recreationists may seek higher elevation sites with higher likelihoods of viable seasons. Although developed downhill skiing sites are fixed improvements, potential adaptations include snowmaking, higher elevation development, and new run development. Changes to Northern Rockies sites relative to other regions may also be important; if other regions see greater relative effects of climate on snow-based recreation, recreationists may view Northern Rockies sites as a substitute for sites in other regions (e.g., the Southwest). (Vol 4-88).

Travel Management - Trails

Recreation users (including hikers, mountain bikers and snowmobilers) access the higher peaks and ridges for the challenge of doing so and for the views those locations provide. Popular destinations include; Poorman Mountain, Green Mountain, Mount Wam, Stahl Peak, St. Claire Peak, two peaks of Therriault Pass, Mount Gibralter, Deep Mountain, and the ridges associated with them. These peaks are accessed via existing trails or are relatively close to existing trails. Less accessible peaks include; Independence Peak, Ksanka Peak, Mount Barnaby, Mount Scotty, and Bald Mountain. These peaks appeal to the more adventurous recreationists. Subalpine larch and White bark pine can be found at these higher locations.

There are approximately 88 miles of National Forest System trail in the Project Area. All 88 miles are open to hiking, stock, and mechanized use (mountain biking). Hiking is the dominant use, followed by stock. Mountain biking is a minor but popular use. Trails within the project area that are popular bicycle loop trails are shared with hikers and horse riders. Trails specifically mentioned in comments as “exemplary trails” by mountain bike users include; Stahl and Wam lookouts (Trails 77, 81), and Wolverine/Bluebird lakes (Trails 84, 339, 83). The Travel Management Rule and EO do not address mechanized uses. Currently there are no restrictions on mechanized uses in the project area.

The most used summer routes are Trail #83 and #84 into Bluebird and Wolverine Lakes. Trails on the south and west end of the project area (Cat #333, Gibralter #335, Sinclair #88, Indian #340, and Blacktail #92) receive much less use. In 2013, voluntary registration at trailheads included the following number of users; Cat Creek (#333) 16, Rainbow (#89) 20, Stahl Peak (#81) 130, Wolverine (#84) 155 and Bluebird (#83) over 400 (Vol 4-54, 4-53). Voluntary trail head registers are not reliable for total amount of use, but can indicate the number of encounters

one would have expect. Day hiking, followed by backpacking and horse riding/packing, are the main uses. During hunting season, horse use in the project area typically increases.

Portions of the Foundation-Camp Trail #77, Sinclair Trail #88, Highline Trail #339, and all of the Blacktail Trail #92 have been identified as part of the Pacific Northwest National Scenic Trail (PNNST) designated by Congress in 2009. A management plan for this trail is currently underway. This national trail designation brings with it increased knowledge of the trail. The national trail designation increased the potential for users to come from farther away, thereby increasing the potential trail user base. Through trail use (specifically noted as PNNST use by trail registers on Forest) has increased from 25-30 in 2014 to an estimated 60 in 2015-16.

Recreation Table 2. Trails in Project Area, Existing Condition Alt 1 Summer Type of Use

NFS Trail Name	NFS Number	GIS Trail Miles	Existing Condition Allowed Type of Use
Foundation/Camp	77	10.1	Hiker, Horse, Mechanized
Clarence/Rich	78	4.7	Hiker, Horse, Mechanized
Stahl Creek	80	2.1	Hiker, Horse, Mechanized
Stahl Peak	81	4.9	Hiker, Horse, Mechanized
Stahl Peak Spur	81a	0.1	Hiker, Horse, Mechanized
Clarence Ness	82	2.4	Hiker, Horse, Mechanized
Bluebird	83	2.1	Hiker, Horse, Mechanized
Wolverine Lakes	84	2.5	Hiker, Horse, Mechanized
David Nesbitt	84a	0.9	Hiker, Horse, Mechanized
Little Therriault Lake Loop	85	0.9	Hiker, Horse, Mechanized
Big Therriault Lake Loop	86	1.5	Hiker, Horse, Mechanized
Therriault Pass	87	1.3	Hiker, Horse, Mechanized
Sinclair Creek	88	4.1	Hiker, Horse, Mechanized
Rainbow	89	4.5	Hiker, Horse, Mechanized
Blacktail	92	8.6	Hiker, Horse, Mechanized
Big Therriault/Highline	190	0.9	Hiker, Horse, Mechanized
Horse Camp	306	0.2	Hiker, Horse, Mechanized
Miistakiistsi	308	1.1	Hiker, Horse, Mechanized
Cat Creek	333	3.2	Hiker, Horse, Mechanized
Gibraltor Ridge	335	9.8	Hiker, Horse, Mechanized
Highline	339	15.1	Hiker, Horse, Mechanized
Indian Creek	340	4.0	Hiker, Horse, Mechanized
Independence Mine Spur	340a	0.5	Hiker, Horse, Mechanized
Little Therriault/Highline	341	0.5	Hiker, Horse, Mechanized
Otter Creek	554	1.8	Hiker, Horse, Mechanized
Paradise Lake	555	0.2	Hiker, Horse, Mechanized
Weasel Lake Accessible	557	0.1	Hiker, Horse, Mechanized
Total		88.4	

All trails in the project area except Indian Creek #340 and #340A are typically logged out yearly through a combination of trail crew, youth crews, and volunteers. The highest maintenance need in the project area is brushing out (mainly alder) of trail section that are on road beds. There is minor erosion annually due to unsustainable trail design, with minor retread needed.

Snowmobiling, snow-shoeing, and dog sledding, as well as back-country and cross-country skiing, are winter uses within the analysis area. The entire project area is open to over-snow motorized use. The Grave Creek Road is plowed approximately 4 miles to a parking area located

at Birch Creek. The Ten Lakes Snowmobile club grooms approximately 34.8 miles of open road in the project area, in partnership with the Kootenai National Forest and Montana Fish and Game, in Grave, Stahl and Clarence Creeks. Grooming may occur from December 1 through April 1. Sno-Trails identified in Recreation Table 3 are those identified and managed for over snow use. Additional routes may be used that are not identified or are not managed, but are open to over snow use.

Recreation Table 3. Sno-Trails in Project Area, Existing Condition Over-Snow Type of Use

NFS Name	NFS Trail Number	GIS Trail Miles	Existing Condition (Alternative 1)
Grave Creek Snowmobile	Sno314	21.1	Groomed
Grave Creek Snowmobile Stahl	Sno314a	3.6	Groomed
Grave Creek Snowmobile Clarence	Sno314b	2.6	Groomed
Grave Creek Snowmobile Weasel	Sno314c	1.5	Groomed
Grave Creek Snowmobile Otter	Sno314d	1.9	Groomed
Grave Creek Snowmobile Little Therriault	Sno314e	0.8	Groomed
Grave Creek Snowmobile Big Therriault	Sno314g	0.6	Groomed
Graves Cr Snowmobile Wolverine	Sno314h	2.7	Groomed
Snowmobile Total		33.8	
Birch X-C Ski	Sno349	1.0	Not Groomed
Birch X-C Ski	Sno349	0.7	Not Groomed
Birch X-C Ski Loop A	Sno349a	0.7	Not Groomed
Therriault X-C Ski	Sno95	0.4	Not Groomed
Therriault X-C Ski	Sno95	1.9	Not Groomed
Therriault X-C Ski	Sno95	1.0	Not Groomed
Therriault X-C Ski	Sno95	0.1	Not Groomed
Therriault X-C Ski	Sno95	1.7	Not Groomed
Therriault X-C Ski North Spur	Sno95b	0.2	Not Groomed
Therriault X-C Ski North Spur	Sno95b	0.0	Not Groomed
Therriault X-C Ski North Spur	Sno95b	0.8	Not Groomed
Therriault X-C Ski South Spur	Sno95a	1.9	Not Groomed
Therriault X-C Ski South Spur	Sno95a	0.5	Not Groomed
Cross Country Ski Total		10.9	

Cross country ski routes have been identified as sno-trails in the project area, one around Birch Creek and another in Sinclair Creek (Therriault cross country). These trails are currently not being managed under agreement with a club, but do receive some use. Both motorized and non-motorized over-snow users utilize many of the same access points for their activities. Winter access is dependent largely on plowed roads and trailheads.

Maintenance and administration of trails and areas are currently accomplished through appropriated funding, partners and volunteers. During the summer all trails in the project area are

typically maintained (logging out or light brushing) annually with the exception of Indian Creek #340 and #340A. This work has been accomplished by the district trail crew with appropriated funding. Posting of regulations and information at trail heads, at the district office and on the Forest Web page is typically done by the district recreation program.

Most heavy trail maintenance (brushing out or minor tread work) is accomplished through partnership with the Montana Conservation Corps young adult crews. Specialized maintenance (snowmobile grooming) on sno-trails is accomplished under partnership with the Ten Lakes Snowmobile Club and State of Montana, funded through the state trails grant program. There is currently no organization which grooms for cross country skiing.

Environmental Consequences

Outdoor recreation provides valuable quality-of-life benefits to the local community, Montanans and citizens throughout the United States. It contributes to the health and well-being of individuals and communities of all types. Benefits include social bonding with friends or family, and mental and physical conditioning which contribute to emotional well-being. Of the approximately 460,000 visits to the KNF, over 60 percent are from within 50 miles (Vol 4-78).

It has long been established that non-motorized fitness activities such as running, hiking, skiing, and biking provide long term health benefits to those who participate. Additional research pointed towards higher levels of physical functioning, vitality, general happiness, and quality of life for recreational off-highway vehicle riders as a consequence of participation in the sport.

The changing complexion of the aging population indicates those over 65 are living longer. Fitness activities and enjoying the outdoors provide the physical activity needed for good health and mental stability for the aging population. Evolving technology that allows people to traverse portions of public land that were inaccessible ten years ago, along with increasing personal wealth and spare time, contribute to growing issues surrounding travel management on public lands.

The 2014-2018 Montana Statewide Comprehensive Outdoor Recreation Plan (SCORP) echoes several of these issues, and notes that the continued access to, and maintenance of, rural and backcountry trails for hiking, biking, horseback riding, and OHVs and snowmobiles is a concern across the state, as well as noting a shortfall in the available miles and maintenance of urban and rural trails (Vol 4-82).

The following is a summary of the indicators and measures for recreation and travel management by alternative.

Recreation Table 4. Effect to Measures of Recreation and Travel Management by Alternative

Resource Element	Indicator Type of Use	Measure	Alt 1	Alt 2	Alt 3	Alt 4
Recreation	Primitive Season 3 (June 1 – November 30)	Trail mile open Acres open	88.4 64,177	83.9 64,177	83.9 64,177	83.9 64,177
Recreation	Primitive Over-snow Season 1 & 2 (December 1- May 31)	Trail mile open NFS Sno-Trail[1] Trail mile/quiet [2] Acres quiet[2]	88.4 11.0 0 0	83.9 11.0 20.5 24,474	83.9 11.0 12.8 15,572	83.9 11.0 75.6 63,232
Recreation	Mechanized Season 3 (June 1 – November 30)	Trail mile open Road mile open Acres Open	88.4 100 64,177	17.0 100 30,177	41.0 100 30,177	25.9 100 0
Recreation	Mechanized Over-snow Season 1 (December 1 – March 31)	NFS Trail mile open Road mile open Snowmobile groomed Acres open	88.4 95 33.8 64,177	64.7 48.8 33.8 45,948	81.7 49.9 33.8 52,653	34.1 38.4 31.0 30,089
Recreation	Mechanized Over-snow Season 2 (April 1 –May 31)	Trail mile open Road mile open Snowmobile groomed Acres open	88.4 88 0 64,177	33.6 43.2 0 30,081	46.4 36.8 0 33,062	34.1 0 0 30,081
Travel Manage-ment	Wheeled motorized Year round (see MVUM)	Trail mile open Acres open Road mile open	0 0 58	0 0 58	0 0 58	0 0 58
Travel manage-ment	Motorized Over-snow Season 1 (December 1- March 31)	Designated motorized[3] Snowmobile Groomed Acres open	60.4[4] 33.8 64,177	48.8 33.8 36,703	49.9 33.8 48,605	38.4 31.0 945
Travel Manage-ment	Motorized Over-snow Season 2 - (April 1-may 31)	Designated motorized[3] Snowmobile Groomed Acres open	60.4[4] 0 64,177	41.4 0 0	36.8 0 4,380	0 0 0

1 Miles identified as NFS Snow trail for cross-country skiing, currently not groomed

2 Miles of road and/or trail in the PA where motorized uses is restricted.

3 Miles of designated route (designated motorized routes are specific to 36 CFR 212); may include roads, trails or cross country routes

4 Miles identified in Lynx Amendment baseline, not mapped

Direct Effects Common to All Alternatives

No alternative proposed changes to wheeled motorized use on roads, trails or areas. Existing uses on open roads would continue, cross country and trail motorized use would continue to be

restricted. Wheeled motorized use would not be expected to change because of proposals in any alternative.

Recreation use that is non-motorized and non-mechanized (e.g. hiking, stock, cross country ski) would be allowed cross county in the entire project area, and have no restriction proposed in any alternatives. Cross country hiking, stock use, cross country skiing and other uses would not be expected to change because of proposals in any alternative.

There would be no change to miles of identified NFS sno-trails for skiing (non-motorized and non- mechanized use). Specialized trail maintenance such as snowmobile or cross country ski grooming is typically accomplished through partnerships with user groups, and is not a primary Forest Service function. While individuals may be using these routes or other areas, there is currently no club or organization that manages or grooms ski sno-trails in the project area.

Mechanized use would continue to be allowed in the project area on 97 miles of road (both open and closed to motorized use) in all alternatives.

Direct Effects Common to Alternatives 2, 3 And 4

Year round recreation use that is non-motorized and non-mechanized (e.g. hiking, stock, snow shoe, cross country ski) would be allowed on 83.9 miles of trail in alternatives 2, 3 and 4. Indian Creek Trail #340 and #340A would no longer be maintained as a NFS trail. Currently there is little use on this trail, and there is no public access at the lower end. This trail used to be the primary access to several patented mining claims (private), which have since been acquired by the Forest Service. There is only one patented mining claim remaining in the project area near Green Mountain. Individuals that currently use this trail would still have access on the route; there would be no restriction to use. However, the trail would not be maintained or appear on future District or Forest visitor maps.

Year round recreation use would be expected to continue to be high around Bluebird, Wolverine and Paradise Lakes (Trail #82, 83), and low in the remainder of the area.

There would be no change to the 61 miles of road open to all wheeled motorized use in the project area. This 61 miles would also continue to be available for summer mechanized use.

Maintenance of the 83.9 miles NFS trail and 33.8 miles of sno-trail would continue through appropriated funding, partnership, and agreements within the current priority and funding levels. In the event partners were found, an additional 11 miles of cross country ski trail may be maintained. As noted in the 2005 Travel Management Rule, p. 68281, “Section 212.55(a) of the proposed and final rule include as a criterion for designation ‘the need for maintenance and administration of roads, trails and areas that would arise if the uses under consideration are designated; and the availability of resources for that maintenance and administration.”

The District reviews its trail system annually in order to prioritize work, which is based on factors including weather events or health and safety issues which change over time, sometimes within a single year. Therefore, it is not uncommon for work plans to change many times within a season to adjust to what is being seen on the ground. Targets for trail maintenance and improvements accomplishment are established annually, and while the Rexford/Fortine trail staff has met or exceeded the targets for operation, maintenance, and improvement each of the past several years, this does not imply that all the miles within the system will be maintained on an annual basis; this is neither required nor realistic.

Administration of route and area closures to mechanized and over-snow motorized use would require additional focus by the district, forest, and partners. Best management practices that would apply to all alternative would include: clearly identifying trailheads, routes, and parking areas on the ground; promoting Best Available Technology (BAT) to reduce conflict and impacts between users; providing digital and paper maps that clearly show routes and allowed uses; working closely with partners and users; and monitor uses to insure illegal activity is not occurring (Vol 4-83). While alternatives differ in the season, route and area restrictions all alternative would require similar resources for education, information, monitoring and enforcement for proposed changes.

Implementation of decision regarding travel management can take up to five years to implement. Research has shown the most effective way to change behavior of forest visitors is through; information, education, warning and when necessary citations (Vol 4-12, 4-13).

Alternative 1 – No Action

By definition, direct and indirect effects (40 CFR 1508.8), and cumulative effects (40 CFR 1508.7) result from the proposed action, and thus are not germane to the No Action alternative.

Under the No Action alternative, Season 3 mechanized (e.g. Mountain biking and carts) use would be allowed in the project area on all 88.4 miles of trail, 100 miles of road (both open and closed to motorized), as well as cross country. While there is no use data, it is estimated that mountain biking use is low, less than 500 visits a year. This use estimate is from information gathered in the 2010 monitoring (Vol 4-25), and encounters in the field by trail crew. Mountain biking would be expected to continue to increase on loop routes such as Bluebird, Wolverine and Paradise Lakes (Trails #84, 83) and Camp/Foundation to Wam Mountain (Trail #77). As the area becomes better known by cyclists, other trails that are currently less used, may also see more use. Trail crew encounters with mountain bikers indicate they are concerned with loosing this opportunity, and riding it while they can (Vol 4-84).

Indian Creek Trail #340 and #340A would remain a NFS trail, while it would continue to not be maintained, would show up on District and Forest visitor maps.

Over-snow mechanized use would be allowed throughout the project area in both season 1 and 2. While currently low, this use would be expected to increase with new technology such as the winter (mountain) bike.

Over-snow motorized use would be expected to increase in season 1 due to population increases (mainly Flathead County) and advances in technology (e.g. motor bikes with skis and tracks). A limiting factor would be the amount of parking at Birch Creek. The two recreation events would continue. Grooming would continue on 33.8 miles of road in the project area. The number of over-snow users is variable year to year (Vol 4-9) and dependent on snow depth.

In season 2 and 3 (May 1 – November 30) over-snow motorized use would continue to be lower than in season 1, and may decrease over time due to earlier snow melt.

Trails and roads would continue to be maintained and administered by district and forest crews. Restrictions on wheeled motor vehicle use (MVUM) on trails and cross country have been in place since 2001, and in general are well known. Illegal motor vehicle use on trails, while infrequent, may continue. Information, education and enforcement of restriction would continue to be through the MVUM, district offices, field crews, Law Enforcement officers, and the Internet. A over snow vehicle use map (OSVUM), or travel plan would not be complete.

Alternative 2 – Proposed Action

Alternative 2 was the starting point for scoping the project and assessing public opinion. This alternative was developed to maintain the existing (1977) wilderness character of the Ten Lakes WSA and address wildlife. See WSA and wildlife sections. Season 3 (June 1 – November 30) mechanized use would be allowed in the project area on 17.0 miles of trail, a reduction of 71.4 miles from Alternative 1, and 100 miles of road (open or restricted to all wheeled motorized uses). Summer, or Season 3, mechanized uses cross country would not be allowed.

In Season 1 (December 1 through March 31) over-snow motorized and mechanized use would continue to be allowed in areas identified as most used, and Blacktail Trail #92. The exception would be over Therriault Creek route (Trail #87), where over-snow and mechanized use would be restricted. While identified by mechanized users to help reduce drive time (Vol 4-85), this area was previously identified by cross country non-motorized users and designated as NFS SNO-trails (Vol 4-86). This would potentially reduce conflicts between motorized/mechanized and primitive over snow uses. While this route is designated as a NFS Snow Trail, there is currently no club or organization that manages or grooms these areas. Over-snow motorized and mechanized uses would be allowed on 36,703 and 54,865 respectively acres in the project area. Snowmobile grooming would continue on 33.8 miles of road in the project area.

With the over-snow and mechanized closure, Non-motorized over-snow areas for quite users would increase by 24,474 acres primarily on the east face, Therriault Creek, and south of Mt. Gibralter including trail #88, 87, 333, and 335. The Blacktail basin would be non-motorized, with the exception of Trail #92.

In Season 2 -3 (April 1 through November 30) over-snow motorized and mechanized uses would not be allowed in this alternative, except on designated or allowed routes. The 41.4 miles of designated over snow routes are mostly on roads, with 0.7 miles of Blacktail Trail #92. This is a reduction of approximately 64,177 acres open to over-snow motorized use from Alternative 1. Clearly designated areas where over snow mechanized uses are allowed in all seasons, and subsequently quiet areas, would potentially reduce conflicts between mechanized and primitive (stock, hike, cross country ski) users.

Trails and roads would continue to be maintained and administered by district and forest crews. Restrictions on wheeled motor vehicle on trails and cross country have been in place since 2001, and in general are well known. Illegal motor vehicle use on trails, while infrequent, may continue. Additional restriction would require information and posting, education of forest visitors, and additional enforcement. This would require the publication of information (handouts, posters, internet), and increased field presence for at least five years. New restriction in Season 1, and closure of the area in Season 2 -3would require a moderate amount of additional enforcement.

No additional funding is anticipated for travel management, so resources would be reduced in other areas of the district to increase a presence in the project area. Additional equipment and training would be necessary such as for mountain bikes, snowmobiles, and traffic counters or cameras. Information, education and enforcement of restriction would continue to be through the MVUM, OSVUM, district offices, field crews, Law Enforcement officers, and the Internet.

Direct and Indirect Effects

Following is the direct and indirect effects of Alternative 2 Recreation and Travel Management measures. See Affected Environment, Existing Condition, for additional information.

Recreation Indicator and Measures

Under Alternative 2, season 3 summer mechanized (e.g. Mountain biking and carts) use would be restricted to 17.0 miles of trail on Blacktail Creek Trail #92 and a loop route on Trails #336 and 333. These trails were identified in the 2009 TAR (Vol 4-87) with mountain biking opportunities. Cross country use would be allowed on 30,177 acres. Use would continue to be allowed on 100 miles of road (open and closed to wheeled motorized use). Some of the closed road may be grown in and not usable. Use would be expected to decline or remain the same as these routes are not what have been identified in public input as the most used. Mechanized use on the currently high use loop to Bluebird, Wolverine, and Paradise Lakes (Trail #82, 83, 84) would be restricted, potentially decreasing conflict and increasing public safety with hikers and stock users.

Blacktail Trail #92 (on Road #1001) would be a one way in and out summer mechanized opportunity with no destination. The loop south of Mount Gibralter on Trails #335 and 333 would provide a short but difficult opportunity of approximately 13 miles.

In Season 1, over-snow mechanized (e.g. winter biking) use would be allowed on 64.7 miles of trail, 48.8 miles of designated motorized route, most of which is groomed for snowmobiles. Blacktail trail #92 is included as a designated route. Over-snow mechanized cross country use would be restricted to 54,856 acres. Over-snow mechanized use while currently low, would be expected to increase in season 1 on groomed routes, most areas used available and with population increases.

In Season 2, over-snow mechanized use would be allowed on 33.6 miles of trail (outside of the WSA), and 43.2 miles of designated routes. No snowmobile routes would be groomed. Over-snow mechanized use would be restricted cross country within the WSA. While providing for mechanized over-snow use, the only loop opportunity would be on Trails #333and #335, and Trail #82. Use would be expected to increase as winter biking is relative new, but overall it would remain low.

Areas and trail for quite uses would increase, with the amount of use expected to continue to be low. The identified cross country Snow Trail in Griffith Creek may be more attractive to quiet users with motorized restrictions in place. Opportunities for partners to manage or groom over-snow routes for cross country ski use would remain. Clearly designated areas where over snow mechanized uses are allowed in all seasons, and subsequently quiet areas, would potentially reduce conflicts between mechanized and primitive (stock, hike, cross country ski) users.

The selection of these routes and areas was based on maintaining the 1977 existing condition for wilderness qualities of solitude and opportunities for primitive recreation and wildlife concerns. Restricting the miles of trail and areas open to mechanized uses, with less desirable routes, would likely maintain a low level of use as existed in 1977. See WSA section.

Travel Management Indicator and Measures

In Season 1, over-snow motorized use cross country would be restricted to fifty six percent of what is allowed in Alternative 1. Approximately 48.8 miles would be designated for over-snow use, with all but Blacktail trail #92 within a designated areas. Most of the area where use would be restricted was not identified in scoping as the most commonly used (Vol 4-112). The exception is the Therriault Creek route, which provides an alternative access point into the project area. Areas identified in scoping as most used would remain open. However areas in the Eureka Face and south of Mount Gibralter would be closed to over-snow motorized use. The areas closed are those that provide more challenging experiences, while desirable to some, are less used.

Use would be expected to increase in Season 1 as population increases and advances in technology (e.g. motor bikes with skis and tracks, more powerful or lighter machines). Limiting factors would be the amount of parking at Birch Creek, and Therriault Creek access being closed. The Ten Lakes Snowmobile Club recreation event would continue. Snowmobile grooming would continue on 33.8 miles of road in the project area. The number of over-snow users is variable from year to year (Vol 4-9) dependent on snow fall.

In Season 2-, over-snow motorized use would be restricted to designated routes, and additional minor spurs on roads open to wheeled motorized use beyond what is currently groomed. There would not be a loop opportunity over Therriault Pass, between Therriault Lakes and Stahl Creek. No areas, beyond the designated routes, would be open to over-snow motorized use. This would restrict motorized access in areas of late season high elevation snow that Ten Lakes is known for (Vol 4-113). The lower elevation designated routes may not be as desirable to some or hold snow late into the season, likely resulting in a decrease in use. Clearly designated areas where over snow motorized uses are allowed (OSMVUM), and subsequently quiet areas, would potentially reduce conflicts between motorized and primitive (stock, hike, cross country ski) users.

The selection of these routes and areas was based on maintaining the 1977 existing condition for wilderness qualities of solitude and opportunities for primitive recreation. In 1977, after April 1 (Season 2), sixty three percent of the project area, and most of the areas identified as used by over-snow motorized visitors was in Area 21 – where '*all motorized vehicles restricted to designated routes from April 1 through November 31'*(Vol 4-36). In 1977, use was allowed on designated routes, which is similar to what is allowed in Alternative 2. See WSA section.

Alternative 3

Alternative 3 was developed in response to motorized and mechanized user comments to the proposed action. Season 3, or summer, mechanized use would be allowed in the project area on 41.0 miles of trail, a reduction of 47.4 miles from Alternative 1. Summer mechanized uses (e.g. mountain biking) cross country would not be allowed.

In Season 1 (December 1 through March 31) over-snow motorized and mechanized use would continue to be allowed in areas identified as most used, Blacktail Trail #92, and a route over Therriault Creek (Trail #87). Over snow motorized and mechanized uses would be allowed on 48,605 and 52,653 acres respectively in the project area, a reduction of 15,572 motorized acres from Alternative 1. Snowmobile grooming would continue on 33.8 miles of road in the project area.

In Season 2 -3 (April 1 through November 30) over-snow motorized and mechanized uses would be allowed cross country on 4,380 and 33,062 acres respectively identified in scoping as most used. Designated routes would include 36.8 miles of road and trail #82. Over-snow motorized use would not be allowed on Blacktail Trail #92, Therriault Creek route Trail #87 or Clarence Creek Road 7022.

Trails and roads would continue to be maintained and administered by district and forest crews. Illegal motor vehicle use on trails, while infrequent, may continue. Additional restriction would require information and posting, education of forest visitors, and additional enforcement. This would require the publication of information (handouts, posters, internet), and increased field presence for at least five years. With more area and routes available for over-snow motorized uses, enforcement in Season 1 would be similar to Alternative 1. Education and enforcement needs would increase in Season 2 and 3 with additional restrictions.

No additional funding is anticipated for travel management, so resources would be reduced in other areas of the district to increase a presence in the project area. Additional equipment and training would be necessary such as mountain bikes, snowmobiles, and traffic counters or cameras. Information, education and enforcement of restriction would continue to be through the MVUM, district offices, field crews, Law Enforcement officers, and the Intranet.

Direct and Indirect Effects

Following is the direct and indirect effects of Alternative 3 Recreation and Travel Management measures that vary by alternative. See Affected Environment, Existing Condition, for additional information.

Recreation Indicator and Measures

Under Alternative 3, season 3 (June 1 – November 30) mechanized (e.g. Mountain biking and carts) use to would be allowed on 41.0 miles of trail on Blacktail Creek Trail #92 through to Wolverine Creek Trail 84 and 82, a loop route on Trails #336 and 333, loop route on trail #77 to Wam Mountain, and Trail #308 in upper Stahl Creek. Cross country use would be allowed outside of the WSA. Use would be expected to increase as these routes were identified as being desirable by mountain bikers. Mechanized use on the currently high use routes to Wolverine (Trail #82, 84) would likely continue to increase, potentially increasing conflict and decreasing public safety with hikers and stock users.

In Season 1, over-snow mechanized (e.g. winter biking) use would be allowed on 81.7 miles of trail, and 49.9 miles of designated motorized route. Blacktail trail #92 is included as a designated route. Grooming would continue on 33.8 miles of the designated route. Over 82 percent of the area would be open to cross county mechanized use. Over-snow mechanized use while currently low, would be expected to increase in season 1 with groomed routes, most of the area open cross county, and as the population increases.

In Season 2, over-snow mechanized use would be allowed on 46.4 mile of trail, and 36.8 mile of designated routes. Over-snow mechanized use would be allowed cross country on 33,062 acres in the Wolverine, Bluebird, and Therriault Lake's area, and outside of the WSA This alternative provides 77.4 miles for over-snow mechanized use, with loop or through opportunities such as Trail 77 to Wam Mountain and Bluebird/Wolverine lakes area. While use would be expected to increase, over all it would remain low.

Areas and trail for quite uses would increases although not as much as in Alternative 1, with the amount of use expected to continue to be low. There would be a motorized route on Therriault Creek Trail #87, bisecting the cross country Snow Trail, increasing potential for conflict between users in this area. Opportunities for partners to manage or groom over-snow routes would remain. Clearly designated areas where over snow mechanized uses are allowed in all seasons, and subsequently quiet areas, would potentially reduce conflicts between mechanized and primitive (stock, hike, cross country ski) users.

Travel Management Indicator and Measures

In Season 1, over-snow motorized use cross country would be allowed on seventy six percent of what is allowed in alternative 1. Approximately 49.9 miles would be designated for over-snow use, with all but Therriault Creek route being in designated areas. Most of the area where use would be restricted was not identified in scoping as most commonly used. The Therriault Creek designated route would provide an alternative access point into the project area. The lower end of this route is also identified as NFS Sno-trail for non-motorized and non-mechanized uses. While

not currently groomed or managed for quite uses, designated a motorized route would likely effect existing quite users. The areas most used and upper slopes of the Eureka Face would remain open. The area south of Mount Gibralter would be closed to over-snow motorized use. The areas closed are those that provide more challenging experiences, while desirable to some, are less used.

Use would be expected to increase in Season 1 with population increases, restriction in other areas (e.g. Flathead NF), and advances in technology (e.g. motor bikes with skis and tracks). Limiting factors would be the amount of parking at Birch Creek. However, there is alternate access points in Therriault and Blacktail Creeks. The Ten Lakes Snowmobile Club recreation event would continue. Grooming would continue on 33.8 miles of road in the project area. While the number of over-snow users is variable from year to year (Vol 4-9), dependent on snow fall, it would likely increase.

In Season 2 (April 1 – May 31, over-snow motorized use would be allowed on 36.8 miles of designated routes and 4,380 acres cross country. There would be a loop opportunity over Therriault Pass between Wolverine/Therriault Lakes and Stahl Creek, and in Bluebird Basin on Trail #82. The area available for use would be reduced to 6 percent of that in Alternative 1, but is within area identified through scoping as most used. This would restrict motorized access in areas of late season high elevation snow that Ten Lakes is known for. The lower elevation designated routes, may not be as desirable to some or hold snow late into the season, likely resulting in a decrease in use. Clearly designated areas where over snow motorized uses are allowed (OSMVUM), and subsequently quiet areas, would potentially reduce conflicts between motorized and primitive (stock, hike, cross country ski) users.

Alternative 4

Alternative 4 was developed in response to wilderness advocates and individuals wanting more primitive recreation opportunities. This alternative is similar to Alternatives Considered but eliminated from detailed study A, B. Season 3, or summer mechanized use would be allowed on 25.9 miles of trail. Season 3 mechanized use uses cross country would not be allowed.

In Season 1 (December 1 through March 31) this alternative limits over-snow motorized and mechanized use to designated routes along open roads, Trail #82, a route from Stahl Creek to Therriault Lakes, and areas around Therriault Lakes, Weasel Cabin, and Weasel Lake. There would be 38.4 miles of designated route, with less than 945 acres open to cross country use. Grooming would be allowed on 31.0 miles of the designated route.

In Season 2 and 3 (April 1 through November 30) over-snow motorized use would not be allowed in this alternative, within the project area. Mechanized use would be allowed on 25.1 miles of trail, open roads but not cross country.

Quiet user areas would increase to the majority of the project area in Season 1, 2, and 3, reducing potential conflicts between users the most. Quite opportunities would include 80 miles of NFS trail, with 11 miles of designated cross country snow-trail. The entire project area, including all trails and routes, would be available for quiet users in Season 2.

Trails and roads would continue to be maintained and administered by district and forest crews. Illegal motor vehicle use on trails, while infrequent, may continue. Additional restriction would require information and posting, education of forest visitors, and additional enforcement. This would require the publication of information (handouts, posters, internet), and increased field presence for at least five years. This alternative, with the most restriction on motorize use would require the most in implementation and enforcement.

No additional funding is anticipated for travel management, so resources would be reduced in other areas of the district to increase a presence in the project area. Additional equipment and training would be necessary such as mountain bikes, snowmobiles, and traffic counters or cameras. Information, education and enforcement of restriction would continue to be through the MVUM, district offices, field crews, Law Enforcement officers, and the Intranet.

Direct and Indirect Effects

Following is the direct and indirect effects of Alternative 3 Recreation and Travel Management measures that vary by alternative. See Affected Environment, Existing Condition, for additional information.

Recreation Indicator and Measures

Under Alternative 4, season 3 summer mechanized (e.g. Mountain biking and carts) use would be restricted to 25.1 mile of trail. These are trails that are outside of the WSA and 3.5 miles of Foundation Camp Trail #77 in the WSA. The Trail #77 route provides a loop opportunity identified through scoping, and access to Wam Lookout. While in the WSA, Trail #77 and Wam Lookout are outside of the Ten Lakes Recommended Wilderness area MA1b. Blacktail Trail #92 (on Road #1001) would be a one way in and out opportunity with no destination. Season 3, summer mechanized use would continue to be allowed on 61 miles of road open to motorized use. Cross country use would be allowed outside of the WSA.

Mechanized use would be expected to decline or remain level, as use on the most popular loop route to Wolverine/Bluebird Lakes would not be allowed. Restricting mechanized use on the currently high use loop to Bluebird, Wolverine, and Paradise Lakes (Trail # 83, 84) would potentially decrease conflict with hikers and stock users on a high use trail.

In Season 1, over-snow mechanized (e.g. winter biking) use would be allowed on 25.9 miles of trail, 38.4 miles of designated motorized route. There would be 945 acres where cross country use would be allowed around Weasel Lake, Weasel Cabin and Therriault Lakes. Snowmobile grooming, which is used by fat tire bikers, would continue on 31.0 miles of the designated route. Over-snow mechanized use while currently low, would be expected to increase in Season 1 with the groomed routes, increases in population, and that winter biking is a relatively new activity.

In Season 2-3 (April 1 – November 30), over-snow mechanized use would not be allowed in the project area on trails or areas. No routes would be groomed. Over-snow mechanized use would not be allowed cross country. Over-snow mechanized uses would only be allowed on roads open to motor vehicle use.

Areas and trail for quite uses would increases the most in this alternative, reducing potential conflict between users the most. Motorized uses would be restricted in the majority of the project area in both Season 1 and 2. In Season 1 access to higher elevations in the PA would be along the 31.0 miles of designated route. The amount of use expected to continue to be low. Opportunities for partners to manage or groom over-snow routes would remain.

Travel Management Indicator and Measures

In season 1, over-snow motorized use would be restricted to designated routes along open roads, Trail #82, a route from Stahl Creek to Therriault Lakes, and areas around Therriault Lakes, Weasel Cabin, and Weasel Lake. There would be 38.4 miles of designated route, with 945 acres open to cross country use. This alternative would allow for limited over-snow motorized use, with a loop opportunity over Therriault Pass. Use would be expected to decrease, with relatively

little area open to over-snow motorized use. With use mostly restricted to designated routes, the amount of use would be more dependent on adequate snowfall.

This alternative proposes construction of a four season pavilion at Therriault Lake. A four season pavilion would become a destination outside of the WSA, instead of Wolverine Cabin which is within the WSA. The pavilion would also address safety concerns raised during scoping. Grooming would be allowed on 31.0 miles of the designated route, with Clarence Road 7022 being dropped to reduce the potential for trespass through closed areas.

In Season 2-3 (April 1 – November 30) over-snow motorized use would not be allowed in this alternative. This would eliminate over-snow motorized access in areas of late season high elevation snow.

Cumulative Effects

Spatial and Temporal Context for Cumulative Effects Analysis

The spatial boundaries for analyzing the cumulative effects recreation and travel management are the project area because the WSA boundary was established as distinct area by Law. The project area includes all access point into the WSA. This analysis area is appropriate to analyze any incremental effects from the actions of this project, in combination with past, present, and reasonably foreseeable activities, because effects of implementing travel planning decisions within the project area would be negligible to trails and areas outside this analysis area.

The temporal boundaries for travel management decision are long term, typically in effect for 5-20 years or longer. Implementation of decision regarding travel management can take up to five years to implement. Research has shown the most effective way to change behavior of forest visitors is through; information, education, warning and when necessary citations (Vol 4-12, 4-13).

Past, Present, and Reasonably Foreseeable Activities Relevant to Cumulative Effects Analysis

Past actions have contributed to the existing condition and trends for recreation and travel management, which is described in the Affected Environment sections and under No Action effects.

Appendix A to the DEIS describes past, present, and reasonably foreseeable forest and other activities which, when combined with the activities proposed in the Travel Management Planning Project, could result in cumulative effects to the recreation resource and opportunities.

In 2009 Congress designated the Pacific Northwest National Scenic trail (PNNST), including routes that are within the project area. While the designation did not occur until 2009, the PNNST was first identified in the 1970's (Vol 4-57), and has been traveled by cross country users since then. Primitive uses on this trail can be expected to increase over time. The designation as a National Scenic Trail will likely increase use.

Season 3

Some activities have nominal or no effect on recreation for the following reasons:

> The activity's disturbance is too small and isolated to produce an effect
> Project design features are applied to limit an activity's effects to a negligible level

Examples of forest activities, which, when carried out consistent with existing regulations, produce only nominal or no cumulative effects to recreation resources include:

Personal use firewood cutting;
Personal use Christmas tree harvesting
Special uses\Permits
Invasive Plants management

There are forest activities that could result in cumulative effects to recreation including:

Timber Harvest, Prescribed Burning, and Associated Activities

The sights and sounds of timber harvest and associated activities, such as chain saws and other mechanized equipment including skidders, forwarders, de-limbers, and trucks hauling timber, may be heard in the project area. Intrusions such as these activities were identified in the 2010 UM monitoring as affecting solitude. The project area is adjacent to private development to the south and west, National Forest System roads, and active management areas, resulting in possible short term adverse effects to recreation uses looking for a quiet opportunity.

Fuel treatment projects are proposed across the Forest, including within the project area (Galton Vegetation EIS). Treatments of fuels prior to burning could result in short term impacts, where stumps and slash piles are obvious. During pre-treatment and burning operations, short-term impacts to recreation could be expected where visitors encounter crews working with chainsaws, helicopters, etc. Treating fuels could result in short-term exposure to invasive plants infestations in burned areas. In the long term, fuel treatments would be beneficial by restoring a more natural fire regime to areas where wildfires have long been suppressed

Wildfire Suppression

Forest closures and noise associated with wildfire suppression could have a temporary impact on recreation opportunities. Additionally, fire lines, helispots, and safety zones, if created by machinery, can remain on the landscape for many years.

Road and Trail Management

Vehicles and noise associated with road maintenance and use, by both the public and Forest Service personnel, would continue to carry into the project area. The project area is located relatively close to development, National Forest System roads, and active management areas.

Hiking and the use of stock would continue. The continued use of routes by foot and stock would cause minor effects to the landscape's natural integrity and apparent naturalness wilderness qualities where trail erode or weeds become established.

Natural Disturbance Events

Events such as floods, large wind events, and blizzards can create large areas of disturbance resulting in blocked trails or routes, drainage or erosion issues to trail treads, and hazardous conditions, as occurred during the 2015 Marston Fire Complex. Consequently, recreation activities, such as wildlife viewing and accessing trails for hiking, biking, camping, and riding ATVs, may be temporarily prohibited for safety reasons.

Over-Snow

Many roads and trails would be snow covered during the winter months, which would limit their use by motorized vehicles, both by the public and Forest Service personnel. Subsequently,

personal use firewood cutting and personal use Christmas tree harvesting, as well as forest management activities, including road and trail management, and invasive plants management, would not occur.

Timber harvest projects to be implemented during the winter months may affect the Recreation and Trails resource by restricting access to National Forest System roads and trails, as well as areas, on a short-term or long-term basis, preventing visitors from accessing roads and trails. Closing routes to motorized use could result in displacement and concentration of use, as well as conflict of uses. Timber hauling associated with such projects can result in safety issues, as large trucks would be using the same roads as snowmobiles and skiers.

Reduced over-snow vehicle use opportunities on adjacent public, including the Flathead National Forest or Stillwater State Forest, could result in increased use in the project area, with associated effects including conflicts of uses, concentration, and displacement of users.

Cumulative Effects from the Implementation of the Alternatives

Alternative 1

Several of the above-listed present and reasonably foreseeable activities could result in cumulative effects to the Recreation and Trails resource during season 1, in combination with the activities proposed in the Ten Lakes Travel Management Project; timber harvest projects could have cumulative effects on over-snow use in season 1-2.

Alternative 2

Several of the above-listed present and reasonably foreseeable activities could have cumulative effects on the Recreation and Trails resource during season 3, in combination with the activities proposed in the Ten Lakes Travel Management Project; timber harvest projects could have cumulative effects on over-snow use in season 1-2.

Alternative 3

Several of the above-listed present and reasonably foreseeable activities could have cumulative effects on the Recreation and Trails resource during season 3, in combination with the activities proposed in the Ten Lakes Travel Management Project; timber harvest projects could have cumulative effects on over-snow use in season 1-2.

Alternative 4

Several of the above listed present and reasonably foreseeable activities could have cumulative effects on the Recreation and Trails resource during season 3, in combination with the activities proposed in the Ten Lakes Travel Management Project; timber harvest projects could have cumulative effects on over-snow use in season 1-2.

Cumulative Effects Finding

There could be cumulative effects to the Recreation and Trails resource from past, current, and reasonably foreseeable actions including timber harvest, prescribed burning, and associated activities; wildfire suppression; road and trail management; and activities on private, state, and federal lands in association with the activities in **Alternatives 1, 2, 3,** and **4** during the summer months. There could be cumulative effects from timber harvest projects and activities on private, state, and federal lands in combination with the activities proposed in **Alternatives 1, 2, 3, and 4** during the winter months.

Regulatory Framework Findings

Land and Resource Management Plan

The Kootenai National Forest Land and Resource Management Plan (LRMP) provides desired conditions, objectives, standards, and guidelines for recreation and travel management. This project is consistent with the relevant forestwide, MA, and/or GA goals and desired conditions listed in the introductory regulatory framework and below. The following are applicable to the actions in this project:

FW-DC-AR-05. A variety of motorized and non-motorized winter and summer recreation opportunities are available. Well-designed and maintained trailheads exist and offer adequate parking and turnaround areas. Trails are designed and maintained for the given users (saddle stock, snowmobiles, OHV users, hikers, mountain bikers, etc.).

How Addressed; Alternatives 2, 3 and 4 propose changes to the type of uses allowed, and to what extent they are allowed during the year. Alternatives 2, 3 and 4 make progress towards offering a variety of primitive and motorized recreation opportunities. Proposed changes maintain or make progress toward this desired condition over the long term, although alternatives 2, 3, 4 reduce roads, trails and areas open to mechanized and over-snow motorized uses. Mechanized and over-snow motorized recreation opportunities would be reduced.

FW-DC-AR-08. Motor vehicle use designations are complete, accurate signing is in place, and motorized vehicle use maps are available. User conflicts are reduced. Loop opportunities are a part of both the road and trail systems. Community involvement is promoted and user awareness programs (educational and informational) enhance the recreational experience.

How Addressed; No alternative includes wheeled motor vehicle use (wheeled non-conforming motorized). The current 2015 MVUM displays all allowed wheeled motor vehicle uses. The outputs of this Travel Management planning project will be an over-snow vehicle use map (OSVUM), and special orders for mechanized uses.

MA1c-DC-AR-01. This area primarily offers opportunities for primitive recreation, although uses established and allowed prior to the legislation are retained if they maintain the wilderness character and the potential for inclusion in the National Wilderness Preservation System (NWPS) that existed in 1977.

How Addressed; Alternative 1 degrades the wilderness character that existed at the time of WSA designation (1977) primarily due to uses established (over snow vehicle) are currently allowed after April, which was not allowed in 1977. Alternatives 2, 3 and 4 propose changes to the type of uses allowed, and to what extent they are allowed during the year. Alternatives 2, 3 and 4 make progress towards offering a variety of primitive recreation opportunities and uses established and allowed prior to 1977, including mechanized and over-snow motorized uses. Proposed changes maintain or make progress toward this desired condition over the long term, even though the project or activity would adversely affect progress toward other desired conditions.

MA1c-STD-AR-01. Motor vehicle use (excluding over-snow vehicle use) is not allowed. Over-snow vehicle use is not allowed except where it maintains the wilderness character as it existed at the time of designation (1977) and the potential for inclusion in the National Wilderness Preservation System.

MA1c-STD-AR-02. Mechanized use is not allowed (e.g., mountain bikes and other wheeled equipment), except where it maintains the wilderness character as it existed at the time of designation (1977) and the potential for inclusion in the National Wilderness Preservation System.

How Addressed: No alternative includes wheeled motor vehicle use (non-conforming motorized). The current 2015 MVUM displays all allowed motor vehicle uses. All alternatives are compared to the 'presently existing (1977) condition for all other types of uses. Alternatives vary in their consistency with the Montana Wilderness Study Act, to maintain the 'presently existing (1977) condition.

The outputs of this Travel Management planning project will be an over-snow vehicle use map (OSVUM), and special orders for mechanized uses.

MA3-DC-AR-05. Recreational, Geological, and Scenic Areas provide motorized and non-motorized recreation opportunities. These areas provide opportunities for non-motorized use, motor vehicle use on designated roads and trails, and over-snow vehicle use.

MA3-GDL-AR-02. Motor vehicle use is allowed in Geological, Recreational, and Scenic Areas.

MA3-GDL-AR-04. Mechanized use (e.g., mountain bikes and other wheel equipment) is allowed in Geological, Recreational, and Scenic Areas.

How Addressed; Alternatives 2, 3 and 4 propose designation of roads, trails and areas. These designations include roads, trails, and areas that are currently open to motorized and mechanized uses. Alternatives 2, 3 and 4 make progress towards offering a variety of primitive and motorized recreation opportunities. Proposed changes maintain or make progress toward this desired condition over the long term, although alternatives 2, 3, 4 reduce roads, trails and areas open to mechanized and over-snow motorized uses. The project is designed in accordance with this guideline as mechanized and over-snow motorized recreation opportunities are allowed in scenic area, although they would be reduced.

MA5a, b, c-DC-AR-01. These areas provide more remote and undeveloped recreation experiences largely through the management of the various trail systems (i.e., motorized and non-motorized).

MA5a-GDL-AR-02. Additional routes and areas should not be designated for motor vehicle use in MA5a.

MA5a, b, c-GDL-AR-05. Mechanized use is allowed (e.g., mountain bikes and other wheeled equipment).

How Addressed; Alternatives 2, 3 and 4 propose in general a reduction of roads, trails and areas where motorized or mechanized use is allow. The project is designed in accordance with this guideline as no areas or routes are identified or designated that are not currently open to over-snow motorized or mechanized use. Blacktail Trail #92 (MA5A) is in an area currently open to motor vehicles, alternatives reduce the areas and routes open to over-snow motor vehicles use in various alternatives. Alternatives 2, 3 and 4 make progress towards offering a variety of primitive and motorized recreation opportunities.

The effectiveness of travel management decisions relies upon education, voluntary compliance, monitoring uses of the area, and re-evaluation if non-compliance occurs.

Federal Law

- The Montana Wilderness Study Act of 1977 (PL 95-150) S393
- Pacific Northwest National Scenic Trail (Omnibus Act of 2009 PL 111.11)

The Ten Lakes WSA has been carved out by Congress for special protection. Public demand for motorized or mechanized uses, the balancing of competing interests, and "managed growth" are not the governing standards under the Montana Wilderness Study Act. Instead, Congress has directed the Forest Service to maintain the 1977 wilderness character of the area. That is the primary duty of the Forest Service, and it must guide all decisions as the first and foremost standard of review for any proposed action (Vol 4-89).

Once it is determined that the proposed action will maintain that 1977 wilderness character, and only at that point, the Forest Service may engage in its traditional balancing-of-interests analysis (Vol 4-89). Wilderness Character is described as improved, preserved, or degraded by the actions managers take or not take (Vol 4-1). WSA qualities measures for each alternative, include the no action, was evaluated against the 'presently existing (1977) existing condition. See WSA section.

The Pacific Northwest National Scenic Trail, which goes through the project area, was designated by Congress in 2009. A management plan for this trail is currently underway.

Regulation and Executive Orders

Regulation and Executive Orders (EO):

- 36 CFR Part 212 Travel Management
- Executive order 11644, as amended by Executive Order 11989

When designating public off-road motor vehicle use on National Forest System trails and areas on National Forest System lands, the 2005 Travel Management Rule requires Forests to consider effects on National Forest System natural and cultural resources, public safety, provision of recreational opportunities, access needs, conflicts among uses of National Forest System lands, the need for maintenance and administration of roads, trails and areas that would arise if the uses under considerations are designated; and the availability of resources for that maintenance and administration.

Executive Order 11644 (1972, amended 1978) established requirements on the use of motor vehicles off of roads. The purpose set out in that E.O. is "to establish policies and provide for procedures that will ensure that the use of off-road vehicles on public lands will be controlled and directed so as to *protect the resources of those lands, to promote the safety of all users of those lands, and to minimize conflicts among the various uses of those lands*." Specific requirements of the EO were carried into regulations at 36 CFR 212 Subpart B and C. 36 CFR 212.55(b) includes what have commonly been referred to as the minimization criteria. It states, "the responsible official shall consider effects on the following, with the objective of minimizing:

1. Damage to soil, watershed, vegetation, and other forest resources;
2. Harassment of wildlife and significant disruption of wildlife habitats;
3. Conflicts between motor vehicle use and existing or proposed recreational uses of National Forest System lands or neighboring Federal lands; and
4. Conflicts among different classes of motor vehicle uses of National Forest system lands or neighboring Federal lands.

For this analysis this would include over-snow motorized trails and areas. The alternatives proposed allowing (designate) over-snow motorized trails and areas where it is compatible with maintaining other resource values and minimize conflicts.

Throughout the analysis, including public comments and the TAR, the ID Team identified routes and areas where it was apparent resource effects associated with use of motorized vehicles were occurring (VOL 4-87, 4-91, 4-92, 4-74, 4-90). These effects were mainly focused on wildlife concerns in early spring (see wildlife section). The 2009 TAR explored proposals to separate uses, primarily through construction of new trails to provide loop opportunities, and restricting stock or mountain biking to reduce conflict or safety concerns. Construction of new trails within the WSA was not proposed in any alternative, as it would not maintain the wilderness character 1977 existing condition.

Conflicts between Motorized Over-snow Vehicle Use and Existing Proposed Recreational Uses of NFS Land or Neighboring Federal Lands

Over snow vehicle use can have a negative effect, due to primarily to noise and exhaust pollution, on primitive, semi-primitive non-motorized dispersed recreation. Over snow vehicle use has a positive effect on semi-primitive motorized classes of dispersed recreation, allowing winter recreationists to enjoy the winter landscapes of the backcountry.

There is a great difference in opinions regarding the effects on a person's recreational experience when they encounter others on a road or trail. Some people using non-motorized modes of travel become upset when they encounter or hear motorized equipment. Some express concern about safety when encountering motorized vehicles. The reverse situation is not as frequently true; most people using motorized modes of travel do not seem to be disturbed when they encounter people on foot, horseback, or bicycles.

Often the situation is defined as "conflict of use," but there generally is not physical or safety conflict associated with one party encountering another party on the trail. The situation is more accurately described/defined as failure to fully meet the social expectation of the visitor. Face-to-face trail encounters between different kinds of users are usually polite. Use conflict involves one's willingness to accept other uses on trails, fear about losing one's use of a trail, or concern for the natural resource. Non-motorized users may become dissatisfied, disappointed, or angry when recent motorized use has changed a smooth and compacted trail tread into loose, churned, or eroded tread, or users went off the existing trail tread, especially when using a favorite trail.

Typical findings is that use conflicts are almost always one way. For example, skiers perceive snowmobilers interfering with their activity, but snowmobilers are generally indifferent to skiers (Jackson and Wong 1982). Trail users may have different understanding regarding who has the right of way. Use conflict can occur when use restrictions on roads and trails are not clearly understood, observed, or enforced. The degree of use conflict depends on the individual, the group they identify with, their experience, and the recreational setting of the particular road, trail, or area.

Best management practices for addressing conflict between users and safety of users include a separation of uses (Vol 4-121) readily available information such as OSVUM maps and signs (Vol 4-83). Primitive uses would be allowed in 100% of the project area in all alternative. Separation of uses considered included providing quite areas, where motorized travel is prohibited.

Alternatives

In Alternative 1, season 1 and 2 there would be no quite areas in the project area for over snow users. All of the project area would remain open to over-snow motorized use. Alternative 1 has the highest potential for conflict between quiet and over-snow motorized users and they share all of the same area and routes. In the 2009 TAR conflict, or safety issues between snowmobilers and cross-country users was noted. Since there are no partners to manage cross country ski routes, skiers may utilize groomed or regularly used snowmobile routes, creating potential conflict as snowmobilers must be on the lookout for skiers. Conversely, as 100% of the project area is open to over-snow use, quite users may feel they have no place to go to 'get away from it all'. Motorized uses would be maintained, with no quite areas identified.

Alternative 2, season 1 includes area and temporal restriction, with over-snow motorized use permitted on approximately 57% of the area, with 43% of the area for quite use. Access to recreation sites such as Weasel and Wolverine Cabins would be in motorized areas. The area where a motorized free (quite) area would be designated includes west of Poorman and Green Mountains in the Blacktail basin, Ksanka face, and south of Mt. Gibralter. On the south side of the project area Road #756 outside of the WSA would remain open to motorized use. However Therriault Creek route (Trail #87), an access route off Road #756, to Therriault Lakes through the WSA would be restricted to primitive uses only.

Therriault Creek (Trail #87) was identified by motorized/mechanized users to help reduce drive time (Vol 4-85). This area was previously identified by cross country non-motorized users and designated as NFS SNO-Trail 95 (Vol 4-86). Access to the Therriault Creek route on Road #756 is narrow and can become icy creating safety concern with mixed primitive and motorized travel. Restricting Therriault Creek (Trail #87) to primitive uses would reduce the number of motorized users (would not be a through route to Therriault Lakes), and potentially reduce conflicts and safety concerns between on Road #756. While this route is designated as a NFS Snow Trail, there is currently no club or organization that manages or grooms this areas. Motorized use would be maintained in most of the area, with some quiet use areas being designated.

Alternative 2, season 2 includes area and temporal restrictions, with over-snow motorized uses only permitted on designated routes, and areas outside of the WSA. The area around Wolverine cabin would be quite, while access to Weasel Cabin would be in a motorized area. This would provide for large contiguous areas designated for quite user in high elevation back country, and a quiet route up Therriault Creek, , Motorized uses would be restricted to lower elevations along open roads. The physical separation of use would potentially reducing conflict between primitive and motorized/mechanized users. However over-snow motorized use would be concentrated in smaller areas and designated routes only, which may increase safety issues between motorized users with the concentration of use and limited opportunity. Clearly designated areas where over snow motorized uses are allowed (OSMVUM), and subsequently quiet areas are, would potentially reduce conflicts between motorized and primitive (stock, hike, cross country ski) users. Motorized use would be reduced over all, with larger quite use areas being designated.

Alternative 3, season 1 includes area and temporal restrictions, with over-snow motorized use permitted on approximately 75% of the area, with 25% of the area for primitive uses. Access to recreation sites such as Weasel and Wolverine Cabins would be in motorized areas. The area where quite use would be in limited to lower sections of Ksanka Face and south of Mt. Gibralter. The Ksanka face area faces the valley, private property, and community of Eureka, where outside motorize noises may be heard. Over-snow motorized user would be allowed on Therriault Creek (Trail #87), which would potentially increase conflict and reduce safety due to narrow and icy

conditions on road #756. Motorized use would be maintained in most of the area, with limited quite areas being designated.

Alternative 3, season 2 includes area and temporal restriction, with over-snow motorized use on permitted on only 7% of the area and designated routes, with 93% of the area for primitive uses. Access to recreation sites Weasel and Wolverine Cabins would be in motorized areas. The area where quite use would designated would include higher elevations with the exception of a route between Therriault lakes and Stahl Creek. Clearly designated areas where over snow motorized uses are allowed (OSMVUM), and subsequently quiet areas are, would potentially reduce conflicts between motorized and primitive (stock, hike, cross country ski) users by providing separate areas. Motorized use would be maintained is most of the areas identified as most used by users, with quiet areas designated in higher elevations.

Alternative 4, season 1 includes area and temporal restriction with over snow-motorized uses permitted on 1% of the area, and designated routes, with 99% of the area for primitive uses. Access to Weasel Cabin and immediately around Therriault Lakes would remain motorized. Access to Wolverine Cabin would be non-motorized. This would provide for the largest contiguous quite areas. Over-snow motorized uses would be concentrated on designated routes only, which may increase safety issues between motorized users with the concentration of motorized use with limited opportunity. Alternative 4, season 2 would provide 100% quite use in the project area, eliminating potential for conflict with motorized uses. Clearly designated areas where over snow motorized uses are allowed (OSMVUM), and subsequently quiet areas are, would potentially reduce conflicts between motorized and primitive (stock, hike, cross country ski) users by providing separate areas. Motorized use areas would be reduced, with quite areas increased.

Conflicts among Different Classes of Motor Vehicle Uses of NFS Lands or Neighboring Federal Land

There is very little use by any other motorized vehicles during the season 1 or 2 in areas proposed for snowmobile use. Snowmobiles are the primary motor vehicles in the project area. The only potential conflict among different classes of motor vehicle use in winter is early spring ATV use on roads designated for wheeled motor vehicle use yearlong and tracked OHVs. Full size vehicles also occasionally use open routes when snow levels are low. Legal ATV and full size vehicle use can rut the snow enough to make snowmobile use difficult.

An example of changing technology is the use of snow bikes (created by installing an aftermarket kit that allows dirt bikes to be converted to include a ski on the front and a track on the rear). There has been very limited use of these machines believed to be occurring in the project area; however, there is concern amongst some members of the public that snow bikes are being used in places previously inaccessible to snowmobiles.

Montana Department of Fish, Wildlife and Parks (FWP) defines a snowmobile as “a self-propelled vehicle of an overall width of 48" or less, excluding accessories, designed primarily for travel on snow or ice, that may be steered by skis or runners and that is not otherwise registered or licensed under the laws of Montana”. Under this definition, snow bikes are subject to the same allowances, restrictions and prohibitions as snowmobiles in the project area. (http://fwp.mt.gov/education/outdoorRec/snowmobile.html).

The Over Snow Vehicle (OSV) Rule (2015) requires that the Forest Service designates over snow use by class of vehicle and time of year. 36 CFR 212.81(a). The Department included class of vehicle to enhance consistency with subpart B, to allow Responsible Officials to take into account

changing technology in OSVs. As national forests and grasslands make decisions for OSV use, an over snow vehicle use map (OSVUM) is published, showing what roads, trails and areas are open to OSVs, by class of vehicle and time of year. Snow bikes are regulated along with snowmobiles to meet state definitions and law, and Forest Service regulations.

Conflicts between classes of motor vehicle uses have not been observed. There are no other classes of motor vehicle uses that would potentially conflict with snowmobile use. There are no projected conflicts between different classes of motor vehicles in Season 1 or 2 in any alternative.

Degree to Which the Purpose and Need for Action is Met

Alternatives 2, 3, and 4 meet the purpose and need for action. An over-snow vehicle use map (OSVUM) as outlined in 36 CFR212 and special orders for mechanized use would be issued with the Record of Decision.

Recreation Table 5. Summary Comparison of How the Alternatives Address the Purpose and Need

Purpose and Need	Indicator/ Measure	Alt 1	Alt 2	Alt 3	Alt 4
Develop summer and winter travel plans for WSA	Travel Planning MVUM, OSVUM, and special orders	None Current 2015 None None	Complete Current 2015 Complete Complete	Complete Current 2015 Complete Complete	Complete Current 2015 Complete Complete

Degree to Which the Alternatives Address the Issues

Below is a summary of the degree to which the alternatives address the issue(s) relevant to the recreation resource.

Recreation Table 6. Degree to Which the Alternatives Address the Issues

		Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4
Issue 2: Change in recreation opportunity (area/miles available)	Primitive Season 3				
	Primitive (open)[1]	None	None	None	None
	Primitive (quiet)[2]	None	Increase	Increase	Increase
	Mechanized	None	Reduce	Reduce	Reduce
	Primitive Over-snow				
	Primitive (open)[1]	None	None	None	None
	Primitive (quiet)[2]	None	Increase	Increase	Increase
	Mechanized Over-snow				
	Season 1	None	Reduce	Reduce	Reduce
	Season 2	None	Reduce	Reduce	Reduce
	Motorized Over-snow				
	Season 1	None	Reduce	Reduce	Reduce
	Season 2	None	Reduce	Reduce	Reduce

1 Primitive (open) included all routes or areas, as there are no restrictions in the project area on primitive uses.

2 Primitive (quiet) are routes or areas which are closed to motorized uses, with only primitive uses allowed.

Wildlife

Introduction

The Kootenai National Forest (KNF) provides habitat for over 300 different species of wildlife (USFS 2003) which is one of several natural resources that the Forest manages for. The National Forest Management Act (NFMA) specifies that the National Forest System be managed to provide for a diversity of plant and animal communities to meet overall multiple-use objectives. The "specific land area" (scale) for providing diversity is established in the framework as the area covered by a Forest Plan.

Many of these 300 species of wildlife occur within the project area. The presence or absence of these wildlife species depends in part on the amount, distribution and quality of habitat used by each species. In addition to habitat changes, a number of these species are impacted by hunting or trapping. The Montana Department of Fish, Wildlife & Parks (MFWP) regulates game animal populations through hunting permits and seasons. The Forest Service and the MFWP work together to ensure that an appropriate balance is maintained between habitat capability and population numbers. The Forest Service also works closely with the U.S. Fish and Wildlife Service (USFWS) to assist in the recovery of animals listed under the Endangered Species Act (ESA). Proposed federal projects which have the potential to impact species protected by the ESA require consultation with the USFWS.

For the purpose of this Environmental Impact Statement, a number of wildlife species were selected for detailed analysis. The species chosen includes three groups: 1) threatened, endangered, and proposed species that may be present on the KNF as determined by the USFWS, 2) sensitive species which are designated by the Regional Forester, and 3) other species/habitat of interest. Species that would not be affected by any of the action alternatives are reviewed, but not discussed in detail.

The wildlife analyses include direct, indirect, and cumulative effects of the proposed alternatives. Cumulative effects include past actions with ongoing effects (existing baseline) and effects of ongoing and reasonably foreseeable actions that are cumulative with the effects of the proposed alternatives."

Threatened, Endangered, and Proposed Species

Introduction

Federally listed endangered species are those species in danger of extinction throughout all or a significant portion of its range and currently none are found on the KNF. Threatened species are those species which are likely to become an endangered species within the foreseeable future and include grizzly bear and Canada lynx. Also found on the KNF is designated lynx critical habitat. Proposed species are those proposed in the Federal Register to be listed under section 4 of the ESA; the wolverine is again proposed for listing (2016) and will be addressed under this section.

Regulatory Framework

The ESA of 1973 declares that all Federal agencies… "utilize their authorities in furtherance of the purposes of this Act by carrying out programs for the conservation of endangered species and threatened species listed pursuant to section 4 of this Act." Under provisions of the ESA, federal agencies shall use their authorities to carry out programs for the conservation of listed species, insuring any action authorized, funded, or implemented by the agency is not likely to: 1)

jeopardize the continued existence of any threatened, endangered, or proposed species or 2) result in the destruction of or adverse modification of critical habitat (16 USC 1536).

The National Forest Management Act (NFMA) directs the Forest Service to "provide for diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet overall multiple-use objectives."

This Environmental Impact Statement analyzes the potential effects of the proposed management treatments on all threatened and endangered species known or suspected to occur in the proposed action influence area (T, E, & P Species Table 1). The species list comes from the USFWS Montana Ecological Services Field Office website, www.fws.gov/montanafieldoffice/, which is current as of January 2016.

T, E, & P Species Table 1. Threatened, Endangered, and Proposed Terrestrial Wildlife Species in the Ten Lake Travel Management Project Area

Species	Determination*	Comments
Grizzly Bear (Ursus arctos horribilis) Threatened	MALAA – Alternative1 and 3 MANLAA – Alternative 2 and 4	Grizzly bears and their home ranges are documented within the project area.
Canada Lynx (Lynx canadensis) Threatened	MANLAA – Alternatives 1, 2, 3, 4	Lynx presence is documented within the project area.
Canada Lynx Critical Habitat	MANLAA – Alternatives 1, 2, 3, 4	The project area is located in designated critical habitat within Northern Rocky Mountains Critical Habitat Unit #3.
Wolverine (Gulo gulo) Proposed	WNJCE – Alternatives 1, 2, 3, 4	Wolverine presence is documented within the project area.

* Determination Key: MALAA = May Affect, Likely to Adversely Affect; MANLAA = May Affect, Not Likely to Adversely Affect; and WNJCE = Will Not Jeopardize the Continued Existence.

Grizzly Bear

Introduction

Grizzly bears are considered a generalist species in that they can and will use a variety of habitat types and seral conditions. Use of these habitats is generally dictated by food availability and distribution, as well as security from human disturbance and human-caused mortality. The availability of secure habitat is primarily influenced by motorized access management which, if not managed or mitigated, can negatively impact habitat use and increase the potential for grizzly bear mortality through human-grizzly interactions and the introduction of attractants. Therefore access management, as proposed or associated with other proposed activities, is a focus of the grizzly bear analysis. The Ten Lakes Travel Management project develops summer and winter motorized and non-motorized travel plans for the Project area and analyzes the effects to grizzly bears during these time frames. Vegetative management (harvest or burning) is not part of the proposed action or alternatives, and therefore will not be discussed in this project

Summary of Conclusions

The Ten Lakes Travel Management Project's proposed action and alternatives would significantly reduce the area where over-snow activities can occur as well as define starting and ending dates for seasons of over-snow use. These actions would reduce potential disturbances to bears, particularly females with young, directly after den emergence and in spring habitat. The Action Alternatives also define summer time use of trails open to mechanized use (see Recreation section for definitions). No changes to summer time motorized use of either roads or non-motorized use of trails are proposed. Action Alternative 3 could result in disturbance of females with cubs due to an overlap of over-snow activities and mapped denning habitat during emergence from the den. Therefore implementation of **Alternative 3** would result in a determination of **may affect, is likely to adversely affect** grizzly bears. Alternative 2 does not include any overlap of over-snow activities and mapped denning habitat during emergence from the den and Alternative 4 ends motorized over the snow activities on March 31st, before den emergence typically starts. Therefore implementation of **Alternatives 2 and 4** would result in a determination of **may affect, is not likely to adversely affect** grizzly bears. In all action alternatives, the potential for disturbance is greatly reduced from the existing condition.

Regulatory Framework

2015 Forest Plan

The 2015 Forest Plan provides overall guidance for the management of the lands on the KNF. It describes the goals, desired conditions, and objectives toward which the management of the land should be directed. It also establishes standards and guidelines to help achieve or maintain the desired condition or conditions, to avoid or mitigate undesirable effects, or to meet applicable legal requirements.

The plan components which provide specific grizzly bear resource direction relevant to this project include:

FW-DC-WL-02	FW-DC-WL-04	FW-DC-WL-05
FW-STD-WL-02	FW-STD-WL-03	FW-STD-WL-05
FW-GDL-WL-01	FW-GDL-WL-15	GA-DC-WL-TOB-01

There are several other 2015 Forest Plan components that provide resource direction for a range of wildlife species or habitat conditions that are not specific to grizzly bears, but still are applicable to grizzly bear management. The full list of the plan components applicable to grizzly bear management are found in the "Regulatory Framework Findings" section of this analysis.

Grizzly Bear Habitat Analysis Framework

The proposed Ten Lakes Travel Management project is located in the Northern Continental Divide Ecosystem (NCDE) grizzly bear recovery zone. The Ten Lakes Travel Management project area is located entirely within the Murphy Lake BMU (Bear Management Unit) and encompasses approximately 90% of the entire Therriault sub-BMU and a very small portion of the northern part of the adjacent Krinklehorn sub-BMU (T, E & P Species Figure 1). These two sub-BMUs make up roughly 3% of the entire NCDE which also includes land managed by Glacier National Park, four other National Forests, as well as State, Tribe and private lands.

On NFS lands, the objectives of land management within grizzly bear habitat "are to maintain and enhance habitat and to minimize potential for grizzly-human conflicts" (IGBC 1986, pg. 2).

Identifying and managing key stressors and trending towards desired vegetative conditions similar to what grizzly bears evolved with would meet the intent of the Interagency Grizzly Bear Guidelines (IGBC 1986) and 2015 Forest Plan direction. The Ten Lakes Travel Management project does not include any vegetation projects, but identifies the key stressors that are applicable for grizzly bears in this project.

The following analysis addresses potential key stressors (risks and threats) and their effects to grizzly bears. These are activities that might impact grizzly bears if not managed or mitigated and some are outside of Forest Service control, such as activities that occur on adjacent private lands. The wildlife specialist report for the 2015 Forest Plan identifies five potential key stressors under Forest Service control: 1) attractants, 2) road impacts,3) motorized over-snow vehicle use after spring emergence, 4) livestock/grizzly bear interaction, and 5) major ground disturbing activities (mining) (Anderson 2014). Only those key stressors applicable to the existing condition of the project area and/or the proposed actions (stressors 1-3) will be discussed.

Also addressed are Forest Plan desired conditions, objectives, standards, and guidelines applicable to grizzly bears and this project, specifically the following two desired conditions: **FW-DC-WL-04-** "All grizzly BMUs have low levels of disturbance to facilitate denning activities, spring use, limit displacement, and reduce human/bear conflicts and potential bear mortality. Spring, summer, and fall forage is available for the grizzly bear"; and **FW-DC-WL-05-** "Recovery of the grizzly bear is promoted by motorized access management within the KNF portion of the Northern Continental Divide Ecosystem (NCDE) and Cabinet-Yaak recovery zones". For grizzly bears, these elements of the Forest Plan have been grouped into the following categories: A) Effects of Over-snow motorized vehicle use on seasonal habitat; B) Effects of Over-snow non-motorized vehicle use on seasonal habitat; C) Effects of Summer Non-motorized Use on Grizzly Bears and: D) Key Stressors from the Forest Plan not discussed in A-C above.

Effects analysis for the Ten Lakes Project considers the potential key stressors, compliance with management direction, and best science. In addition, potential effects from agency implemented or permitted activities (construction of a four season pavilion) will be addressed.

The NCDE Grizzly Bear Conservation Strategy is currently in a draft form, and would be incorporated as an amendment to the 2015 KNF Forest Plan once the grizzly bear in the NCDE is delisted (FW-GDL-WL-15). The Ten Lakes Travel Management project's alternatives were designed with consideration of the elements in this strategy.

Resource Indicators and Measures

For the grizzly bear analysis, effects of motorized and non-motorized winter travel on grizzly bears shortly after den emergence and in spring habitat will be examined. The measure for effects during den emergence are the acres and percentage of modeled denning habitat receiving motorized use within designated over-snow areas and routes. The measure of effects to spring habitat will be the acres and percentage of spring habitat receiving motorized use. Motorized over the snow activities after April 1st may reduce effectiveness of secure habitat for a short period of time. The overall assessment of grizzly bear habitat also considers other activities or conditions that can affect the suitability and use of the analysis area for daily and annual requirements (stressors identified in the Forest Plan and not previously discussed). These are assessed in the effects section to follow.

T, E, & P Species Table 2. Resource Indicators and Measures for Assessing Effects (inside the recovery zone).

Resource Element	Resource Indicator	Measure	Used to Address: P/N or Key Issue?	Source
Den emergence habitat affected	Changes in the acres/percentage of denning habitat receiving motorized use after April 1st.	Acres/Percentage of Denning habitat receiving motorized use from over-snow areas after April 1st.	Key Issue	FW-GDL-WL-01 FW-DC-WL-04 GA-DC-WL-TOB-01
Spring Habitat	Changes in the acres/percentage of spring habitat receiving motorized use.	Acres/Percentage of Spring habitat receiving motorized use.	Key Issue	FW-GDL-WL-01 FW-DC-WL-04

Methodology

Habitat parameters (denning habitat, spring habitat) and acres were calculated using geographic information system (GIS) applications using project area, sub-BMU, proposed over-snow areas and routes, and road information. Activity area acres and route lengths are in decimal format. Therefore, there may be slight differences in acres or mile totals as presented in the following analysis than elsewhere in the document (e.g., project description) depending on when rounding of the decimals took place (e.g., rounding each individual unit before summing or totaling all acres then rounding).

In 1994, the Interagency Grizzly Bear Committee (IGBC) created a taskforce to evaluate current state and federal procedures for evaluating the effects of motorized access on grizzly bears within recovery areas. A revised final report from this taskforce was completed in 1998 (IGBC, 1998), and included standardized recommendations and definitions established to provide consistent methods of analyzing and displaying the effects of human access on grizzly bear habitat. These recommendations were based on the Mace and Manley (1993) progress report from research on grizzly bears in the South Fork of the Flathead River which introduced the concept of using a "moving window" GIS-based analysis to quantify Open Motorized Road Density (OMRD) and Total Motorized Road Density (TMRD), as well as defining areas free of motorized access (Core areas). In 1995, the Flathead National Forest produced a Biological Assessment for an amendment to their Forest Plan (A19) using the moving window analysis approach and applying findings of Mace and Manley to determine a Core: OMRD: TMRD standards for BMUs within the NCDE on the Flathead National Forest. Other Forests within the NCDE (including the Kootenai's portion of this ecosystem) followed the 1998 IGBC recommendations as "best science". The 2015 Kootenai Forest Plan established Core, TMRD and OMRD parameters for the Krinklehorn and Therriault sub-BMUs.

Data Sources

Grizzly bear population ecology, biology, habitat description and relationships identified by research are described in USFWS (1993), Mace, 2011, annual progress reports and Kendall et al. 2009 for the Northern Continental Divide Ecosystem (NCDE). They are also described by the Kootenai National Forest Plan Amendment for Motorized Access management Within the Selkirk and Cabinet-Yaak Grizzly Bear Recovery Zones (2011) and corresponding biological opinion (BO) (USFWS 2011), herein referred to as the Access Amendment, as well as the Kootenai National Forest Land Management Plan and FEIS, and its corresponding BO (USFWS 2013) and

BOs from other winter travel projects such as the Blackfoot-North Divide Winter Travel Project (2010). That information is summarized below. Grizzly bear occurrence data comes from recent District wildlife observation records, Forest historical data (NRIS Terrestrial), and other agencies (USFWS, MFWP).

Assumptions and Limitations

There are no other assumptions or limitations associated with this resource analysis.

Affected Environment

Spatial and Temporal Context for Effects Analysis

The majority of the proposed project is located in the Northern Continental Divide (NCDE) grizzly bear recovery zone (USFWS 1993). The NCDE is large and diverse, meaning that grizzly bear habitat and use in one part of the ecosystem may not be reflected throughout the whole ecosystem.

Grizzly bear habitat in the NCDE was initially delineated into BMUs or Bear Management Units. It was then further divided into sub-BMUs to better reflect grizzly home range sizes. On the Fortine Ranger District, the Murphy BMU is the portion of the NCDE that occurs on the KNF and is made up of the Therriault and Krinklehorn sub-BMUs (T, E & P Species Figure 1). The Project Area encompasses the majority of the Therriault sub-BMU and includes a very small portion of the Krinklehorn sub-BMU.

Breaking the ecosystem down into smaller units, i.e. Bear Management Units or sub-BMUs (NCDE) allows for analysis to consider effects associated with the activity's area of influence and so that potential effects will not be minimized by considering too large an area (IGBC 1990). These units (sub-BMUs in the NCDE or BMUs in the CYE) are biologically meaningful to grizzly bears in that they 1) are based on the average size of a female bear's home range, 2) provide seasonal and elevational movement in response to needs (e.g. food and denning habitat), and 3) provide contiguous, unobstructed habitat allowing for displacement (i.e. Core) (Christensen and Madel 1982, IGBC 1990). Delineating these boundaries using topographical features establishes a recognizable unit for management consistency, allowing for identification of management needs or concerns, activity planning, scheduling, coordination, and monitoring (Ibid) within and among adjacent ranger districts, national or state forests.

Christensen and Madel (1982), in Cumulative Effects Analysis Process chose a 515,000 acre cumulative analysis area which represented 56% of the Cabinet-Yaak recovery zone and was the focal point of mineral exploration and development on the forest. In this analysis, it was assumed that if each smaller bear unit within that analysis area is maintained in a viable condition, the total of all bear units would remain a viable habitat. This well-established premise led to the establishment of the sub-BMU in the NCDE as the analysis area for analyzing and monitoring effects, including cumulative effects, to the grizzly bear (IGBC 1994, McMaster 1995, IGBC 1998).

The proposed actions include the development of winter and summer travel management plans within the project area, as well as the construction of a four season pavilion. No new roads or trails are being proposed, however motorized over-snow seasons of use will be defined as well as defining existing trail miles open to mechanized use (see definitions in the recreation section). A large contiguous block of core, over 35,000 acres, is located within the Therriault sub-BMU, as well as another 35,000 acre block in the adjacent Krinklehorn sub-BMU, which provide large blocks of secure habitat in and adjacent to the project area. Other, smaller blocks of Core are also

found within the Therriault sub-BMU as well. Any bears potentially displaced during summer-time project activities, would likely move to the interior of the Therriault sub-BMU where these large, unroaded areas currently provide secure habitat. Therefore, affects to bears from project activities will be assessed within the Therriault sub-BMU.

The Ten Lakes Travel Management Project is proposing a travel management plan that only affects habitat within the Therriault sub-BMU. Therefore effects of the Alternatives will be shown on the Therriault sub-BMU. Although the Krinklehorn sub-BMU lies adjacent to the Therriault sub-BMU, the terrain in the higher elevations is steeper and generally more rugged. Grizzly bear habitat in this sub-BMU is generally similar to the Therriault sub-BMU however due to the more rugged terrain, there is less over-snow activity within the Krinklehorn sub-BMU. Because of the similar habitat and adjacency, grizzly bear habitat in the Krinklehorn sub-BMU may be referenced to depict a larger picture of the available habitat.

Temporal boundaries for the grizzly bear analysis include both long and short-term effects. Short-term effects are those that are expected to last between a few days to a season or portion of two seasons. Generally, once disturbance causing activities have been completed, bears can move back into and use the area. In this project, the effects of building a warming hut may constitute short-term affects. Defining seasons of use for over snow activities would be expected to have long-term effects, in that they are expected to last longer than a season or two. Limiting late-season over-snow travel would provide more security for sows with cubs of the year for the long term.

Existing Condition

Introduction

There are two grizzly bear recovery zones on the Kootenai National Forest (KNF), the Cabinet Yaak Ecosystem (CYE) and the Northern Continental Divide Ecosystem (NCDE). The project area encompasses a portion of the NCDE (T, E & P Species Figure 1). The portion of the NCDE that is on the KNF is only approximately 3% of the entire NCDE Recovery Zone. Habitat conditions in this area have improved over the last 20 years as documented by annual Kootenai Forest Plan Monitoring Reports (monitoring item C7). In 1993, USFWS (1993) estimated that there were between 549-813 bears within the whole ecosystem. More recent information (Kendall et al. 2009) estimated there were 765 bears within the ecosystem in 2004. After 7 years of grizzly trend monitoring work, the results estimate that there are over 1,000 grizzly bears residing in and adjacent to the NCDE recovery area, and the population is growing at a mean annual rate of approximately 3% (Mace, 2011). With the existing grizzly bear numbers at or nearing recovery levels, a NCDE Grizzly Bear Conservation Strategy was developed and is currently in a draft form. This document was developed to describe the management and monitoring efforts necessary to maintain a recovered grizzly bear population in the NCDE and would be incorporated as an amendment to the 2015 KNF Land Management Plan once the grizzly bear in the NCDE is delisted (FW-GDL-WL-15). District sighting reports and Forest Plan monitoring also support this as the number of grizzly bear sightings on the District have increased over the last 25 years. Information also suggests the NCDE grizzly bear population is also expanding its range. A mapping effort in 2002 (Wittinger et. al., unpublished report) used five years of data to map the area outside the grizzly bear recovery zones where grizzly bears were consistently being documented. Results indicated a relatively recent (10 to 15 years) of expansion of grizzly bears outside the NCDE recovery zone boundaries to the east, south and west.

Human use patterns within and adjacent to the project area can be characterized by dispersed summer recreation accessing the area mainly by the one main yearlong open road (Grave

creek/Therriault Lakes roads), limited spur roads off these main roads, as well as limited roads/trails accessing the western edge of the Therriault sub-BMU. Trail access is also available in the northwest corner of the project area. The trails are used by hikers, horseback riders and some mountain bike riders as well. There are two small campgrounds as well as numerous dispersed camping sites within the project area. There has been a consistent but not overwhelming human presence. The TLTM project area contains some very popular over-snow vehicle use areas and use has been occurring for several decades. The Ten Lakes Snowmobile club currently grooms approximately 34 miles of road open yearlong to motorized travel. Currently, the entire project area and sub-BMU are open to over-snow vehicle use with no restriction dates on that use. While the entire area is currently open for use, steep terrain and trees limits the majority of the use to only portions of the project area. See the Recreation section for more information on the existing recreation uses in the Project Area.

The majority of the Ten Lakes Travel Management Project Area lies within the Ten Lakes Wilderness Study Area, Ten Lakes Inventoried Roadless Area, or other MA's where summer motorized travel occurs only on designated routes. These areas overlap the Therriault sub-BMU. Much of the past timber harvest within this area occurred below 4000 feet, outside of the BMUs. Because of the management emphasis, and inaccessibility of much of the Project Area's land base, very little timber harvest or road building has occurred in the higher elevations, with much of it adjacent to the existing open roads.

Grizzly Bear Occurrence

Throughout the majority of the Therriault sub-BMU, highly suitable habitat occurs and seasonal or yearlong grizzly activity is common. Over the last ten years, numerous grizzly sightings have been recorded including grizzly bear family sightings (females with young) within and adjacent to the sub-BMU (sighting information located in permanent District files).

Much of the human-caused bear mortality within the NCDE continues to be associated with conflicts arising from attractants on private land and subsequent management removals of bears, resulting in approximately 33 percent of total grizzly bear mortality within the NCDE recovery zone between 2000 and 2012 (USFWS 2013). Causes of human-caused grizzly bear mortality have generally been due to factors beyond Forest Service control (e.g. illegal mortalities, collision with cars/trains, hunter mistaken identity or self- defense, and illegal kill by a human). Despite this level of human-caused mortality, the grizzly bear population has been increasing from 2004 – 2011 (USFWS, 2013).

Description of Analysis Areas

The Therriault sub-BMU is located within the Fortine Ranger District and is slightly larger than the 64,177 acres project area. The project area and Therriault sub-BMU northern boundary is also the Fortine district boundary as well as the U.S./Canada border (T, E & P Species Figure 1).

Existing Over-Snow Motorized Use

The Project Area contains some popular over-snow vehicle use areas. This use has been occurring for several decades. The Ten Lakes Snowmobile Club currently grooms approximately 34 miles of over-snow vehicle trails from December 1 through March 31. The groomed route starts at Birch Creek on the main Grave Creek Road (Road 114) and continues on Road 319 where it ends at Big & Little Therriault Lakes. This is one of the few open roads and the main year-round open road leading into the most popular over–snow areas on the Fortine District. Access and management opportunities are limited in this area because of Canada to the north, private land west and south of the project area, as well as the grizzly bear motorized standards,

and the non-motorized/non-motorized backcountry area designations to the east in the Krinklehorn sub-BMU (T, E & P Species Figure 3). This groomed route is also the boundary between the Therriault and Krinklehorn sub-BMU's, with the vast majority of the snowmobile activity occurring within the Therriault sub-BMU. All of the groomed areas are on roads that are open year-round to highway legal vehicles. These routes typically cannot be utilized by wheeled vehicles during the winter months due to snow depths.

Currently, most of the area within the Therriault BMU and Krinklehorn BMU are open to over-snow vehicle use, however in practical terms, much of this area is not actually useable by snowmobiles due to slope (steepness), vegetation (e.g., too densely forested), dangerous avalanche potential, and personal preferences. The Fortine Ranger District estimates that about 16,166 acres (see recreation section) currently receive the most common use based on ground observations, discussions with long-term snowmobilers in the area, and where slope and vegetation do not generally impede snowmobile use. The Fortine Ranger District acknowledges that use can likely occur outside of these areas by more experienced riders, however the majority of the use occurs within these acres.

General Effect to Grizzly Bear

A key habitat requirement for grizzly bears is the presence of suitable denning habitat. Past grizzly bear den sites have been documented within both the Therriault and Krinklehorn sub-BMUs (Manley, pers. comm. 2011). With advancing technology, there is a concern that over-snow vehicle travel could have potential effects on grizzly bears especially after den emergence. There are no known peer-reviewed scientific papers that discuss the effects of snowmobile use on grizzly bears. Most of the literature available is generally anecdotal, and summarizes information from research collections on reactions of grizzly bears to various winter disturbances (industrial activity), but not specifically snowmobiles (USFWS, 2013).

Response of and effects to denning bears from human disturbances were collected and summarized in Joslin and Youmans (1998), Linnell et.al. (2000), and USFWS, (2008, 2013). While den abandonment has been documented in association with industrial activity and direct approach, similar levels of disturbance have not led to den abandonment (USFWS, 2008, 2013). The Biological Evaluation for the 2015 Kootenai Land Management Plan states that, "The potential for disturbance to denning grizzly bears on the KNF does exist but it is low due to the low probability of a direct encounter of a snowmobile to a den and even in that unlikely case, the excellent insulative properties of snow to mitigate the noise."

Mace and Waller (1997) reported in their Swan Mountain grizzly bear study that they routinely observed snowmobile activity within two km of denning bears with no den abandonment. Tim Manley, Montana Fish Wildlife & Parks (MTFWP) grizzly bear management specialist, has reported seeing snowmobile tracks within the Project Area over the top of or close to a known denning bear (pers. comm. 2011). He flew over this radio-collared bear twice later in the year before the bear vacated the den during the time of typical den emergence.

It is generally agreed that disturbance from over-snow vehicles may be the most consequential shortly before or after den emergence of a female with cubs (USFWS 2013, 2008, Mace and Waller (1997), and Manley (pers. comm. 2011). This is the time when females with cubs are still confined to the den vicinity during spring. At this time females with cubs have high energetic needs, and cubs have limited mobility for several weeks after leaving the den. Disturbance levels that cause a female to prematurely leave the den in spring or move from the den area could impair the fitness of the female and safety of the cubs. There is potential to separate a mother from the cub, which could result in cub mortality, although these affects have not been documented. No

known grizzly bear mortality has been directly or indirectly attributed to people using snowmobiles anywhere in the NCDE (C. Servheen, electronic message. 2012). USFWS 2013 reports that "To date, we are unware of any documentation of snowmobile-related impacts on post-den emergent females with cubs, although detection of such events may go unreported".

While the timing of grizzly bear denning appears to be similar across the NCDE (Mace and Waller, 1997 – page 41), grizzly bear spring emergence from the den can be variable. Generally, females with cubs can emerge after April 1, while males generally emerge two weeks earlier. After den emergence in spring, grizzly bears seek sites that melt snow early and produce green vegetation (Kasworm et al. 2010, as reported in USFWS, 2013). These areas include places with low snow levels such as low elevation areas, riparian areas, and avalanche chutes with little snow. These areas are not typically suitable for over-snow activities due to lack of snow. In addition, the portion of the population using these habitats in early spring is most likely to be males and lone females, who are mobile and can move from disturbance (USFWS, 2013).

A. Over-snow Motorized Vehicle Use on Seasonal Habitats

Effects on Females with Cubs during Den Emergence

Past grizzly bear den sites have been documented within both the Therriault and Krinklehorn sub-BMU (Manley, pers. comm. 2011). Because it is not possible to know the locations of all active bear dens or dens used by females with cubs within the analysis area, analyzing the overlap of modeled denning habitat within the Project Area will show a worst case scenario of how much overlap of over the snow use and denning habitat occurs. As stated above, it is acknowledged that not every acre of the Project Area is used by over-snow vehicles and therefore a Most Common Use Area (MCUA) shows where the majority of the over-the-snow area occurs, and will be used to show a more realistic figure of how much overlap of over-the-snow use and denning habitat occurs. Denning habitat was modeled using the same parameters as the adjacent Flathead National Forest. This model used den site characteristics identified by Mace and Waller (1997), for bears that denned within the NCDE on the Flathead. This denning layer (Figure W-03) was reviewed by FWP biologists that aerially locate bears denned within the Whitefish range including the Galton range.

T, E, & P Species Table 3. Existing Condition of Motorized Over-snow Use within Most Common Use Area and Overlap of modeled grizzly bear denning habitat within the Project Area

Over-Snow Use Area	Existing Potential Denning Acres	Acres of Available to Over-snow-use	Potential Denning acres & (% of total acres) within Over-snow-area
Project Area	11,743	64,177	11,743 (100%)
Most Common Use Area (MCUA)	1903	16,166	1903 (16%)

All (100%) of the available potential denning habitat within the Therriault BMU is located within the area that could receive over-snow use (T, E & P Species Table 3). As stated earlier, much of this area is not actually useable or used by snowmobiles due to slope (steepness), vegetation (e.g.,

too densely forested), dangerous avalanche potential, and personal preferences. This is reflected by showing that 12% of the denning habitat receives known use in the most commonly used areas. There are currently no restrictions dates on over-the-snow vehicle use in the open areas.

The main Grave Creek/Ten Lakes road (Roads 144 and 319), its spurs and Road 1007 are the main access for over-snow vehicles to get to higher elevation riding areas within the project area (T, E & P Species Figure 3). These groomed roads receive the highest use level within the BMUs because 1) riders with all experience levels will use these roads as potentially their only route (due to the lower driving skills required for groomed routes going up to Big or Little Therriault Lake), and 2) these areas are also used by more experienced riders to access higher elevations. There are currently 33.8 miles groomed within the project area. The majority of the roads/routes used to access the over-snow areas lie below the elevation required for denning habitat and therefore would not be expected to overlap denning habitat.

The timing of grizzly bear denning appears to be similar across the NCDE (Mace and Waller, 1997 – page 41). Grizzly bear spring emergence from the den can be variable, however, generally, females with cubs can emerge around April 1, while males generally emerge two weeks earlier. Females with cubs of the year are more likely to emerge later from the den and spend more time in the vicinity of the den after emerging (Mace and Waller, 1997; pers. com. Manley, 2011). Sows with cubs may move a short distance from the den site to areas that provide less snow, some vegetation and cover in the form of trees. These areas may include rocky areas that encourage solar heating, thus providing some green vegetation and less snow so cubs can move around more easily (Ibid, Manley).

Temporally, the potential exists for interactions between snowmobiles and bears emerging from their dens. The greatest potential for interactions between snowmobiles and bears would be expected 1) at higher elevations where bears are emerging from dens (denning habitat overlapping with open over-snow areas (quantified for the existing condition in T, E & P Table 3 above).

Currently, over-snow activities extend beyond the April 1 date and are limited only by snow conditions. Although currently much of the area within the Therriault sub-BMU is open to over-snow vehicle use, and the potential denning habitat located within the area, much of this area is not actually useable by over-snow vehicles due to slope (steepness), vegetation (e.g. too densely forested), dangerous avalanche potential, and personal preference. Spring time use of the routes to these areas is often influenced by environmental conditions (e.g., winter snow pack, spring temperatures, and aspect) that can affect the location, amount, and condition of snow and whether is it suitable for use by snowmobiles or not. Suitability of the routes can vary from year to year depending on differences in these conditions.

Effects on Spring Habitat

Currently there are no restriction dates on the over-snow vehicle use in open areas. Therefore, spring snow conditions and general recreational use patterns dictate how long snowmobiles will recreate into the spring. Snow conditions can be suitable for snowmobiling to continue beyond April 1. However observational trends seem to show school spring break in late March and early April results in most over-snow vehicle users putting away their skis and snowmobiles and turning to more spring related activities. At this time, snowmobile use drops off dramatically. This trend was also noted by local game warden, Jim Roberts (now retired), who reports the number of over-snow vehicle users decreasing as they have to “chase” the melting snow up the main Grave creek road. He noted that when snowmobilers run out of snow at the Birch creek

snowmobile area, that parking further up the main road limits how many people can unload snowmobiles because the road becomes very narrow (pers.comm.2011).

Spring habitat components occur throughout the sub-BMU. The availability of stand openings and early successional vegetative communities are limited within portions of the sub-BMU. In the springtime, bears are known to forage in areas that green up early such as open side-hill parks and in wetter habitats such as snow chutes. The available spring habitat was modeled within the TLTM Project. There are 14,984 acres of mapped spring habitat (south and southwest-facing slopes) within the Project Area. In addition there are approximately 265 acres of avalanche chutes/slide areas that also provide spring habitat within the area. This habitat is well distributed throughout the project area (T, E & P Species Figure 2), and is found at varying elevations. It would be expected that use of these areas would be tied to the amount of snow on site. With all other factors being equal, it is expected that the lower elevation sites would be used early in the season and bears would move upslope as the melting snow made other areas available. As discussed in USFWS(2013), spring snowmobiling areas and spring grizzly bear habitat are almost mutually exclusive in that the areas that would be suitable for spring snowmobiling (i.e. more snowpack) would not typically overlap with spring grizzly bear habitat (less snowpack). Bears moving from the den sites may cross the motorized over-snow routes available on their way to spring range. The majority of the routes available in all alternatives occur on yearlong open roads. There is low probability of disturbance to bears on these routes at this time due to the decreasing use observed during this timeframe. In addition, spring range is well distributed across the project area with the majority of the spring range occurring away from the main Grave creek over-snow route (T, E & P Species Figure 2). The likelihood of disturbance to bears using or moving to spring range is low, therefore this habitat element will not be discussed further.

Spring Use and Security Habitat

Grizzly Bear access management applies within the NCDE recovery zone during the non-denning period from 4/1 to 11/30. Winter recreation primarily occurs during the grizzly bear denning season (Dec. 1 to March 30). Current over-snow use within the Therriault sub-BMU and project area extend into the grizzly spring bear emergence period (April 1st and later). Over-the-snow use off of these open roads could be temporarily reducing the effectiveness of security habitat. As discussed previously, although most of the area within the Therriault sub-BMU is open to over-snow vehicle use, much of this area is not actually useable by snowmobiles due to slope (steepness), vegetation (e.g., too densely forested), dangerous avalanche potential, and personal preferences. However, currently, there is no limit to areas or timeframes open to over snow use. Existing permits limit the grooming of the 33.8 miles in the project area past March 31. However, use of these and other routes continues past these dates, although the amount of use of the area decreases due to rougher routes and lower quality snow conditions.

Although over the snow motorized use currently occurs beyond the April 1 date, the increasing grizzly bear population trend in the NCDE indicates that the current motorized over -snow levels are not affecting grizzly bears in significant ways. This over-snow use has been occurring for several decades during which bear numbers have been increasing to the point of potential delisting in the near future.

The proposed action and alternatives make no changes to wheeled motorized access from the existing condition. Additionally there are no changes proposed to make existing non-motorized trails into motorized trails.

B. Existing Over-Snow Non-Motorized Use

Non-motorized road or trail use (such as cross country skiing or snowshoeing) could also affect denning habitat indirectly. In a study in the Swan Mountains in the NCDE, Mace and Waller (1996) found that grizzly bears avoided high use hiking trails, and in fact positioned themselves further from areas frequented by humans. It is expected that the same behavior could occur with non-motorized over-snow users, however the main skiing done in lower elevations do not typically overlap denning habitat which occurs at higher elevations. Currently, limited non-motorized over the snow use occurs within the BMU's. There are two cross-country ski trails that also use roads in the Therriault sub-BMU. These trails occur on non-groomed existing roads. Use and access depend upon snow conditions. The majority of the existing use occurs in the lower elevations off open roads, and generally not in the same areas of denning habitat. As with over-snow motorized use, areas used for skiing and snowshoeing are almost mutually exclusive to spring habitat in that areas used for spring non-motorized activities (more snowpack) would not typically overlap with spring grizzly bear habitat (less snowpack). These ski trails typically experience patchy snow conditions by April 1st. More recently, non-motorized snow bikes are available to recreationists and may be used in the Project area. Snowshoeing may also occur in the lower elevations, however steep terrain and limited road/route access (discussed above) generally limit interior use of the sub-BMU to all but the extreme users. Effects to bears during this winter/spring period of time would be similar to what is described for motorized over snow use, however the area used (potential denning habitat disturbed) and overall use is currently much less than the motorized use (see recreation section). No changes to over-snow non-motorized use are proposed as part of the Ten Lakes Travel Management Analysis, therefore no effects are expected as part of this proposal.

C. Existing Summer Non-motorized Use

There are approximately 88 miles of National Forest System trail in the Project Area. All of these miles are open to hiking, stock, and mechanized use (mountain biking). The most dominant use of the trails is hiking followed by stock. All trails are currently open to all of these uses and there is no restriction on mechanized uses in the project area. Grizzly bears use the project area in the spring, summer, and fall while trail use occurs (sightings in district files). KNF Forest Plan desired condition FW-DC-WL-04 states that "All grizzly BMUs have low levels of disturbance to facilitate denning activities, spring use, limit displacement, and reduce human/grizzly bear conflicts and potential bear mortality. Spring, summer and fall forage is available for the grizzly bear". The trail uses described above do not typically occur at the same time denning habitat and denning emergence habitat are used by bears. Spring habitat for bears can occur at lower elevations, but also occurs at higher elevations on south and west slopes. Much of this habitat is not accessible to users as many of the roads that access the area trails are not free of snow until early to mid-June depending on yearly snow conditions. The Therriault sub-BMU as well as the adjacent Krinklehorn sub-BMU include large security areas in contiguous blocks that are available as displacement areas for potential displacement due to existing summer use. These security levels exceed levels required for the adjacent NCDE forests as well as meeting KNF forest plan standards (FW-STD-WL-03). In addition, cover levels are high throughout the Project area and within these areas which enhances the condition of security.

Human/grizzly conflicts have been minimal in the project area, and no reports of food conditioned bears have been reported to the district. The district has been proactive in regards to food storage and sanitation on the Fortine District. Efforts to limit human/bear interactions include installing food storage boxes in the campgrounds, installing back country food poles, and employing a bear ranger over the last 8-10 years to educate forest users across the district but specifically in the project area. Grizzly bear use of the project area has been documented during

the spring, summer, and fall. The project area provides known bear foraging habitat in the spring, summer and fall. As stated above, bears in Swan Valley (Mace and Waller, 1997) tended to avoid higher use trails and lakes with campsites, while responding seasonally to habitat and topographic variables in search of known natural food sources. The majority of the recreational use in the Project area occurs off of these known trail systems or along open roads, and while sightings of grizzlies occur in the project area yearly, reported conflicts have been minimal.

D. Key Stressors from the 2015 Forest Plan (not already discussed above)

The intention of grizzly bear management on the KNF is to provide sufficient quantity and quality of habitat to facilitate grizzly bear recovery. As mentioned above, an integral part of the intent is to implement measures within the authority of the Forest Service to minimize human-caused grizzly bear mortalities. This goal is accomplished by addressing and mitigating the key stressors described above and achieving goals, desired conditions, objectives, standards, and guidelines identified by the 2015 Forest Plan applicable to grizzly bear recovery. Of the five key stressors listed above, only attractants will be discussed below in detail. Road impacts and motorized over-snow vehicle use are discussed in detail above, and the remaining two key stressors are not applicable to this project.

1) Attractants

Implementation of proposed activities and other permitted activities could result in the introduction of attractants in addition to those that may currently exist. Addressing this stressor includes identifying potential sources of attractants as well as measures taken to minimize the potential for grizzly-human conflicts. Attractants are discussed below during the timeframe bears are generally known to be active in the NCDE which is from April 1st through November 30th.

Eight Forest Service facilities or permitted facilities are found within or along the boundary of the sub-BMUs. These include two small fee campgrounds, two dispersed campgrounds, two lookouts, (one a rental), and two FS cabins (non-rentals). There are also a number of dispersed camping sites in this area. All facilities within the Project Area require users to pack out their garbage. In addition, food storage lockers were installed in major campgrounds and campsites within both sub-BMUs to keep attractants unavailable to bears. Major backcountry camp sites also have food storage poles to help users manage their attractants. Minimal conflicts between humans and bears have been reported in the sub-BMU. Attractants can also include such items as garbage collection sources. There are no garbage collection sites or food storage sites within the sub-BMU.

In 2011, the Kootenai National Forest signed a Food Storage Special order # F14-083-L-11. This order enacts occupancy and use restrictions on the entire Kootenai National forest designed to minimize adverse interactions between humans, bears and other wildlife and to provide visitor safety. This order required that food attractants (human, pet and livestock food) and refuse be stored in a bear-resistant manner during the active bear year. This order has been incorporated into all permits and contracts the Forest currently has and will authorize in the future. Taking into consideration the status of the habitat components listed above, mortality risk to the bear is generally low throughout most of the sub-BMU and project area.

2) Road Impacts

Current management of motorized routes, primarily roads, within grizzly bear habitat on the KNF is guided by the Forest Plan. Habitat parameters are based on prudently drivable roads and are used to evaluate the quality of grizzly bear habitat. Habitat parameters that directly measure motorized route density include OMRD and TMRD, while Core measures the amount of secure

habitat within the BMU(s) located at least 0.3 mile away from motorized roads and trails. All parameters meet KNF Forest plan access standards for the Therriault sub-BMU (FW-STD-WL-03). There are no motorized trails within the project area or Fortine District.

In addition, this project proposes non-winter trail designations to the existing trails, which are all non-motorized. These designations include the allowance of mountain bikes on certain existing trails. No increases or decreases in motorized miles of roads or trails are proposed with this project. Therefore, route densities (both TMRD and OMRD) and Core will not be impacted with this project. The effectiveness of habitat security is discussed above under the heading "spring use and motorized access management", therefore this stressor will not be discussed further.

Environmental Consequences

Alternative 1 – No Action

Alternative 1 would continue the current over-snow vehicle situation. There are currently no restriction dates within open areas and season of use is dependent upon snow conditions. Over-snow activities in this alternative occur both while bears are in the den and during/after den emergence.

Currently, 67,177 acres are available to over-snow use. All (100%) of the modeled denning habitat (11,743 acres) lie within this area available to over-snow use (T, E & P Species Figure 3). All motorized roads/routes within the project area are open to over-snow vehicles, although some receive more use than others.

Existing non-motorized over-snow activities do occur within the project area and include, skiing, snowshoeing, and potentially mechanized snow bikes. The effects of these activities on denning habitat would be similar to what is described for motorized over snow use, however the area used (potential denning habitat disturbed) and general use is currently much less than the motorized use (see recreation section).

Existing over the snow use within the Therriault sub-BMU extends into the grizzly bear spring emergence period (April 1st and later). Because the over-snow access to these areas occurs on yearlong open roads, open motorized road density (OMRD) and total motorized road density (TMRD) would not be affected during this period (after April 1st). Existing over the snow use off of these open roads could temporarily reduce the effectiveness of this habitat during the spring.

Spring habitat is plentiful and well distributed in the Project area. Although over-snow activities are occurring after April 1st, spring snowmobiling areas and spring grizzly habitat are almost mutually exclusive (see spring habitat discussion above). The existing grizzly bear numbers are growing as documented above in the "Grizzly Bear Occurrence" section, with the existing travel management in place.

Existing summer recreation consists of trails use by hikers, stock, and some mechanized use (mountain bikes etc.).There are currently 88 miles of trail open to these activities with no current restrictions on mechanized use. The most dominant use is hiking, followed by stock, and then mechanized use. There are no motorized trails in the project area. While grizzly bear spring, summer and fall habitat are found in the project area, and there is known use of these habitats, human/grizzly conflicts have been minimal (see section C. Existing Summer Non-motorized use).

Alternatives 2, 3 and 4 - Direct and Indirect Effects

Project Design Features

No project design features have been identified.

Action Alternatives

The Action Alternatives for over-snow motorized use were developed with the active bear year in mind (April 1 to November 30th – or the time bears are generally not denning), as well as using maps of the modeled denning habitat. This is consistent with Forest Plan Desired Conditions FW-DC-WL- 04, standard FW-STD-WL-03 and guideline FW-GDL-WL-01, and also follows the minimization criteria (EO 11644). All Action Alternatives have over-snow seasonal dates during which over-snow activities are allowed. Alternatives 2 and 3 propose two seasons of use, while alternative 4 would have one season of use. All Action Alternatives analyze the potential effects of over-snow use on bears after den emergence. These potential effects are quantified by comparing the amount of modeled denning habitat within allowed over-snow use areas by alternative during season 2 which overlaps the den emergence timeframe.

A. Over-snow Motorized Vehicle Use on Seasonal Habitats

Effects on Denning Habitat and the Effects to Females with Cubs during Den Emergence

T, E, & P Species Table 4. Acres of Allowable Over-Snow Area by Alternative in Season 2; And the Acres and % of Total Modeled Grizzly Bear Denning Habitat That Overlap With Allowable Over-Snow Area by Alternative in Season 2

Season of Use	Alternative 1 (No Action) One season. Limited only by snow access	Alternative 2 Season 1: Dec.1-March 31 Season 2: April 1-May 31	Alternative 3 Season 1: Dec.1-March 31 Season 2: April 1-May 31	Alternative 4 One season only Dec. 1 – March 31
Season 2 Acres Over-Snow Vehicle Area Use	64,177	0 acres of Areas used (Routes only)	4380 (7% of available acres)	NA
Season 2 Denning Habitat Acres affected & % Total Denning affected	11,743 (100%)	0 acres of Den habitat affected from Use Areas (Routes only)	320 3%	NA

Alternative 2

Alternative 2 proposes two seasons of over-snow use, each with a different amount of area, and roads/routes that are open to over-snow use. Season 1 would be from Dec. 1 through March 31st and generally covers the timeframe while bears are in the den. Season 2 would be from April 1st to May 31st and generally occurs during and after den emergence.

Den Emergence

Season 1 of this alternative would generally matches the timeframe when bears are in the den and would allow over-snow use on 36,703 acres or approximately 57% of the current or existing available over-snow area.

Season two would occur late in the over-snow season, generally during and after den emergence and would allow over-snow use only on roads/routes (T, E, & P Species Figure 4). None of these over-snow roads or routes would overlap mapped denning habitat and therefore would not spatially overlap den emergence habitat. Zero (0) acres of available over-snow *areas* would be allowed for this season in this alternative. In general, this alternative would include the routes available in season 1 except for the Blacktail trail route. No grooming of routes are allowed in this season meeting Forest-wide standard FW-STD-WL-05.

Season two of this alternative would allow over-snow activities after March 31. The only access open to over-snow vehicles in this season would occur on year-round open roads with short extension in the Stahl Peak area. This extension off the open road would temporarily reduce the effectiveness of habitat security near this area for a short period of time (April 1 – May 31). This alternative proposes a reduction in the allowable acres of motorized over-snow activity and allowable timeframe of this use from the existing condition. This would result in fewer potential effects to bears during and after den emergence than the existing condition.

Alternative 3

Alternative 3 proposes two seasons of over-snow use, each with a different amount of area, and roads/routes that are open to over-snow use. Season 1 would be from Dec. 1 through March 31st and generally covers the timeframe while bears are in the den. Season 2 would be from April 1st to May 31st and generally occurs during and after den emergence.

Season 1 of this alternative would generally match the timeframe when bears are in the den and would allow over-snow use on 48,605 acres or approximately 76% of the current or existing available over-snow area.

Season 2 would occur late in the snowmobiling season generally during and after den emergence and would allow over-snow use on 4380 acres or approximately 7% of the current or existing available over-snow area. Three percent (3%) of all denning acres (320 acres) occur within this proposed over-snow area (T, E &P Figure 5). Season 2 would allow over-snow activities after March 31. This would result in a large decrease in the amount of security habitat that would be available to over-snow habitat at this time compared to the existing condition. There would be a in a short-term reduction (April 1- May 31st) in the effectiveness of security habitat on these over-snow acres.

This alternative proposes a reduction in the allowable acres of motorized over-snow activity and allowable timeframe of this use from the existing condition. This would result in fewer potential effects to bears during and after den emergence than the existing condition.

Alternative 4

Alternative 4 proposes one season of over-snow use. This season would run from Dec. 1 through March 31st and generally covers the timeframe while bears are in the den. Therefore there would be no overlap of over-snow activities during the typical time bears would be emerging from dens. No security habitat would be affected by over-snow activities in this season because no over-snow activities are planned during the active bear year (April 1st through November 30th).

This alternative proposes a reduction in the allowable acres of motorized over-snow activity and allowable timeframe of this use from the existing condition. This results in fewer potential effects to bears during and after den emergence than the existing condition.

Effects Common To All Action Alternatives

Den Emergence (Season 2 - April 1st – May 31st)

1. All of the action alternatives define ending seasons of over-snow use which would decrease over-snow springtime use, and therefore decrease the potential disturbance of bears during and after den emergence.
2. All action alternatives define over-snow use areas and all alternatives would decrease the area where over-snow activities can occur. The action alternatives listed above would all result in a decrease from the existing condition, in the amount of modeled denning habitat that may be affected by over-snow activities during season 2 and therefore potential effects to emerging bears.
3. All of the action alternatives would significantly reduce the amount of security habitat that is affected. These affected acres would experience a short-term reduction in effectiveness and would continue to provide this secure habitat through the remainder of the non-denning period.
4. No groomed routes would be allowed after April 1st which meets Forest Plan standard: FW-STD-WL-05.

Discussion of Potential Effects to Bears After Den Emergence by Alternative

Alternative 4 would have the fewest potential effects for bears after den emergence because the over-snow use period ends before den emergence starts (March 31st). This alternative would not affect security habitat because no over-snow activities are planned after April 1st. Alternative 2 does not propose any areas of over-snow use in season 2 (only routes) as opposed to Alternative 3, and therefore potentially would affect fewer acres of den emergence habitat (0% vs. 7%- areas only). Because Alternative 2 stays mainly on open roads for the late season, it would affect fewer acres of habitat security during the active bear year than Alternative 3.

All Action Alternatives result in fewer potential affects to bears, compared to the existing condition (No Action Alternative/Alternative 1), during den emergence because of the reduced acres of allowable over-snow activity and seasons of use that are proposed. Existing over-snow activities within the project area have been in place for many decades while the grizzly bear population within the NCDE has been growing (USFWS, 2013). Additionally, the Murphy BMU represents a small percentage (roughly 3%) of the entire Northern Continental Divide Grizzly Bear Ecosystem, with four other national forests, state forests, and tribal lands making up the remaining 97% of this grizzly bear ecosystem.

Existing local over-snow information does not document any observations, or known interactions between over-snow users and grizzly bears. Manley (pers. comm. 2011) reports that the den sites of the collared bears he has located in the Ten Lakes area are not typically the same places where he has seen snowmobiling. He feels that the terrain is either too steep or that there are too many trees that would prohibit easy snowmobile access. He reported that he's rarely seen snowmobile tracks within ¼ mile of known den locations. In discussions with Tim Manley and Jim Roberts, both mentioned that they had not heard of snowmobilers running into, or seeing bears while snowmobiling in the project area (Manley, pers. comm. 2011 & Roberts, pers. comm. 2011). Additionally, no known grizzly bear mortality has been directly or indirectly attributed to people using snowmobiles anywhere in the NCDE (C. Servheen, electronic communications 2012, and USFWS, 2011, 2013).

As technology improves, over-snow vehicles will continue to become more sophisticated, and capable of using areas that were previously inaccessible. Also, when vegetative conditions change

(wildfire, prescribed burns) and enable over-snow travel in areas that are currently inaccessible due to thick trees, the action alternatives have addressed these potential conditions by defining use areas as well as seasons of use for over-snow activities. This would continue to provide undisturbed areas for bear denning, as well as den emergence into the future.

B. Effects of Over-Snow Non-Motorized Use

No changes to over-snow non-motorized use are proposed as part of the Ten Lakes Travel Management Analysis, therefore no new effects are expected as part of this proposal.

C. Effects of Summer Non-motorized Use

The Ten Lakes Travel Management Action Alternatives propose to decrease the available miles of trails open to mechanized use in the Project Area. No other changes to the non-motorized trail system in the project area are proposed. Effects of recreational activities on grizzly bear spatial and temporal distribution relative to trails and camp-sites in the Swan Mountains was discussed in Mace and Waller (1996). They found that bears tended to avoid higher use trails and lakes with campsites, while moving around seasonally to take advantage of habitat and topographic variables to find natural food sources. While some of the trails experience more use throughout the summer than others (see recreation section), none of the trails experience high levels throughout the entire summer. Joslin et al. (1999) concluded that while bears are sensitive to human disturbance, they can habituate to ongoing and predictable behavior. All Action Alternatives define which trails would be available to mechanized use. This would increase the likelihood of knowing where to expect mountain bikes to occur as opposed to the current situation, where they could occur on every trail. All Action Alternatives would allow mechanized use, with Alternative 2 allowing the fewest miles of mechanized use and percentage of total trails with 16 miles (19% of total trails in the project area). Alternative 4 would allow mechanized use on 25.1 miles (29% of total trail miles in the project area) while Alternative 3 would allow the most miles of mechanized use with 37.6 miles or 44% of the total trail miles in the project area.

While Alternative 2 would have the greatest reduction in the potential to displace bears or result in potential conflict between trail users and bears, all Action Alternatives reduce the existing levels (all trails available) available to mechanized use. All Action Alternatives would maintain the large core areas available in the Therriault sub-BMU, and adjacent Krinklehorn sub-BMU. All Action Alternatives make progress toward Forest Plan desired condition FW-DC-WL-04 which calls for low levels of disturbance to facilitate denning activities, spring use, limit displacement and reduce human/bear conflicts and potential mortality. It is important to emphasize that the existing condition has been in place during the same time bear numbers have been increasing in this area as well as the entire ecosystem, to the point of potential delisting in the near future.

D. Key Stressors from the 2015 Forest Plan

1) Attractants

None of the Action Alternatives would create any attractants such as garbage sources that increase the risk of conflict with humans. All camping or day use activities located within the sub-BMUs require removal of garbage. Contracts would include language addressing the required handling of attractants at work sites and would be in compliance with the KNF Food Storage Order. Standard FW-STD-WL-04 would be met. No ground disturbance requiring re-seeding is expected with any of the alternatives. In addition, food storage lockers are available in major campgrounds and campsites within both BMUs. Major backcountry camp sites also have food storage poles to help users manage their attractants. The district has also employed a bear ranger for the last several years to provide education to campers and recreationists, as well as campground hosts

about proper food/attractant management while using Forest Service lands. All of these efforts have resulted in minimal conflicts on FS lands between humans and bears in either BMU.

Alternative 4 proposes the construction of a four season pavilion along the yearlong open road adjacent to the campground at Big Therriault Lake. This pavilion was proposed initially for over-snow vehicle use in the winter, however it is anticipated that this would also be used as a day-use only pavilion in the summer as well. This location would not affect existing habitat for bears as it is located in a wide spot along the open road and would require no vegetation removal for its construction. It is located adjacent to an existing campground which is used all summer long until snow levels prohibit access. The Kootenai Food Storage Order would be in effect for this area starting April 1st until November 30th and as in the campground, it would be expected that food and garbage would be pack in, pack out. Because of the existing human activity at the campground, it is not expected that the construction of the pavilion would cause displacement of bears. The construction would be short in duration and not expected to take more than 4-8 weeks.

Cumulative Effects

Past, Present and Ongoing Actions

Over-snow use has been occurring for many years within the Project Area. In 1977, Congress pass the Montana Wilderness Study Act designating the Ten Lakes a Wilderness Study Area. The act requires the Forest Service to administer these acres to “maintain their presently existing wilderness character and potential for inclusion in the National Wilderness Preservation System. Trail grooming of the area has occurred every year since 1990 and over-snow use has been consistent since before 1977.

Timber harvest and associated activities started in the early 1900’s within the lower elevations of the Therriault sub- BMU and project area. During the 1950’s and 1960’s, timber harvest accelerated in response to the Spruce Bark Beetle infestation occurring in the higher elevations. The Grave Creek road was extended into the Wigwam drainage to access the dying trees. Within the last 40 years there has been little vegetation management in the Therriault sub-BMU. Other activities associated with these projects include ecosystem burning, and decommissioning of roads in the BMU in Rich, Wigwam, Clarence, Weasel, and Stahl drainages. These activities are now complete.

During the summer of 1994, one wildfire (High One) occurred within the Therriault sub-BMU.

Past management activities, as well as wildfires within the BMUs have created some variety in age and stand structure classes. More prominent on the landscape are large blocks of un-harvested areas including Inventoried Roadless Areas and a Wilderness Study Area. There are also areas that support natural disturbances like insect and disease infestations, and wildfire. The past treatment areas and wildfires provide habitat conditions favorable for grizzly bear and for forage production such as huckleberries. Past road decommissioning has resulted in decreased Open and Total Road Densities within the BMU over the last 15 years. As a result, the amount of core habitat has increased. Over-snow motorized use has primarily occurred during the time bears are in the den, but have also occurred during the den emergence period. No documented conflicts with bears or reports of bears being displaced by over-snow vehicles are known to have occurred.

Vegetation altering events, whether man-caused or naturally occurring have been largely beneficial for grizzly bear in that they have provided early seral areas as foraging habitat. Because of past Forest Plan MA direction in the Project Area, very little timber harvest has occurred in the higher elevations, with much of it adjacent to the existing open roads or side

drainages. Many of the side roads that accessed the timber in the side drainages have been closed to motor vehicles and are now non-motorized trails. These past harvest units (most of which are hiding cover) are intermingled with other habitat elements necessary for grizzly bear survival. Roads and trails constructed to facilitate timber harvesting and other forest management activities have made it easier for humans to access habitats that were once more remote. This increase in access can result in an increase in the risk of mortality through vehicle collision, illegal taking or poaching, and malicious killing, although little of this is known to have occurred in these BMUs.

Basic road maintenance, pre-commercial thinning, mushroom picking, prescribed burning, timber hauling, wildlife habitat improvement projects and various recreational uses are additional activities that have occurred and will continue to occur within the project area. These activities are generally not considered to have adverse impacts on wildlife species. These activities may incidentally affect wildlife use within some areas on a temporary basis.

Effects of Current and Reasonably Foreseeable Actions

Vegetation Management - Timber harvest and associated activities may contribute to the environmental habitat baseline for the grizzly bear as well as possible effects to species ability to utilize a specific area during project implementation. Timber harvest and hauling could cause these animals to temporarily avoid affected areas. The amount of time that species will avoid an area depends upon the individual, but generally, avoidance will last from hours to possibly days. Given that roads used to access timber harvest areas are closed to the general public, there would be little to no increase in the risk of mortality to wildlife, especially with the enforcement of contractual provisions. Additionally, timber harvest can result in areas lacking in hiding or movement cover and increased edge effect for approximately 5 to 15 years, depending on the species.

The Galton Vegetation Management Project includes the entire Ten Lakes Travel Management project area. No harvest activities will occur within the WSA boundary. The following are potential harvest acres within the Ten Lakes boundary for two alternatives that could be selected. Alternative 1: 6,150 acres of Ecosystem Burning, 178 acres of Regeneration Harvest, and 43 acres of Vista cutting units along the Grave Creek Road. Alternative 3: 899 acres of Ecosystem Burning, 168 acres of Ecosystem Burning designed to benefit whitebark pine, and 74 acres of Regeneration Harvest. These projects use timber management, slashing, and prescribed fire, and as a result some, but not all, down woody debris and snags may be lost in treated areas These activities may incidentally affect bear use within some areas on a temporary basis, but with the large amount of existing core habitat and cover in other areas, would not have adverse cumulative effects. The ecosystem burns could potentially change vegetative conditions that could enable over-snow travel in areas that are currently inaccessible due to thick trees. The Ten Lakes Travel management action alternatives have addressed these potential conditions by defining use areas as well as seasons of use for over-snow activities. This would continue to provide undisturbed areas for bear denning, as well as den emergence into the future.

Pre-commercial Thinning - The effects to grizzly bears from pre-commercial thinning are similar to those discussed under timber harvesting above except that hiding cover is typically present in most stands, even after treatment.

Pre-commercial thinning on National Forest land occurs when past regenerated timber stands meet certain stand conditions. It is expected that approximately 50 acres/year acres would be treated through pre-commercial thinning within the project area. Pre-commercial thinning would maintain hiding cover values of the stand for associated species. During thinning operations, there

would be short-term localized disturbance to bears and their prey in the area. Mortality risk for associated species is not expected to increase.

Noxious Weed Control - Efforts to treat present infestations of noxious weeds and to eradicate infestations of new invaders are ongoing. All activities will comply with the Kootenai National Forest Invasive plant Management ROD (2007). Weed treatment activities would not lead to any adverse effects on the grizzly bear or its habitat because treatments isolate non-beneficial weed species and would actually benefit forage species important to many species or their prey (USDA Forest Service 1997, 30).

Fire Suppression - In the event of a wildfire, construction of fire lines, helispots, and safety zones could potentially result in impacts to grizzly bear core habitat or temporarily affect OMRD and TMRD. This could result in temporary displacement of bears. The amount and timing of such an impact cannot be predicted. The existing size of core habitat within the affected and adjacent sub-BMU provide large potential displacement areas.

Road Management Activity - Actions such as road maintenance and administrative use associated with permit administration, data collection, and monitoring of NFS lands are not likely to measurably affect wildlife or specialized habitats (e.g. old growth habitat, snags nor down woody debris) because they generally do not result in vegetation removal or persist for long periods of time. The standing tree and snag component would only be affected if considered a hazard to road users. These activities would not result in any change to grizzly bear habitat, thus no adverse cumulative effects would be expected.

Public Use - Other forest product activities occurring presently and typically on an annual basis are the gathering of pine cones, boughs and commercial gathering of Christmas trees and "character trees." These activities occur throughout the project area and have little-to-no effect on the landscape due to the unspecific nature of the use and the low impact on the resources (foot traffic, hand tools). These activities would be more prominent in the lower elevation habitat, where there are more open roads. Within the project area boundaries, minimal roads in this area reduces some uses, and therefore would occur on a minor percentage of the grizzly bear habitat available.

Firewood cutting in the project area will continue to occur. The effect of this would be minor adjustments to movement of bears using the area. This activity would occur next to open roads, which are limited within the sub-BMU boundary and are more likely to occur at lower elevations.

Ongoing hunting activities are regulated by the MFWP. The Forest Service influences hunter access through road management. Hunting activities within the analysis area will cumulatively contribute to minor short-term effects (during the general hunting season) to habitat security. Effects from hunting vary with activity levels and can include short-term disturbance. Mortality risk to the listed species like the grizzly bear is increased through hunting. The potential increase of early seral habitat creation through proposed prescribed burns may draw hunters to these areas. However these proposed areas are dispersed throughout the mainly unroaded BMU's, and would provide options for areas for bears to use. Hunting levels within the project area are not expected to significantly change due to the action alternatives, since no new road construction will occur. Trapping levels are not expected to significantly change as most trapping occurs off the existing open roads and typically does not occur late in the season.

Recreation Maintenance - Routine maintenance of trails and developed and dispersed recreation sites may temporarily displace some wildlife species. Approximately 85 miles of trail are maintained each year within the project area. Recreation maintenance could involve the harvest of

trees in mature forest stands that pose a hazard to users. However, the scale of the impact would be negligible as a cumulative effect to bears utilizing the immediate area, or adjacent forest stands.

Special Uses - Operations of outfitter/guides would not result in any change to general and specialized wildlife habitats that listed species may utilize, as they do not involve the harvest of trees. There would be no cumulative effects to bears and their habitats associated with these activities other than possible temporary and local avoidance of an area due to the presence of humans. All operations would be subject to the Kootenai Food Storage Order which would be incorporated into all permits and contracts the Forest currently has and authorizes in the future.

Private Land – The primary sources of attractants in the area would be associated with the private homes located along the southeast portion of the project area and could include garbage, gardens, livestock/pets and their foods, birdfeeders, etc. Availability of these attractants would vary by homeowner. Education of private landowners regarding potential attractants and reducing conflicts with grizzlies on private land has been ongoing with the FS as well as other agencies. This includes the construction of electric fencing as well as educational efforts at the local fair and rendezvous by multi-agency personnel in this area.

Other Agency Activities - Fish Wildlife and Parks continues to stock fish in Big and Little Therriault Lakes and Wolverine Lake. This project is adjacent to the US/Canada Border and receives a great deal of use year round by the Department of Homeland Security and Forest Service Law Enforcement. This use is expected to continue in the area. Regardless, these activities would not directly impact species or suitable habitat on NFS lands.

Summary of Cumulative Effects

Any cumulative effects from wildfire suppression or from the assumed development of adjacent private lands can only be surmised, at this time.

The temporal occurrence of forest uses such as summer activities (camping, hiking, and berry picking) versus fall (hunting and firewood cutting) or winter (skiing and snowmobiling) activities, and the scheduling of management actions to avoid key time periods (spring range and den emergence) when bears may be more sensitive to human disturbances, allow for the avoidance of measurable cumulative impacts to bears. There may be some situations where isolated or localized cumulative effects may occur, due to an overlap of forest activities, but these situations are typically short in duration, and do not persist through the lifecycle of any one species, either temporally or spatially.

Regulatory Framework Findings

2015 Forest Plan

GOAL-WL-01: The KNF manages wildlife habitat through a variety of methods (e.g. vegetation alteration, prescribed burning, noxious weed treatments, etc.) to promote the diversity of species and communities and to contribute toward the recovery of threatened and endangered terrestrial wildlife species. *All alternatives were designed to reduce the overlap in time and space of over-snow motorized use and mapped grizzly bear denning habitat and den emergence habitat. This reduces the possibility of potential conflict and over-snow related impacts to bears (see Over-snow motorized vehicle use on Seasonal Habitats" section above. Therefore, the project would contribute to progress toward this goal.*

FW-DC-WL-01: Nests and den sites and other birthing and rearing areas for terrestrial threatened, endangered, proposed, or sensitive species are relatively free of human disturbance during the period they are active at these sites. *All alternatives were designed to reduce the overlap in time and space of over-snow motorized use and mapped grizzly bear denning habitat and den emergence habitat. This reduces the possibility of potential conflict and over-snow related impacts to bears (see Over-snow motorized vehicle use on Seasonal Habitats" section above). Therefore, the project would contribute to progress toward this desired condition.*

FW-DC-WL-02: A forest-wide system of large remote areas is available to accommodate species requiring large home ranges and low disturbances, such as some wide-ranging carnivores (e.g., grizzly bear). *Large Core blocks are found within the affected BMU as well as IRAs and MAs that provide non-motorized or limited motorized access during the bear year (see "Spatial and Temporal Context for Effects Analysis" covered in detail above). Therefore, the project would contribute to progress toward this desired condition.*

FW-DC-WL-03: Recovery of the terrestrial threatened and endangered species is the long-term desired condition. Foraging, denning, rearing, and security habitat is available for occupation. Populations trend toward recovery through cooperation and coordination with USFWS, state agencies, other federal agencies, tribes, and interested groups. *Core habitat is providing large blocks of secure habitat for bears in this area. Recovery of the grizzly bear in this area is imminent as supported by recent studies showing 3% annual growth. This project would not reduce long-term core habitat and potential conflict in den emergence habitat would be reduced in all alternatives. Coordination with USFWS has been an ongoing process since the initiation of the project and would continue through consultation. Therefore, the project would contribute to progress toward this desired condition.*

FW-DC-WL-04: All grizzly BMUs have low levels of disturbance to facilitate denning activities, spring use, limit displacement, and reduce human/bear conflicts and potential bear mortality. Spring, summer, and fall forage is available for the grizzly bear. *See DC-WL-03, DC-WL-02, and Goal-WL-01 above. All action alternatives reduce and define the areas that mechanized use can occur (see "Effects of Summer Non-motorized Use" above). Therefore, the project would contribute to progress toward achieving this desired condition.*

FW-DC-WL-05: Recovery of the grizzly bear is promoted by motorized access management within the KNF portion of the Northern Continental Divide Ecosystem (NCDE) and Cabinet Yaak recovery zones. *Motorized access management is described in the "Methodology" section above for the NCDE recovery zone. Effects of the alternatives on motorized access apply to over-snow vehicles and do not change the existing TMRD or OMRD and would result in better security core during the time of den emergence. The proposed action and alternatives make no changes to wheeled motorized access from the existing condition. Therefore, the project would contribute to progress toward this desired condition.*

FW-STD-WL-03: Within the Kootenai portion of the NCDE Recovery Zone, BMU subunits shall maintain or improve the access and habitat parameters as shown in T & E Species Table 6. Site-specific motorized access densities and security core habitat are developed at the project level in consultation with the USFWS and through appropriate public involvement and NEPA procedures. *See response to FW-DC-WL-05, and FW-DC-WL-03 above. The proposed action and alternatives make no changes to wheeled motorized access from the existing condition and improve security core through over-snow motorized access. Therefore, all Action Alternatives are designed in accordance with this standard.*

FW-STD-WL-04: Permits and operating plans (e.g., special use, grazing, and mining) shall specify sanitation measures and adhere to the forestwide food/attractant storage order in order to reduce human/wildlife conflicts and mortality by making wildlife attractants (e.g., garbage, food, livestock carcasses) inaccessible through proper storage or disposal. *The Forest Service has limited sources of attractants within the project area and implementation of the Food Storage Order in these areas reduces potential effects. Also, contractors would be required to properly handle activity associated attractants (See "Attractants" section). Therefore, the project is designed in accordance with this standard.*

FW-STD-WL-05: No grooming of snowmobile routes in grizzly bear core habitat in the spring after April 1 of each year. *No grooming of over-snow routes currently is allowed in grizzly bear core habitat before or after April 1st. All groomed routes occur outside of core habitat. None of the action alternatives would allow the grooming of over-snow routes in core before or after April 1st. Therefore, the project is designed in accordance with this standard.*

FW-GDL-WL-01: Grizzly Bear: Management activities should avoid or minimize disturbance in areas of predicted denning habitat during spring emergence (April 1 through May 1). *See FW-DC-WL-01 above. Therefore, the project is designed in accordance with this guideline.*

FW-GDL-WL-15: Grizzly Bear: Elements contained in the most recent "Interagency Grizzly Bear Guidelines," or a conservation strategy once a grizzly bear population is delisted, would be applied to management activities. *On NFS lands, the objectives of land management within grizzly bear habitat "are to maintain and enhance habitat and to minimize potential for grizzly-human conflicts" (IGBC 1986, pg. 2). Identifying and managing key stressors and trending towards desired vegetative conditions similar to what grizzly bears evolved with would meet the intent of the Interagency Grizzly Bear Guidelines (IGBC 1986) and 2015 Forest Plan direction. The Ten Lakes Travel Management project alternatives were designed in accordance with elements that minimize potential for grizzly-human conflicts by reducing potential overlap of over-snow motorized use in mapped denning habitat.*

Implementation of proposed actions that are consistent with the 2015 Forest Plan's established goals, desired conditions, objectives, standards and guidelines would meet the intent of the elements contained in a Conservation Strategy. This would minimize the potential impacts or effects of resource competition between bears and humans during the life of the project and would maintain habitat conditions favorable for grizzly bears throughout the project area and the affected BMU or sub-BMU. See "Grizzly Bear Habitat Analysis Framework". Therefore, the project is designed in accordance with this guideline.

MA3-DC-WL-01: The Northwest Peak and Ten Lakes areas, in combination with MAs1 and 5, contain large remote areas that contribute to movement across the Forest. These areas additionally provide secure habitat, foraging, denning, and nesting. *See FW-DC-WL-01, FW-DC-WL-02, and FW-DC-WL-04. Therefore, the project would contribute to progress toward these desired conditions.*

MA5a,b,c-DC-WL-01 (Backcountry): Large remote areas with little human disturbance such as those found in these MAs (in conjunction with MAs 1a, 1b, and 1c) are retained and contribute habitats for species with large home ranges. Habitat conditions within these management areas contribute to wildlife movement within and across the Forest. These areas also provide foraging, security, denning, and nesting habitat for wildlife. See FW-DC-WL-02, FW-DC-WL-04. FW-DC-WL-17. *See "Landscape Connectivity and Local Movement above." Therefore, the project would contribute to progress toward these desired conditions.*

GA-DC-WL-TOB-01: Low levels of human disturbance allows for denning activities of wide ranging carnivores that are sensitive to human disturbance (e.g., grizzly bear), and for summer use by big game in the Ten Lakes, Thompson Seton, and Marston Face areas. *These areas also provide foraging, security, denning, and nesting habitat for wildlife. See FW-DC-WL-02, FW-DC-WL-04. FW-DC-WL-17. See "Landscape Connectivity and Local Movement above." Therefore, the project would contribute to progress toward these desired conditions.*

GA-DC-WL-TOB-03: In the Therriault and Krinklehorn sub-BMUs the current levels of security core habitat, open motorized route densities, and total motorized route densities are also the desired condition. *See response to FW-STD- WL-03 and "Over-snow motorized use on seasonal habitats" in the sections above. The Project would contribute to progress toward this desired condition.*

GA-DC-WL-TOB-05: Wildlife move to and from the border with Canada. *Activities that may affect movement of wildlife species across a landscape such as new roads or vegetation removal, are not part of the proposal or alternatives. Defining over-snow seasons and areas of use will not prevent wildlife movement in the project area. Therefore, the project would contribute to progress toward these desired conditions.*

Endangered Species Act

The preferred alternative would be consulted on with USFWS and therefore comply with ESA.

Regulation and Executive Orders

- 36 CFR Part 294 Special Areas, Roadless Area Conservation; final Rule
- 36 CFR Part 212 Travel Management
- Executive order 11644, as amended by Executive Order 11989

The Ten Lakes Travel Management Alternatives addressed the travel management rules or minimization criteria specific to the effects on grizzly bears in the following ways: alternatives were developed to decrease or minimize the overlap of motorized over-snow areas and grizzly bear denning habitat; seasons of use were developed to minimize temporal effects to bears during den emergence; and both over-snow areas and route locations were considered in alternative development.

National Forest Management Act

The project complies with NFMA direction to provide for diverse populations of plant and animal communities through compliance with the Kootenai Forest Plan.

Statement of Findings

The following statements are true for all three action alternatives.

1. NCDE grizzly bear population is close to recovery levels and estimated to be growing at a mean annual rate of 3% (Mace, 2011).
2. Grizzly bear range has also expanded over the last 15-20 years, as evidenced by the BORZ areas and sightings/management actions.
3. Current OMRD and TMRD and security core levels within the Therriault and Krinklehorn sub-BMU's have been in place for the past 15-20 years and meet the 2015 Forest Plan standards.

4. Grizzly bears may be disturbed or temporarily displaced due to project activities, however the availability of large secure blocks and maintenance of movement corridors would accommodate potential bear displacement from activity areas.
5. No expected increase in bear attractants would result from implementing this project.
6. Over snow use areas during the spring would be reduced or eliminated from existing levels, and over-snow areas are defined with the implementation of this project.
7. Over snow use areas in potential denning habitat are significantly decreased from existing levels.

Based on the above statements:

Alternative 3 would allow some over-snow activities during the spring period (April 1 – May 31) which could expose females with cubs of the year to disturbance that could result in cub mortality. Even though this has not been documented in the past anywhere in the NCDE, the potential for this mortality exists with this alternative. Therefore, Alternative 3 **may affect, is likely to adversely affect grizzly bears**.

Alternative 2 and 4 would not allow over-snow activities that overlap mapped denning habitat during the spring period. Therefore, **Alternative 2 and 4 may affect, are not likely to adversely affect grizzly bears.**

Alternative 1 (no action) allows over-snow activities during the spring period which could expose females with cubs of the year to disturbance that could result in cub mortality. Even though this has not been documented in the past anywhere in the NCDE, the potential for this mortality exists with this alternative. Therefore, Alternative 1 **may affect, is likely to adversely affect grizzly bears**.

Other Agencies and Individuals Consulted

Katrina Dixon, USFWS Consultation Biologist

Communications have consisted of informal consultation throughout the development of the Ten Lakes Project and included providing a description of proposed actions and discussions regarding potential concerns and expected determinations of effects for grizzly bears.

Kevin Aceituno, USFWS Consultation Biologist

Communications have consisted of informal consultation throughout the development of the Ten Lakes Project and included providing a description of the Ten Lakes proposed actions and discussions regarding potential concerns and expected determinations of effects for grizzly bears.

Tim Manly, MT Fish, Wildlife and Parks Grizzly Bear Management Specialist

Communications have consisted of information requests regarding grizzly bear use of the project area (denning habitat and locations), and providing a description of the project's proposed actions for discussions of effects.

Tim Thier, MT Fish, Wildlife and Parks Biologist

Communications have consisted of information requests regarding grizzly bear use of the project area and providing a description of the project's proposed actions for discussions of effects within the sub-BMUs.

Canada Lynx

Introduction

Canada lynx occupy northern boreal forests which are primarily composed of cool, moist subalpine fir and Engelmann spruce and moist lodgepole pine forest which receive abundant snowfall. Snowshoe hares are the primary prey of lynx and habitat use by lynx is associated with those conditions that support hare populations. Therefore, young regenerating and multi-storied forests that provide habitat for snowshoe hares is important to lynx conservation. Especially important is winter habitat that continues to provide snowshoe hare forage and cover (twigs and stems that protrude above the snow or limbs that drop to the snow surface) during high snow periods. Denning habitat is found in forests with abundant dead and down trees, especially in areas near foraging habitat. Both natural (e.g. wildfire) and human disturbances such as timber harvest and prescribed fires can affect lynx habitat (USDA, 2007).

Although a variety of habitat and forest types may be found within a lynx home range and used to some level (e.g., non-lynx habitat for travelling between patches of boreal forest), in northwestern Montana lynx select forest stands with high horizontal cover primarily consisting of Engelmann spruce and subalpine fir. Both mature multistory and early successional forest habitats provide for snowshoe hares, but use by lynx varies seasonally in response to snowshoe hare availability. Mature multistory stands provide the greatest foraging opportunities for both hares and lynx during winter and management that maintains and promotes a mosaic of mature multistory spruce-fir forests is most beneficial to the species (Squires et al. 2010).

The Ten Lakes Travel Management project proposes temporal and spatial limits on over-snow vehicle motorized travel, as well as specifying where mechanized use (mountain bike) use could occur. No increase in roads or trails is proposed. One alternative proposes building a four season pavilion for winter/summer use located off an existing open road adjacent to the Big Therriault campground. Vegetation management is not proposed as part of this project and existing lynx habitat would not be affected. Therefore the effects of recreation on lynx behavior and habitat use, including the potential disturbance to lynx from infrastructure development or effects to connectivity is the focus of this Canada lynx analysis.

Summary of Conclusions

Implementation of Alternatives 2, 3 and 4 **may effect, is not likely to adversely affect Canada lynx** as no vegetative manipulation is proposed in any action alternative and all alternatives result in fewer acres and routes of potential snow compacting activities.

Regulatory Framework

KNF Land Management Plan (USDA Forest Service 2015)

The 2015 Forest Plan provides overall guidance for the management of the lands on the KNF. It describes the goals, desired conditions, and objectives toward which the management of the land should be directed. And it establishes standards and guidelines to help achieve or maintain the desired condition or conditions, to avoid or mitigate undesirable effects, or to meet applicable legal requirements.

The plan components which provide specific Canada lynx resource direction relevant to this project include:

FW-STD-WL-01: The Northern Rockies Lynx Management Direction (NRLMD) 2007 and ROD is included in appendix B, and shall be applied.

There are other 2015 Forest Plan components that provide resource direction for a range of wildlife species or habitat conditions that are not specific to lynx, but still are applicable to lynx management. The full list of the plan components applicable to lynx management are found in the "Regulatory Framework Findings" section of this analysis.

Resource Indicators and Measures

For the Canada lynx analysis, the NRLMD Human Use Objectives and Guidelines will be the resource indicators (T&E Species Table 5) for measuring changes to lynx habitat from proposed over-snow routes or areas used by motorized over-snow vehicles and will be used to compare alternatives as well as to demonstrate compliance with the NRLMD standards. The overall assessment of lynx habitat also analyzes the relevant NRLMD objectives, standards, and guidelines in detail. These include objectives HU 01, HU 02, HU 03, HU 04; and guidelines HU G3, and HU G11; and objective ALL 01. Objectives, standards, and guidelines considered but found "not relevant" are located in the project file. Discussions on the effects of developed recreation and winter and non-winter dispersed recreation are included to discuss the potential effects of proposed project activities.

T, E, & P Species Table 5. Resource Indicators and Measures for Assessing Effects

Resource Element	Resource Indicator	Measure	Used to address: P/N, or key issue?	Source
NRLMD Guideline HU G11	Percent of lynx habitat available to over-snow motorized use	Percent of Project Area receiving over-snow motorized use	Yes	KNF Forest Plan FW-STD-WL-01
NRLMD Objective HU 01	Expansion of over-snow routes within lynx habitat.	Increase of over-snow routes within lynx habitat.	Yes	KNF Forest Plan FW-STD-WL-01
NRLMD Objective HU 01	Expansion of groomed routes within lynx habitat.	Increase of groomed routes within lynx habitat.	Yes	KNF Forest Plan FW-STD-WL-01

Methodology

The TLTM project alternative over-snow areas, routes and groomed routes were calculated using geographic information system (GIS) applications within the project area and LAU boundaries. Activity area acres and route lengths are in decimal format. Therefore, there may be slight differences in acres or mile totals as presented in the following analysis than elsewhere in the document (e.g. project description) depending on when rounding of the decimals took place (e.g., rounding each individual unit before summing or totaling all acres then rounding).

No vegetation manipulation is proposed as part of this analysis therefore no effects to lynx habitat is expected. However, lynx habitat conditions are relevant to this project to show the existing habitat conditions for lynx in the project area as well as across the forest. Forestwide, lynx habitat is described using the terminology from the NRLMD. Lynx habitat was mapped for the KNF based on forest type, stand age, and elevation. In addition to lodgepole pine, Engelmann spruce, and subalpine fir forest types, mapping also includes cedar-hemlock and other cool, moist forest types as they may provide lynx habitat (USFS 2007a, b). Successional or structural stage is based

on year of origin and assumptions about the length of time it takes for a stand to move from one stage to the next. However, age does not account for environmental conditions or disturbance processes that affect development of the successional stage. Therefore, mapping of lynx habitat based on stand data provides a broad estimation of lynx habitat within an LAU but may need to be fine-tuned based on field review.

Connectivity was evaluated through the use of stand data, satellite imagery, and photo documentation to visually examine lynx habitat, past management activities, as well as the presence of forested cover to determine possible movement areas and potential areas where lynx travel may be hindered. Ridge lines and draws were considered high value movement areas.

Data Sources

Lynx population ecology, biology, and habitat description and relationships are also described in LIBT (2013), Ruggiero et al. (1999), and Ruediger et al. (2000). Population and habitat status on a national scale is provided in the final lynx listing rule (Clark, 2000) and the most recent lynx distinct population segment status is found in the BO on the effects of the 2015 Forest Plan (USFWS 2013b). Effects of recreation on lynx is also described in this document (Ibid). National population and habitat status descriptions in these documents are incorporated by reference.

Lynx occurrence data comes from District wildlife observation records, Natural Resource Information System (NRIS) wildlife database, and other agencies (Montana Natural Heritage Program (MNHP), MFWP, and USFWS).

Baseline over-snow routes and areas relating to the NRLMD were taken from Forest and District data (see project file). These routes and areas were used to show how the district is meeting the NRLMD in affected LAU's.

Assumptions and Limitations

There are no assumptions or limitations associated with this resource analysis.

Affected Environment

Spatial and Temporal Context for Effects Analysis

The action alternatives include the development of winter and summer travel management plans within the project area, as well as the construction of a warming hut in one action alternative. No vegetation manipulation is proposed in any alternative. No new roads or trails are being proposed, however over snow seasons of use will be defined as well as defining existing trail miles open to mechanized use (see definitions in the recreation section).

The Ten Lakes Travel Management Project area encompasses lynx habitat within the Therriault and a portion of the Graves LAUs (T, E & P Species Figure 6). The boundary of the project area lies along the Grave Creek road and at its southern end, extends outside but adjacent to the LAU boundaries because lower elevations are not included in the LAUs. This is a small percentage of the project area and it is expected that lynx use this area for movement between lynx habitat on either side of Grave creek. This portion of the project area also includes the main parking area for over-snow vehicles and is also the origin of the groomed route for the project area.

The effects of this Project are tied to human use of the area and how that affects lynx movement and the effectiveness of lynx habitat. The project area is only approximately 100 acres larger than the LAU boundaries, doesn't include vegetation manipulation and therefore will not dilute the effects of the project, and is still generally the size of a lynx home range. Therefore the project

area has been chosen as the appropriate scale of analysis for determining direct and indirect effects for the TLTM project.

Temporal boundaries for the Canada lynx analysis include both short-term and long-term effects. Short-term effects are those that are expected to last between a few days to a season or two and up to approximately 15 years. Although lynx are generally considered tolerant of human activity, it is expected that a range of behavioral response could occur depending on the individual and circumstances involved (ILBT 2013). Generally, once disturbance causing activities have been completed lynx can move back into and use the area. In this project, the building of a warming hut may constitute short-term affects (e.g. short-term displacement). Limiting areas and time restrictions of over-snow recreation could provide longer-term reduced human activity in the project area.

Existing Condition

Introduction

The USFWS listed the contiguous U.S. distinct population segment of the Canada lynx as threatened in March 2000 (Clark, 2000) with the designation of critical habitat in 2006 (USFWS 2006). In February 2008, the USFWS issued a proposed rule revising critical lynx habitat (USFWS 2008). Then, in February 2009, the USFWS issued their final rule to revise the critical habitat designation for the lynx in the U.S. (USDI 2009). The final rule delineates lynx critical habitat units and subunits across the lower 48 states from Maine to Washington. Based on this delineation, the TLTM project falls within the Northern Rocky Mountains (NRM) Critical Habitat Unit #3 (Ibid). Critical habitat boundaries were updated with a new final designation on September 12, 2014 (USFWS 2014a). There were only extremely minor changes to the critical habitat boundary on the KNF and all of these were small slivers along the critical habitat edge that were removed in the 2014 version. The updated boundaries are practically unchanged and the project still falls within Unit #3 in this updated final rule. Critical habitat is analyzed in the Canada Lynx Critical Habitat section.

The Final EIS for the Northern Rockies Lynx Management Direction (NRLMD) was completed in March 2007 (USDA 2007). This decision has been incorporated into the 2015 Forest Plan and provides lynx management objectives, standards, and guidelines. The decision replaced the interim consideration of the Lynx Conservation Assessment and Strategy recommendations. The direction provided in the NRLMD is applied to lynx habitat at the LAU scale. The KNF has delineated 47 LAUs which approximate a lynx home range size. The TLTM project area includes all of one LAU (Therriault) and part of another (Grave LAU) (T, E & P Species Figure 6).

Canada Lynx Occurrence

Annual winter track surveys within the project area (conducted until 2012) recorded lynx tracks every year. Since 2012, lynx are reported in this area every year (pers. comm., Thier, 2015). The key habitat on the KNF is primarily located north of Libby, especially between Pete Creek to the west and Koocanusa Reservoir to the east (Squires 2012). In the Intermountain West, young cats have been documented to travel up to 269 km, or approximately 467 miles, during natal dispersal (Squires et al. 2006). Although this is at the far range of the dispersal distances documented, it demonstrates that lynx are a mobile species and are capable of traveling between the project area and the key habitats found on the Forest.

Description of the Analysis Area

The 64,177 acre TLTM project area is located within the Fortine Ranger District. The project area and Therriault Lynx Analysis Unit (LAU) northern boundary is also the U.S./Canada border (T, E & P Species Figure 7). The project area as well as the LAUs within this area are also within the NCDE recovery zone for grizzly bears and as such are also afforded the security provided for bears in these areas (Biological Assessment for KNF LMP revision, 2013).

Lynx Habitat Condition

Much of the Ten Lakes Travel Management Project Area lies within the Ten Lakes Wilderness Study Area, Inventoried Roadless Areas (IRA's), with other areas in motorized backcountry MA containing few roads. The lynx LAUs overlap the majority of this area. Much of these lands lie in unroaded blocks that provided largely natural vegetative conditions. Much of the past timber harvest within the project area occurred below 4000 feet, outside of the lynx LAU's. Because of the management emphasis and inaccessibility of much of the project areas land base, very little timber harvest or road building has occurred in the higher elevations, with much of the existing harvest adjacent to the existing open roads. There are very few acres of recent harvest that have created early stand initiation habitat in the Therriault or Grave LAUs.

Currently, both LAUs within the project area (all of Therriault and a portion of Graves) meet the NRLMD vegetation standards based on 2014 data for the KNF (T, E & P Species Table 6).

T, E, & P Species Table 6. Existing lynx habitat conditions by LAU within the Ten Lakes Travel Management Project Area.

LAU Name (Number)	LAU Total Acres	Total Lynx Habitat Acres[1] (% of Total)	Early Stand Initiation (Summer Forage Only) Acres [2] (% of Lynx Habitat)	Stand Initiation (Winter & Summer Forage) Acres[3] (% of Lynx Habitat)	MSLS (Winter & Summer Forage)[4] Acres (% of Lynx Habitat)	Stem Exclusion (Non-Forage) Acres[5] (% of Lynx Habitat)	Lynx Habitat unknown stage[6] (%of Lynx Habitat)
Therriault 140301	46,747	38,018 (81%)	7 (0.01%)	2,676 (7%)	13,783 (36%)	19,551 (51%)	2001 (5%)
Grave* 140302	40,235	38,147 (95%)	0 (0%)	4,283 (11%)	23,307 (61%)	9,813 (26%)	744 (2%)

[1] Acres do not include non-lynx habitat stands (considered unavailable as snowshoe hare habitat but suitable for lynx habitat connectivity); for example, dry Douglas fir/Larch stands; non-lynx habitat comprises the remaining 19 and 5 percent of the Therriault, and Grave LAUs, respectively.
[2] Stand initiation structural stage that provides snowshoe hare foraging in the summer only because the trees have not grown tall enough to protrude above the snow in winter - unsuitable
[3] Stand initiation structural stage that currently provides winter snowshoe hare habitat - suitable
[4] Mature multistory or late successional (MSLS) structural stage; includes many age classes and vegetation layers that provide winter snowshoe hare habitat - suitable
[5] Includes closed canopy forested stands with limited understory vegetation that is currently unsuitable as snowshoe hare foraging habitat.
[6]Includes stands with little data. Data shows it is in lynx habitat. NAIP views show mainly older age stands (*either stem excl. or mature multistory), as well as small areas of shrubs, sod, and bare areas.
*Grave LAU extends outside the Project area, however 17,302 acres of the LAU total acres (43%) lie within the project area.

The existing vegetative conditions meet all vegetative NRLMD standards and guides (see project file). The TLTM project does not propose any vegetative manipulation and will therefore not affect this existing condition. Therefore lynx vegetative habitat conditions will not be discussed further.

Existing Recreation and potential effects to Lynx

Over-snow use: The Project Area contains some popular over-snow vehicle use areas. This use has been occurring for several decades. The Ten Lakes Snowmobile Club currently grooms approximately 33.8 miles of road from December 1 through April 1. The groomed route starts at Birch Creek on the main Grave Creek Road (Road 114) and continues on Road 319 where it ends at Big & Little Therriault lakes. This is one of the few open roads and the main year-round open road leading into the most popular over–snow areas on the Fortine District. Access and management opportunities are limited in this area because of rugged lands in Canada to the north, private land west and south of the project area, as well as the grizzly bear motorized standards, and the non-motorized/non-motorized backcountry area designations to the west in the Grave LAU (T, E & P Species Figure 7). This groomed route is also the boundary between the Therriault and Grave LAUs, with the vast majority of the snowmobile activity occurring within the Therriault LAU. All of the groomed areas are on roads that are open year-round to highway legal vehicles. These routes typically cannot be utilized by wheeled vehicles during the winter months due to snow depths. No grooming is allowed after April 1st in this area. In addition to the groomed routes, there are existing over-snow routes used to access more frequented areas in the project area. There are no designated routes or play areas in the Project Area (as defined by the NRLMD).

Currently all of the Project Area (64,177 acres or 100 %) is open to over-snow vehicle use, however in practical terms, much of this area is not actually useable by snowmobiles due to slope (steepness), vegetation (e.g., too densely forested), dangerous avalanche potential, and personal preferences. Use within these areas is facilitated by routes (mainly hiking trails) used to access most common use areas within the project area.

The project area also lies within grizzly bear habitat which includes large core areas in contiguous blocks that are available as displacement areas for grizzly bears. Cover levels are high throughout the project area and within these core areas which enhance the condition of security for both the bear and lynx. A contiguous block of core, over 35,000 acres, is located within the project area with additional blocks adjacent to the Project Area (see grizzly bear section).

Currently, limited non-motorized over the snow use occurs within the Project Area. There are two cross-country ski trails in the project area. These trails occur on non-groomed existing roads. Use and access depend upon snow conditions. The majority of the existing use occurs in the lower elevations off open roads. These ski trails typically experience patchy snow conditions by April 1st. More recently, non-motorized snow bikes are available to recreationists and may be used in the project area. Snowshoeing may also occur in the lower elevations, however steep terrain and limited road/route access (discussed above) generally limit interior use of the project area to all but the extreme users. No changes to over-snow non-motorized use are proposed as part of the Ten Lakes Travel Management Analysis, therefore no effects are expected as part of this proposal.

Concerns regarding the effect of winter recreation on lynx behavior and habitat use are mainly associated with effects of snow compaction and increased competition with other predators specifically coyotes. Kolbe (et al. 2007) backtracked coyotes in his Montana study area and found that while coyotes did use snowmobile trails, they did not travel closer to these trails than randomly expected. Additionally, he found that there was no difference between coyotes' use of compacted and uncompacted roads suggesting that coyotes are selecting more for an open travel corridor than snow conditions. A more recent study in Wyoming (Burghardt-Dowd 2010, in USFWS, 2013) found that average snow penetrability was higher in northwestern Wyoming than in western MT, making coyote movement in non-compacted snow potentially more energetically

costly to coyotes in Wyoming (USFWS, 2013). A review of the literature regarding competition between lynx and coyotes for snowshoe hare found that coyotes in both the MT and WY studies were primarily scavengers with only 3% and 8% (respectively) of coyote feeding remains containing snowshoe hare (USFWS, 2013). In contrast, lynx studies in MT and WY showing that 96% and 85% (respectively) of the lynx prey biomass consisting of snowshoe hares (ibid). This review of most recent research concluded that snow compaction use and prey overlap vary geographically and temporally and snow conditions may have the larger influence in determining whether or not over-snow trails affect coyote movements. Local prey abundance or the presence of alternate prey may be larger factors than the potential of snow-compacting recreational vehicles (Ibid).

Summer use: Eight Forest Service facilities or permitted facilities are found within or along the boundary of the project area. These include two small fee campgrounds, two dispersed campgrounds, two lookouts, (one a rental), and two FS cabins (non-rentals). There are also a number of dispersed camping sites in this area as well. There are approximately 88 miles of National Forest System trail in the Project Area. All of these miles are open to hiking, stock, and mechanized use (mountain biking). The most dominant use of the trails is hiking followed by stock. All trails are currently open to all uses and there is no restriction on mechanized uses in the project area. Much of this habitat is not accessible to users early in the season as many of the roads that access the area trails are not free of snow until early June depending on yearly snow conditions.

The potential effects of recreation on lynx reproduction, behavior, habitat use and populations have not been thoroughly investigated however anecdotal evidence suggests that lynx are tolerant of human presence (USFWS, 2013). Effects to lynx from developed recreation may include avoidance of habitats but are more likely affected by the alteration or loss of habitat (Ibid). Human created disturbance near existing developed recreation sites is a predictable event and if disturbance occurred at levels affecting lynx or their dens, it is unlikely that lynx would den near such established sites at all (Ibid).

Connectivity/Linkage

Existing habitat connectivity within the project area and LAUs is provided by forested cover and is continuous with the exception of portions of the two past wildfires (Barnaby and Kopsi) as well as natural rocky openings along the ridgetops and high elevation meadows. Past fire suppression, lack of recent harvest activities as well as management area direction has limited management within these affected LAUs. Much of the Ten Lakes Travel Management Project Area lies within the Ten Lakes Wilderness Study Area, Inventoried Roadless Areas (IRAs), with other areas in motorized backcountry MA containing few roads. The lynx LAUs overlap the majority of this area. Much of these lands lie in unroaded blocks that provided largely natural vegetative conditions. Connectivity in terms of forested cover is high north of the Therriault LAU into Canada as well as to the east into the Flathead National Forest and further south into the Krinklehorn LAU and adjacent Stillwater State Forest. The southern portion of the project area/ LAU is bordered to the south and west by low elevation, Koocanusa Reservoir, Highway 93, and private land within the Tobacco Valley and Fortine Creek (T, E & P Species Figure 7), making lynx travel through these areas more challenging.

There are no identified linkage corridors (USDA Forest Service 2004: Figure 1-1; KNF Lynx Taskforce 1997: 6) within any of the affected LAUs or within the project area. There is one linkage area located approximately 10 miles southeast of the TLTM Project area which could provide potential linkage habitat outside of identified lynx habitat between the Krinklehorn LAU

and the Sunday LAU (located further south). These two LAUs are separated by Highway 93 and low elevation non- lynx habitat approximately 6 miles wide between the LAUs.

Environmental Consequences

Alternative 1 (No Action)

No direct effects from federal actions would occur. The No Action alternative would maintain existing vegetative condition on the landscape. Alternative 1 would continue the current over-snow vehicle situation. There are currently no restriction dates within open areas and season of use is dependent upon snow conditions.

As discussed previously, although 100% of the project area is available to over-snow vehicle use, much of this area is not actually useable by snowmobiles due to slope (steepness), vegetation (e.g., too densely forested), dangerous avalanche potential, and personal preferences. Currently, 64,177 acres are available to over-snow use however approximately 16,166 acres have been identified as “most common use areas” (MCUA). Routes leading to and found within these areas were calculated at roughly 26.6 miles in the project area (T, E & P Species Table 7 below) in the year 2000 as part of a forest-wide calculation for baseline for monitoring requirements for the NRLMD. In addition, 33.8 miles of road are currently groomed from Dec. 1 through March 31st (T, E & P Species Figure 6). All roads/trails within the project area are open to over-snow vehicles, although some receive more use than others. Existing non-motorized over-snow activities do occur within the project area and include, skiing, snowshoeing, and potentially mechanized snow bikes.

Existing summer recreation consists of trails use by hikers, stock, and some mechanized use (mountain bikes etc.).There are currently 88 miles of trail open to these activities with no current restrictions on mechanized use. The most dominant use is hiking, followed by stock, and then mechanized use. There are no motorized trails in the project area.

Connectivity within and adjacent to the project area is good due to the limited harvest and natural openings on the landscape. Few roads access the interior of the project area and grizzly bear core areas provide secure habitat for large carnivores using this area. Low elevation, private land and Koocanusa reservoir to the south and west of the project area may limit movement in those directions, however movement north into Canada and east have similar habitat to the project area and provides good landscape connectivity (T, E & P Species Figure 7).

Alternatives 2, 3 and 4: Direct and Indirect Effects

Project Design Features

No project design features have been identified.

Canada Lynx- Northern Rockies Lynx Management Direction

Objectives and Guidelines applicable to human use (HU) projects in lynx habitat within LAUs: The following objectives and guidelines apply to human use projects, such as special uses (other than grazing), recreation management, roads, highways, and mineral and energy development, in lynx habitat in lynx analysis units (LAUs) in occupied habitat, subject to valid existing rights.

Objectives HU 01 – *Maintain the lynx’s natural competitive advantage over other predators in deep snow, by discouraging the expansion of snow-compacting activities in lynx habitat.*

Guidelines HU G11 – *Designated over-the-snow routes or designated play areas should not expand outside baseline areas of consistent snow compaction, unless designation serves to consolidate use and improve lynx habitat.*

There is no indication that compacted snow routes in Montana increase competition for prey from other species (coyote) to levels that adversely impact lynx populations (USFWS, 2013), however, all Action Alternatives meet these objectives by reducing the existing motorized over-snow acres and routes available in the project area (T, E & P Species Table 7). There are no designated routes or play areas (as defined in the NRLMD) within the project area, however the MCUA's (most common use area) and over-snow routes receive the most use (consistent snow compaction) within the project area and LAU's and will be used as the measure for Guideline HU G11.

T, E, & P Species Table 7. Project Area effects by alternative of acres of over-snow areas, miles of routes and miles of groomed routes.

Measure	Alternative 1 (Existing Condition & Baseline) one season –snow dependent	Alternative 2 Season 1 (12–1 thru 3-31)	Alternative 2 Season 2 (4-2 thru 5-31)	Alternative 3 Season 1 (12–1 thru 3-31)	Alternative 3 Season 2 (4-2 thru 5-31)	Alternative 4 (one season only) (12–1 thru 3-31)
Acres/% receiving Over-snow motorized use: ASA[1] and MCUA[2]	ASA: 64,177 acres (100%) MCUA: 16,166 acres (100%)	ASA: 36,703 acres (57%) MCUA: 12,498 acres (77%)	0 acres available in this season, only routes available. (0%)	ASA: 48,605 acres (76%) MCUA: 16,166 acres (100%)	ASA: 4380 acres (7%) MCUA: 4380 acres (27%)	ASA: 945 acres (1%) MCUA: 945 acres (7%)
Miles of Over-snow routes	26.6	15.0	7.6	16.1	3.0	3.0
Groomed Routes	33.8	33.8	0	33.8	0	31.0
All Routes Available	60.4	48.8	*41.4	49.9	*36.8	34.0

ASA[1] – Available Snowmobile Area – the area available to motorized over-snow vehicles.
MCUA[2] – Most Common Use Area – the area most commonly used by motorized over-snow vehicles
*includes 33.8 miles of route not groomed during Season 2, but available to over-snow vehicles

All Action Alternatives reduce the timeframe over-snow vehicles are allowed in the project area as opposed to Alternative 1 No Action) where over snow activities are restricted only by snow availability. All Action Alternatives end grooming activities by March 31st. All these elements combined would further reduce the potential effects of over-snow vehicles on lynx habitat. See discussions by alternative below.

Alternative 2: Alternative 2 proposes two seasons of over-snow use each with a different amount of area, and roads/routes that are open to over-snow use. Season one would be from Dec. 1 through March 31st and season two would be from April 1st to May 31st.

Season 1 of this alternative would allow over-snow use on 36,703 acres or approximately 57% of the current or existing available over-snow area (ASA) (T, E & P Species Figure 8). This alternative would reduce the most commonly used areas from 16,166 acres to 12,498 acres or 77% of the existing condition (T, E & P Species Table 7). This alternative would reduce the available motorized over-snow routes from 26.6 miles to 15 miles and would maintain the existing groomed routes at 33.8 miles. This would reduce all routes available from 60.4 to 48.8 miles.

Season 2 would occur late in the snowmobiling season (April 1 through May 31st) and would allow over-snow use only on roads/routes (T, E & P Species Figure 9). Zero acres of available over-snow *areas* would be allowed for this season in this alternative. In season 2, there would be no groomed routes, however the existing 33.8 miles would be available for over-snow use. This season reduces motorized over-snow routes from 26.6 miles to 7.6 miles and would reduce all routes available from 60.4 to 41.4 miles (T, E & P Species Table 7).

Alternative 3: Alternative 3 proposes two seasons of over-snow use, each with a different amount of area, and roads/routes that are open to over-snow use. Season one would be from Dec. 1 to March 31st and season two would be from April 1st through May 31st.

Season one of this alternative would allow over-snow use on 48,605 acres or approximately 76% of the current or existing ASA (T, E & P Species Figure 10). This alternative would maintain the current Most Common Use Area (MCUA) at 16,166 acres in this season (T, E & P Species Table 7). This alternative would reduce the available motorized over-snow routes from 26.6 miles to 16.1 miles and maintain the existing groomed routes to 33.8 miles. This would reduce all routes available from 60.4 to 49.9 miles.

Season 2 would allow over-snow use on 4380 acres or approximately 7% of the current or existing ASA and 27% of the MCUA (T, E & P Species Figure 11). In season 2, there would be no groomed routes, however the existing 33.8 miles would be available for over-snow use. This season would reduce motorized over-snow routes from 26.6 miles to 3 miles and would reduce all routes available from 60.4 to 36.8 (T, E & P Species Table 7).

Alternative 4: Alternative 4 proposes one season of over-snow use. This season would run from Dec. 1 through March 31st. This alternative would allow over-snow use on 945 acres or approximately 1% of the current or existing ASA and 7% of the MCUA (T, E & P Species Figure 7). This alternative would reduce the available motorized over-snow routes from 26.6 miles to 3.0 miles and reduces the existing groomed routes to 31.0 miles. This would also reduce all routes available from 60.4 to 34.0 miles (T, E & P Species Table 7).

All action alternatives meet Objective **HU 01** and Guideline **HU G11** by reducing the areas and routes where over-snow vehicles are allowed, reducing the timeframe for allowable use of these vehicles as well as limiting grooming of over-snow routes to April 1st.

Objectives HU 02 – *Manage recreational activities to maintain lynx habitat and connectivity.*

Objectives HU 03 – *Concentrate activities in existing developed areas, rather than developing new areas in lynx habitat.*

Objectives HU 04 – *Provide for lynx habitat needs and connectivity when developing new or expanding existing developed recreation sites or ski areas.*

Guidelines HU G3 – *Recreation developments and operations should be planned in ways that both provide for lynx movement and maintain the effectiveness of lynx habitat.*

There are no proposed activities in any alternative that would reduce lynx habitat and connectivity. No vegetative removal would occur in any alternative and no new trails, roads or new infrastructure are proposed that would affect connectivity within or between lynx LAU's (HU O2, HU G3). All Action Alternatives would limit summer mechanized use (mountain bikes) to fewer existing trails than the existing condition (HU 02, HU G3). As discussed in USFWS 2013, dispersed recreation on or off trails is not expected to adversely disturb or otherwise adversely affect lynx. The likelihood that dispersed recreation would occur in proximity to a den site is low, and den site availability is not limiting for lynx (Ibid). Additionally, the project area is located in a remote area with large blocks of security which help to maintain the effectiveness of lynx habitat (HU G3).

All Action Alternatives also would reduce winter motorized use both temporally and spatially. Alternative 4 proposes a four season pavilion that would be located along an open road, near the existing Big Therriault Campground. No vegetation would be removed with this construction as it is located in a wide spot along the road. This proposed pavilion would be located in an existing developed area (adjacent to Big Therriault Campground), and would therefore meet objectives HU 03 and HU 04.

Objectives,Standards, and Guidelines Applicable To ALL Management Projects in Lynx Habitat

Objective ALL 01: *Maintain or restore lynx habitat connectivity in and between LAUs and in linkage areas.*

Standard ALL S1: *New or expanded permanent development and vegetation management projects must maintain habitat connectivity in an LAU and/or linkage area.*

This objective and standard would be met for all Action Alternatives. No vegetative manipulation would occur in any Action Alternative. However, Alternative 4 proposes the construction of a pavilion along the yearlong open road adjacent to the campground at Big Therriault Lake. This location would not affect existing habitat for lynx as it is located in a wide spot along the open road, would require no vegetation removal for its construction and is located adjacent to an existing campground which is used all summer long until snow levels prohibit wheeled motorized access. Because of the existing human activity at the campground, it is not expected that the construction or use of the pavilion would affect lynx moving through the project area as they are already accustomed to human activity in this area. The construction would be short in duration and not expected to take more than 4-8 weeks and expected use period of the pavilion coincides with current summertime camping as well as winter over-snow use at the Therriault Lakes campground, which is also a destination point for snowmobile users. Connectivity would be maintained with other lynx habitat to the north, into Canada as well as to the east, onto the Flathead National Forest and the Stillwater State Forest (T, E & P Species Figure 7).

There are no identified linkage corridors (USDA Forest Service 2004: Figure 1-1; KNF Lynx Taskforce 1997: 6) in the TLTM project area or within the affected LAU's. There is one identified linkage corridor (Ibid) southeast of the project area that provides potential linkage habitat between the Krinklehorn LAU and the Sunday LAU located further south. This linkage area is outside of the project area. Therefore this guideline, as it pertains to the linkage corridor, does not apply. However, the Ten Lakes Travel Management project does not propose any activities within the project area that would prevent lynx movement to the linkage corridor.

Cumulative Effects

Introduction

The Existing Condition section describes relevant past and present factors affecting lynx and lynx habitat conditions and trends in the affected LAU's. This cumulative effects section summarizes the past actions as well as further describes ongoing and other reasonably foreseeable contributions potentially impacting lynx in terms of the standards and guidelines of the NRLMD.

Spatial and Temporal Context for Cumulative Effects Analysis

The Action Alternatives include the development of winter and summer travel management plans within the project area, as well as the construction of a four season pavilion in one Alternative. No vegetation manipulation is proposed in any alternative. No new roads or trails are being proposed, however over snow seasons of use would be defined as well as defining existing trail miles open to mechanized use (see definitions in the recreation section).

The Ten Lakes Travel Management Project area encompasses lynx habitat within the Therriault and a portion of the Graves LAUs (T, E & P Species Figure 7). The boundary of the project area lies along the Grave Creek road and splits the Grave LAU, with the eastern portion of the LAU lying adjacent but outside of the TLTM project boundary. Although, the project does not make decisions within this portion of the LAU, it is the appropriate scale to assess affects in the cumulative effects analysis, as it represents the theoretical boundary of a lynx home range. The habitat for lynx in both LAU's is similar and includes high elevation habitat with few roads and minimal past harvest activity.

Temporal boundaries for the Canada lynx analysis include both short-term and long-term effects. Short-term effects are those that are expected to last between a few days to a season or two and up to approximately 15 years. Although lynx are generally considered tolerant of human activity, it is expected that a range of behavioral response could occur depending on the individual and circumstances involved (ILBT 2013). Generally, once disturbance causing activities have been completed lynx can move back into and use the area. In this project, the building of a warming hut may constitute short-term affects (e.g. short-term displacement). Limiting areas and time restrictions of over-snow recreation could provide longer-term reduced human activity in the project area.

Summary of the Existing Condition – Past Actions

The existing condition of Canada lynx habitat for the Therriault and Grave LAU is summarized in T, E & P Species Table 6). Specifically, a more detailed description of previous vegetation management activities is found at the beginning of Chapter 3. Lynx habitat within the cumulative effects area has been cumulatively affected by past management actions and natural occurrences. Vegetation altering events, whether man-caused or naturally occurring have been largely beneficial for lynx in that they have provided cycles of foraging habitat in these LAUs. Because of past Forest Plan MA direction in the cumulative effects area, very little timber harvest has occurred in the higher elevations, with much of it adjacent to the existing open roads. The majority of the TLTM Project Area lies within IRAs and MAs with a non-motorized management emphasis. The affected lynx LAUs overlap the majority of those acres that fall above 4000 feet in elevation. There are very few acres of recent harvest that have created early stand initiation habitat in the Therriault, or Grave LAUs (T&E Species Table 11). The Project Area contains some very popular over-snow vehicle use areas. This use has been occurring for several decades. The Ten Lakes Snowmobile Club currently grooms approximately 33.8 miles of road from December 1 through April 1. The groomed route starts at Birch Creek on the main Grave Creek Road (Road

114) and continues on Road 319 where it ends at Big & Little Therriault lakes. This is one of the few open roads and the main year-round open road leading into the most popular over–snow areas on the Fortine District. Compared to the area found in the TLTM project area, the eastern portion of the Grave LAU sees very little over-snow use with the only road/trail over-snow access provided by Williams and Blue Sky creek trails. These trails are used by individuals mainly for trapping purposes. Access and management opportunities are limited in both LAU's because of rugged lands in Canada to the north, private land west and south of the project area, as well as the grizzly bear motorized standards, and the non-motorized/non-motorized backcountry area designations to the east in the Grave LAU (T, E & P, Figure 7). This groomed route bisects the Grave LAU east to west with the vast majority of the snowmobile activity occurring within project area in the Therriault LAU and west half of the Grave LAU. All of the groomed areas are on roads that are open year-round to highway legal vehicles. These routes typically cannot be utilized by wheeled vehicles during the winter months due to snow depths. No grooming is allowed after March 31st in this area. In addition to the groomed routes, there are existing over-snow routes used within the over-snow vehicle areas that are used more often than the general use areas. There are no designated play areas in the Project Area.

Effects of Current and Reasonably Foreseeable Actions

Vegetation Management - Timber harvest and associated activities may contribute to the environmental habitat baseline for the lynx as well as possible effects to species ability to utilize a specific area during project implementation. Timber harvest and hauling could cause lynx to temporarily avoid affected areas. The amount of time that species will avoid an area depends both on the species and the individual, but generally, avoidance will last from hours to possibly days. Given that roads used to access timber harvest areas are closed to the general public, there would be little to no increase in the risk of mortality to wildlife, especially with the enforcement of contractual provisions. Additionally, timber harvest can result in areas lacking in hiding or movement cover and increased edge effect for approximately 15-25+ years in this area, depending on the site.

The Galton Vegetation Management Project includes the entire Ten Lakes Travel Management project area and includes the Therriault and Grave LAUs. No harvest activities will occur within the WSA boundary. The following are potential harvest acres within the LAU boundaries for two alternatives that could be selected. Alternative 1: 7,226 acres of Ecosystem Burning, 178 acres of Regeneration Harvest, and 43 acres of Vista cutting units along the Grave Creek Road. Alternative 3: 1,029 acres of Ecosystem Burning, 168 acres of Ecosystem Burning designed to benefit whitebark pine, and 74 acres of Regeneration Harvest. These projects use timber management, slashing, and prescribed fire, and as a result some, but not all, down woody debris and snags may be lost in treated areas These activities may incidentally affect lynx use within some areas on a temporary basis, but with the large amount of existing secure habitat and cover provided, would not have adverse cumulative effects. The ecosystem burns could potentially change vegetative conditions that could enable over-snow travel in areas that are currently inaccessible due to thick trees. The Ten Lakes Travel management action alternatives have addressed these potential conditions by defining use areas as well as seasons of use for over-snow activities. This would continue to provide effective lynx habitat as well as not allowing expansion of the over-snow use areas and routes.

Harvest of blown down or damaged trees associated with future storms is possible in the analysis area. If a salvage project is identified and implemented, the cumulative effects to specific habitats (e.g. old growth, snags, wetlands etc.) and associated species would be evaluated at that time. If a salvage project is identified and implemented, the cumulative effects and associated species would be evaluated at that time, including the effects of this project.

The effects to lynx from pre-commercial thinning are a reduction in winter foraging habitat for hare as well as temporary avoidance while activities occurred. No pre-commercial thinning would be proposed in lynx habitat, unless it complied with the standards in the NRLMD.

Pre-commercial thinning on National Forest land occurs when past regenerated timber stands meet certain stand conditions. It is expected that approximately 50 acres/ year would be treated through pre-commercial thinning within the project area. Because the vast majority of the past regenerated stands are located below 4000 feet, they do not fall within lynx habitat. However, no pre-commercial thinning would be proposed in lynx habitat, unless it complied with the standards in the NRLMD. During thinning operations, there would be short-term localized disturbance to listed species and their prey in the area. Mortality risk for associated species is not expected to increase. Pre-commercial thinning on State land is considered a minor activity. With the limited amount of pre-commercial thinning on State lands, potential effects to listed species and their prey would be indiscernible.

Noxious Weed Control - Efforts to treat present infestations of noxious weeds and to eradicate infestations of new invaders are ongoing. All activities will comply with the Kootenai National Forest Invasive plant Management ROD (2007). Weed treatment activities would not lead to any adverse effects on wildlife species or their habitat because treatments isolate non-beneficial weed species and would actually benefit forage species important to many species or their prey (USDA Forest Service 1997, 30).

Fire Suppression - In the event of a wildfire, construction of fire lines, helispots, and safety zones could potentially result in impacts to lynx habitat, or create openings along travel corridors such as ridges or riparian areas. This could result in temporary displacement of lynx. Suppression activities are typically subject to input from District Resource Advisors, and protection of species and specialized habitats is considered. Maintaining travel corridors are considered a priority in these cases.

Road Management Activity - Actions such as road maintenance and administrative use associated with permit administration, data collection, and monitoring of NFS lands are not likely to measurably affect wildlife or specialized habitats (e.g. old growth habitat, snags nor down woody debris) because they generally do not result in vegetation removal or persist for long periods of time. The standing tree and snag component would only be affected if considered a hazard to road users. These activities would not result in any change to specialized habitats of listed species, thus no adverse cumulative effects would be expected.

Public Use - Other forest product activities occurring presently and typically on an annual basis are the gathering of pine cones, boughs and commercial gathering of Christmas trees and “character trees.” These activities occur throughout the analysis area, and have little-to-no effect on the landscape due to the unspecific nature of the use and the low impact on the resources (foot traffic, hand tools). These activities would be more prominent outside the LAU boundaries below 4000 feet, where there are more open roads. However within the LAUs the roadless designation of this area limits the roads, and therefore would occur on a minor percentage of the lynx habitat available.

Firewood cutting in the project area will continue to occur. The result of this would be possible reduction of down trees that may be used as potential denning habitat and perhaps a slight displacement for animals using the area. These activities would be more prominent outside the LAU boundaries below 4000 feet, where there are more open roads. However within the LAUs, the roadless designation of this area limits the roads, and therefore would occur on a minor percentage of the lynx habitat available.

Recreation Maintenance - Routine maintenance of trails and developed and dispersed recreation sites may temporarily displace some wildlife species. Approximately 85 miles of trail are maintained each year within the project area. Recreation maintenance could involve the harvest of trees in mature forest stands that pose a hazard to users. However, the scale of the impact would be negligible as a cumulative effect to those species utilizing the immediate area, nor adjacent forest stands.

Special Uses - Operations of outfitter/guides would not result in any change to general and specialized wildlife habitats (e.g. old growth, snags or down woody debris) that listed species may utilize, as they do not involve the harvest of trees. There would be no cumulative effects to wildlife and their habitats associated with these activities other than possible temporary and local avoidance of an area due to the presence of humans.

Permits associated with access to private homes, right-of-ways for utilities, and outfitter/guides are not expected to contribute to the cumulatively impact on wildlife because they are limited to previously disturbed and hardened sites like trails and roads. The majority of these occur outside of the affected LAU's.

Private Land - Any cumulative effects to wildlife species will be partially dependent on the duration (seasonal versus year-round) of use of these parcels and homes. Anticipated effects include species displacement, reductions in specialized habitats (e.g. old growth, snags, and down woody debris), habitat alteration and/or habitat loss. Many of the activities that may occur on the private parcels can only be surmised.

Other Agency Actions - Fish Wildlife and Parks continues to stock fish in Big and Little Therriault Lakes and Wolverine Lake. This project is adjacent to the US/Canada Border and receives a great deal of use year round by the Department of Homeland Security and Forest Service Law Enforcement. This use is expected to continue in the area. Regardless, these activities would not directly impact species or suitable habitat on NFS lands.

Summary of Cumulative Effects

Any cumulative effects from wildfire suppression or from the assumed development of adjacent private lands can only be surmised, at this time.

The temporal occurrence of forest uses such as summer activities (camping, hiking, and berry picking) versus fall (hunting and firewood cutting) or winter (skiing and snowmobiling) activities may result in a temporary displacement of lynx use of that area, however, the majority of these activities occur in existing areas of human use that are already avoided by lynx. There may be some situations where isolated or localized cumulative effects may occur, due to an overlap of forest activities, but these situations are typically short in duration, and do not persist through the lifecycle of any one species, either temporally or spatially.

Regulatory Framework Finding

Land and Resource Management Plan

The 2015 Forest Plan provides desired conditions, objectives, standards, and guidelines for Canada lynx within the Wildlife Resource. The following are applicable to the actions in this project:

FW-DC-WL-01: Nests and den sites and other birthing and rearing areas for terrestrial threatened, endangered, proposed, or sensitive species are relatively free of human disturbance

during the period they are active at these sites. *No active lynx dens are known within the project area and denning habitat is abundant within the LAU's (*T, E & P *species Table 6 above). Therefore, the TLTM project would contribute to progress toward FW-DC-WL-01*.

FW-DC-WL-03: Recovery of the terrestrial threatened and endangered species is the long-term desired condition. Foraging, denning, rearing, and security habitat is available for occupation. Populations trend toward recovery through cooperation and coordination with USFWS, state agencies, other federal agencies, tribes, and interested groups. *A mosaic of lynx habitat is found throughout the LAU's in and adjacent to the project area (*T, E & P S*pecies Table 6). Vegetation manipulation is not proposed in any alternative and would not change the existing condition of lynx habitat. Therefore, the TLTM project would contribute to progress toward FW-DC-WL-03*.

FW-DC-WL-17: Forest management contributes to wildlife movement within and between national forest parcels. Movement between those parcels separated by other ownerships is facilitated by management of the NFS portions of linkage areas identified through interagency coordination. Federal ownership is consolidated at these approach areas to highway and road crossings to facilitate wildlife movement. *Movement areas would be maintained within and between the LAU's under all alternatives. Recreational use areas in all alternatives were reduced temporally and spatially (see HU 02, 03, 04 and HU G3). Affected LAU's are bordered to the south and west by low elevation, Koocanusa Reservoir, Highway 93, and private land within the Tobacco Valley and Fortine Creek (*T, E & P Species Figure 7*), making lynx travel outside the project area more challenging. The project area does not include the identified linkage area and there would be no change to federal ownership in this area. Therefore, the TLTM project would contribute to progress toward FW-DC-WL-17*.

FW-STD-WL-01: The Northern Rockies Lynx Management Direction (2007) and ROD is included in appendix B, and shall be applied. Management direction from the NRLMD direction has be applied to actions proposed in the TLTM project. See the "Direct and Indirect" and "Cumulative Effects" discussions as organized by the objectives, standards, and guidelines of the NRLMD. Also, see the project file for those objectives, standards, and guidelines considered but determined to be not relevant to this project. Therefore, the TLTM project is designed in accordance with this standard.

FW-GDL-WL-21: Management activities on NFS lands should avoid/minimize disturbance at known active nesting or denning sites for other sensitive, threatened, or endangered species not covered under other forestwide guidelines. *No active dens are known within the project area and denning habitat is not expected to be a limiting factor for lynx (see discussion under "Objectives HU 02- 04 and Guideline HU-G3 above). Therefore, the TLTM project is designed in accordance with this guideline.*

MA5a, b, c-DC-WL-01 (Backcountry): Large remote areas with little human disturbance such as those found in these MAs (in conjunction with MAs 1a, 1b, and 1c) are retained and contribute habitats for species with large home ranges. Habitat conditions within these management areas contribute to wildlife movement within and across the Forest. These areas also provide foraging, security, denning, and nesting habitat for wildlife. *MAs 5a and 5b are found within the project area in addition to IRA's and wilderness study areas. A reduction in over-snow motorized travel would occur in all alternatives contributing to secure habitat for lynx with low levels of non-motorized human disturbance and largely natural vegetative conditions. Therefore, the TLTM project would contribute to progress toward this desired condition.*

GA-DC-WL-TOB-05: Wildlife move to and from the border with Canada. *The majority of the TLTM Project Area lies within IRA's with low levels of motorized access (see response to MA's 5a,*

b. c-DC-W:-01 above). The lynx LAU's overlap the majority of this area. Much of these lands lie in unroaded blocks that provided largely natural vegetative conditions. Connectivity is good north of the Therriault LAU into Canada as well as to the east into the Flathead National Forest and the Stillwater State Forest. The project area is bordered to the south and west by low elevation, Koocanusa Reservoir, Highway 93, and private land within the Tobacco Valley and Fortine Creek, making lynx travel through these areas more challenging. The action alternatives will not compromise travel through any of these areas. Therefore, the TLTM project would contribute to progress toward this desired condition.

Endangered Species Act

The preferred alternative would be consulted on with the USFWS and will be in compliance with the ESA. Consultation with FWS is ongoing and will continue with the selection/analysis of an alternative in the Final EIS. Concurrence is anticipated with the completion of the Ten Lakes Travel Management Final EIS.

Regulation and Executive Orders

- 36 CFR Part 294 Special Areas, Roadless Area Conservation; final Rule
- 36 CFR Part 212 Travel Management
- Executive order 11644, as amended by Executive Order 11989

The Ten Lakes Travel Management Alternatives Addressed the Travel management rules or minimization criteria specific to the effects on lynx in the following ways: all alternatives decrease or minimize the allowable areas of motorized over-snow areas as well as reducing the overall days available for motorized winter use. These alternatives meet the Northern Rockies Lynx Management Direction by reducing potential areas of snow compaction in lynx habitat, thereby minimizing potential effects to lynx and lynx habitat.

National Forest Management Act

The project complies with NFMA direction to provide for diverse populations of plant and animal communities through compliance with the Kootenai Forest Plan.

Statement of Findings

Alternatives 2, 3 and 4 **may affect, are not likely to adversely affect the Canada lynx**. This determination is based on: 1) existing lynx habitat conditions meet all NRLMD vegetation standards and no vegetation manipulation is proposed in any alternative; 2) all action alternatives reduce the area and routes available for over-snow vehicles and therefore snow-compacting activities in the project areas and affected LAU's; 3) all action alternatives define timeframes in which motorized over-snow activities can occur; all action alternatives would maintain existing movement within and between LAU's as well as areas adjacent to the project area; 4) no increase in lynx mortality is expected; 5) effects of snow compaction providing increased competition with other predators was not found to be a valid concern Kolbe (et al. 2007) and 6) project activities could disturb a lynx in activity areas and may cause temporary avoidance of the affected areas although lynx are generally considered tolerant of human activity.

Alternative 1 (no action), **may affect, is not likely to adversely affect the Canada lynx** based on no increased areas of over snow compaction with this alternative as well as reasons 1, 5 and 6 listed above.

Other Agencies and Individuals Consulted

Katrina Dixon, USFWS Consultation Biologist

Communications have consisted of consultation throughout early on in the development of the Ten Lakes Travel Management project and include providing a description of proposed actions and discussions regarding potential concerns and expected determinations of effects for Canada lynx.

Kevin Aceituno, USFWS Consultation Biologist

Communications consisted of consultation during the latter stages of the Ten Lakes Travel Management project.

Canada Lynx Critical Habitat

Introduction

Canada lynx occupy northern boreal forests[2] which are primarily composed of cool, moist subalpine fir and Engelmann spruce and moist lodgepole pine forest which receive abundant snowfall. Snowshoe hares are the primary prey of lynx and habitat use by lynx is associated with those conditions that support hare populations. Therefore, mature multistory and young regenerating forest that provide habitat for snowshoe hares is important to lynx conservation. Especially important is winter habitat that continues to provide snowshoe hare forage and cover (twigs and stems that protrude above the snow or limbs that drop to the snow surface) during high snow periods. Denning habitat is found in forests with abundant dead and down trees, especially in areas near foraging habitat. Both natural (e.g. fire) and human disturbances such as timber harvest and prescribed fires can affect lynx habitat (USFS 2007a).

Although a variety of habitat and forest types may be found within a lynx's home range and used to some level (e.g., matrix habitat for travelling between patches of boreal forest), in northwestern Montana lynx select forest stands with high horizontal cover primarily consisting of Engelmann spruce and subalpine fir. Both mature multistory and early successional forest habitats provide for snowshoe hares, but use by lynx varies seasonally in response to snowshoe hare availability. Mature multistory stands provide the greatest foraging opportunities for both hares and lynx during winter and management that maintains and promotes a mosaic of multistory spruce-fir forests is most beneficial to the species (Squires et al. 2010).

With designation of critical habitat, physical and biological features important to lynx were considered to identify those essential to the conservation of the species. Examples of these features include nutritional or physiological requirements, cover or shelter, and reproductive sites. The physical and biological features of critical habitat essential to lynx conservation, or the Primary Constituency Elements (PCE), has been defined as "(1) Boreal forest landscapes supporting a mosaic of differing successional forest stages" containing the following sub-elements: (1a) snowshoe hares and their preferred habitat, (1b) adequate winter snow conditions, (1c) denning habitat with abundant coarse woody debris (CWD), and (1d) 'matrix' habitat which facilitates lynx movement and dispersal by connecting areas of suitable habitat (USFWS 2013).

This Ten Lakes Travel Management project proposes temporal and spatial limits on over-snow motorized travel, as well as specifying which existing non-motorized trails mechanized use (mountain bike) use can occur. No increase in roads or trails is proposed. One alternative proposes building a four season pavilion located off an existing open road adjacent to the Big Therriault campground. Vegetation management is not proposed as part of this project and existing lynx habitat will not be affected. Therefore the effects of recreation on the applicable lynx primary constituency elements, is the focus of this Canada lynx critical habitat analysis.

2 Boreal forests used by lynx are generally cool, moist, and dominated by conifer tree species, primarily spruce and fir. Boreal forest landscapes used by lynx are heterogeneous mosaics of vegetative cover types and successional forest stages created by natural and human-caused disturbance. In many places periodic vegetation disturbances stimulate development of dense understory or early successional habitat or snowshoe hares. (USFWS 2013a description based on literature review).

Summary of Conclusions

Alternatives 2, 3 and 4 **may affect, are not likely to adversely affect Canada lynx critical habitat**. This determination is based on: 1) existing lynx habitat conditions meet PCE sub-elements 1a, 1c, and 1d and no vegetation manipulation is proposed in any alternative; 2) all Action Alternatives define timeframes in which motorized over-snow activities can occur; and reduce the area and routes available for over-snow vehicles which reduces potential snow-compacting activities in the project areas and affected LAU's, and therefore meets PCE sub-element 1b; 3); all Action Alternatives would maintain existing movement within and between LAU's as well as areas adjacent to the project area.

Regulatory Framework

KNF Land Management Plan (USDA Forest Service 2015)

The 2015 Forest Plan provides overall guidance for the management of the lands on the KNF. It describes the goals, desired conditions, and objectives toward which the management of the land should be directed. And it establishes standards and guidelines to help achieve or maintain the desired condition or conditions, to avoid or mitigate undesirable effects, or to meet applicable legal requirements.

There are no plan components which provide specific Canada lynx critical habitat resource direction relevant to this project. However, there are other Forest Plan components that provide resource direction for a range of wildlife species or habitat conditions that are not specific to lynx critical habitat, but still are applicable to the management of critical habitat for a threatened species. The list of the plan components applicable to lynx management are found in the "Regulatory Framework Findings" section of this analysis.

Resource Indicators and Measures

For the lynx critical habitat analysis, PCE sub-element (1b) "winter conditions that are generally deep and fluffy for extended periods of time", specifically as it pertains to snow-compacting activities proposed in the TLTM project will be used as a resource indicator to measure potential effects and to compare alternatives. PCE sub-elements 1a, 1c, and 1d all pertain to snowshoe hare and lynx habitat. This project does not propose vegetation management and will therefore have no impact to these remaining Primary Constituency sub-elements. There are two human use objectives/guidelines in the NRLMD that pertain to snow-compacting activities in lynx habitat: HU 01 – maintain the lynx's natural competitive advantage over other predators in deep snow, by discouraging the expansion of snow-compacting activities in lynx habitat; and HU G11 – designated over-the snow routes or designated play areas should not expand outside baseline areas of consistent snow compaction, unless designation serves to consolidate use and improve lynx habitat. The changes to potential snow-compacting activities (motorized over-snow routes and areas, as well as over-snow groomed routes) will be used to measure potential effects to this sub-element and to compare alternatives.

T, E, & P Species Table 8. Resource Indicators and Measures for Assessing Effects on Lynx Critical Habitat

Resource Element	Resource Indicator	Measure	Used to address: P/N, or key issue?	Source
NRLMD Guideline HU G11	Percent of lynx habitat available to over-snow motorized use	Percent of Project Area receiving over-snow motorized use	Yes	KNF Forest Plan FW-STD-WL-01
NRLMD Objective HU 01	Expansion of over-snow routes within lynx habitat.	Miles of over-snow routes within lynx habitat.	Yes	KNF Forest Plan FW-STD-WL-01
NRLMD Objective HU 01	Expansion of groomed routes within lynx habitat.	Miles of groomed routes within lynx habitat.	Yes	KNF Forest Plan FW-STD-WL-01

ASA[1] – Available Snowmobile Area – the area available to motorized over-snow vehicles.
MCUA[2] – Most Common Use Area – the area most commonly used by motorized over-snow vehicles
*includes 33.8 miles of route not groomed during Season 2, but available to over-snow vehicles

Methodology

The TLTM project alternative over-snow areas, routes and groomed routes were calculated using geographic information system (GIS) applications within the project area and LAU boundaries. Activity area acres and route lengths are in decimal format. Therefore, there may be slight differences in acres or mile totals as presented in the following analysis than elsewhere in the document (e.g. project description) depending on when rounding of the decimals took place (e.g., rounding each individual unit before summing or totaling all acres then rounding).

No vegetation manipulation is proposed as part of this project therefore no effects are anticipated to Primary Constituency sub-elements 1a, c, and d. However, snowshoe hare and lynx habitat conditions are relevant to this project to show the habitat conditions in the project area as well as across the forest. Forestwide lynx habitat is described using the terminology from the NRLMD. Lynx habitat was mapped for the KNF based on forest type, stand age, and elevation. In addition to lodgepole pine, Engelmann spruce, and subalpine fir forest types, mapping also includes cedar-hemlock and other cool, moist forest types as they may provide lynx habitat (USFS 2007a, b). Successional or structural stage is based on year of origin and assumptions about the length of time it takes for a stand to move from one stage to the next. However, age does not account for environmental conditions or disturbance processes that affect development of the successional stage. Therefore, mapping of lynx habitat based on stand data provides a broad estimation of lynx habitat within an LAU but may need to be fine-tuned based on field review.

Habitat connectivity was also evaluated through the use of stand data, satellite imagery, and photo documentation to visually examine lynx habitat, past management activities, as well as the presence of forested cover to determine possible movement areas and potential areas where lynx travel may be hindered. Ridge lines and draws were considered high value movement areas.

Data Sources

Lynx population ecology, biology, and habitat description and relationships are described in Ruggiero et al. (1999), ILBT (2013), and USFWS (2013). Critical habitat designation and the PCE are described in USFWS (2014).

Assumptions and Limitations

There are no assumptions or limitations with the TLTM project.

Affected Environment

Spatial and Temporal Context for Effects Analysis

The Action Alternatives include the development of winter and summer travel management plans within the project area, as well as the construction of a four season pavilion in one action alternative. No vegetation manipulation is proposed in any alternative. No new roads or trails are being proposed, however over snow seasons of use would be defined as well as defining existing trail miles open to mechanized use (see definitions in the recreation section). The effects analysis for critical habitat addresses the type and magnitude of effects to PCE sub-element 1b, the only applicable sub-element in this project (USFWS 2009, 2013a).

The Ten Lakes Travel Management Project area encompasses lynx habitat within the Therriault and a portion of the Grave LAUs (T, E & P Species Figure 6). The boundary of the project area lies along the Grave Creek road and at its southern end, extends outside but adjacent to the LAU boundaries because of lower elevations not included in the LAUs. This is a small percentage of the project area and it is expected that lynx use this area for movement between lynx habitat on either side of Grave Creek. This portion of the project area also includes the main parking area for over-snow vehicles and is also the origin of the groomed route for the project area.

The effects of this Project are tied to human use of the area and how that affects lynx movement and the effectiveness of lynx habitat. The project area makes travel management decisions on the Therriault LAU and approximately half of the Grave LAU, doesn't include vegetation manipulation, and is still generally the size of a lynx home range. Therefore the project area has been chosen as the appropriate scale of analysis for determining direct and indirect, effects on critical lynx habitat for the TLTM project.

Temporal boundaries for lynx critical habitat analysis include both short-term and long-term effects. Short-term effects are those that are expected to last between a few days to a season or two and up to approximately 15 years. Effects to PCE sub-element 1b are environmental effects, with possible effects consisting of snow compaction. In this project, limiting areas and time restrictions of over-snow recreation could provide longer-term reduced areas of potential snow-compacting activities.

Existing Condition

Introduction

Following the listing of Canada lynx within the contiguous U.S. as threatened in March 2000 (USFWS 2000). The USFWS designated lynx critical habitat in November 2006 (USFWS 2006). Since 2006, the USFWS subsequently revised the critical habitat designation (USFWS 2009) which delineated lynx critical habitat units across the lower 48 states from Maine to Washington. Based on this delineation, the Ten Lakes Travel Management project falls within the Northern Rocky Mountains (NRM) Critical Habitat Unit #3 (Ibid). Critical habitat boundaries were updated with a new final designation on September 12, 2014 (USFWS 2014a). There were only extremely minor changes to the critical habitat boundary on the KNF and all of these were small slivers along the critical habitat edge that were removed in the 2014 version. The updated boundaries are practically unchanged and the project still falls within Unit #3 under this updated final rule.

Condition of PCE within the Therriault and Grave LAU's

Historically, natural disturbances (e.g., fire, insect, disease, wind) influenced successional stages of vegetation and resulted in diversity of habitat type and distribution. Wildfire was a major contributor of landscape disturbance within lynx habitat and resulted in vegetative structural changes by reducing timber and shrub overstory in affected areas and creating additional age classes and species diversity. Fire suppression since the early 1900s has resulted in fewer and smaller fires with only two wildfires of any size occurring in the last 25 years in the affected LAUs: the 1000 + acre Kopsi fire in the Grave LAU and the High One fire (700 acres) in the Therriault LAU. Both these wildfires now provide summer and limited winter lynx habitat and fall into the stand initiation structural stages (young forest) in these LAUs. Effects of fire suppression includes alteration of stand structure resulting in more homogenous stands with greater canopy closure and poorly developed understories in some areas. This has in turn reduced the suitability of the stands for snowshoe hares and, therefore, lynx.

The majority of the Ten Lakes Travel Management Project Area lies within the Ten Lakes Wilderness Study Area, Inventoried Roadless Areas with other areas in motorized backcountry MA containing few roads. The lynx LAUs overlap the majority of this area. Much of these lands lie in unroaded blocks that provided largely natural vegetative conditions. Much of the past timber harvest within the project area occurred below 4000 feet, outside of the lynx LAUs. Because of this management emphasis, and inaccessibility of much of the project area's land base, very little timber harvest has occurred in the higher elevations, with much of the existing harvest adjacent to the existing open roads. There are very few acres of recent harvest that have created early stand initiation habitat in the Therriault or Grave LAUs.

Within LAUs, the majority of the acres that fall into stand initiation habitat (other than the wildfire areas) are from regeneration harvest that occurred adjacent to the roads in the mid to late 1960's. Past harvest has provided some variety of age classes and successional stages across the project area. Regeneration harvest in lynx critical habitat would have resulted in structural changes that influenced lynx and matrix habitats. Immediately following regeneration, stands would temporarily not provide snowshoe hare preferred habitat conditions. Conditions on the KNF indicate that young forests provide these preferred conditions after approximately 15 years. Therefore, recent regeneration timber harvests (those within the last 15 years) are unlikely to offer adequate vegetation to provide snowshoe hare winter forage whereas timber harvests completed prior to 2000 would now have trees in the units of the size and density to provide high quality snowshoe hare habitat in a young forest condition.

Boreal forest landscapes are naturally in a state of change, through disturbance and succession processes, and result in a changing environment of habitat types, distribution, and juxtaposition (USFWS 2013). As such, not all lynx habitat acres provide suitable habitat all of the time and there may naturally be periods of time with low levels of suitable habitat. This variability of habitat suitability and distribution is reflected in habitat mapping done on lynx habitat to estimate historic range of lynx habitat levels, current levels on the KNF, and projected future levels under different management scenarios (ERG 2012). Historically, the KNF provided between 69,681 acres to 278,725 acres of mature multistory suitable lynx habitat (Ibid). Currently the KNF has approximately 149,781 acres of mature multistory suitable lynx habitat which falls within the historic range of variation (Ibid).

Mature multistory and young forests (PCE 1a) as well as matrix habitat (PCE 1d) in the affected LAUs was assessed for all ownerships. There are 213 acres of private land (<1%) in the Therriault LAU, and 3 acres in the Grave LAU. The private land in the Therriault LAU lies mainly in the lower elevations along the foothills of the LAU. T, E & P Species Table 9 displays

the current critical habitat PCE conditions in the project area. The percentages reflect the contribution of each habitat type (e.g., mature multistory forest) to the total amount of critical habitat available within the LAU (each category of habitat acres divided by the total habitat acres within the LAU). See project file for calculations.

T, E, & P Species Table 9. Existing critical habitat PCE conditions[1] within the TLTM project area LAUs

LAU Name (Number)	LAU Total Acres[1]	Stand Initiation Forage[2]	Multistory Forage[3]	Matrix (Movement)[4]
Therriault (14301)	46,747	2676 (6%)	13,783 (30%)	8729 (19%)
Grave[5] (14302)	40,235	4283 (11%)	23,307 (58%)	2087 (5%)

[1] Habitat types presented are only those that contribute to the critical habitat PCE. Other habitat types that have the potential to develop habitat conditions preferred by snowshoe hares, but are currently unsuitable, or have data indicating boreal habitat, but not what type are also found within the project area. These habitats comprise the remaining 45, 26, and 18% (see project file for calculations).
[2] Young stand where the vegetative growth is sufficient to protrude above the snow and provides winter snowshoe hare habitat.
[3] Mature multistory stands that include many vegetation layers that provide winter snowshoe hare habitat.
[4] Habitat types that do not support snowshoe hares but allow for lynx movement between associated patches of boreal forest.
[5] Grave LAU extends outside the Project area, however 17,302 acres of the LAU total acres (43%) lie within the project area

The existing vegetative conditions meet all vegetative NRLMD standards and guides (see project file). The TLTM project does not propose any vegetative manipulation and will therefore not affect this existing condition. Therefore lynx vegetative habitat conditions will not be discussed further.

Existing Recreational activities and effects to PCE sub-element 1b

The Project Area contains popular over-snow vehicle use areas. This use has been occurring for several decades. The Ten Lakes Snowmobile Club currently grooms approximately 33.8 miles of road from December 1 through April 1. The groomed route starts at Birch Creek on the main Grave Creek Road (Road 114) and continues on Road 319 where it ends at Big & Little Therriault Lakes. This is one of the few open roads and the main year-round open road leading into the most popular over–snow areas on the Fortine District. Access and management opportunities are limited in this area because of rugged lands in Canada to the north, private land west and south of the project area, as well as the grizzly bear motorized standards, and the non-motorized/non-motorized backcountry area designations to the west in the Grave LAU (T, E & P Species Figure 7). This groomed route bisects the Grave LAU, with the vast majority of the snowmobile activity occurring within the western portion of the Grave LAU as well as the Therriault LAU/project area. All of the groomed areas are on roads that are open year-round to highway legal vehicles. These routes typically cannot be utilized by wheeled vehicles during the winter months due to snow depths. No grooming is allowed after March31st in this area. In addition to the groomed routes, there are existing over-snow routes used to access more frequented areas in the project area. There are currently no designated routes or play areas in the Project Area (as defined by the NRLMD).

Currently all of the Project Area (64,177 acres or 100 %) is open to over-snow vehicle use, however in practical terms, much of this area is not actually useable by snowmobiles due to slope (steepness), vegetation (e.g., too densely forested), dangerous avalanche potential, and personal preferences. Use within these areas is facilitated by routes (mainly hiking trails) used over time to access most common use areas within the project area.

The project area also lies within grizzly bear habitat which includes large core areas in contiguous blocks that are available as displacement areas for grizzly bears. Cover levels are high

throughout the project area and within these core areas which enhance the condition of security for both the bear and lynx. A contiguous block of core, over 35,000 acres, is located within the project area with additional blocks adjacent to the Project Area (see grizzly bear section).

Currently, limited non-motorized over the snow use occurs within the Project Area. There are two cross-country ski trails in the project area. These trails occur on non-groomed existing roads. Use and access depend upon snow conditions. The majority of the existing use occurs in the lower elevations off open roads. These ski trails typically experience patchy snow conditions by April 1st. More recently, non-motorized snow bikes are available to recreationists and may be used in the project area. Snowshoeing may also occur in the lower elevations, however steep terrain and limited road/route access (discussed above) generally limit interior use of the project area to all but the extreme users. No changes to over-snow non-motorized use are proposed as part of the Ten Lakes Travel Management Analysis, therefore no effects are expected as part of this proposal.

Concerns regarding the effect of over-snow recreation on lynx behavior and habitat use are mainly associated with effects of snow compaction and increased competition with other predators specifically coyotes. Kolbe (et al. 2007) backtracked coyotes in his Montana study area and found that while coyotes did use snowmobile trails, they did not travel closer to these trails than randomly expected. Additionally, he found that there was no difference between coyotes' use of compacted and uncompacted roads suggesting that coyotes are selecting more for an open travel corridor than snow conditions. A more recent study in Wyoming (Burghardt-Dowd 2010, in USFWS, 2013) found that average snow penetrability was higher in northwestern Wyoming than in western MT, making coyote movement in non-compacted snow potentially more energetically costly to coyotes in Wyoming (USFWS, 2013). A review of the literature regarding competition between lynx and coyotes for snowshoe hare found that coyotes in both the MT and WY studies were primarily scavengers with only 3% and 8% (respectively) of coyote feeding remains containing snowshoe hare (USFWS, 2013). In contrast, lynx studies in MT and WY showing that 96% and 85% (respectively) of the lynx prey biomass consisting of snowshoe hares (Ibid). This review of most recent research concluded that snow compaction use and prey overlap vary geographically and temporally and snow conditions may have the larger influence in determining whether or not over-snow trails affect coyote movements. Local prey abundance or the presence of alternate prey may be larger factors than the potential of snow-compacting recreational vehicles (Ibid). USFWS (2013) in reference to PCE 1b, states that Forest management does not influence snow depth and conditions, which are dependent upon broad regional factors, such as geography, precipitation, temperature, and also topography and elevation. USFWS (2013) concludes that there is no indication that compacted snow routes would affect snow conditions in lynx critical habitat in ways that would increase competition from other species to levels that adversely impact lynx.

Connectivity/Linkage

Existing habitat connectivity within the project area and LAUs is provided by forested cover and is continuous with the exception of portions of the two past wildfires (Barnaby and Kopsi) as well as natural rocky openings along the ridgetops and high elevation meadows. Past fire suppression, lack of recent harvest activities as well as management area direction has limited management within these affected LAU's. Much of the Ten Lakes Travel Management Project Area lies within the Ten Lakes Wilderness Study Area, Inventoried Roadless Areas (IRAs), with other areas in motorized backcountry MA containing few roads. The lynx LAUs overlap the majority of this area. Much of these lands lie in unroaded blocks that provided largely natural vegetative conditions. Connectivity in terms of forested cover is high north of the Therriault LAU into Canada as well as to the east into the Flathead National Forest and further south into the

Krinklehorn LAU and adjacent Stillwater State Forest. The southern portion of the project area/ LAU is bordered to the south and west by low elevation, Koocanusa Reservoir, Highway 93, and private land within the Tobacco Valley and Fortine Creek (T, E & P Species Figure 7), making lynx travel through these areas more challenging.

There are no identified linkage corridors (USDA Forest Service 2004: Figure 1-1; KNF Lynx Taskforce 1997: 6) within any of the affected LAUs or within the project area. There is one linkage area located approximately 10 miles southeast of the TLTM Project area which could provide potential linkage habitat outside of identified lynx habitat between the Krinklehorn LAU and the Sunday LAU (located further south). These two LAUs are separated by Highway 93 and low elevation non- lynx habitat approximately six miles wide between the LAUs.

Environmental Consequences

Alternative 1 (No Action)

No direct effects from federal actions would occur. Alternative 1 would continue the current over-snow vehicle situation. There are currently no restriction dates within open areas and season of use is dependent upon snow conditions.

As discussed previously, although 100% of the project area is available to over-snow vehicle use, much of this area is not actually useable by snowmobiles due to slope (steepness), vegetation (e.g., too densely forested), dangerous avalanche potential, and personal preferences. Currently, 64,177 acres are available to over-snow use however approximately 16,166 acres have been identified as “most common use areas” (MCUA). Routes leading to and found within these areas were calculated at roughly 26.6 miles in the project area (T, E & P Species Table 10) in the year 2000 as part of a forest-wide calculation for baseline for monitoring requirements for the NRLMD. In addition, 33.8 miles of road are currently groomed from Dec. 1 through April 1st (T, E & P Species Figure 6). All roads/trails within the project area are open to over-snow vehicles, although some receive more use than others. Existing non-motorized over-snow activities do occur within the project area and include, skiing, snowshoeing, and potentially mechanized snow bikes.

Connectivity within and adjacent to the project area is good due to the limited harvest and natural openings on the landscape. Few roads access the interior of the project area and grizzly bear core areas provide secure habitat for large carnivores using this area. Low elevation, private land and Koocanusa reservoir to the south and west of the project area may limit movement in those directions, however movement north into Canada and east have similar habitat to the project area and provides good landscape connectivity (T, E & P Species figure 7).

Alternatives 2, 3 and 4 – Direct and Indirect Effects to Canada Lynx Critical Habitat - PCE sub-element 1b

Alternatives that discourage the expansion of snow-compacting activities in lynx habitat and that do not expand designated over-the-snow routes or play areas would best meet the PCE sub-element 1b. The following analysis describes how the Action Alternatives address potential snow compacting activities compared to the existing condition.

There is no indication that compacted snow routes in Montana increase competition for prey from other species (coyote) to levels that adversely impact lynx populations (USFWS, 2013), however, all action alternatives meet these objectives by reducing the existing motorized over-snow acres and routes available in the project area (T, E & P Species Table 10). There are no designated routes or play areas (as defined in the NRLMD) within the project area, however the MCUA’s

(most common use area) and over-snow routes receive the most use (consistent snow compaction) within the project area and LAU's.

T, E, & P Species Table 10. Project Area Effects by Alternative of Acres of Over-Snow Areas, Miles of Routes and Miles of Groomed Routes.

Measure	Alternative 1 (No Action & Baseline) one season – snow dependent	Alternative 2 Season 1 (12–1 thru 3-31)	Alternative 2 Season 2 (4-1 thru 5-31)	Alternative 3 Season 1 (12–1 thru 3-31)	Alternative 3 Season 2 (4-1 thru 5-31)	Alternative 4 (one season only) (12–1 thru 3-31)
Acres/% receiving Over-snow motorized use: ASA[1] and MCUA[2]	ASA: 64,177 acres (100%) MCUA: 16,166 acres (100%)	ASA: 36,703 acres (57%) MCUA: 12,498 acres (77%)	0 acres available in this season, only routes available. (0%)	ASA: 48,605 acres (76%) MCUA: 16,166 acres (100%)	ASA: 4380 acres (7%) MCUA: 4380 acres (27%)	ASA: 945 acres (1%) MCUA: 945 acres (7%)
Miles of Over-snow routes	26.6	15.0	7.6	16.1	3.0	3.0
Groomed Routes	33.8	33.8	0	33.8	0	31.0
All Routes Available	60.4	48.8	*41.4	49.9	*36.8	34.0

ASA[1] – Available Snowmobile Area – the area open to motorized over-snow vehicles.
MCUA[2] – Most Common Use Area – the area most commonly used by motorized over-snow vehicles
**includes 33.8 miles of route not groomed during Season 2, but available to over-snow vehicles

All Action Alternatives reduce the timeframe over-snow vehicles are allowed in the project area as opposed to Alternative 1 (No Action) where over snow activities are restricted only by snow availability. All alternatives end grooming activities by April 1st. All these elements combined would further reduce the potential effects of over-snow vehicles on lynx habitat. See discussions by alternative below.

Alternative 2: Alternatives 2 proposes two seasons of over-snow use each with a different amount of area, and roads/routes that are open to over-snow use. Season one would be from Dec. 1 through March 31st and season two would be from April 1st to May 31st.

Season one of this alternative would allow over-snow use on 36,703 acres or approximately 57% of the current or existing available over-snow area (ASA) (T, E & P Species Figure 8). This alternative would reduce the Most Common Use Area (MCUA) from 16,166 acres to 12,498 acres or 77% of the existing condition (T, E & P Species Table 10). This alternative would reduce the available motorized over-snow routes from 26.6 miles to 15 miles and would maintain the existing groomed routes at 33.8 miles. This would reduce all routes available from 60.4 to 48.8 miles.

Season two would occur late in the snowmobiling season (April 1 through May 31st) and would allow over-snow use only on roads/routes (T, E & P Species Figure 9). Zero acres of available over-snow *areas* would be allowed for this season in this alternative. In season 2, there would be

no groomed routes, however the existing 33.8 miles would be available for over-snow use. This season reduces motorized over-snow routes from 26.6 miles to 7.6 miles and would reduce all routes available from 60.4 to 41.4 miles (T, E & P Species Table 10).

Alternative 3: Alternative 3 proposes two seasons of over-snow use, each with a different amount of area, and roads/routes that are open to over-snow use. Season one would be from Dec. 1 to March 31st and season two would be from April 1st through May 31st.

Season one of this alternative would allow over-snow use on 48,605 acres or approximately 76% of the current or existing ASA (T, E & P Species Figure 10). This alternative would maintain the current Most Common Use Area (MCUA) at 16,166 acres in this season (T, E & P Species Table 10). This alternative would reduce the available motorized over-snow routes from 26.6 miles to 16.1 miles and maintain the existing groomed routes to 33.8 miles. This would reduce all routes available from 60.4 to 49.9 miles.

Season two would allow over-snow use on 4380 acres or approximately 7% of the current or existing ASA and 27% of the MCUA (T, E & P Species Figure 11). In season 2, there would be no groomed routes, however the existing 33.8 miles would be available for over-snow use. This season would reduce motorized over-snow routes from 26.6 miles to 3 miles and would reduce all routes available from 60.4 to 36.8 (T, E & P Table 10).

Alternative 4: Alternative 4 proposes one season of over-snow use. This season would run from Dec. 1 through March 31st. This alternative would allow over-snow use on 945 acres or approximately 1% of the current or existing ASA and 7% of the MCUA (T, E & P Species Table 10) & (T, E & P Species Figure 12). This alternative would reduce the available motorized over-snow routes from 26.6 miles to 3.0 miles and would reduce the existing groomed routes to 31.0 miles and would reduce all routes available from 60.4 to 34 miles. With over-snow use ending on March 31st, this alternative would provide the least snow compacting activities of any alternative for the winter season.

All action alternatives meet Objective **HU 01** and Guideline **HU G11** by reducing the areas and routes where over-snow vehicles are allowed, reducing the timeframe for allowable use of these vehicles as well as limiting grooming of over-snow routes to April 1st.

Connectivity/Linkage

Connectivity for all alternatives is maintained with other lynx habitat to the north, into Canada as well as to the east, onto the Flathead National Forest and the Stillwater State Forest (T, E & P Species Figure T&E-7).

There are no identified linkage corridors (USDA Forest Service 2004: Figure 1-1; KNF Lynx Taskforce 1997: 6) in the TLTM project area or within the affected LAUs. There is one identified linkage corridor (Ibid) southeast of the project area that provides potential linkage habitat between the Krinklehorn LAU and the Sunday LAU located further south. This linkage area is outside of the project area. Therefore this guideline, as it pertains to the linkage corridor, does not apply. However, the Ten Lakes Travel Management project does not propose any activities within the project area that would prevent lynx movement to the linkage corridor.

Cumulative Effects

Introduction

The project area falls within designated lynx critical habitat. The KNF received a Biological Opinion (Bush 2013) which analyzed the effects of current lynx management on NFS lands. Analysis determined that the Forest's current management addresses the PCE and critical habitat would continue to serve the intended conservation role for the species.

The Affected Environment/Existing Condition section describes relevant past and present factors affecting lynx critical habitat and the existing condition of the PCE in the Therriault and Grave LAUs. The cumulative effects analysis describes effects of the project as well as relevant past, on-ongoing, and foreseeable project to critical habitat and the PCE specific to lynx in the contiguous United States. Please see Chapter 3 for past actions and Lynx T, E & P Species Table 9 for the existing critical habitat PCE condition that is not affected by any alternatives in this project.

The Ten Lakes Travel Management Project area encompasses lynx critical habitat within the Therriault and a portion of the Graves LAUs (T, E & P Species Figure 6). The boundary of the project area lies along the Grave Creek road and splits the Grave LAU, with the eastern portion of the LAU lying adjacent but outside of the TLTM project boundary. Although, the project does not make decisions within this portion of the LAU, it is the appropriate scale to assess affects in the cumulative effects analysis, as it represents the theoretical boundary of a lynx home range. The critical habitat for lynx in both LAU's is similar and includes high elevation habitat with few roads and minimal past harvest activity.

The cumulative effects analysis for lynx critical habitat uses the affected LAUs as the magnitude of change to PCE sub-element 1b. In addition, areas outside of the impacted LAUs were evaluated for connectivity to other adjacent LAUs. Given the location of the proposed activities (T, E & P species Figure 7), the high percentage of mature multistory conditions within the LAUs, and type and nature of activities along the shared boundaries of the project and adjacent LAUs this boundary is appropriate to analyze affects.

Summary of the Existing Condition – Past Actions

The existing condition of Canada lynx critical habitat is summarized in T, E & P Species Table 9. Specifically, a more detailed description of previous vegetation management activities is found at the beginning of Chapter 3. Lynx habitat within the project area has been cumulatively affected by past management actions and natural occurrences. Vegetation altering events, whether man-caused or naturally occurring have been largely beneficial for lynx in that they have provided cycles of foraging habitat in these LAUs. Because of past Forest Plan direction in the project area, very little timber harvest has occurred in the higher elevations, with much of it adjacent to the existing open roads. The majority of the TLTM Project Area lies within IRAs and MAs with a non-motorized management emphasis. The affected lynx LAUs overlap the majority of those acres that fall above 4000 feet in elevation. There are very few acres of recent harvest that have created early stand initiation habitat in the Therriault, or Grave LAUs (T, E & P Species Table 6). The Project Area contains some popular over-snow vehicle use areas. This use has been occurring for several decades. The Ten Lakes Snowmobile Club currently grooms approximately 33.8 miles of road from December 1 through April 1. The groomed route starts at Birch Creek on the main Grave Creek Road (Road 114) and continues on Road 319 where it ends at Big & Little Therriault lakes. This is one of the few open roads and the main year-round open road leading into the most popular over–snow areas on the Fortine District. Access and management opportunities are limited in this area because of rugged lands in Canada to the north, private land

west and south of the project area, as well as the grizzly bear motorized standards, and the non-motorized/non-motorized backcountry area designations to the west in the Grave LAU (T, E & P Species Figure 7). This groomed route bisects the Grave LAU east to west with the vast majority of the snowmobile activity occurring within project area in the Therriault LAU and west half of the Grave LAU. All of the groomed areas are on roads that are open year-round to highway legal vehicles. These routes typically cannot be utilized by wheeled vehicles during the winter months due to snow depths. No grooming is allowed after April 1st in this area. In addition to the groomed routes, there are existing over-snow routes used within the over-snow vehicle areas that are used more often than the general use areas. There are currently no designated play areas in the Project Area.

Effects of Current and Reasonably Foreseeable Actions

Vegetation Management - Timber harvest and associated activities may contribute to the environmental habitat baseline for the lynx as well as possible effects to species ability to utilize a specific area during project implementation. Timber harvest and hauling could cause lynx to temporarily avoid affected areas. The amount of time that species will avoid an area depends both on the species and the individual, but generally, avoidance will last from hours to possibly days. Given that roads used to access timber harvest areas are closed to the general public, there would be little to no increase in the risk of mortality to wildlife, especially with the enforcement of contractual provisions. Additionally, timber harvest can result in areas lacking in hiding or movement cover and increased edge effect for approximately 15-25+ years in this area, depending on the site.

The Galton Vegetation Management Project includes the entire Ten Lakes Travel Management project area. No harvest activities will occur within the WSA boundary. The following are potential harvest acres within the Ten Lakes boundary for two alternatives that could be selected. Alternative 1: 6,150 acres of Ecosystem Burning, 178 acres of Regeneration Harvest, and 43 acres of Vista cutting units along the Grave Creek Road. Alternative 3: 899 acres of Ecosystem Burning, 168 acres of Ecosystem Burning designed to benefit whitebark pine, and 74 acres of Regeneration Harvest. These projects use timber management, slashing, and prescribed fire, and as a result some, but not all, down woody debris and snags may be lost in treated areas These activities may incidentally affect lynx use within some areas on a temporary basis, but with the large amount of existing secure habitat and cover provided, would not have adverse cumulative effects. The ecosystem burns could potentially change vegetative conditions that could enable over-snow travel in areas that are currently inaccessible due to thick trees. The Ten Lakes Travel management action alternatives have addressed these potential conditions by defining use areas as well as seasons of use for over-snow activities. This would continue to provide effective lynx habitat as well as not allowing expansion of the over-snow use areas and routes.

Harvest of blown down or damaged trees associated with future storms is possible in the analysis area. If a salvage project is identified and implemented, the cumulative effects to specific habitats (e.g. old growth, snags, wetlands etc.) and associated species would be evaluated at that time. If a salvage project is identified and implemented, the cumulative effects and associated species would be evaluated at that time, including the effects of this project.

The effects to lynx from pre-commercial thinning are a reduction in winter foraging habitat for hare as well as temporary avoidance while activities occurred. No pre-commercial thinning would be proposed in lynx habitat, unless it complied with the standards in the NRLMD.

Pre-commercial thinning on National Forest land occurs when past regenerated timber stands meet certain stand conditions. It is expected that approximately 50 acres/ year would be treated

through pre-commercial thinning within the project area. Because the vast majority of the past regenerated stands are located below 4000 feet, they do not fall within lynx habitat. However, no pre-commercial thinning would be proposed in lynx habitat, unless it complied with the standards in the NRLMD. During thinning operations, there would be short-term localized disturbance to listed species and their prey in the area. Mortality risk for associated species is not expected to increase. Pre-commercial thinning on State land is considered a minor activity. With the limited amount of pre-commercial thinning on State lands, potential effects to listed species and their prey would be indiscernible.

Noxious Weed Control - Efforts to treat present infestations of noxious weeds and to eradicate infestations of new invaders are ongoing. All activities will comply with the Kootenai National Forest Invasive plant Management ROD (2007). Weed treatment activities would not lead to any adverse effects on wildlife species or their habitat because treatments isolate non-beneficial weed species and would actually benefit forage species important to many species or their prey (USDA Forest Service 1997, 30).

Fire Suppression - In the event of a wildfire, construction of fire lines, helispots, and safety zones could potentially result in impacts to lynx habitat, or create openings along travel corridors such as ridges or riparian areas. This could result in temporary displacement of lynx. Suppression activities are typically subject to input from District Resource Advisors, and protection of species and specialized habitats is considered. Maintaining travel corridors are considered a priority in these cases.

Road Management Activity - Actions such as road maintenance and administrative use associated with permit administration, data collection, and monitoring of NFS lands are not likely to measurably affect wildlife or specialized habitats (e.g. old growth habitat, snags nor down woody debris) because they generally do not result in vegetation removal or persist for long periods of time. The standing tree and snag component would only be affected if considered a hazard to road users. These activities would not result in any change to specialized habitats of listed species, thus no adverse cumulative effects would be expected.

Public Use - Other forest product activities occurring presently and typically on an annual basis are the gathering of pine cones, boughs and commercial gathering of Christmas trees. These activities occur throughout the analysis area, and have little-to-no effect on the landscape due to the unspecific nature of the use and the low impact on the resources (foot traffic, hand tools). These activities would be more prominent outside the LAU boundaries below 4000 feet, where there are more open roads. However within the LAU's the roadless designation of this area limits the roads, and therefore would occur on a minor percentage of the lynx habitat available.

Firewood cutting in the project area will continue to occur. The result of this would be possible reduction of down trees that may be used as potential denning habitat and perhaps a slight displacement for animals using the area. These activities would be more prominent outside the LAU boundaries below 4000 feet, where there are more open roads. However within the LAUs, the roadless designation of this area limits the roads, and therefore would occur on a minor percentage of the lynx habitat available.

Recreation Maintenance - Routine maintenance of trails and developed and dispersed recreation sites may temporarily displace some wildlife species. Approximately 85 miles of trail are maintained each year within the project area. Recreation maintenance could involve the harvest of trees in mature forest stands that pose a hazard to users. However, the scale of the impact would be negligible as a cumulative effect to those species utilizing the immediate area, or adjacent forest stands.

Special Uses - Operations of outfitter/guides would not result in any change to general and specialized wildlife habitats (e.g. old growth, snags or down woody debris) that listed species may utilize, as they do not involve the harvest of trees. There would be no cumulative effects to wildlife and their habitats associated with these activities other than possible temporary and local avoidance of an area due to the presence of humans.

Permits associated with access to private homes, right-of-ways for utilities, and outfitter/guides are not expected to contribute to the cumulatively impact on wildlife because they are limited to previously disturbed and hardened sites like trails and roads. The majority of these occur outside of the affected LAUs.

Private Land - Any cumulative effects to wildlife species will be partially dependent on the duration (seasonal versus year-round) of use of these parcels and homes. Anticipated effects include species displacement, reductions in specialized habitats (e.g. old growth, snags, and down woody debris), habitat alteration and/or habitat loss. Many of the activities that may occur on the private parcels can only be surmised.

Other Agency Actions - Fish Wildlife and Parks continues to stock fish in Big and Little Therriault Lakes and Wolverine Lake. This project is adjacent to the US/Canada Border and receives a great deal of use year round by the Department of Homeland Security and Forest Service Law Enforcement. This use is expected to continue in the area. Regardless, these activities would not directly impact species or suitable habitat on NFS lands.

Summary of Cumulative Effects

Any cumulative effects from wildfire suppression or from the assumed development of adjacent private lands can only be surmised, at this time.

The temporal occurrence of forest uses such as summer activities (camping, hiking, and berry picking) versus fall (hunting and firewood cutting) or winter (skiing and snowmobiling) activities may result in a temporary displacement of lynx use of that area, however, the majority of these activities occur in existing areas of human use that are already avoided by lynx. There may be some situations where isolated or localized cumulative effects may occur, due to an overlap of forest activities, but these situations are typically short in duration, and do not persist through the lifecycle of any one species, either temporally or spatially.

Cumulative Effects Specific to the Lynx Critical Habitat PCE

Boreal forest landscapes supporting a mosaic of differing successional forest stages and containing:

(1a) Presence of snowshoe hares and their preferred habitat conditions, which include dense understories of young trees, shrubs or overhanging boughs that protrude above the snow, and mature multistoried stands with conifer boughs touching the snow surface.

This project does not include vegetation management and would have no cumulative effects on this sub-element.

(1b) Winter snow conditions that are generally deep and fluffy for extended periods of time.

This sub-element of the PCE is an environmental condition and proposed activities would not impact the location or condition of winter snow. Potential snow compacting activities were analyzed in this project and were found to have fewer acres/miles affected than the existing condition. Therefore there would be no cumulative effects to winter snow conditions.

(1c) Sites for denning that have abundant coarse woody debris, such as downed trees and root wads.

This project does not include vegetation management and would have no cumulative effects on this sub-element.

(1d) Matrix habitat (e.g., hardwood forest, dry forest, non-forest, or other habitat types that do not support snowshoe hares) that occurs between patches of boreal forest in close juxtaposition (at the scale of a lynx home range) such that lynx are likely to travel through such habitat while accessing patches of boreal forest within a home range.

This project does not include vegetation management and would have no cumulative effects on this sub-element.

Regulatory Framework Findings

Land and Resource Management Plan

The 2015 Forest Plan provides desired conditions, objectives, standards, and guidelines for Canada lynx critical habitat within the Wildlife Resource. The following are applicable to the actions in this project:

FW-DC-WL-03: Recovery of the terrestrial threatened and endangered species is the long-term desired condition. Foraging, denning, rearing, and security habitat is available for occupation. Populations trend toward recovery through cooperation and coordination with USFWS, state agencies, other federal agencies, tribes, and interested groups. *A mosaic of lynx habitat is found throughout the project area and it's LAU's. Vegetation management is not part of this project, therefore lynx habitat will not change from the existing condition. Coordination with USFWS is ongoing with this project, and the chosen alternative will go through consultation with the USFWS. Therefore the Ten Lakes Travel Management project would contribute to progress toward FW-DC-WL-03.*

Endangered Species Act

The chosen action would be consulted on with USFWS and compliance with ESA would occur.

Regulation and Executive Orders

- 36 CFR Part 294 Special Areas, Roadless Area Conservation; final Rule
- 36 CFR Part 212 Travel Management
- Executive order 11644, as amended by Executive Order 11989

The Ten Lakes Travel Management Alternatives Addressed the Travel management rules or minimization criteria specific to the effects on lynx in the following ways: all alternatives decrease or minimize the allowable areas of motorized over-snow areas as well as reducing the overall days available for motorized winter use. These alternatives meet the Northern Rockies Lynx Management Direction by reducing potential areas of snow compaction in lynx habitat, thereby minimizing potential effects to lynx and lynx habitat.

National Forest Management Act

The project would comply with NFMA direction to provide for diverse populations of plant and animal communities by applying Forest Plan Desired Conditions, Standards, and Guidelines.

Statements of Findings

Alternatives 2, 3 and 4 **may affect, are not likely to adversely affect the Canada lynx**. This determination is based on: 1) existing lynx habitat conditions meet PCE sub-elements 1a, 1c, and 1d and no vegetation manipulation is proposed in any alternative; 2) all action alternatives define timeframes in which motorized over-snow activities can occur; and reduce the area and routes available for over-snow vehicles which reduces potential snow-compacting activities in the project areas and affected LAU's, and therefore meets PCE sub-element 1b; 3); all action alternatives would maintain existing movement within and between LAU's as well as areas adjacent to the project area.

Alternative 1 (No Action) **may affect, is not likely to adversely affect the Canada lynx.** This determination is based on reasons 1 and 3 listed above.

Wolverine

Summary of Conclusions

Alternatives 2, 3 and 4 **will not jeopardize the continued existence of the wolverine**. This determination is based on: All Alternatives are consistent with the findings of the proposed federal rule stating that wolverine be listed as a threatened species. Wolverine are not tied to a specific vegetation type, and proposed activities would not change the amount of persistent spring snow, (activities listed on page 7890, of USDI (2013) of the proposed rule). The proposed Action Alternatives would not impact the extent of persistent spring snow, or the impact of trapping mortalities. Those are the two factors identified in USDI (2013) as most likely to impact wolverine populations.

Introduction

Due to their large home range size and habitat needs, the North American wolverine is rare and uncommon and occur in low densities. Wolverines use higher elevation, steep, remote habitat. Wilderness and roadless lands account for much of the areas wolverines are known to use, although it is unknown if this is due to avoidance of people or that wolverine tend to choose areas that are not conducive to human development (Copeland et al. 2007). Wolverines appear capable of adjusting to human disturbance (USDI FWS 2014). Wolverines travel long distances throughout large home ranges that average between 186 to 310 square miles (USDI FWS 2013) but can range from 28 to over 360 square miles (Banci 1994). Wolverines are considered to be a generalist species, one that is able to thrive in different habitat types and makes use of a variety of different resources within their home range. Wolverines are generally scavengers of carrion, but do prey on small mammals and birds and will eat berries, fruits, and insects (Hornocker and Hash 1981). Dens are dug into the snow to ground level and are generally located on north-facing slopes under rocks, boulders, tree roots, or avalanche debris (Magoun and Copeland 1998). Females enter dens in mid-February, giving birth to a litter of young, and then utilize a series of dens or rendezvous sites until mid-May when her offspring are mobile enough to travel (Copeland and Yates 2008, Magoun and Copeland 1998).

Recent work on wolverine habitat requirements suggests that they are strongly tied to areas that retain snow until mid-May and where the average temperature in August is less than 72 degrees (Schwartz et al. 2009, Copeland et al. 2010). In North America, 69 percent of den sites were located in areas where snow cover persists until mid-May for an average of six to seven years while 98 percent of all den sites were located in areas of at least one year of snow cover (i.e., “persistent snow,” Copeland et al. 2010). Similarly, Inman et al. (2013) modeled wolverine habitat and categorized the habitat by areas suitable for survival (primary habitat), reproduction (maternal habitat), and dispersal. Inman et al.’s (2013) mapped primary habitat corresponds closely to the persistent snow areas mapped by Copeland et al. (2010). Talus slopes and alpine cirques may, therefore, provide important thermal and denning habitat. Based on current research it appears that suitable wolverine habitat is limited to areas at or above the subalpine zone on the KNF.

Because habitat use by wolverines appears to be closely tied to areas with persistent snow (i.e., daily use, movement, and especially as denning habitat), the project area would be assessed for the presence of persistent snow areas capable of supporting wolverines and whether proposed activities would impact the persistent snow conditions and movement between these suitable habitat areas.

Regulatory Framework

KNF Land Management Plan (USDA Forest Service 2015)

The 2015 Forest Plan provides overall guidance for the management of the lands on the KNF. It describes the goals, desired conditions, and objectives toward which the management of the land should be directed. And it establishes standards and guidelines to help achieve or maintain the desired condition or conditions, to avoid or mitigate undesirable effects, or to meet applicable legal requirements.

There are no fine-filter plan components which provide specific wolverine habitat resource direction relevant to this project. However, there are other 2015 Forest Plan coarse-filter components that provide resource direction for a range of wildlife species or habitat conditions that are not specific to wolverines or their habitat, but still are applicable to the management of habitat for wolverine. The full list of the plan components applicable to wolverine management are found in the "Regulatory Framework Findings" section of this analysis.

Resource Indicators and Measures

Wolverines show a strong association with areas of persistent snow. Therefore, for the wolverine analysis, the presence of persistent snow is an indicator of whether a project area could support wolverines. There are two measures for assessing the ability of the project area to support wolverines (i.e., resource indicators in Threatened, Endangered and Proposed Species Table 11): the acres of suitable habitat consisting of areas that are snow covered through May 15 in at least 1 out of 7 years, and the acres of suitable habitat consisting of areas that have between 6 and 7 years of snow cover on average into mid-May. The overall assessment of wolverine habitat also analyzes the potential effects to the persistent snow conditions from proposed actions and connectivity within the analysis area.

T, E, & P Species Table 11. Resource Indicators and Measures for Assessing the Ability of the Analysis Area to Support Wolverines

Resource Element	Resource Indicator	Measure	Used to Address: P/N, or Key Issue?	Source
Persistent Snow	Availability of persistent snow to provide suitable habitat for wolverine use	Acres of suitable habitat associated with the analysis area that have snow for an average of 1 out of 7 years and an average of 6 to 7 years.	Yes	Research – referenced through this analysis, also most current was reviewed and summarized in USFWS 2013

Methodology

Based on the research by Copeland et al. (2010), wolverine denning habitat was mapped using Region 1 snow layer. In addition, suitable wolverine habitats mapped by Inman et al. (2013) were used to compare against Copeland's modeled habitat. Areas of connectivity were evaluated by visually examining the mapped persistent snow areas and wolverine dispersal habitat.

Data sources

The current knowledge of wolverine population biology, ecology, and habitat descriptions are described in Hornocker and Hash (1981) Banci (1994), Copeland et al. (2007), Schwartz et al. (2009), Copeland et al. 2010, Copeland et al. (2012, 2012b, and 2013) Inman et al. (2013), and USDI, FWS (USDI FWS 2014, and USDI FWS 2013). In addition Ruggiero et al. 1994. Banci (1994) and Butts (1992), Thomas 1995, USDI FWS 2003, IDFG 2005) were also reviewed. These provided information in evaluating potential habitat and effects to wolverine, and are incorporated by reference. Additional information is provided by the Montana Natural Heritage Program, and NatureServe databases.

Information on population numbers, trends, and distribution are based on reported observations/sightings of either the species or tracks recorded in District, Forest or state databases. No research has been conducted for wolverine on the Forest that would estimate population levels. Informal surveys are periodically conducted by Forest personnel during snow surveys, or during aerial flights conducted by the Forest and/or other agencies. Studies or research on wolverine has occurred in the adjacent Flathead NF (Hornocker and Hash 1981), and Glacier National Park (Copeland and Yates 2006) and in Canada (COSEWIC 2003), just north of the Forest as well as winter recreation studies currently being accomplished in central Idaho and the Yellowstone area (Heinmeyer et al., 2015).

Affected Environment

Spatial and Temporal Context for Direct and Indirect Effects Analysis

Wolverine home ranges in Montana range from approximately 24,711 acres for females with young to 104,278 acres for males and home ranges of both sexes overlap (Hornocker and Hash 1981). Within the TLTM project area, the persistent snow zone includes all but the lowest elevations (T, E & P Species Figure 11) and encompasses approximately 51,633 acres or approximately 80% of the Project area. The persistent snow layer continues southeast and outside of the project area in the higher elevations of the Whitefish range. The size of the persistent snow layer within the project area is as large as two female home ranges and would encompass approximately half the size of a male home range. This area of persistent snow and wolverine habitat present in the project area is larger than the average home range for a female with young in Montana, and is therefore appropriate for the analysis boundary for direct and indirect effects to individuals and their habitat. This area is large enough to assess potential effects in context of wolverine dispersal or resident wolverine use, and it is small enough to be representative of the potential effects of the Ten Lakes Travel Management project in wolverine habitat.

Temporal boundaries for the wolverine analysis include both short-term and long-term use of habitats by wolverines. Wolverine use of dispersal habitats are only expected to last for a few days or weeks (short-term) as they move between patches of suitable habitat. Use of suitable habitats that provide for survival and reproduction would be used for the long term on the order of months or years.

Existing Condition

Introduction

On February 4, 2013, the USFWS proposed listing the wolverine as threatened and published a proposed 4(d) rule that lists several activities that are not considered significant threats to the species and would not result in incidental take and a violation of section 9 of the ESA (USDI FWS 2013). Subsequently, the USFWS withdrew the proposal to list the wolverine as a

threatened species based on their "conclusion that the factors affecting the DPS [distinct population segment] as identified in the proposed rule are not as significant as believed at the time of the proposed rule's publication" (USDI FWS 2014). On April 4, 2016, Judge Dana Christiansen vacated the August 13, 2014 USFWS withdrawal of the Proposed Rule to list the distinct population segment of North American wolverine in the contiguous United States as a threatened species under the ESA. The USFWS decided to return the wolverine to its proposed status in May 2016.

In the 2013 proposed ruling, the USFWS proposed that global climate change was the primary threat to the species and that legal and incidental trapping of wolverines are substantial threats in concert with climate change (USDI FWS 2013). There are no Forest Service land management activities or public use activities on NFS lands were found to threaten wolverines (direct effects) or high-elevation habitats (indirect effects) due to the nature and scale of such human activities which include: 1) dispersed recreation such as snowmobiling, skiing, backpacking, and hunting for other species; 2) land management activities such as timber harvest, wildland firefighting, prescribed fire, and silviculture; and 3) mining (ibid). These activities are not likely to disturb wolverines or their habitat to the extent of impacting the population and, therefore, threaten the viability of the species (USDI FWS 2013).

Wolverine have been shown to travel through, spend time within (including reproduce), and survive in areas of high human use and disturbance (e.g., areas of concentrated recreational activities, developments, habitat alteration) (USDI FWS 2013). Currently, there appears to be no evidence that the activities listed above (e.g., snowmobiling, skiing, timber harvest, or mining) translate to threats to characteristics of subpopulations and populations or population persistence (USDI FWS 2013). USDI FWS (2013) cited ongoing research into the impacts of high levels of recreational use on wolverines in central Idaho. The cited ongoing research has documented wolverines living in areas of high recreational use (i.e. disturbance) (Heinemeyer 2012 and Heinemeyer and Squires 2012 & 2015).

Wolverine Occurrence

The distribution of current wolverine records in the contiguous United States is limited to north-central Washington, northern and central Idaho, western Montana, and northwestern Wyoming (Aubry et al. 2007). Even in the northern U.S. Rockies, very little is known about the extent and status of wolverine populations (Aubry et al. 2007). In Montana, wolverines occur throughout the western one third of the state and are considered fairly well distributed throughout their range in the state. On the Forest observations are concentrated in the Northwest Peaks, Ten Lakes, and Cabinet Mountains portions of the Forest. Johnson (2004) confirms wolverine presence in seven of the eight planning units on the KNF. Fortine District and FWP observation, trapping data and track monitoring data documents tracks and sightings of wolverines within the analysis area (the Ten Lakes Scenic Area is included in this analysis area).

Description of the Analysis Area

Wolverine Habitat Condition

Areas of Persistent Spring Snowpack

Wolverines use higher elevation, steep, remote habitat. Wilderness and roadless lands account for much of the areas wolverines are known to use. The Persistent Snow layer indicates that wolverine habitat is found throughout much of the analysis area (T, E & P Species Figure 11). The majority of the Ten Lakes Travel Management Project Area lies within the Ten Lakes Wilderness Study Area, Inventoried Roadless Areas, or other MA's where summer motorized

travel occurs only on designated routes. These areas overlap the persistent snow layer. Much of the past timber harvest within this area occurred below 4000 feet, outside of the project boundary. Because of the management emphasis, and inaccessibility of much of the project area's land base, very little timber harvest or road building has occurred in the higher elevations, with much of it adjacent to the existing open roads.

Forest-wide, about 555,500 acres of persistent snow (average one to seven years) have been identified of which approximately 89,900 acres have persisted on the landscape until mid-May for six to seven years on average (see project file). Such sites, where snow more consistently persists until mid-May, may provide more suitable habitat for denning wolverines. Within the analysis area, approximately 51,633 acres of persistent snow occurs in the higher elevations. This persistent snow layer is now well-established in literature as the primary indicator of wolverine habitat and is the habitat layer used for this project. T, E & P Species Figure 11 depicts those areas of the analysis area that tend to have persistent spring snow cover. The map shows areas with persistent snow as considered by Copeland et al. (2010). The areas in dark blue are those that had persistent spring snow in an average of at least 6 out of 7 years. In other words, those were the area's most likely to have persistent spring snow and the most likely places for wolverine dens (Copeland et al. 2010, p. 239). Areas in light blue had persistent spring snow an average of less than 6 years out of 7.

Also, features such as large snowdrifts that were not captured by the snow layer coverage may exist within the periphery of the mapped habitat and could be used by denning wolverines (Copeland et al. 2010). Weaver (2011) mapped wolverine habitat in the Galton mountain range of the forest and was based on work done by Inman (Weaver 2011, p.58). Weaver's map covers a similar land base to Copeland's persistent spring snow cover map.

Inman et al. (2013) went further by identifying habitats that are suitable to specific wolverine uses, including maternal habitat. These are sites suitable for reproductive females and include those areas with high quality habitat. Approximately 34,836 acres of maternal habitat are found within the analysis area. The majority of these acres overlap with the persistent snow layer.

T, E, & P Species Table 12. Resource Indicators and Measures for the Existing Condition

Resource Element	Resource Indicator	Measure	Existing Condition
Persistent Snow	Availability of persistent snow to provide suitable habitat for wolverine use	Acres of suitable habitat associated with the analysis area that have snow for an average of 1 out of 7 years	Yes – 51,633 acres
Persistent Snow	Availability of persistent snow to provide suitable habitat for wolverine use	Acres of suitable habitat associated with the analysis area that have snow for an average of 6 out of 7 years	Yes – 17,972 acres

Persistent Spring Snowpack and Denning and Foraging Habitat

Wolverines appear to be highly selective in choice of natal denning and kit rearing habitat. Denning habitat may be a factor, limiting distribution and abundance (Copeland 1996), and the persistence of a snowpack into late spring is a strong determining factor in wolverine presence due to its importance in denning (Copeland et al. 2010, USDI FWS 2013). There are no known den sites within the analysis area. Based on the persistent spring snow layer, and the literature, it

is suspected that the analysis area provides habitat for wolverine denning and enough acreage to support two potential female wolverine home ranges.

Wolverine home range sizes are believed to be closely linked to food availability and are a main factor in determining movements and range of wolverines in the South Fork of the Flathead River drainage (Hornocker and Hash 1981). In Norway, female wolverines were found to forage close to den sites in early summer, progressively ranging further from dens as kits become more independent (May et al. 2010, pg. 941). Inman et al. (2012) found a link between persistent snow and wolverine foraging strategy. Wolverines appear to rely on the cold and snow to cache carrion. The analysis area provides a prey base including deer, elk, moose, and bighorn sheep, as well as other smaller mammals.

Persistent Spring Snowpack and Human over-snow recreation

Human use patterns within and adjacent to the project area can be characterized by dispersed summer recreation accessing the area mainly by the one main yearlong open road (Grave creek/Therriault Lakes roads), limited spur roads off these main roads, as well as limited roads/trails accessing the western edge of the project area. Trail access is also available in the northwest corner of the project area. The trails are used by hikers, horseback riders and some mountain bike riders. There are two small campgrounds as well as numerous dispersed camping sites within the project area. There has been a consistent but not overwhelming human presence. The TLTM project area contains some popular over-snow vehicle use areas and use has been occurring for several decades. The Ten Lakes Snowmobile club currently grooms approximately 34 miles of road open yearlong to motorized travel. Currently, the entire project area is open to over-snow vehicle use with no restriction dates on that use. While the entire area is currently open for use, steep terrain and trees limit the majority of the use to only portions of the project area. In a review of literature specific to the overlap of recreational dispersed activities (snowmobiling, skiing, hiking, biking) in wolverine habitat, there was no information to suggest these activities had negative effects on wolverines (USFWS 2013). Preliminary results from an ongoing study on the potential impacts of winter recreation on wolverines in central Idaho indicate that wolverines are present and reproducing in this area in spite of heavy recreational use, including a developed ski area, dispersed winter and summer recreation and dispersed winter and summer recreation and dispersed snowmobile use (USFWS 2013, Heinemeyer et.al, 2015). In addition it was concluded that infrastructure development of the kind found in wolverine habitat was not avoided and there was no evidence that wolverine dispersal was affected by these developments (USFWS 2013).

Persistent Spring Snowpack and Dispersal/Connectivity Habitat

Persistent snow areas also appear to influence summer habitat use by wolverines and connectivity between wolverine populations and habitat patches (Copeland et al. 2010, Schwartz et al. 2009). Because wolverine habitat in the Rocky Mountains exists as high elevation “islands” separated by lower elevations, wolverines need linkage zones to move between areas of suitable habitat. “Wolverines prefer to travel in habitat that is most similar to habitat they use for home-range establishment, i.e., alpine habitats that maintain snow cover well into the spring (Schwartz et al. 2009)” (USDI FWS 2013). “Wolverine populations in the northern Rocky Mountains appear to be connected to each other at the present time through dispersal routes that correspond to habitat suitability (Schwartz et al. 2009, Figures 4, 5) (USDI FWS 2013). The wolverine habitat in the analysis area is connected to the persistent snow layer in Canada, to the north, and to the southeast along the Whitefish range. No existing potential barriers exist to movement throughout this area, or outside of the analysis area within the persistent snow layer to the north in Canada, or to the southeast along the Whitefish range (T, E & P Species Figure 11). This corresponds to

movement areas identified in the 2015 Forest Plan where the desired conditions are to maintain movement between the United States and Canada (GA-DC-WL-TOB-05). No highways bisect this large block of persistent snow within the analysis area. South and west of the analysis area and the Whitefish range, the persistent snow layer is found only in isolated patches, and these areas would be used as dispersal habitat only for wolverine. Inman et al. (2013) mapped potential dispersal habitat for both male and female wolverines. Although still generally associated with persistent snow areas, dispersal habitat is more broadly mapped and includes habitats that provide for short-term use (e.g. days or weeks) while moving between patches of suitable habitat with persistent snow. Nearly all of the KNF is mapped as male dispersal habitat and, therefore, males could potentially move through all habitat types and conditions within the vicinity of the project area including along the pathways identified by Schwartz et al. (2009). Mapping of female dispersal habitat by Inman et al (2013) was a little more restrictive in that it does not include lower elevation valleys. Although female wolverine are capable of traveling the distance between the patches of suitable habitat with persistent snow adjacent to the analysis area, and there is no evidence that human development/activities or transportation corridors prevent wolverine movement in these areas (USDI FWS 2013), certain habitat characteristics of these low lying areas may deter some females from attempting to move through them.

Recent management actions have been limited in the majority (higher elevations) of the analysis area because of Forest Plan non-motorized/wilderness study area designations and grizzly bear motorized standards. These designations and standards have limited road building and harvest activities in these areas. See the grizzly bear analyses for more detail.

The analysis area contains MAs 1b, 1c, 3, 5a, 5b, and 6. MAs 1b includes the Ten Lakes Recommended Wilderness, MA1c includes the Ten Lakes Wilderness Study Area, MA3 are Special Areas, along with MA 5a non-motorized year-round backcountry, and MA 5b, motorized year-round backcountry, and MA 6 or general forest which consists of large areas with roads, trails and past and ongoing activities designed to actively manage the forest. The backcountry management areas are large and remote and contribute to secure habitat for wildlife (MA5a,b-DC-WL-01). Motor vehicle use does not occur within MA5a and it contributes to the effectiveness of security habitat within that management area.

Trapping

A temporary restraining order was placed on wolverine trapping for the State of Montana for the 2012/2013 trapping season, as a result of the proposed listing of wolverine. As of the 2015/2016 trapping period, wolverine trapping in MT still remains closed. There are currently no open trapping seasons for wolverine in Region 1 (MFWP). The regulation of trapping activities is the responsibility of the State of Montana.

Environmental Consequences

Wolverines are not thought to be dependent on vegetation or habitat features that may be manipulated by land management activities. They have been documented using both recently logged areas and burned areas (USDI FWS 2013 p. 7879). It is unlikely that wolverine avoid the type of low-use roads that generally occur in wolverine habitat (Ibid p. 7878). There are no Forest Service land management activities or public use activities on NFS lands that threaten wolverines (direct effects) or high-elevation habitats (indirect effects) due to the nature and scale of such human activities which include: 1) Dispersed recreation such as snowmobiling, skiing, backpacking, and hunting for other species; 2) Land management activities such as timber harvest, wildland firefighting, prescribed fire, and silviculture; and 3) Mining (USDI FWS 2013). These activities are not likely to disturb wolverines or habitat to an extent that threatens the viability of the population or species (Ibid).

Alternative 1 (No Action)

Winter motorized use in this alternative is restricted only by snow availability. While motorized over-snow activities may cause a temporary disturbance to wolverine if they happen to cross paths, wolverine are not known to be directly affected by dispersed recreational activities to the extent that populations are impacted (USDI, 2013).

The topography and climate in the higher elevation peaks and ridgelines in the analysis area is conducive for snow to remain on the landscape in mid-May for up to an average of seven years. No direct effects from federal actions would occur and the persistent snow conditions would continue to provide suitable habitat for use by wolverines. There would be no impact to trapping activities and, therefore, no threat of mortality to wolverines.

Alternatives 2, 3 and 4 – Direct and Indirect Effects

Wolverines and wolverine habitat exist in the analysis area, as evidenced by sightings and snow tracking surveys (MFWP) as well as the persistent spring snow layer (Copeland et al. 2010).

Vegetation management is not part of this project therefore no effects to the physical environment within wolverine habitat would occur. All Action Alternatives reduce winter motorized use both temporally and spatially compared to Alternative 1 (No Action) where over snow activities are restricted only by snow availability. All Action Alternatives end grooming activities by April 1st. While motorized over-snow activities may cause a temporary disturbance to wolverine if they happen to cross paths, wolverine are not known to be directly affected by dispersed recreational activities to the extent that populations are impacted (USDI, 2013). All Action Alternatives reduce the amount of motorized over-snow activities currently occurring and limit summer mechanized use (mountain bikes) to fewer existing trails than the existing condition. The proposed actions include a reduction in the area and timeframe in which proposed recreational activities could occur and these reductions are primarily located within the persistent spring snowpack zone. The scale at which this dispersed recreation would now occur is minor compared to the scale of wolverine home ranges and general lack of human disturbance within this minimally roaded landscape. Alternative 4 proposes a four season pavilion that would be located along an open road, adjacent to the existing Big Therriault Campground. No vegetation would be removed with this construction as it is located in a wide spot along the road. This area would most likely be used in both the summer and the winter.

The reduction in recreational use proposed under the Action Alternatives fall under activities that were identified in the proposed rule that were found not to pose a threat to the Distinct Population Segment (DPS) (USDI FWS 2013). These actions are proposed on a small portion of the total available wolverine habitat in the Continental U.S. and do not occur at a scale that pose a threat to wolverine populations. In the proposed ruling, the USFWS thought that global climate change was the primary threat to the species and that legal and incidental trapping of wolverines were substantial threats, in concert with climate change.

These action alternatives are consistent with the rationale found in the 2013 proposed rule which states: "We know of no examples where human activities such as dispersed recreation have occurred at a scale that could render a large enough area unsuitable so that a wolverine home range would be likely to be rendered unsuitable or unproductive. Given the large size of home ranges used by wolverine, most human activities affect such a small portion that negative effects to individuals are unlikely. These activities do not occur at a scale that is likely to have population-level effects to wolverine. The available scientific and commercial information does not indicate that other potential stressors such as land management, recreation, infrastructure development, and transportation corridors pose a threat to the DPS."

Effects on Persistent Spring Snowpack and Dispersal/Connectivity Habitat

Project activities would not affect wolverine dispersal because, as stated above, wolverines do not appear to avoid two lane roads and there are no new proposed highways in the analysis area. Project activities would not create barriers to wolverine movement. There are no proposed activities in any alternative that would reduce wolverine connectivity within persistent spring snowpack. No new trails or roads are proposed that would affect connectivity within or adjacent to the project area. There is no evidence that wolverine dispersal is affected by infrastructure development (Schwartz et al. 2009, p. 3227 in USDI FWS 2013 pg. 7878). No vegetative changes are proposed, however vegetative changes do not appear to negatively impact the species (USDI FWS 2013). This would be consistent with the Tobacco's Geographic Area's desired condition for providing for wildlife movement GA-DC-WL-TOB-05 between Canada and the USA. Implementation of the action alternatives would not change the characteristics of dispersal habitat found within the backcountry management areas or the management area's allocation or its potential use of dispersal habitat by wolverine. In summary, connectivity between wolverine populations and habitat patches is generally tied to persistent spring snow, and wolverines appear to currently be able to disperse between habitats and through areas where human developments occur (Schwartz et al. 2009, USDI FWS 2014). Proposed activities would not affect the persistent spring snow that provides connectivity for wolverine populations.

Effects on Trapping

The trapping season for wolverines is currently closed, but trapping for other species does occur and incidental wolverine mortality is a possibility. The project would have no effects on the risk of incidental trapping because no new roads or trails are proposed as part of this project and in fact over the snow routes miles are reduced, and limits are placed on the time over-snow vehicles are allowed in the project area. This should result in a potential reduction in the number of trap days and therefore a reduction in potential incidental trapping in the project area.

Cumulative Effects

Introduction

The "Existing Condition" section describes relevant past and present factors influencing the existing habitat conditions in the project area. This cumulative effects section summarizes the past actions as well as further describes ongoing and other reasonably foreseeable contributions potentially impacting wolverines and their habitat.

Spatial and Temporal Context for Cumulative Effects Analysis

The cumulative effects boundary for wolverines is the four subunits that make up the Galton mountain range within the Fortine Ranger District: Ksanka, Wigwam, Grave and Murphy planning subunits. This area of persistent snow and wolverine habitat present in this cumulative effects analysis area is larger than the project boundary and includes the persistent snow layer and maternal habitat included on this district within the Whitefish mountain range. This analysis area is large enough to assess potential effects in context of wolverine dispersal or resident wolverine use, and it is small enough to be representative of the effects of management in wolverine habitat.

Temporal boundaries for the wolverine cumulative effects analysis would be the same as those described for direct and indirect effects under the section "Spatial and Temporal Context for Effects Analysis." Wolverine use of dispersal habitats would be for the short-term, lasting only a few days to a week, while use of suitable habitats could be expected to last for years for resident wolverines.

Past, Present, and Reasonably Foreseeable Activities Relevant to Cumulative Effects Analysis

Past Actions

Wolverines are habitat generalists and are not associated with specific vegetative types, structure, or features; therefore, land management activities are not considered to significantly affect the conservation of the distinct population segment (USDI FWS 2014). Wolverines have been able to use and persist on this landscape over the past 60 or more years in association with land management activities, including timber harvest. Descriptions of previous vegetation management activities are found at the beginning of Chapter 3 in this document.

Ongoing and Reasonably Foreseeable Actions

Reasonably foreseeable actions include those federal, state, or private activities that are ongoing or scheduled to occur, independent of this federal action. Current and foreseeable actions in the project area that were determined to be appropriate for inclusion in the analysis of environmental effects are listed in Chapter 3. Because habitat suitability for wolverines is tied to persistent snow areas (generally higher elevation and rugged habitats) there are no apparent conditions within the analysis area that would contribute to effects to wolverine or its habitat.

Within the cumulative effects area for wolverine, the 2015 Marston wildfire burned approximately 2,748 acres in areas with persistent snow. Of that total, only 103 acres occurred in areas having snow for an average of 6 out of 7 years. Of the 48,337 acres of maternal habitat identified by Inman et al 2013, approximately 109 acres within the analysis area were affected by the wildfire. Within all of the Marston fire perimeter, a mosaic of burn intensity and vegetation responses would result in an improvement in foraging habitat for prey species as regrowth occurs.

Also, implementation of the proposed activities would not impact state trapping regulations related to wolverines or the increased potential for incidental trapping and mortality. Therefore, there would be no threat to the viability of the species as a result of this project.

Wolverine habitat is projected to decrease in area and become more fragmented in the future as a result of climate changes that result in increasing temperatures, earlier spring snowmelt, and loss of deep, persistent, spring snowpack. These climate change impacts are expected to have direct and indirect effects to wolverine populations in the contiguous United States (78 FR7877). The best scientific and commercial information available indicates that only the projected decrease and fragmentation of wolverine habitat or range due to future climate change is a threat to the species now and in the future. The available scientific and commercial information does not indicate that other potential stressors such as land management, recreation (such as what the TLTM project is proposing limits upon), infrastructure development, and transportation corridors pose a threat to the DPS (78 FR7880).

The USFWS 2013 proposed rule states: “The available scientific and commercial information does not indicate that other potential stressors such as land management, recreation, infrastructure development, and transportation corridors pose a threat to the DPS [distinct population segment]”. Past, present, and reasonably foreseeable actions within the analysis area fall within this list of potential stressors and consists largely of recreation and land management activities. They each occur at a small scale compared to a wolverine home range, are found outside large expanses of suitable habitat found within places like national parks and wilderness areas, and do not impact the persistent snow areas that wolverines are associated with. Proposed activities in addition with past, present, and reasonably foreseeable actions would not negatively impact wolverines and the distinct population segment. There are no cumulative effects anticipated that

would change the effects determination to the wolverine from implementation of the proposed federal action.

Regulatory Framework Findings

Land and Resource Management Plan

The 2015 Forest Plan provides desired conditions, objectives, standards, and guidelines applicable to wolverine within the Wildlife Resource. The following are applicable to the actions in this project and the goals, desired conditions, objectives, standards, and guidelines can be found on the noted pages in the 2015 Forest Plan.

FW-DC-WL-01: Nests and den sites and other birthing and rearing areas for terrestrial threatened, endangered, proposed, or sensitive species are relatively free of human disturbance during the period they are active at these sites. *No active dens are known within the analysis area, but suitable habitat exits. All action alternatives reduce the over-snow motorized areas and levels from existing conditions (see "Direct and Indirect Effects" section.) Therefore, this project makes progress toward this desired condition.*

FW-DC-WL-02: A forestwide system of large remote areas is available to accommodate species requiring large home ranges and low disturbances, such as some wide-ranging carnivores (e.g., grizzly bear). *The proposed activities do not impact the remote areas existing within the project area. No impact to the persistent snow condition would occur, which the factor is known to be closely tied to use by the wolverine. See the "Direct and Indirect Effects" discussion. The project makes progress towards FW-DC-WL-02 by reducing the area available for over-snow motorized use.*

FW-GDL-WL-21: Management activities on NFS lands should avoid/minimize disturbance at known active nesting or denning sites for other sensitive, threatened, or endangered species not covered under other forest-wide guidelines. *No active dens are known within the analysis area, but suitable habitat exits. All action alternatives reduce the over-snow motorized areas and levels from existing conditions (see "Direct and Indirect Effects" section. Therefore, the project was designed in accordance with FW-GDL-WL-21.*

FW-DC-WL-17: Forest management contributes to wildlife movement within and between national forest parcels. Movement between those parcels separated by other ownerships is facilitated by management of the NFS portions of linkage areas identified through interagency coordination. Federal ownership is consolidated at these approach areas to highway and road crossings to facilitate wildlife movement. *Implementation of the proposed activities would not be expected to impact wolverine movement within the analysis area or connectivity to adjacent patches suitable habitat. See the "Direct and Indirect Effects" discussion. Therefore, the project would maintain FW-DC-WL-17.*

MA 1b, and 1c (Wilderness) 5a, b-DC-WL-01 (Backcountry): Large remote areas with little human disturbance such as those found in these MAs are retained and contribute habitats for species with large home ranges. Habitat conditions within these management areas contribute to wildlife movement within and across the Forest. These areas also provide foraging, security, denning, and nesting habitat for wildlife. *MA's 1b, 1c, and 5a and 5b are found within the project area. These MAs are associated with persistent snow areas found within the analysis area. These lands would continue to contribute to natural vegetative conditions, wolverine movement, and areas where individual wolverines are less likely to be temporarily disturbed by human activities.*

See "Direct and Indirect Effects." See the "Direct and Indirect Effects" discussion. Therefore, the project would contribute to progress toward FW-DC-WL-01 for these MAs.

GA-DC-WL-TOB-01: Low levels of human disturbance allows for denning activities of wide-ranging carnivores that are sensitive to human disturbance (e.g. grizzly bear), and for summer use by big game. *No active dens are known within the analysis area, but suitable habitat exits. All action alternatives reduce the over-snow motorized areas and levels from existing conditions (see "Direct and Indirect Effects" section.) Therefore, this project makes progress toward this desired condition.*

GA-DC-WL-TOB-02: Wildlife move between the large blocks of NFS lands across Highway 93 southeast of Murphy and Dickey Lakes. Wildlife also moves from the Lydia and Pinkham mountains vicinity and the Sunday Creek vicinity. *Known linkage areas do not occur within the analysis area and the action alternatives would not affect areas adjacent to known linkage areas located just outside of the analysis area. Movement of prey species between and within National Forest parcels is maintained as hiding cover remains high within the analysis area with both alternatives. Potential disturbance levels from Forest Service activities would remain small compared to the average wolverine home range. Therefore this project maintains this desired condition.*

GA-DC-WL-TOB-05: Wildlife move to and from the border with Canada. *Known linkage areas do not occur within the analysis area and the action alternatives would not affect areas adjacent to known linkage areas located just outside of the analysis area. Movement of prey species between and within National Forest parcels is maintained as hiding cover remains high within the analysis area with both alternatives. Potential disturbance levels from Forest Service activities would remain small compared to the average wolverine home range. Therefore this project maintains this desired condition.*

Federal Law

Regulation and Executive Orders

- 36 CFR Part 294 Special Areas, Roadless Area Conservation; final Rule
- 36 CFR Part 212 Travel Management
- Executive order 11644, as amended by Executive Order 11989

No effects were specifically identified to wolverine from the travel management planning in this area. Wolverine are not known to be specifically affected by recreation or project level travel management. There are no new roads or trails proposed with this project. Effects of using existing FS roads for trapping was addressed in the cumulative effects section of this document.

National Forest Management Act

The project would comply with NFMA direction to provide for diverse populations of plant and animal communities through compliance with the 2015 Forest Plan.

Statement of Findings

Implementation of Action Alternatives 2, 3, and 4 **will not jeopardize the continued existence of the wolverine**. This determination is based on:

All alternatives are consistent with the findings of the proposed federal rule proposing that wolverine be listed as a threatened species (see "Environmental Consequences" section above). Wolverine are not tied to a specific vegetation type and proposed activities would not change the

amount of persistent spring snow as found on the list on page 7890 of USDI (2013). These activities are not likely to disturb wolverines or their habitat to the extent of impacting the population and, therefore, threaten the viability of the species (USDI FWS 2013).

Alternative 1 (existing condition), **will not jeopardize the continued existence of the wolverine** for the same reasons listed above.

Sensitive Species

Introduction

Sensitive species are administratively designated by the Regional Forester (Forest Service Manual, FSM 2670.5) and are those species for which population viability is a concern.

Regulatory Framework

The National Forest Management Act (NFMA) directs the Forest Service to "provide for diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet overall multiple-use objectives" [16 U.S.C. 1604(g) (3) (B)]. The vegetation management approach in the 2015 Forest Plan is one that provides for ecosystem diversity by providing the ecological components, patterns, and processes at multiple scales on the landscape, and thereby provides the full spectrum of habitats and conditions needed for all of the biological organisms associated with the various ecosystems (USDA FS 2013). This includes the goal GOAL-WL-01 and GOAL-WL-02 to "manage wildlife habitat through a variety of methods (e.g., vegetation alteration, prescribed burning, invasive species treatments, etc.) to promote the diversity of species and communities and to contribute toward the recovery of threatened and endangered terrestrial wildlife species" and to manage sensitive species habitat "to promote their perpetuation into the future." The 2015 Forest Plan also has an objective (FS-OBJ-WL-01) that states "The outcome is the maintenance or restoration of wildlife habitat on 1,000 to 5,000 acres of NFS land, annually, with an emphasis on restoration of habitat for threatened and endangered listed species and sensitive species."

In addition, the 2015 Forest Plan (p. 207-208) provides "fine filter" management direction in the form of species-specific or ecological characteristics (snags, coarse woody debris, and old growth) desired conditions, standards, and guidelines as the companion to the ecosystem diversity (coarse filter) plan component approach. The fine filter approach narrows the focus to those species that require habitat that may be outside the range of variation and are not covered under the coarse filter.

Sensitive species are administratively designated by the Regional Forester (Forest Service Manual (FSM) 2670.5) and managed under the authority of the NFMA. FSM 2670.22 requires the maintenance of viable populations of native and desired non-native species and to avoid actions that may cause a species to become threatened or endangered are required. The NFMA's implementing regulations at 36 CFR 219.19 defines a viable population as "a population of species that continues to persist over the long term with sufficient distribution to be resilient and adaptable to stressors and likely future environments." The sensitive species analysis in this document meets the requirements for a biological evaluation as outlined in FSM 2672.42.

The following table (Sensitive Species Table 1) shows the Regional Forester's terrestrial sensitive species designations for the KNF (USDA FS 2011d). Twelve of the designated sensitive species in Sensitive Species Table 1 will not be discussed further because either there is no suitable habitat available for the species in the analysis area, and therefore they are not suspected to be present in the analysis area, or activities would not occur within the identified suitable habitat. The Ten Lakes Travel Management Analysis area for sensitive species consists of portions of three planning subunits (Ksanka, Wigwam and Grave) located within the TLTM project area. Detailed information is provided below for those species that are suspected to be present in the analysis area.

Sensitive Species Table 1. Sensitive Wildlife Species on the KNF and Status in the Ten Lakes Travel Management Project Area

Sensitive Species	Status*	Determination**	Comments
American Peregrine Falcon (*Falco peregrinus anatum*)	NS	No Impact	Suitable nesting habitat limited to cliffs or rock substrates along main river corridors, including areas above Koocanusa Reservoir located outside and west of the project area. No proposed activities would occur in proximity to these cliffs; therefore, project activities are not expected to affect habitat, individuals, or the species. Species not addressed further.
Bald Eagle (*Haliaeetus leucocephalus*)	NS	No Impact	Nesting habitat not known to occur in project area. Project contains no vegetation management and proposed actions would have no impact on species or habitat. Species not addressed further.
Bighorn Sheep (*Ovis canadensis*)	K	May Impact (Alt. 3)	Native Ten Lakes "Trench" bighorn sheep herd, with approximately 21,900 acres of the herds home range located in the United States, predominately within the analysis area. Suitable habitat available.
Black-backed Woodpecker (*Picoides arcticus*)	S	No Impact	Suitable habitat occurs within the project area, however vegetation management is not part of the proposed action so no impacts to black-backed woodpecker or it habitat is expected. Species not addressed.
Coeur d'Alene Salamander (*Plethodon vandykei idahoensis*)	NS	No Impact	Suitable habitat does not occur within the project area therefore no impact to species or habitat. Species not addressed.
Common loon (*Gavia immer*)	K	No Impact	Therriault lakes located within the project area provide suitable feeding habitat but not suitable nesting. Project does not propose any activities that would impact the species or its habitat. Species not addressed.
Fisher (*Pekania pinnanti*)	S	May Impact (Alt.4)	Low liklihood of species within project area boundary. Modeling shows low potential for suitable habitat.
Flammulated Owl (*Otus flammeolus*)	K	No Impact	Suitable habitat occurs within the project area, however vegetation management is not part of the proposed action so no impacts to flammulated owls or its habitat is expected. Species not addressed.
Gray Wolf (*Canus lupus*)	K	No Impact	Documentated use of the analysis area however no project affects to big game habitat or species or effects to wolf or their habitat. Species not addressed.
Harlequin Duck (*Histrionicus histrionicus*)	K	No Impact	Suitable habitat occurs within the project area, however vegetation management is not part of the proposed action so no

			impacts to harlequin duck or it habitat is expected. Species not addressed further.
Northern Bog Lemming (*Synaptomys borealis*)	NS	No Impact	No suitable habitat within or adjacent to the analysis area. Species is not suspected. Therefore, project activities are not expected to affect habitat, individuals, or the species. Species not addressed further.
Northern Leopard Frog (*Rana pipiens*)	NS	No Impact	All known locations on the Fortine Ranger District are west of the analysis area. Species not suspected. Therefore, project activities are not expected to affect habitat, individuals, or the species. Species not addressed.
Townsend's Big-Eared Bat (*Corynorhinus townsendii*)	S	No Impact	Suitable habitat occurs within the project area, however vegetation management is not part of the proposed action so no impacts to the bat or its habitat is expected.Species not addressed.
Western Toad (*Bufo boreas*)	K	No Impact	Suitable habitat occurs within the project area, however vegetation management is not part of the proposed action so no impacts to toad or its habitat is expected. Species not addressed.

S=Species is suspected to occur within the analysis area because suitable habitat exists or area is within range of species occurrence.
NS = Species is not suspected to occur within the analysis area due to lack of suitable habitat or analysis area is outside the species' range. There would be no impact on these species and further analysis is not required (see project file).
K = Species is known to occur within the analysis
**Determination Key:
No Impact = Species is not suspected to occur with the analysis area or proposed activities would not impact suitable habitat and/or result in disturbance to individuals.
May Impact = May impact individuals or their habitat but will not likely contribute to a trend toward federal listing or cause a loss of viability the population or species.

Sensitive Species Analysis Assumptions or Limitations

For each of the following sensitive species, if any assumptions and limitations are known, they will be described, otherwise, there are no assumptions or limitation associated with the analysis.

Bighorn Sheep

Summary of Conclusions

Implementation of Alternative 1 (No Action) and Action Alternative 3 would result in a determination of **may impact individuals or their habitat, but will not likely contribute to a trend toward federal listing or cause a loss of viability to the population or species for the bighorn sheep.** In summary, this is due to the low potential of disturbance of sheep moving to or from lambing habitat during Season 2 motorized over-snow timeframe. Action Alternatives 2 and 4 would have **no impact** on individual sheep or their habitat.

Introduction

Rocky Mountain bighorn sheep are the largest of several species of mountain sheep in North America. They are a very social species and segregate into groups of mature males only or

females, lambs, and immature males for most of the year. Primarily, they eat grasses and forbs, although herds in northwest Montana eat more shrubs than herds in other areas. The most important habitat requirement for the species is suitable escape habitat. Steep, rocky terrain is necessary for them to escape from predators. This type of escape terrain must be found in all of their seasonal ranges in order for the habitat to be usable by bighorn sheep. Their rut begins in early November and lasts for approximately two months. Mature females produce one lamb in late May.

The greatest threat to bighorn populations is from disease. The animals are susceptible to pneumonia and a population involved in a pneumonia outbreak will see a significant number of animals die and reproduction and recruitment will be reduced for several years. The reasons for disease outbreaks are unclear. However, there is evidence to suggest that contact with domestic sheep or goats can play a role (MDFWP 2010).

This Ten Lakes Travel Management (TLTM) project proposes temporal and spatial limits on over-snow motorized travel, as well as specifying where mechanized use (mountain bike) use can occur. No vegetation management will occur with this project. No increase in roads or trails is proposed. One alternative proposes building a four season pavilion for winter/summer use located off an existing open road adjacent to the Big Therriault campground.

Regulatory Framework

KNF Land Management Plan (USDA Forest Service 2015)

The 2015 Forest Plan provides overall guidance for the management of the lands on the KNF. It describes the goals, desired conditions, and objectives toward which the management of the land should be directed and it establishes standards and guidelines to help achieve or maintain the desired condition or conditions, to avoid or mitigate undesirable effects, or to meet applicable legal requirements.

The plan components which provide specific bighorn sheep resource direction relevant to this project include:

- FW-DC-WL-16
- FW-GDL-WL-11
- GA-DC-WL-TOB-06

There are other 2015 Forest Plan components that provide resource direction for a range of wildlife species or habitat conditions that are not specific to bighorn sheep, but still are applicable to sheep management. The full list of the plan components applicable to bighorn sheep management are found in the “Regulatory Framework Findings” section of this analysis.

Resource Indicators and Measure

The effects analysis for bighorn sheep focuses on direction provided in the 2015 Forest Plan which focuses on key stressors described below.

Key Stressors (Risks and Threats) Affecting Bighorn Sheep:

The KNF Forest Plan specialist report (Anderson 2014) identified key stressors on NFS land. Those applicable to NFS land within the project area and evaluated as resource elements for this project include: human disturbance (and associated dogs) in lambing and wintering habitat; and motorized or non-motorized routes in key habitat areas. These stressors can lead to disturbance/displacement of individual sheep, or even mortality and are found below in Sensitive

Species Table 2. The TLTM area does not include big horn sheep winter range, but does include some identified lambing habitat. Therefore this element will focus on human disturbance in lambing habitat.

Other NFS stressors were identified but are not applicable to the project area for the following reasons: there are no domestic sheep allotments or domestic sheep trailing routes located on the KNF; there are no non-sheep livestock allotments within the project area or Fortine or Rexford districts; Vegetation management or disturbance of vegetation is not proposed in the Ten Lakes Travel Management project, and therefore will not affect noxious weeds, fire/fire exclusion, or proposing treatments that will attract bighorns between bighorns and domestic sheep or goats on non-NFS ownership. There is no use of domestic sheep or goats for weed treatment and no known use of pack goats in the area.

Sensitive Species Table 2. Resource Indicators and Measures for Assessing Effects

Resource Element	Resource Indicator	Measure	Used to Address: P/N, or Key Issue?	Source
Lambing Habitat	Activities occurring in lambing habitat during their period of use	Potential for disturbance and displacement of sheep during this period.	No	GOAL-WL-02; FW-DC-WL-01; FW-GD-WL-08; ; FW-GDL-WL-09; FW-GDL-WL-11,
Lambing Habitat	Motorized/non-motorized routes in lambing habitat during their period of use	Routes found in lambing habitat.	No	GOAL-WL-02; FW-DC-WL-01; GD-WL-08; ; FW-GDL-WL-09; FW-GDL-WL-11,

The Ten Lakes big horn sheep herd uses the TLTM project area mainly for late spring, summer and fall use. Winter range habitat is located outside of the project area on state land called the Woods Ranch Wildlife Management Area (WMA). This WMA functions primarily as winter range for big horn sheep, however recent sightings of lambs in the spring may indicate that it is also being used as spring range. No activities are proposed in this area, which lies adjacent to NW corner of the TLTM project area. The Ten Lakes big horn sheep herd was the focus of a 1993 master's thesis study. In this study, 2 areas located within the TLTM project area were used as lambing habitat at that time (Johnsen, 1993). The project area is not known to provide winter range however this analysis will qualitatively discuss the differences in alternatives in terms of potential disturbances from proposed activity or routes on known big-horn sheep spring range.

In addition, specific habitat management strategies for the Ten Lakes herd are summarized in the draft Montana Sheep Conservation Strategy (MFWP 2010) and include cooperative work with USFS in habitat needs/improvements, cooperative relationships with domestic sheep owners including double fencing, aggressive management of weeds and grazing on Woods Ranch WMA, continuance of cooperative relations with land trust organizations to assist in protecting private lands adjacent to USFS sheep habitat. This analysis will qualitatively discuss how the Ten Lakes Travel Management (TLTM) Project (where applicable) assists in meeting or meets these habitat management strategies and objectives specific to the Ten Lake's herd. Meeting these overall habitat management strategies and objectives are related to the KNF Forest Plan Tobacco Plains Geographic Area desired conditions to retain or enhance habitat conditions for the Ten Lakes herd (GA-DC-WL-TOB-06).

Methodology

Bighorn sheep ranges for each of the herds found on the KNF have been identified for the 2015 Forest Plan. Based on discussions with State wildlife biologists, the extent of the sheep range may be adjusted based on local observations. Johnsen (1993) mapped the Ten Lakes sheep herd range (found in the project file) based on radio-collared animals locations. This home range includes a large portion of the Ten Lakes Travel Management project area. Known winter range for this herd is located outside the project area on the state-owned Woods Ranch WMA. Therefore this analysis will analyze the overlap of proposed over-snow recreation on spring range discussed in Johnsen (1993). Over-snow areas and routes, and road information were calculated and mapped using geographic information system (GIS) applications.

Data Sources

Bighorn sheep population ecology, biology, habitat description and relationships identified by research are described in Geist (1971), Buechner (1960), and Couey (1950). That information is incorporated by reference. Bighorn occurrence data and herd range boundaries comes from Johnsen (1993), recent District wildlife observation records, Forest historical data (NRIS Wildlife) as well as Montana FWP records.

Affected Environment

Spatial and Temporal Context for Effects Analysis

The alternatives include the development of over snow motorized and mechanized travel management plans within the project area, as well as the construction of a four season pavilion in one action alternative. No vegetation manipulation is proposed in any alternative. No new roads or trails are being proposed, however over snow seasons of use will be defined as well as defining existing trail miles open to mechanized use (see definitions in the recreation section). This project does not propose any management activities that may have direct or indirect effects on the bighorn sheep habitats but focus on effects that proposed recreation may have on sheep use of that habitat. As such, the effects of this project on bighorn sheep will discuss the differences in alternatives in terms of disturbance or displacement from recreation in spring habitats. The project area boundary encompasses the spring or lambing habitat as identified in Johnsen (1993) as well as the area where recreation travel management is planned. No winter range habitat is located within the project area, therefore no effects to this habitat are anticipated. The contribution toward viability is assessed at the Kootenai National Forest.

Temporal boundaries for the bighorn sheep analysis include both short-term and long-term effects. Short-term effects are those that are expected to last between a few days to a season or portion of two seasons. Generally, once disturbance causing activities like habitat management have been completed sheep can move back into and use the area. Long-term effects are those expected to last longer than a season or two and could include the reduction of over-snow motorized vehicle occurrence in areas used as lambing habitat.

Existing Condition

Forest-wide there are 90,880 acres of bighorn sheep habitat (Hunting Districts 100, 101, 102, 123). It is found in widely distributed pockets that include steep, rocky terrain. The total number of bighorn sheep on the Kootenai National Forest is approximately 248, while statewide, the total number of sheep is 5,694 animals in 49 herds (MFWP 2010).

There are four herds of bighorn sheep within the boundaries of the Kootenai National Forest. Two of the herds (Ural-Tweed, Ten Lakes) are native herds, totaling 125 individuals based on

reported observations (personal communication, Tim Thier, 2015). The Kootenai Falls and Cabinet (Berray Mtn.) herds are both transplanted herds, herds that have been reestablished or established by the relocation of sheep from other populations.

The primary risk factor for bighorns is all-age epizootic die-offs, generally associated with interactions with domestic sheep (although domestic goats may also be carriers). This risk is greatly exacerbated by the fact that domestic and wild sheep are attracted to each other, and can actively seek each other out over great distances. A single bighorn visiting a domestic herd (including rams being drawn in by females in season) can then return to a wild herd and initiate an epizootic die-off. A single domestic sheep seeking out a wild herd can bring about the same end. This contact could occur from domestic sheep on private lands, on trailing routes, from domestic sheep or goats being used for noxious weed treatment, or from pack goats (Tomasik 2011). **No active or vacant domestic sheep or goat allotments occur on the KNF**, nor are there any allotments adjacent to the KNF (see the map produced by the Forest Service and Bureau of Land Management, USDA FS and USDI BLM 2012, Weldon 2012).

Although no allotments for sheep or goats occur on the KNF, there are domestic sheep and goats on private land within one air mile of the state-managed Woods Ranch Wildlife Management Area (WMA) that pose a risk to the Ten Lakes bighorn Sheep herd via transfer of epizootic diseases such as pneumonia.

The Forest Service and State of Montana have worked cooperatively on habitat enhancement burns and noxious weed control on the Wood Ranch WMA in past years.

Bighorn Sheep Occurrence

The analysis area includes the Ten Lakes “Trench” bighorn sheep herd. The herd is estimated at 100 individuals with 61 actually observed via aircraft (MFWP 2010). The area used by the herd includes Ten Lakes Scenic Area, Woods Ranch Wildlife Management Area (WMA), and adjacent borderlands of Canada. Approximately 21,900 acres of the Ten Lakes herd home range is located in the U.S. predominantly within the analysis area (Johnsen 1993).

Habitat

The Ten Lakes herd home range (US portion) consists of approximately 21,906 acres which includes much of the TLTM project area and extends onto the Woods Ranch WMA, where this herd’s primary winter range habitat is found. Two areas of lambing habitat were identified by Johnsen (1993) located near Therriault Pass and northeast of Bluebird Lake. It is unknown if these areas are being currently used as lambing habitat (pers. comm. Thier, 6/2/2016), however it is suspected. No winter range was identified within the TLTM project area as this area is steep and would provide little forage in the winter.

The Ten Lakes Bighorn sheep herd travels throughout the higher elevations of the TLTM project area during the spring, summer and fall, then move to the lower elevations of the Woods Ranch (adjacent to the project area) for winter range habitat. These sheep also move back and forth across the US/Canadian boundary. The existing connectivity/linkage is very good both within and adjacent to the project area (see connectivity discussion in grizzly bear and lynx).

Recreation and Potential Effects to Bighorn Sheep

Over-snow use: The Project Area contains some popular over-snow motorized vehicle use areas. This use has been occurring for several decades. The Ten Lakes Snowmobile Club currently grooms approximately 33.8 miles of road from December 1 through April 1. The groomed route starts at Birch Creek on the main Grave Creek Road (Road 114) and continues on Road 319

where it ends at Big & Little Therriault lakes. This is one of the few open roads and the main year-round open road leading into the most popular over–snow areas on the Fortine District. Access and management opportunities are limited in this area because of rugged lands in Canada to the north, private land west and south of the project area, as well as the grizzly bear motorized standards, and the non-motorized/non-motorized backcountry area designations to the west of the project area (T&E Figure 2). All of the groomed areas are on roads that are open year-round to highway legal vehicles. These routes typically cannot be utilized by wheeled vehicles during the winter months due to snow depths. No grooming is allowed after April 1st. In addition, there are existing over-snow routes which originate off the groomed routes and are used to access over-snow areas in the project area.

Currently all of the Project Area (64,177 acres or 100 %) is open to over-snow vehicle use, however in practical terms, much of this area is not actually useable by snowmobiles due to slope (steepness), vegetation (e.g., too densely forested), dangerous avalanche potential, and personal preferences. Use within these areas is facilitated by routes (mainly hiking trails) used over time to access most common use areas within the project area.

Currently, limited non-motorized over the snow use occurs within the Project Area. There are 2 cross-country ski trails in the project area. These trails occur on non-groomed existing roads. Backcountry skiing does occur but is generally limited by the lack of access points and the steep, tree covered nature of the area. No helicopter skiing is occurring in the project area or district. Use and access depend upon snow conditions. The majority of the existing use occurs in the lower elevations off open roads. These ski trails typically experience patchy snow conditions by April 1st. More recently, mechanized snow bikes are available to recreationists and may be used in the project area. Snowshoeing may also occur in the lower elevations, however steep terrain and limited road/route access (discussed above) generally limit interior use of the project area to all but the extreme users. No changes to over-snow non-motorized use are proposed as part of the Ten Lakes Travel Management Analysis, therefore no effects are expected as part of this proposal.

Non-winter use: Eight Forest Service facilities or permitted facilities are found within or along the boundary of the project area. These include two small fee campgrounds, two dispersed campgrounds, two lookouts, (one a rental), and two FS cabins (non-rentals). There are also a number of dispersed camping sites in this area as well. There are approximately 88 miles of National Forest System trail in the Project Area. All of these miles are open to hiking, stock, and mechanized use (mountain biking). The most dominant use of the trails is hiking followed by stock. All trails are currently open to all three types of use and there is no restriction on mechanized use in the project area. Changes to the amount of mechanized use in the project area is part of this project. Most of these facilities listed above lie along open roads or on mountain tops (lookouts) and are not accessible to users early in the season as many of the roads that access the area trails are not free of snow until early June depending on yearly snow conditions.

The key stressor identified for the TLTM project is potential human disturbance of lambing habitat from recreational activities. Two areas of lambing habitat were identified within the TLTM project area utilizing sheep locations from radio-collared animals (Johnsen, 1993). The lambing season generally coincides with the timing of vegetation green-up in late April to mid-May (Shackleton et al., 1999) however Johnsen (1993) found most sheep still on the winter range (outside of TLTM project area) in late April. The known lambing areas in this area seem to be used generally in the month of May. Lambing habitat is generally described as escape terrain (steep and rocky) with a southern exposure and good visibility. While motorized over-snow vehicles are currently allowed within the entire project area in May, the nature of lambing habitat, (steep southern slopes experiencing vegetation green-up) make them almost mutually exclusive

to areas used for over-snow use (areas of more snowpack). The same would be true for back-country ski sites used in the spring (areas of snowpack are needed), and are generally found on north-facing slopes that time of year. Because of the proximity of potential over-snow use (north slope of lambing habitat) to the lambing habitat (south slope) especially in the Therriault pass/Mt. Barnaby area, there is a small potential for disturbance or displacement of sheep if over-snow use was happening at the same time.

As snow pack melts, it is anticipated that hiking may start to occur in mid to late May depending on the amount of snow on trails. Neither area of lambing habitat has a trail going through it, generally because of the steep and rocky nature of these areas. The Therriault pass trail lies south and east of areas known to have been used as lambing habitat. This trail has been in place for many years and is expected to have little effect on sheep using the lambing habitat. The lambing habitat is not easily accessible from the trail because of its extremely steep and rocky nature, and early in the season, snow found on north and eastern slopes at high elevations would discourage most hikers in this area until later in the year. Very little use off the trail is expected by hikers in this steep area. The other known lambing area is not easily accessible to hikers/bikers in the spring because snow levels limit accessibility generally until June. Sheep counts from 1996 through the year 2008 in the Ten Lakes herd show that numbers of lambs per 100 ewes have remained steady throughout this time frame (2010 MT Bighorn sheep management plan), leading one to believe that the existing over-snow and summer recreational use and potential displacement levels are not affecting sheep recruitment in this herd. No other known existing recreational activities occur near lambing habitat.

Environmental Consequences

Alternative 1 – No Action

No direct effects from federal actions would occur. The No Action alternative would maintain existing vegetative condition on the landscape. Alternative 1 would continue the current over-snow vehicle situation. There are currently no restriction dates within open areas and season of use is dependent upon snow conditions.

Both motorized and non-motorized over-snow recreation occurs within the project area with far more use by motorized over-snow vehicles. As discussed previously, although 100% of the project area is available to over-snow vehicle use, much of this area is not actually useable by snowmobiles due to slope (steepness), vegetation (e.g., too densely forested), dangerous avalanche potential, and personal preferences. Currently, 64,177 acres are available to over-snow use however approximately 16,166 acres have been identified as “most common use areas” (MCUA). All roads/trails within the project area are open to over-snow vehicles, although some receive more use than others. Existing non-motorized over-snow activities do occur within the project area and include, skiing, snowshoeing, and potentially mechanized snow bikes.

Existing summer recreation consists of trail use by hikers, stock, and some mechanized use (mountain bikes etc.).There are currently 88 miles of trail open to these activities with no current restrictions on mechanized use. The most dominant use is hiking, followed by stock, and then mechanized use. There are no motorized trails in the project area.

Bighorn sheep do not generally use the majority of the project area in the winter. Spring lambing habitat has been identified and is used generally starting in May. While motorized over-snow vehicles are allowed within the entire project area in May, the nature of lambing habitat, (steep southern slopes experiencing vegetation green-up) make them almost mutually exclusive to areas used for over-snow use (areas of more snowpack). The same would be true for back-country ski

sites used in the spring (areas of snowpack are needed), and are generally found on north-facing slopes this time of year. Because of the proximity of potential over-snow use (north slope of lambing habitat) to the lambing habitat (south slope) especially in the Therriault pass/Mt. Barnaby area, there is a small potential for disturbance or displacement of sheep moving to or from the lambing area from over-snow use.

As snow pack melts, it is anticipated that hiking may start to occur in mid to late May depending on the amount of snow on trails. No hiking trails are located within lambing habitat and very little use off the trail is expected by hikers in this steep area. Sheep counts from 1996 through the year 2008 in the Ten Lakes herd show that number of lambs per 100 ewes have remained steady throughout this time frame (2010 MT Bighorn sheep management plan), leading one to conclude that the existing over-snow use and potential displacement levels are not affecting sheep recruitment in this herd. No other existing recreational activities occur near lambing habitat.

Alternatives 2, 3 and 4 – Direct and Indirect Effects

Project Design Features and Mitigation Measures

There are no design features or mitigation measures for bighorn sheep in this project.

Sensitive Species Table 3. Resource Indicators and Measures for indirect and direct effects to Bighorn Sheep Habitat

Resource Element	Resource Indicator	Measure	Existing Condition Alt. 1 (No Action)	Alt. 2	Alt. 3	Alt. 4
Lambing Habitat	Activities occurring on lambing habitat during their period of use	Potential for disturbance & displacement of sheep during these periods	Low potential	No	Low potential	No
Lambing Habitat	Motorized/non-motorized routes in lambing habitat during their use period	Routes found in lambing habitat	No routes	No routes	No routes	No routes

Vegetation management is not part of this project therefore no direct effects to bighorn sheep habitat will occur with any alternative.

All Action Alternatives reduce winter motorized use both temporally and spatially compared to Alternative 1 (No Action) where over-snow activities are restricted only by snow availability. All Action Alternatives break over-snow use into two seasons of use: December 1 through March 31st; and April 1st through May 31st and end grooming activities by April 1st. Bighorn sheep are not generally known to use the project area until well into the 2nd season of use in May for lambing. Collared animals from the 1993 Johnsen study as well recent observations show the sheep returning to the winter range by mid to late November. Therefore, any potential over-snow project affects would be expected to occur during the 2nd season from April 1st through May 31st. As discussed in the affects for Alternative 1, while motorized over-snow vehicles are allowed within the entire project area in May, the nature of lambing habitat, (steep southern slopes experiencing vegetation green-up) make them almost mutually exclusive to areas used for over-

snow use (areas of more snowpack). The following discusses the reduction of motorized over-snow use in relation to the lambing habitat.

Alternative 2 reduces motorized over-snow use in Season 2 to only those routes on roads open yearlong to motorized vehicles. No over-snow areas off these routes are available during this timeframe. There are no routes that approach or enter lambing habitat with this alternative. No disturbance or displacement of sheep from the lambing habitat is expected.

Alternative 3 retains some motorized over-snow areas available in season 2, as well as routes during this timeframe. All routes are located on roads open yearlong to motorized vehicles, except the route following Trail # 82 (Clarence Ness). None of the routes or areas overlap known lambing habitat, however the area available in this alternative (season 2) is located on the north facing slope of Mt. Barnaby and Therriault pass. Lambing habitat is located on the south side of these areas. Because of the proximity of potential over-snow use (north slope of lambing habitat) to the lambing habitat (south slope) especially in the Therriault pass/Mt. Barnaby area, there is a low potential for disturbance or displacement of sheep moving to or from the lambing area. However the sheep population appears to be stable with lambs per 100 ewe numbers remaining stable over the years (FWP, 2010), so it is not expected that the potential disturbance would lead to recruitment issues. In both Alternatives 2 and 3, motorized over-snow use would end May 31st, which reduces the timeframe motorized over-snow use is allowed in the project area.

Alternative 4 does not propose Season 2, ending all over-snow motorized use March 31st. This alternative would have the most reduction of over-snow motorized use of all the alternatives, eliminating the potential of any routes in lambing habitat or disturbance of sheep using the lambing habitat by over-snow motorized use.

It is not known which routes sheep use when moving from the winter range to lambing habitat in May, however both lambing areas could be accessed from the Woods Ranch wintering area without crossing the main over-snow route up Grave Creek (Road 114) and Therriault Lakes (Road 319). No known sightings of sheep have been recorded along this route or the other roads accessing this area in the summer or the winter. No increases to these roads or routes are proposed in any alternative in either the summer or winter seasons (except to limit use in the winter), and general motorized over-snow areas are reduced or eliminated during the timeframe lambing could occur. Vegetation management is not part of any alternative. Therefore no changes to movement or travel corridors within or outside of the project area (winter range or Canada) within the Ten Lakes sheep herd home range are expected.

There are no proposed summer recreational activities in any alternative that would disturb or displace sheep from lambing habitat. No new trails or roads are proposed. All Action Alternatives limit summer mechanized use (mountain bikes) to fewer existing trails than the existing condition. Areas for mechanized use are limited to existing trails and most trails in the project area are typically limited for hiking/biking/horses in May due to snow levels.

Cumulative Effects

Introduction

The “Existing Condition” section describes relevant past and present factors affecting bighorn sheep in the Ten Lakes bighorn sheep range. This cumulative effects section summarizes the past actions as well as further describes ongoing and other reasonably foreseeable contributions potentially impacting bighorn sheep habitat.

Spatial and Temporal Context for Cumulative Effects Analysis

The cumulative effects analysis area would be the Ten Lakes herd home range which extends outside the project area to include winter range area on the Woods Ranch WMA. Although only a portion of the home range of the Ten Lakes herd is located within the analysis area, effects to sheep or their habitat in one part of their range may influence habitat suitability and use throughout their range. Therefore, cumulative effects are discussed at both the portion of the herd's home range located within and outside the project area. Similarly, temporal boundaries for the cumulative effects analysis would be the same as for the direct and indirect effects.

Past, Present, and Reasonably Foreseeable Activities Relevant to Cumulative Effects Analysis

Past Actions

Past management actions, in the general area, especially within or adjacent to the known home range of the Ten Lakes bighorn sheep herd have been both beneficial and harmful to bighorn sheep. While past trail construction has exposed the sheep to humans and any accompanying dogs, vegetation management has increased foraging opportunities for sheep. Conversely, years of active fire suppression have not benefited the sheep by allowing conifers to encroach, not only on winter range, but also on to escape habitat, in general degrading the habitat. Likely the greatest benefits to the local herd were the acquisition of the Woods Ranch (which serves as the main winter range) by the State of Montana and years of noxious weed control.

Alternative 1 – No Action

The No Action Alternative does not directly contribute any cumulative effects to bighorn sheep or their habitat based on the lack of action. The primary risk factor for bighorns is all-age epizootic die-offs, generally associated with interactions with domestic sheep. Existing forest activities would not change the level of exposure to the bighorn sheep herds.

Alternatives 1, 2, 3, and 4 – Effects of Current and Reasonably Foreseeable Actions

Reasonably foreseeable actions include those federal, state, or private activities that are ongoing or scheduled to occur, independent of this federal action. Those current and foreseeable actions in the project area that were determined to be appropriate for inclusion in the analysis of environmental effects are listed at the beginning of Chapter 3.

One of the problems associated with habitat management for bighorn sheep in northwest Montana is the reduction of open habitat conditions that provides forage opportunities and/or escape terrain. Management activities that maintain or improve upon existing range use, including availability and quality of forage habitat and escape cover or terrain, maintain visibility to detect predators and access to forage would benefit bighorn sheep (MFWP 2010). Forest activities and treatments that can assist in maintaining or enhancing these habitat needs will assist in perpetuating this species.

Vegetation Management - The Galton Vegetation Management Project includes the entire Ten Lakes Travel Management project area. No harvest activities would occur within the WSA boundary. The following are potential harvest acres within the Ten Lakes Travel Management project boundary for the two action alternatives that could be selected. Alternative 1: 6,150 acres of Ecosystem Burning, and 178 acres of Regeneration Harvest. Alternative 3: 899 acres of Ecosystem Burning, 168 acres of Ecosystem Burning designed to benefit whitebark pine, and 74 acres of Regeneration Harvest. These activities would occur mainly outside of the Ten Lakes

bighorn sheep range, however proposed harvest and burn treatments on or adjacent to known bighorn sheep habitat would be largely beneficial and assist in maintaining habitat for the Ten Lakes herd.

Additionally, B.C. Ministry of Forestry, Lands, and Natural Resources in Canada has planned two high elevation burns northwest of the project area for the fall of 2016, with other burns planned for 2017 in Phillips creek on the west side of the planning area. These prescribed burns are designed to benefit mule deer, especially in the higher elevations, as well as bighorn sheep (Oestrich, 2016). These projects will be beneficial and assist in maintaining habitat for species that use habitat in both the U.S. and Canada.

Noxious Weed Control - Efforts to treat present infestations of noxious weeds and to eradicate infestations of new invaders are ongoing. All activities will comply with the Kootenai National Forest Invasive plant Management ROD (2007). Weed treatment activities would not lead to any adverse effects on the bighorn sheep, or its habitat because treatments isolate non-beneficial weed species and would actually benefit forage (USDA Forest Service 1997, 30).

Fire Suppression - Efforts in wildfire suppression could occur in this area. This could continue to allow encroachment of trees into areas that were historically more open and provided forage areas both for summer and winter range. Effects include a less diverse landscape that would not provide a mosaic of habitats for species to use.

Road Management Activity - Actions such as road maintenance and administrative use associated with permit administration, data collection, and monitoring of NFS lands are not likely to measurably affect wildlife or specialized habitats (e.g. old growth habitat, snags nor down woody debris) because they generally do not result in vegetation removal or persist for long periods of time. The standing tree and snag component would only be affected if considered a hazard to road users. These activities would not result in any change to sheep habitat, thus no adverse cumulative effects would be expected.

Public Use - Other forest product activities occurring presently and typically on an annual basis are the gathering of pine cones, boughs and commercial gathering of Christmas trees. These activities occur throughout the project area and have little-to-no effect on the landscape due to the unspecific nature of the use and the low impact on the resources (foot traffic, hand tools). These activities would be more prominent in the lower elevation habitat adjacent to open roads, and therefore would occur on a minor percentage of the sheep habitat available.

Ongoing hunting activities are regulated by the MFWP. The Forest Service influences hunter access through road management. Hunting activities within the analysis area will cumulatively contribute to minor short-term effects (during the general hunting season) to habitat security. Effects from hunting vary with activity levels and can include short-term disturbance. The potential increase of early seral habitat creation through proposed prescribed burns may draw hunters to these areas. However these proposed areas are dispersed throughout the mainly unroaded project area, and would provide options for areas for big game to use. Hunting levels within the project area are not expected to significantly change due to the action alternatives, since no new road construction will occur.

Recreation Maintenance - Routine maintenance of trails and developed and dispersed recreation sites may temporarily displace some wildlife species. Approximately 85 miles of trail are maintained each year within the project area. Routine trail maintenance activities may include brushing; removing blowdown, debris, and hazard trees; repairing or adding waterbars, repairing

treads; and repairing or replacing signs. These activities are spread across the district spatially and do not occur frequently within the Ten Lakes sheep herd home range.

Public Uses - Operations of outfitter/guides would not result in any change to general and specialized wildlife habitats that listed species may utilize, as they do not involve habitat manipulation. In addition, general public recreational use of the project area is expected to include but is not limited to hiking, camping, fishing, hunting, photography, berry picking, other forest product gathering, Christmas tree cutting, firewood gathering, driving for pleasure, mountain biking, sightseeing, wildlife viewing, cross country skiing, snowshoeing, trapping and snowmobiling. Recreation is likely to increase on all land ownership types, if for no other reason than human population growth. This would increase human disturbance and potentially impact bighorn sheep on all ownerships. There would be no cumulative effects to sheep and their habitats associated with these activities other than possible temporary and local avoidance of an area due to the presence of humans.

Private Land – Private land development may impact suitable forest habitat on non-public lands, and impact connectivity between public lands.

Other Agency Activities - Fish Wildlife and Parks continues to stock fish in Big and Little Therriault Lakes and Wolverine Lake. This project is adjacent to the U.S./Canada Border and receives a great deal of use year round by the Department of Homeland Security and Forest Service Law Enforcement. This use is expected to continue in the area. Regardless, these activities would not directly impact species or suitable habitat on NFS lands.

The ability of the Ten Lakes Travel Management project to meet or contribute to the specific management strategies for the Ten Lakes bighorn sheep herd are paraphrased below:

1. Cooperative work between USFS and MFWP in habitat needs/improvements (Obj., Strategy): The Forest Service and State of Montana have worked cooperatively on habitat enhancement burns on the Woods Ranch WMA in the past.
2. Maintain/develop cooperative relationships with domestic sheep owners including double fencing (Obj., Strategy): Direct management of bighorn sheep and potential risk from domestic sheep or goats beyond NFS grazing allotments are outside of Forest Service jurisdiction and must be addressed by State of Montana personnel. However, fencing opportunities on NFS lands that may contribute to the control of domestic sheep and goats may exist and could be explored via a cooperative agreement if the need and opportunity were to exist.
3. Maintain high quality habitat (winter range) on Woods Ranch WMA (aggressive management of weeds and grazing) (Obj., Strategy): These opportunities may exist and were addressed under element 1, above.
4. Continuance of cooperative relations with land trust organizations to assist in protecting private lands adjacent to USFS sheep habitat (Strategy): While this strategy is outside the scope of the TLTM Project, there may be areas adjacent to the Ten Lakes sheep home range that have this need and could be identified as such.

Regulatory Framework Findings

Land and Resource Management Plan

The 2015 Forest Plan provides desired conditions, objectives, standards, and guidelines for bighorn sheep within the Wildlife Resource. The following are applicable to the actions in this

project, and goals, desired conditions, objectives, standards, and guidelines can be found on the noted pages in the 2015 Forest Plan.

GOAL-WL-02: The KNF manages and schedules activities to avoid or minimize disturbance to sensitive species and manages habitat to promote their perpetuation into the future. *Proposed over-snow areas and routes are reduced in all alternatives and would not occur within lambing habitat, therefore, timing restrictions were not identified to minimize or avoid potential disturbance during these sensitive periods. See "Direct and Indirect Effects". This project, therefore makes progress toward the goal of minimizing disturbance to sensitive species GOAL-WL-02.*

FW-DC-WL-01: Nests and den sites and other birthing and rearing areas for terrestrial threatened, endangered, proposed, or sensitive species are relatively free of human disturbance during the period they are active at these sites. *See the discussion on lambing habitat for GOAL WL-02 above. Therefore, the project maintains FW-DC-Wl-01.*

FW-DC-WL-16: Habitat for native ungulates (elk, deer, moose, bighorn sheep, and mountain goat) is managed in coordination with state agencies. Cover and forage are managed according for FW-DC-EG-01, FW-DC-VEG-02, FW-DC-VEG-04, FW-DC-VEG-05, and FW-DC-VEG-11). *Vegetation management was not part of this project, however locations of special habitats such as lambing and winter range habitat was discussed with local FWP biologist - See "Other Agencies and Individuals Consulted," below, as well as the project file. In addition, specific habitat management strategies for the Ten Lakes herd summarized in the draft Montana Sheep Conservation Strategy (MFWP 2010) was utilized in this project and those strategies were addressed in this analysis. Therefore, the project would contribute to progress toward FW-DC-WL-16.*

FW-DC-WL-17: Forest management contributes to wildlife movement within and between national forest parcels. Vegetation management is not part of this project however wildlife movement within and outside the project area is discussed under the section titled "Alternatives 2, 3, and 4 – direct and indirect effects" found above. Therefore, the project would contribute to progress toward FW-DC-WL-17.

FW-GDL-WL-08: Big Game: Management activities should avoid or minimize disturbance to native ungulates on winter range between December 1 and April 30, with the exception of routes identified on MVUM as open to motor vehicle use. Management activities that occur on winter range during the winter period should concentrate activities to reduce impacts to native ungulates. *No disturbance to the bighorn sheep winter range on the Woods Ranch WMA is planned with the action alternatives. Winter range for this herd is found only on state land on the Woods Ranch WMA, and no activities are planned in this area. Timber harvest or other vegetation management is not part of this projects. The project is designed in accordance with FW-GDL-WL-08.*

FW-GDL-WL-09: Big Game: Management activities should be avoided on native ungulate winter range areas during the critical mid-winter period (January and February) when snow depth most likely influence movement and availability of forage. *See FW-GDL-WL-08 above. The project is designed in accordance with this guideline.*

FW-GDL-WL-11: Big Game: Management activities should avoid or minimize disturbance to native ungulates during the birthing/parturition period. *No activities are planned in known winter/lambing habitat located on the Woods Ranch WMA. All alternatives minimize disturbance during the spring lambing season by reducing the areas and routes available to motorized over-*

snow vehicles in Season 2 of all alternatives. See Alternatives 2, 3 and 4 – Direct and Indirect Effects. The project is designed in accordance with FW-GDL-WL-11.

GA-DC-WL-TOB-01: Low levels of human disturbance allows …and for summer use by big game in the Ten Lakes, Thompson Seton, and Marston Face areas. *Summer use by the Ten Lakes bighorn sheep herd home range would not be affected by this project. Proposed activities in the summer include limiting mechanized use to a limited number of trails, which reduces the number of trail miles mountain bikes are currently allowed on. This would reduce the potential trail miles and potential disturbance by this use type to bighorn sheep potentially using trails for movement. Therefore, the project makes progress towards GA-DC-WL-TOB-01.*

GA-DC-WL-TOB-05: Wildlife move to and from the border with Canada. *The proposed action does not include vegetation management, or the building of new roads or trails, or proposes activities that would affect bighorn sheep movement within or outside of the project area (See "Alternatives 2, 3 and 4 – Direct and Indirect Effects"). Therefore this project maintains GA-DC-WL-TOB-05.*

GA-DC-WL-TOB-06: Habitat conditions for bighorn sheep (Ten Lakes herd) are retained or enhanced. *Vegetation management is not part of this project, however locations of special habitats such as lambing and winter range habitat was analyzed to ensure these special habitats would not be affected (See "Alternatives 2, 3 and 4 – Direct and Indirect Effects"). The project makes progress towards GA-DC-WL-TOB-06.*

Federal Law

Regulation and Executive Orders

- 36 CFR Part 294 Special Areas, Roadless Area Conservation; final Rule
- 36 CFR Part 212 Travel Management
- Executive order 11644, as amended by Executive Order 11989

No effects were specifically identified to bighorn sheep from the travel management planning in this area. The reduction in available late season (Season 2) areas and routes may result in fewer potential disturbances to sheep on lambing habitat in May, however no known routes or areas in any alternatives are found in this habitat. There are no new roads, trails or vegetation management proposed with this project and therefore movement of sheep within and outside of the project area would not be affected.

National Forest Management Act

The project would comply with NFMA direction to provide for diverse populations of plant and animal communities through compliance with the 2015 Forest Plan.

Other Guidance or Recommendations

The Montana Sheep Conservation Strategy (MFWP 2010) provides management plans for each of the bighorn sheep herds within Montana. These plans provide "a comprehensive history of the population, habitat and population objectives, and strategies for meeting the objectives." The Management Challenges section describes some of the main concerns and need regarding habitat management for the herd that can be used to plan projects to benefit the bighorn population. The project contributes to or is neutral towards meeting identified management strategies and objectives for the Ten Lakes bighorn sheep herd. Please see the "Environmental Consequences" and "Cumulative Effects" discussions.

Statement of Findings

Action Alternative 2 and 4 will have no impact on individual sheep or their habitat. This determination is based on: 1) the reduction of motorized over-snow area and routes available during the timeframe sheep may use the lambing habitat within the project area; 2) no changes to vegetation or existing road or trail miles in the project area results in maintenance of connectivity for sheep movement within and outside of the project area and home range; 3) no activities or potential for disturbance to sheep on winter range located on the Woods Ranch WMA within the known home range of the Ten Lakes herd, 4) no increased potential for interaction with domestic sheep or goats that could introduce zoonotic diseases.

Alternative 1 (No Action) and Action Alternative 3 may impact individuals or their habitat, but will not likely contribute to a trend toward federal listing or cause a loss of viability to the population or species for the bighorn sheep for reasons 1, 2, 3 & 4 stated above as well as the following: there is a low potential for disturbance or displacement of sheep moving to or from the lambing areas due to the proximity of potential over-snow use to the lambing habitat.

Other Agencies and Individuals Consulted

Communication occurred with Tim Their, MFWP wildlife biologist to discuss type of proposed activities within the Ten Lakes herd home range and potential projects within the Woods ranch WMA, which is the primary winter range area for this herd.

Irene Teske and Allana Oestreich, wildlife biologists for B.C. Ministry of Forestry, Lands and Natural Resources of Canada were consulted to find out about known activities north of the project area in Canada and any potential activities that may affect the Ten Lakes Herd home range area or other species.

Fisher

Summary of Conclusions

Alternative 1 (No Action) would have **no impact** on the fisher or its habitat due to lack of action and lack of change from the existing condition.

Alternatives 2 and 3 would have **no impact** on the fisher or its habitat. This determination is based on: 1) the Ten Lakes Travel Management project area provides low probability habitat (based on literature) and was assessed primarily as dispersal habitat; 2) documentation of fisher has not been found in recent years (1959 on) in the project area or Galton range; 3) no vegetation management would occur with any alternative; 4) project activities consist of enacting temporal and spatial limits on winter over-snow motorized travel and designating where summer mechanized use can occur and does not propose any new recreational activities.

Alternative 4 **may impact** individuals and/or their habitat, but will not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species. This determination is based on: four season pavilion construction and use in Alternative 4 may cause short-term displacement of fisher using the travel/dispersal habitat; no vegetation management would occur with any alternative.

Resource Indicators and Measures

Key Stressors (risks and threats) Affecting the Fisher:

The following Forest Service management activities may have direct or indirect effects on forested and riparian habitats (as listed in the wildlife specialist report (Anderson 2014)) for the 2015 KNF Forest Plan.

- Timber harvest – changes in mature and late-successional forest stand composition and structure affecting canopy cover and the amount and availability of large down wood; and
- Fire (both planned ignitions and natural, unplanned ignitions) – removal of standing snags and down wood, reduction of canopy coverage, or direct mortality.

While vegetation management (timber harvest or fire) can have an effect on fisher habitat, vegetation management is not proposed as part of this project and therefore mapped fisher habitat will not be affected.

Based on recent fisher habitat models, the TLTM project area was identified as low probability/non-habitat (Olson et.al. (2014), and Sauder (2014)). Therefore, the project area was considered as primarily providing fisher travel habitat as potential dispersers move through the area to higher quality habitat. Potential fisher travel and dispersal habitat was identified as all habitat located within a 200 meter buffer from a perennial stream, as well as old growth habitat within the analysis area (map available in project file). Connectivity and dispersal habitat can also be affected by vegetation management, as well as increasing roads which can affect connectivity for certain species. No new roads, trails or vegetation management are proposed with this analysis, and therefore the TLTM project would not affect travel habitat for potential dispersers.

Human disturbance (summer and winter travel for this project) does not seem to be a significant factor for fisher. Fisher have been commonly seen near occupied dwellings, and were reported as "rarely flushed from their rest sites" even with field researchers spending as much as one hour within a few meters of the animals (Joslin and Youmans, 1999). No new roads or trails are proposed, however motorized over-snow seasons of use would be defined as well as defining existing trail miles open to mechanized use (see definitions in the recreation section). One alternative proposes a four season pavilion located adjacent to an existing campground. This analysis will qualitatively discuss the differences in alternatives in terms of disturbance from travel as well as the four season pavilion construction and future use.

Key Stressors to this species group that are outside the control of the Forest Service management (2015 FEIS) and which may cause loss of habitat, displacement, or mortality may include (see cumulative effects):

- Global warming (climate change) – increased and prolonged summer temperatures and/or drought conditions, and/or the increased risk of fire that may impact forest cover and down wood. This could reduce the extent of dense, closed canopy forest. Those stands may be more susceptible to large scale, stand replacing disturbances like fire or insects;
- Private land development – developments to support increased human populations that may impact suitable forest cover on non-public lands, and impact connectivity between public lands;
- Over-harvesting by trappers – both allowable and incidental trapping with marten traps may be an important source of mortality, particularly where populations are small and fragmented (cumulative effect);

- Habitat loss and degradation on non-NFS lands – loss of forested habitat, particularly late-successional forests, to fire and timber harvest results in the reduction and fragmentation of suitable habitat. Loss of habitat cover and structure near streams, loss of down and woody material near streams; and
- Small, isolated populations – may lose genetic diversity and have a higher probability of extinction. It is unknown if a sufficient number of individuals exist to sustain the populations across the full range of environmental and demographic stochasticity (Vinkey, 2003) (cumulative effect).

These stressors are outside of the control of the Forest Service and will therefore be addressed in the cumulative effects section below.

Introduction

Fishers are similar in body form to weasels, but larger. Their fur color varies from very dark brown to blackish brown. Young are born in cavities in either live or dead trees. Mature moist forest habitats with continuous overhead cover and riparian zones are frequently utilized (Vinkey 2003) and stream courses are often used as travel corridors.

In January 2016, the US Fish and Wildlife Service determined that listing the fisher as a threatened or endangered species may be warranted due to new information (USDI FWS, 2016, Federal Register, 1-12-2016). They will now conduct a status review where all potential threats to the species are evaluated. This evaluation will take into consideration any information that has become available since its 2011 finding concluding that listing the fisher as endangered or threatened was not warranted (Ibid).

Fisher in the U.S. Northern Rocky Mountains have increased in numbers and distribution since their perceived extirpation in the 1920's (USDI, FWS 2011). However there is no information on the historical numbers or density of fisher populations in the region, and little is known of regional population numbers today (Ibid). What little is known of fisher population numbers is primarily derived from harvest data (from legal and incidental trapping) and from recent survey efforts using non-invasive sampling for DNA. Fishers are thought to be one of the lowest-density carnivores in Montana (Vinkey 2003), although densities appear to vary throughout the Northern Rockies. Considered secure at a global level, fishers are a Sensitive Species in Region One of the Forest Service. They are considered a Species of Concern in Montana, but are managed as a furbearer with annual trapping quotas.

This Ten Lakes Travel Management (TLTM) project proposes temporal and spatial limits on winter motorized travel, as well as designating trails where mechanized use (mountain bike) use can occur. No vegetation management will occur with this project. No increase in roads or trails is proposed. One alternative proposes building a four season pavilion located off an existing open road adjacent to Big Therriault campground.

Regulatory Framework

KNF Land Management Plan (USDA Forest Service 2015)

The 2015 Forest Plan provides overall guidance for the management of the lands on the KNF. It describes the goals, desired conditions, and objectives toward which the management of the land should be directed. And it establishes standards and guidelines to help achieve or maintain the desired condition or conditions, to avoid or mitigate undesirable effects, or to meet applicable legal requirements.

There are no plan components which provide specific fisher habitat resource direction relevant to this project. However, because fishers are associated with large forest structure, resource direction relevant to the maintenance and/or promotion of these characteristics is important for managing fisher habitat and includes:

- FW-DC-WL-10
- FW-DC-WL-11
- FW-DC-WL-12
- FW-DC-WL-13

Also, there are other 2015 Forest Plan components that provide resource direction for a range of wildlife species or habitat conditions that are not specific to fishers, but still are applicable to the management of fisher habitat. The full list of the plan components applicable to fisher habitat management and this project are found in the "Regulatory Framework Findings" section of this analysis.

Methodology

Based on recent fisher habitat models, the TLTM project area was identified as low probability/non-habitat (Olson et.al. (2014), and Sauder (2014). Therefore, the project area is considered as primarily providing fisher travel habitat as potential dispersers move through the area to higher quality habitat. Because the proposed action and alternatives do not propose vegetation management, or new roads or trails that would change fisher habitat, this analysis will qualitatively discuss the differences in alternatives in terms of disturbance from travel as well as the four season pavilion construction and future use. The "key stressors" that are outside the control of Forest Service Management will be addressed in the "Cumulative Effects" section below.

Data Sources

Fisher population ecology, biology, habitat description and relationships identified by research are described in Powell and Zielinski (1994) and Heinemeyer and Jones (1994), Rugierro et al. (1994), Vinkey (2003), Lofroth et al. (2010), Olson et al (2014), Sauder and Rachlow (2014), Sauder and Rachlow (2105), Schwartz et al. (2013). That information is incorporated by reference. Fisher occurrence data comes from District wildlife observation records and Forest historical data (NRIS Wildlife) and other agencies (MFWP).

Affected Environment

Spatial and Temporal Context for Effects Analysis

The Action Alternatives include the development of winter and summer travel management plans within the project area, as well as the construction of a four season pavilion in one action alternative. No vegetation manipulation is proposed in any alternative. No new roads or trails are being proposed, however motorized over-snow seasons of use will be defined as well as defining existing rail miles open to mechanized use (see definitions in the recreation section). This project does not propose any management activities that may have direct or indirect effects on the forested or riparian habitats that fisher use. As such, the effects of this project on fisher will qualitatively discuss the differences in alternatives in terms of disturbance if traveling through the project area as well as the four season pavilion construction and its future use. The project area is large enough to analyze effects to fisher traveling through the area, as this area was considered as primarily providing fisher dispersal habitat (map in project file).

Temporal boundaries for the fisher analysis include both short-term and long-term effects. While research does not show fisher to be highly sensitive to human activity, the presence of people during the construction of the four season pavilion may temporarily displace fisher traveling through the area. This displacement would be short-term and would last until the people are gone. Long-term effects are those that are expected to last longer than a season or two. No long term effects have been identified for this project, however the existing campgrounds in this area may cause a change in the way fisher would travel through this area, at least during the summer while campgrounds are occupied.

Existing Condition

Fisher Occurrence

Fisher occurrence in the Project area and Galton Mountain Range is uncertain. Montana Fish, Wildlife and Parks trapping records (available from 1959 on) do not show any fisher ever being trapped from the Ten Lakes Travel Management Project area. In 1959 and 1960, nine fisher were transplanted from British Columbia to Pinkham creek which is located approximately 12 miles from the project area (pers. comm. T. Thier, 2016). Potential fisher tracks were observed during MFWP's 1996/1997 snow track surveys in the Wigwam PSU within the project area. In retrospect, due to the lack of sightings or trapping data in the area before or since this date, it is thought that the tracks reported in these surveys probably represented large marten tracks (ibid). Harvest data on fisher in this area show that trapping season on fisher was re-opened in 1983 for the first time in over 20 years. The capture closest to the project area came in 1996 on Stryker ridge south of the project area and was from a collared animal that was transplanted to southern B.C. in 1996 (Thier, 2016). The Flathead National Forest has a similar history of transplanting animals and few reports of trapped or sighted animals (Ibid). Glacier National Park has not found records that there were or currently are fisher in the park (pers.comm. Waller, 2016). This lack of reports support the habitat modeling discussed above which show this area primarily providing low capabilities for supporting fisher habitat.

Habitat Analysis

Two recent habitat assessments for the fisher looked at potential habitat across the north Idaho and western Montana landscape. Olson et al. (2014) is a coarse-scale land cover-based approach to determine the amounts and distribution of probable fisher habitat based on current vegetation and certain biophysical conditions. Sauder (2014) used a multi-scale product model to characterize both the configuration and composition aspects of forest patterns selected by fisher based on the monitoring of habitat use by individual animals. While these models came up with varying amounts of habitat, they both indicated similar patterns as to where fisher habitat has the highest probability to occur. The TLTM Project lies within the eastern portion of the Kootenai NF, where predicted/modeled habitat is sparse and highly fragmented (Olson et al 2104, Sauder 2014).

The Idaho Panhandle National Forest has conducted extensive fisher surveys and research, and have detected fisher across the forest. The Cabinet-Yaak areas of the Kootenai are geographically connected to the Idaho Panhandle and is also an area that has had repeated fisher detections (USDA FS, 2012). The TLTM project area lies east of the Yaak river drainage and east of Koocanusa Reservoir. Sauder (2014) discusses the Kootenai River Valley (Lake Koocanusa) as a barrier to dispersal by many wildlife species, including martens, and suspects that it also acts as barrier to movements of fisher (east and west). This factor, along with the lack of high quality predicted habitat in the TLTM area, may help to explain the lack of fisher documentation in this area.

Forest-wide, fisher habitat is abundant at about 703,423 acres (over 32% of the Forest) and exceeds the upper range of historic variation of approximately 671,150 acres, and there is no indication that fisher viability is at risk (ERG 2012).

Existing Recreation and Potential Effects to Fisher

Over-snow use: The Project Area contains some popular over-snow vehicle use areas. This use has been occurring for several decades. The Ten Lakes Snowmobile Club currently grooms approximately 33.8 miles of road from December 1 through April 1. The groomed route starts at Birch Creek on the main Grave Creek Road (Road 114) and continues on Road 319 where it ends at Big & Little Therriault Lakes. This is one of the few open roads and the main year-round open road leading into the most popular over–snow areas on the Fortine District. Access and management opportunities are limited in this area because of rugged lands in Canada to the north, private land west and south of the project area, as well as the grizzly bear motorized standards, and the non-motorized/non-motorized backcountry area designations to the west of the project area (see T, E & P Species Figure 1). All of the groomed areas are on roads that are open year-round to highway legal vehicles. These routes typically cannot be utilized by wheeled vehicles during the winter months due to snow depths. No grooming is allowed after April 1st in this area. In addition, there are existing over-snow routes which originate off the groomed routes and are used to access over-snow areas in the project area.

Currently all of the Project Area (64,177 acres or 100 %) is open to over-snow vehicle use, however in practical terms, much of this area is not actually useable by over-snow vehicles due to slope (steepness), vegetation (e.g., too densely forested), dangerous avalanche potential, and personal preferences. Use within these areas is facilitated by routes (mainly hiking trails) used over time to access most common use areas within the project area.

The project area also lies within grizzly bear habitat which includes large core areas in contiguous non-roaded blocks that are available as displacement areas for grizzly bears. Cover levels are high throughout the project area and within these core areas which enhance the condition of security for all species. A contiguous block of core, over 35,000 acres, is located within the project area with additional blocks adjacent to the Project Area (see grizzly bear section).

Currently, limited non-motorized over the snow use occurs within the Project Area. There are 2 cross-country ski trails in the project area. These trails occur on non-groomed existing roads. Backcountry skiing does occur in limited areas but is generally limited because of the lack of access points and steep, tree covered nature of the area. No helicopter skiing is occurring in the project area or district. Use and access depend upon snow conditions. The majority of the existing use occurs in the lower elevations off open roads. These ski trails typically experience patchy snow conditions by April 1st. More recently, non-motorized snow bikes are available to recreationists and may be used in the project area. Snowshoeing may also occur in the lower elevations, however steep terrain and limited road/route access (discussed above) generally limit interior use of the project area to all but the extreme users. No changes to over-snow non-motorized use are proposed as part of the Ten Lakes Travel Management Analysis, therefore no effects are expected as part of this proposal.

Non-Winter use: Eight Forest Service facilities or permitted facilities are found within or along the boundary of the project area. These include two small fee campgrounds, two dispersed campgrounds, two lookouts, (one a rental), and two FS cabins (non-rentals). There are also a number of dispersed camping sites in this area as well. There are approximately 88 miles of National Forest System trail in the Project Area. All of these miles are open to hiking, stock, and mechanized use (mountain biking). The most dominant use of the trails is hiking followed by

stock. All trails are currently open to all three types of use. Changes to the amount of mechanized use in the project area is part of this project. Much of this habitat is not accessible to users early in the season as many of the roads that access the area trails are not free of snow until early June depending on yearly snow conditions.

There are few concerns regarding the effect of winter or summer travel on fisher behavior and habitat use. As discussed above the main concern regarding human activities would be associated with negative effects on fisher due to habitat removal or development of high quality habitat. Joslin and Youmans (1999) summarized literature discussing human disturbance on fisher and found that fisher were generally highly tolerant of human activity, and were often found near residences even feeding in bird feeders on window ledges. The exception to this may be females with kits that may be more sensitive to human disturbance.

Connectivity/Linkage

Existing habitat connectivity within and adjacent to the project area is provided by forested cover and is continuous with the exception of portions of the past Barnaby wildfire, as well as natural rocky openings along the ridgetops and high elevation meadows. Past fire suppression, lack of recent harvest activities as well as management area direction has limited management within these affected LAU's. Much of the Ten Lakes Travel Management Project Area lies within the Ten Lakes Wilderness Study Area, Inventoried Roadless Areas (IRAs), with other areas in motorized backcountry Forest Plan Management Areas containing few roads. Much of these lands lie in unroaded blocks that provided largely natural vegetative conditions. Connectivity in terms of forested cover is high north of the project area into Canada as well as to the east into the Flathead National Forest and further south into the Marston/Murphy Lake area and adjacent Stillwater State Forest. South and west of the project area are low elevations with Koocanusa Reservoir, Highway 93, and private land within the Tobacco Valley and Fortine Creek (T, E & P Species Figure 1).

Environmental Consequences

Alternative 1 – No Action

No direct effects from federal actions would occur. The No Action alternative would maintain existing vegetative condition on the landscape. Alternative 1 would continue the current over-snow vehicle situation. There are currently no restriction dates within open areas and season of use is dependent upon snow conditions.

As discussed previously, although 100% of the project area is available to over-snow vehicle use, much of this area is not actually useable by over-snow vehicles due to slope (steepness), vegetation (e.g., too densely forested), dangerous avalanche potential, and personal preferences. Currently, 64,177 acres are available to over-snow use however approximately 16,166 acres have been identified as "most common use areas" (MCUA). Routes leading to and found within these areas were calculated at roughly 26.6 miles in the project area (see lynx section). In addition, 33.8 miles of road are currently groomed from Dec. 1 through April 1. All roads/trails within the project area are open to over-snow vehicles, although some receive more use than others. Existing non-motorized over-snow activities do occur within the project area and include, skiing, snowshoeing, and potentially mechanized snow bikes.

Existing summer travel consists of trails use by hikers, stock, and some mechanized use. There are currently 88 miles of trail open to these activities with no current restrictions on mechanized use. The most dominant use is hiking, followed by stock, and then mechanized use. There are no motorized trails in the project area.

Due to the limited past harvest and few natural openings on the landscape, connectivity provided by timbered stands is very good. Few roads access the interior of the project area and grizzly bear core areas provide secure habitat for large carnivores using this area. Low elevation, private land and Koocanusa reservoir to the south and west of the project area may limit movement in those directions, however movement north into Canada and east have similar habitat to the project area and provides more than adequate landscape connectivity (see T, E & P Species Figure 1).

Alternatives 2, 3 and 4 – Direct and Indirect Effects

Vegetation management is not part of this project therefore no effects to fisher habitat will occur with any alternative.

All alternatives reduce over-snow motorized use both temporally and spatially compared to Alternative 1 (existing condition) where over-snow activities are restricted only by snow availability. All alternatives end grooming activities by April 1st. Fisher are not known to be directly affected by over-snow activities, however all alternatives reduce the amount of motorized over-snow activities currently occurring.

There are no proposed recreational activities in any alternative that would reduce fisher habitat and connectivity. No new trails or roads are proposed that would affect connectivity within or adjacent to the project area. All Action Alternatives limit summer mechanized use (mountain bikes) to fewer existing trails than the existing condition. Fisher are not known to be disturbed by human activity, but with the project area lying in a remote area with large, remote blocks of security it would allow large areas for fisher to move to if disturbed.

Alternative 4 proposes a four season pavilion that would be located along an open road, adjacent to the existing Big Therriault Campground. No vegetation would be removed with this construction as it is located in a wide spot along the road. This area would most likely be used in both the summer and the winter. With the existing activity at the adjacent campground, the building of the pavilion may cause a short-term shift in fisher traveling through the area or in the rare case, females with kits may be displaced with ongoing use of the pavilion.

Project Design Features and Mitigation Measures

The TLTM project area has been assessed as a low to non-habitat habitat probability (see “Existing Condition” discussion). Records of fisher occurrences in the analysis area are extremely limited and support the habitat modeling which show low capabilities for supporting fisher habitat. The Ten Lakes Travel Management project does include a general wildlife design criteria that would protect known dens or nests of sensitive species. Although fishers are not expected, this project would protect a den site if found. The TLTM project would be consistent with FW-DC-WL-01 and FW-GDL-WL-21.

Cumulative Effects

The Existing Condition section describes relevant past and present factors affecting fisher habitat conditions in the analysis area. This cumulative effects section summarizes the past actions as well as further describes ongoing and other reasonably foreseeable contributions potentially impacting fisher habitat (see Key Stressors outside control of FS management).

Spatial and Temporal Context for Cumulative Effects Analysis

The spatial and temporal boundary for the cumulative effects analysis is the TLTM project area and is based on low probability of the species occurring.

Past, Present, and Reasonably Foreseeable Activities Relevant to Cumulative Effects Analysis

Past Actions

Timber harvests, salvage of blowdown, road construction, and wildfire occurrences, especially those occurring within the past 75 to 100 years, are some activities that have contributed to the reduction of suitable fisher habitat across the forest. These occurrences, whether man-caused or natural have altered numerous acres of mature and late succession forest stands and their associated elements, including large woody debris. This statement is especially true when these types of stand alterations occur within 200 meters of riparian areas known to provide dispersal/travel habitat for the fisher. Forest Plan direction and other laws/regulations applicable to forest management in or near streams assist in protecting fisher habitat for perpetuation of this species.

Effects of Current and Reasonably Foreseeable Actions

Reasonably foreseeable actions include those federal, state, or private activities that are ongoing or scheduled to occur within the next five years, independent of this federal action. Those current and foreseeable actions in the project area that were determined to be appropriate for inclusion in the analysis of environmental effects are listed at the beginning of Chapter 3.

The Galton Vegetation Management Project includes the entire Ten Lakes Travel Management project area. No harvest activities would occur within the WSA boundary. The following are potential harvest acres within the Ten Lakes boundary for two action alternatives that could be selected. Alternative 1: 6,150 acres of Ecosystem Burning, 178 acres of Regeneration Harvest, and 43 acres of Vista cutting units along the Grave Creek Road. Alternative 3: 899 acres of Ecosystem Burning, and 168 acres of Ecosystem Burning designed to benefit whitebark pine. These projects use timber management, slashing, and prescribed fire, and as a result some, but not all, down woody debris and snags may be lost in treated areas. These activities may incidentally affect fisher use within some areas on a temporary basis, but with the large amount of existing secure habitat and cover provided, would not have adverse cumulative effects. The majority of these projects take place outside the riparian area and old growth habitat, therefore effects to potential fisher habitat would be minimal.

If a salvage project is identified and implemented, the cumulative effects and associated species would be evaluated at that time, including the effects of this project.

Additionally, B.C. Ministry of Forestry, Lands, and Natural Resources in Canada has planned two high elevation burns northwest of the project area for the fall of 2016, with other burns planned for 2017 in Phillips creek on the west side of the planning area. These prescribed burns are designed to benefit mule deer, especially in the higher elevations, as well as bighorn sheep (Oestrich, 2016). These projects will be beneficial and assist in maintaining habitat for species that use habitat in both the U.S. and Canada.

Noxious Weed Control - Efforts to treat present infestations of noxious weeds and to eradicate infestations of new invaders are ongoing. All activities will comply with the Kootenai National Forest Invasive plant Management ROD (2007). Weed treatment activities would not lead to any adverse effects on fisher, or its habitat because treatments isolate non-beneficial weed species.

Fire Suppression - Efforts in wildfire suppression could occur in this area. This could continue to allow encroachment of trees into areas that were historically more open. Effects include a less diverse landscape that would not provide a mosaic of habitats for species to use.

Road Management Activity - Actions such as road maintenance and administrative use associated with permit administration, data collection, and monitoring of NFS lands are not likely to measurably affect wildlife or specialized habitats (e.g. old growth habitat, snags nor down woody debris) because they generally do not result in vegetation removal or persist for long periods of time. The standing tree and snag component would only be affected if considered a hazard to road users. These activities would not result in any change to fisher habitat, thus no adverse cumulative effects would be expected.

Public Use - Other forest product activities occurring presently and typically on an annual basis are the gathering of pine cones, boughs and commercial gathering of Christmas trees. These activities occur throughout the project area and have little-to-no effect on the landscape due to the unspecific nature of the use and the low impact on the resources (foot traffic, hand tools).

Recreation Maintenance - Routine maintenance of trails and developed and dispersed recreation sites may temporarily displace some wildlife species. Approximately 85 miles of trail are maintained each year within the project area. Routine trail maintenance activities may include brushing; removing blowdown, debris, and hazard trees; repairing or adding waterbars, repairing treads; and repairing or replacing signs. These activities are spread across the district spatially and would not affect fisher habitat.

Public Uses - Operations of outfitter/guides would not result in any change to general and specialized wildlife habitats that listed species may utilize, as they do not involve habitat manipulation. In addition, general public recreational use of the project area is expected to include but is not limited to hiking, camping, fishing, hunting, photography, berry picking, other forest product gathering, Christmas tree cutting, firewood gathering, driving for pleasure, mountain biking, sightseeing, wildlife viewing, cross country skiing, snowshoeing, trapping and snowmobiling. Recreation is likely to increase on all land ownership types, if for no other reason than human population growth. This would increase human disturbance and potentially impact bighorn sheep on all ownerships. There would be no cumulative effects to fisher and their habitat associated with these activities other than possible temporary and local avoidance of an area due to the presence of humans.

Private Land – Private land development may impact suitable forest habitat on non-public lands, and impact connectivity between public lands.

Other Agency Activities - Private land development may impact suitable forest cover on non-public lands, and impact connectivity between public lands. Over-harvesting by trappers – both allowable and incidental trapping with marten traps may be an important source of mortality, particularly where populations are small and fragmented. This can contribute to population declines or prevent a population from increasing. Montana Fish, Wildlife and Parks Proposed 2016/2017 Furbearer Seasons and Quotas (May 13, 2016) ask for comment on a decrease of the fisher trapping quota from 7 to 0 in regions 1 and 2 which includes the project area and Forest. This would eliminate allowable harvest in a large portion of NW Montana for this next season if approved and reduce the risk of trapping a dispersing animal using the project area.

Climate change is likely to alter the distribution and extent of fisher habitat. A warmer climate would reduce the extent of dense, closed canopy forest. Those stands would be more susceptible to large-scale, stand replacing disturbance like fire or insects. Both may at least temporarily increase the amount of snags and downed wood until the next fire, but there would be an open canopy and the stands would not be suitable for fisher. Distributional shifts are one way species respond to climate change (p. 90 in USDA 2010).

Regulatory Framework Findings

Land and Resource Management Plan

The 2015 Forest Plan provides desired conditions, objectives, standards, and guidelines for fisher within the Wildlife Resource. The following are applicable to the actions in this project, and Goals, desired conditions, objectives, standards, and guidelines can be found on the noted pages in the 2015 Forest Plan.

Forestwide Direction

p. 28, **FW-DC-WL-01**: Nests and den sites and other birthing and rearing areas for terrestrial threatened, endangered, proposed, or sensitive species are relatively free of human disturbance during the period they are active at these sites. *The TLTM area has been assessed as a low to non-habitat habitat probability (see "Existing Condition" discussion. Records of known fisher occurrences in the analysis area are limited at best and support the habitat modeling which show low capabilities for supporting fisher habitat. The TLTM project does include a general wildlife design criteria that would protect known dens or nests of sensitive species. Although fisher breeding and denning is not expected in the project area, the Ten Lakes Travel Management project would protect a den site if found. Therefor the TLTM project would contribute progress toward achieving this desired condition.*

p. 32, **FW-GDL-WL-21**: Management activities on NFS lands should avoid/minimize disturbance at known active nesting or denning sites for other sensitive, threatened or endangered species not cover under other forestwide guidelines. *The TLTM area has been assessed as a low to non-habitat habitat probability (see "Existing Condition" discussion. Records of known fisher occurrences in the analysis area are limited at best and support the habitat modeling which show low capabilities for supporting fisher habitat. The TLTM project does include a general wildlife design criteria that would protect known dens or nests of sensitive species. Although fisher breeding and denning is not expected in the project area, the Ten Lakes Travel Management project would protect a den site if found. The TLTM project is designed in accordance with FW-GDL-WL-21.*

p. 90, **GA-DC-WL-TOB-05:** Wildlife move to and from the border with Canada. *The TLTM project does not include vegetation management. The TLTM project proposes spatial and temporal limitations on the existing recreational activities. No effects to connectivity are expected. Please see the "Potential disturbance and connectivity" discussion above. The TLTM project maintains GA-DC-WL-TOB-05.*

Federal Law

Regulation and Executive Orders

- 36 CFR Part 294 Special Areas, Roadless Area Conservation; final Rule
- 36 CFR Part 212 Travel Management
- Executive order 11644, as amended by Executive Order 11989

No effects were specifically identified to fisher from the travel management planning in this area. There are no documented sightings of fisher in this area, and fisher are not known to be affected by recreation. There are no new roads or trails proposed with this project. Cumulative effects of using existing FS roads for trapping was addressed in the cumulative effects section of this document.

Statement of Findings

Alternatives 2 and 3 would have **no impact** on the fisher or its habitat. This determination is based on: 1) the Ten Lake Travel Management project area provides low probability habitat (based on literature) and was assessed primarily as dispersal habitat; 2) documentation of fisher has not been found in recent years (1959 on) in the project area or Galton range; 3) no vegetation management would occur with any alternative; 4) project activities consist of enacting temporal and spatial limits on winter over-snow motorized travel and designating where summer mechanized use can occur and does not propose any new roads or access for trapping.

Alternative 4 **may impact** individuals and/or their habitat, but will not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species. This determination is based on: four season pavilion construction and use in Alternative 4 may cause short-term displacement of fisher using the travel/dispersal habitat or in the rare case, females with kits may be displaced with ongoing use of the hut.

Other Agencies and Individuals Consulted

Communication occurred with Tim Thier, MFWP wildlife biologist to discuss fisher sightings or past trapping that have occurred in the Project Area or Galton range. Discussions of effects of project motorized/non-motorized travel and effects on fisher type of proposed activities within the Ten Lakes herd home range and potential projects within the Woods ranch WMA which is the primary winter range area for this herd.

Irene Teske, wildlife biologist for B.C. Ministry Forestry, Lands, and Natural Resources of Canada was consulted to find out about known fisher activities north of the project area in Canada and trapping seasons in Canada.

Other Wildlife Species of Interest

Big Game

Introduction

Montana has a rich tradition of big game hunting, and has earned a well-deserved reputation for having some of the best big game hunting in North America. Big game species have high economic and social values and are a large contributor to the quality of life in Montana. For the KNF, this group includes mule deer, white-tailed deer, elk, moose, bighorn sheep, and mountain goat. Most of this group is wide-spread throughout North America, with mountain goat having the most restricted range and limited to the mountain ranges of western North America. All six are found on the KNF, with mountain goat again the smallest distribution being limited mainly to the Cabinet and West Cabinet Mountains. Bighorn sheep are also a sensitive species for the Forest and they are analyzed separately within the Sensitive Species section.

Populations of big game species have varied over the decades as they were influenced by many factors including weather, habitat changes and hunting.

General habitat and life history information comes from www.natureserve.org/ (NatureServe Explorer 2015). The following is a summary of the habitat used by each species:

- Both species of deer browse on a variety of woody plants and graze on grasses and forbs. They occupy a variety of habitat types including forests, edges, and openings although

white-tailed deer tend to demonstrate a higher association with cover than mule deer. They move to areas with less snow in the winter (generally low elevations).

- Moose generally browse on woody vegetation or aquatic vegetation. They prefer a mosaic of second-growth forest, openings, and aquatic habitat. They winter in areas with forested vegetation and summer where there is vegetation for shade or water to aid in cooling.
- Elk are primarily grazers of grasses and forbs, but also may browse on woody vegetation when grasses are unavailable. They are found in a variety of habitat types and structural conditions, including open areas, coniferous forests, and brushy clearcuts or forest edges. In winter, they move to areas with less snow such as lower elevations or more opened exposed areas.
- Mountain goats graze on grasses, forbs, mosses/lichens, and browse on woody vegetation. They are commonly associated with alpine or subalpine areas at or above treeline where cliffs/rocky areas are available for escape and security habitat. Mountain goats may move to areas of lesser snow depths in winter to conserve energy.

As the brief description of the big game species' general habitat and life histories demonstrates, a range of habitat use exists. Winter habitat requirements are also somewhat variable; however, all species demonstrate a need for winter ranges that, because of reduced snow depths, would continue to provide foraging opportunities throughout the winter while reducing energy expenditures. The availability and quality of these habitats for big game are influenced through human activities on the landscape. This can include displacement of animals from important winter range during this critical time of the year. Therefore, a main focus of the big game analysis is providing suitable winter range by managing activities and motorized access to maintain low levels of disturbance especially to important habitats.

The Action Alternatives include the development of winter and summer travel management plans within the project area, as well as the construction of a four season pavilion in one action alternative. No vegetation manipulation is proposed in any alternative. No new roads or trails are being proposed, however motorized over-snow seasons of use will be defined as well as defining existing trail miles open to mechanized use (see definitions in the recreation section). Travel management, both motorized and non-motorized would have an impact on natural resources (e.g., big game) and change human use in the project area (the distribution of motorized or non-motorized recreation).

The Ten Lakes Travel Management Area contains summer habitat for white-tailed deer, mule deer, elk, bighorn sheep, and moose. In general, mountain goats would not be expected to be found within the project area due to low amounts of exposed cliff and rocky terrain in the higher elevation alpine or subalpine habitats. Therefore, mountain goats will not be discussed further. White-tailed deer and their habitat were part of a ten year study in the late 1980's looking at winter range habitat. There are currently proposals to study mule deer in the Galton mountain range to learn more about their habitat, especially areas used in the winter. However, no recent studies of elk or moose habitats have occurred within the Project area, so exact winter range boundaries for these species is unclear (Pers. Comm., T. Thier, May-17-2016).

The Ten Lakes Travel Management Area contains winter range habitats for moose and mule deer. Elk and White-tail deer winter range occur in the valley bottoms and lower elevations of the Tobacco Valley, and do not generally occur in the higher elevation areas in the Ten Lakes Travel Management Area. Mule deer winter range occurs on the northwestern edge of the Project area, the Gibraltar Ridge area, and extends outside the TLTM area. Moose winter range within the

Project area include the Gibraltar Ridge area, the Wigwam Creek basin, and also extends outside the TLTM project area (see maps in project file).

Summary of Conclusions

The Ten Lakes Travel Management Project's Action Alternatives would significantly reduce the area where over-snow activities can occur as well as define the start and end dates for seasons of over-snow use. These actions reduce the potential disturbance in the winter range and parturition areas of big game. The Action Alternatives also define summer time use of trails open to mechanized use which reduces disturbance to big game in general.

Regulatory Framework

KNF Land Management Plan (USDA Forest Service 2015)

The 2015 Forest Plan provides overall guidance for the management of the lands on the KNF. It describes the goals, desired conditions, and objectives toward which the management of the land should be directed. And it establishes standards and guidelines to help achieve or maintain the desired condition or conditions, to avoid or mitigate undesirable effects, or to meet applicable legal requirements.

The plan components which provide specific big game resource direction relevant to this project include:

FW-DC-WL-16	FW-GDL-WL-08
FW-GDL-WL-09	FW-GDL-WL-11

In addition, Anderson (2015) provided a winter range document that was used to clarify the intent of the big game guidelines. There are other 2015 Forest Plan components that provide resource direction for a range of wildlife species or habitat conditions that are not specific to big game, but still are applicable to the management of their habitat. The full list of the plan components applicable to big game habitat management are found in the "Regulatory Framework Findings" section of this analysis.

Resource Indicators and Measures

For the big game analysis, the primary resource indicator is the occurrence of activities on winter range during its period of use when big game may be more sensitive to disturbance. (**Error! Reference source not found.**).

Big Game Table 1. Resource Indicators and Measures for Assessing Effects

Resource Element	Resource Indicator	Measure	Used to Address: P/N, or Key Issue?	Source
Winter RangePeriod	Activities occurring on winter range during its period of use	Potential for disturbance and displacement of big game during this period?	No	2015 Forest FW-GDL-WL-08; FW-GDL-WL-09;

Methodology

Winter ranges for each of the big game species found on the KNF were identified in the 2015 Forest Plan. These maps came from a compilation of GIS layers developed by Montana Department of Fish, Wildlife and Parks (MFWP) (Anderson, 2015). These maps showed that elk and white-tailed deer winter range occur more in the valley bottoms and low elevations, and as such, do not generally occur in the TLTM project area. Moose and mule deer winter ranges were identified in the TLTM project area according to the forest layer. Mule deer winter range was previously refined in this area of the Fortine District based off of local knowledge of MFWP and Forest Service area biologists. This resulted in larger mule deer winter range polygons along the western portion of the TLTM project area than shown in the Forest layer. MFWP area Biologist concurred with these winter range areas as they pertained to the Ten Lake Travel Management Area (Pers. Comm. T. Thier, May 17, 2016). These winter range determinations are consistent with the methodology for determining the extent of winter range on a project level, which states that “habitat for native ungulates is managed in coordination with state agencies” (Anderson, 2015).

Data Sources

NatureServe Explorer (2015) is an online resource that compiles information on the ecology, biology, habitat descriptions and relationships identified in research. This information was referenced to provide the general habitat descriptions and use of white-tailed and mule deer, elk, and moose used in this analysis. More detailed descriptions of these big game species and their habitats were found in Toweill and Thomas (2002) which provide a comprehensive synthesis of elk habitat and relationships. MFWP 1998 and MFWP 2006 describe mule and white-tailed deer habitat and relationships in Montana. Big game use and occurrence data comes from MDFWP surveys and subsequent correspondence as well as observation records, NRIS wildlife database, and other agency records (MDFWP).

Assumptions and Limitations

There are no assumptions or limitations associated with this resource analysis.

Affected Environment

Spatial and Temporal Context for Effects Analysis

The project area was selected as the spatial boundary for direct and indirect effects. The entire project area provides summer range for these species. The Action Alternatives include the development of winter and summer travel management plans within the project area, as well as the construction of a four season pavilion in Alternative 4. The project area is an appropriate scale for analysis of summer activities because the entire area provides summer range for the big game identified for this area. This includes the entire area where decisions on travel will occur. No vegetation manipulation is proposed in any alternative and therefore no alternation of habitat will occur. No new roads or trails are being proposed, however over-snow seasons of use will be defined as well as defining existing trail miles open to mechanized use (see definitions in the recreation section). The project area also includes the species winter range areas. Winter effects were analyzed within the identified winter range areas within the project area. These are the areas where over-snow vehicles and wintering animals could occupy the same space.

Temporal boundaries for the big game analysis include both short-term and long-term effects. Short-term effects are those that are expected to last between a few days to a season or portion of two seasons. Generally, once disturbance causing activities have been completed, big game can move back into and use the area. In this project, the building of a four season pavilion may

constitute short-term affects (e.g. short-term displacement). Long-term effects are those expected to last longer than a season or two. For example, limiting areas and time restrictions of over-snow recreation could provide longer-term reduced human activity in the project area.

Existing Condition

Description of the Analysis Area

The 64,177 acre TLTM project area is located within the Fortine Ranger District. Much of the Project Area lies within the Ten Lakes Wilderness Study Area, Inventoried Roadless Areas (IRA's), with other areas in motorized backcountry Management Areas containing few roads. Much of these lands lie in unroaded blocks that provided largely natural vegetative conditions. Much of the past timber harvest within the project area occurred below 4000 feet. Because of the management emphasis and inaccessibility of much of the project areas land base, very little timber harvest or road building has occurred in the higher elevations, with much of the existing harvest adjacent to the existing open roads.

Human use patterns within and adjacent to the project area can be characterized by dispersed summer recreation accessing the area predominately by the one main yearlong open road (Grave creek/Therriault Lakes roads), limited spur roads and trails off these main roads. Trail access is also available in the northwest corner of the project area. The trails are used by hikers, horseback riders and some mountain bike riders as well. There are two small campgrounds as well as numerous dispersed camping sites within the project area. There has been a consistent but not overwhelming human presence. The TLTM project area contains some popular over-snow vehicle use areas and use has been occurring for several decades. Currently, the entire project area is open to over-snow vehicle use with no restriction dates on that use. While the entire area is currently open for use, steep terrain and trees limits the majority of the use to only portions of the project area. See the Recreation section for more information on the existing recreation uses in the Project Area.

Both motorized and non-motorized access can result in disturbances to big game (Cuiti et al. 2012, Canfield et al. 1999, Schultz and Bailey 1978, Freddy et al. 1986, Ward and Cupal 1979). The KNF acknowledges that all types of recreation, whether motorized or non-motorized, can have disturbance impacts on wildlife, including big game. However, most non-motorized users arrive on the KNF and navigate to their chosen non-motorized recreation spot by driving a motorized vehicle on KNF's road system. Additionally, the number of non-motorized users diminishes with increasing distance from a road. (p. 364 USDA 2013).

Existing Over-Snow Motorized Use

The Ten Lakes Snowmobile Club currently grooms about 33.8 miles of over-snow vehicle trails from December 1 through April 1. The groomed route starts at Birch Creek on the main Grave Creek Road (Road 114) and continues on Road 319 where it ends at Big & Little Therriault lakes. This is one of the few open roads and the main year-round open road leading into the most popular over–snow areas on the Fortine District. Access and management opportunities are limited in this area because of Canada to the north, private land west and south of the project area, as well as the grizzly bear motorized standards, and the non-motorized/non-motorized backcountry area designations to the west. All of the groomed areas are on roads that are open year-round to highway legal vehicles. These routes typically cannot be utilized by wheeled vehicles during the winter months due to snow depths.

Currently most of the project area is open to over-snow vehicle use. However in practical terms, much of this area is not actually useable by snowmobiles due to slope (steepness), vegetation

(e.g., too densely forested), dangerous avalanche potential, and personal preferences. The Fortine Ranger District estimates that about 16,166 acres (see recreation section) currently receive "the most common use" based on ground observations, discussions with long-term snowmobilers in the area, and where slope and vegetation do not generally impede snowmobile use. The Fortine Ranger District acknowledges that use can likely occur outside of these areas by more experienced riders, however the majority of the use occurs within these acres. There are currently no restriction dates on the over-snow vehicle use in open areas.

General Effects to Moose and Mule Deer

The responses to big game, such as white-tailed deer, to snowmobiling has been studied by Dorrance et al. (1975). In areas where hunting is allowed, the deer reacted more to snowmobiles, than in areas where hunting was not allowed, and may not as easily habituate to human (snowmobile) presence. The findings in Cuiti et al. (2012) are representative of the impacts of recreation on big game on NFS lands. In Cuiti et al (2012) they found that the "highest levels of vigilance were recorded on public lands where hunting and motorized recreation activities were cumulative compared to the national park during summer, which had the lowest levels of vigilance. Big game is hunted on the KNF, so the findings in Cuiti et al. (2012) are relevant.

Harris, et al. (2014) found that recreation impacts on ungulates increase when it occurs over long periods and across large areas, with disturbances unpredictable in location and time. Because motorized use covers greater area, the numbers of disturbance events increase. White et al. (2005) suggested that active responses by wildlife can be diminished by restricting motorized travel to predictable routes and times, reducing the number of vehicles in a group, and other means. Anderson (2015) recommends that impacts to winter range be minimized by designated routes and / or concentrating the use on a limited area.

A. Over-snow Motorized Vehicle Use on Seasonal Habitats (Winter Range, Birthing/Parturition)

Winter Range

Winter range is one of the most important components of big game habitat. The Forest provides winter range on 989,070 acres for moose and 354,883 acres for mule deer (p. 357 in USDA 2013). Most motorized over-snow vehicle use occurs at higher elevations, which places it above most of the big game winter range on the Forest, which is generally below 6000 feet in elevation. New technology has provided over-snow vehicles that are capable of travel in all snow conditions, allowing access to more areas and higher elevations throughout the winter. This could result in potential disturbance to moose and mule deer over a longer period during the winter, than in the past. Snowmobiles in the earlier decades had to wait for the snow to become harder and more crusted.

On the KNF, there is currently very little overlap between over-snow route, snow use areas, and big game winter range (p. 360 in USDA 2013). Most winter range occurs at lower elevations and most over-snow routes occur in higher elevations where the snow conditions are more consistent. The largest overlap is with moose winter range, mainly because there is so much moose range on the Forest (p. 357 in USDA 2013) Given the very limited overlap with big game winter range, the effects of the existing over-snow routes and snow use areas is small (1% overlap) (p. 360 in USDA 2013). Although there are many miles of snow use routes within moose winter range, the overall amount of range on the Forest is so large, the effects are diluted (p. 359 in USDA 2013).

The TLTM project area includes portions of the available winter range in the area for mule deer and moose. Because of different winter range requirements and habitat use, the amount and

location of winter range for each species varies. Although the boundaries of identified winter ranges would not change dramatically over time, big game use is expected to shift somewhat as the suitability of winter range changes as a result of snow depth.

Mule deer winter range occurs on the northwest side of the Project area and on the base of Gibraltar Ridge. Moose winter range occur within the Project area on the base of Gibraltar Ridge, along the hill slope and the Wigwam and portions of the Wolverine Creek Basin. In both species, winter range extends also outside the TLTM project area in lower elevations (Big Game Figure 1).

As stated earlier, currently most of the project area is open to over-snow vehicle use as snow conditions permit. However, much of this area is not actually useable by over-snow vehicles due to overly steep slopes, densely forested vegetation that restrict the passage of over-snow vehicles, dangerous avalanche potential, and personal preferences. The Gibraltar Ridge area does not currently see much snowmobiling as recreationists drive past this area to the parking lot at Birch creek where snowmobiles are unloaded and used to access their preferred areas at higher elevations. Within the moose winter range in the Wigwam and Wolverine areas, current snowmobile use takes place mainly on the groomed routes (which are year round open roads). Only one groomed route enters into moose winter range at the trailhead to Wolverine lakes. From this area, over-snow vehicles can use trails or unmarked routes to enter the Wolverine basin and Wolverine cabin, or to go south and outside of the moose winter range area along the trail to horse camp. The Wolverine Lakes basin is located at the western edge of the moose range and is one of the most popular destination areas. The main Ten Lakes Road and groomed route skirts the edge of Wigwam drainage and the edge of the moose winter range. The Wigwam drainage north of the groomed trail is not heavily used or accessed from the main trail due to high tree density which impedes over-snow vehicle travel. Similarly, the mule deer winter range on the northwest edge of the project area is not used heavily by over-snow vehicle riders because of the lack of access due to private ownership to the west. Burma trail is the only easy access to this area and it is not preferred by over-snow vehicle riders.

Birthing/Parturition

Human activity can result in the disturbance of big game. High levels of disturbance or disturbance during critical times of the year could result in the displacement of game from their preferred habitats, potentially impacting health or reproductive success, or resulting in an increased risk of mortality. Human access and the type and level of activity are largely influenced by motorized access.

The birthing/parturition period for big game species within the project area generally occurs in May and June. The entire TLTM project area provides habitat for calving for big game, including mule deer and moose. Therefore, no specific areas have been identified.

Currently there are no restriction dates on the over-snow vehicle use in open areas. Therefore, spring snow conditions and general recreational use patterns dictate how long over-snow vehicles will recreate into the spring. Snow conditions can be suitable for over-snow vehicles to continue beyond April 1. However observational trends seem to show school spring break in late March and early April results in most over-snow vehicle users putting away their skis and snowmobiles and turning to more spring related activities

Portions of TLTM area also coincide with backcountry management areas (MA1c, MA5 a and b) and Inventoried Roadless Areas (Ten Lakes and a small portion of Tuchuck) that reduce disturbance during birthing and parturition. Because these backcountry management areas tend to be large and remote, they generally have little human disturbance.

Some studies of elk habitat selection during the calving season find that elk focused on forage components (Dalke et al. 1965, Reardon 2005), whereas other studies found a mix of forage and cover variables to be important (Johnson 1951, Troyer 1960, Harper et al. 1967). Langley and Pletscher (1994) looked at birth sites for moose in northwest Montana and found that snow cover was still present, patchy, or very recently melted. Some moose chose sites with nearly three times more moose shrub coverage in their calving areas compared with others in the study. In either case, available forage or minimal snow cover would preclude the conditions generally desired for snowmobiling. In other words, spring snowmobiling areas and areas preferred by big game in the spring as parturition habitat are almost mutually exclusive in that the areas that would be suitable for spring snowmobiling (i.e. more snowpack) would not typically overlap with spring big game parturition habitat (less snowpack). Therefore, this habitat element will not be discussed further.

B. Existing Over-Snow Non-Motorized Use

Winter Range

In some cases ungulates may react to a person on foot more than a motorized vehicle (Eckstein et al. 1979, Richen and Lavigne 1978, Lavigne 1976). White et al. (2005) found that some animals in Yellowstone can habituate to over-snow motorized use and display little or no reaction unless they are approached on foot. Parker et al. (1984) observed “Greater flight distances occur in response to skiers or individuals on foot than snowmobiles, suggesting that most detrimental disturbances to the wintering animal is that which is unanticipated.” Thompson and Henderson (1998) reported an increasing occurrence of elk not responding to predictable and harmless human activities on winter ranges.

Currently, limited non-motorized over the snow use occurs within the project area. There are two cross-country ski trails that also use roads in the area. These trails occur on non-groomed existing roads. Use and access depend upon snow conditions. The majority of the existing use occurs in the lower elevations off open roads, and generally not in the same areas of winter range. More recently, non-motorized snow bikes are available to recreationists and may be used in the Project area. Snowshoeing may also occur in the lower elevations, however steep terrain and limited road/route access (discussed above) generally limit interior use of the project area to all but the extreme users.

Birthing/Parturition

As with over-snow motorized use, areas used for skiing and snowshoeing are almost mutually exclusive to spring habitat in that areas used for spring non-motorized activities (more snowpack) would not typically overlap with spring habitat for parturition (less snowpack). These ski trails typically experience patchy snow conditions by April 1st.

Effects to big game during this spring period of time would be similar to what is described for motorized over snow use. However the area used (potential parturition habitat disturbed) and overall use by cross country skiers/snowshoers is currently much less than the motorized use (see recreation section). In other words, spring skiing and snowshoeing and areas preferred by big game in the spring as parturition habitat are almost mutually exclusive in that the areas that would be suitable for spring snowshoeing / skiing (i.e. more snowpack) would not typically overlap with spring big game parturition habitat (less snowpack). Therefore, this habitat element will not be discussed further.

No changes to over-snow non-motorized use are proposed as part of the Ten Lakes Travel Management Analysis, therefore no effects are expected as part of this proposal.

C. Existing Summer Non-motorized Use

There are approximately 88 miles of National Forest System trail in the Project Area. All of these miles are open to hiking, stock, and mechanized use (mountain biking). The most dominant use of the trails is hiking followed by stock. All trails are currently open to all three of these uses and there is no restriction on mechanized uses in the project area. Some research on the effects of recreation on big game has been conducted at the Starkey Experimental Forest in Oregon. Wisdom et al. (2005) found that off-road activities such as ATV use, hiking, mountain biking, and horseback riding appear to have a "substantial effect on elk behavior" (p 6 in Wisdom et al. 2005). Deer did not appear to move as much in response to the activities, but they may have been responding by making small behavioral changes such as using dense cover.

The trail uses described above do not typically occur at the same time parturition habitat are used by big game.

Spring parturition habitat for big game can occur at lower elevations, but also occurs at higher elevations on south and west slopes. As described above, the TLTM project area lies within the Ten Lakes Wilderness Study Area, Inventoried Roadless Areas (IRA's), with other areas in motorized backcountry MA containing few roads. Human use patterns within and adjacent to the project area can be characterized by dispersed summer recreation accessing the area predominately by the one main yearlong open road (Grave creek/Therriault Lakes roads), limited spur roads and trails off these main roads. As snow levels recede in the spring, the main access (Grave creek road) slowly becomes accessible over time, with access to the Therriault Lakes campgrounds sometimes not available until early June. This factor, in addition to the relative inaccessibility of the project area compared to roaded areas, allows minimal human use during the same time wildlife could be using the area for birthing/parturition.

Environmental Consequences

Currently, 64,177 acres are available to over-snow use (Big Game Table 2). All motorized roads/routes within the project area are open to over-snow vehicles, although some receive more use than others. Existing non-motorized over-snow activities do occur within the project area and include, skiing, snowshoeing, and potentially mechanized snow bikes. Existing summer recreation consists of trails use by hikers, stock, and some mechanized use (mountain bikes etc.).There are currently 88 miles of trail open to these activities with no current restrictions on mechanized use.

Alternative 1 – No Action

Alternative 1 would continue the current over-snow situation and summer mechanized use. There are currently no restriction dates within open areas and season of use is dependent upon snow and trail conditions. Over-snow activities in this alternative could occur when moose and mule deer are on their winter range however lack of snow would typically limit over snow use in spring big game parturition habitat in low elevations and snow on roadways would limit access to hiking trails in higher elevation snow-free areas. Mechanized use, as well as hiking and horse use would continue to be allowed on all existing trails.

Alternatives 2, 3, and 4 – Direct and Indirect Effects

Project Design Features and Mitigation Measures

There are no design features or mitigation measures for big game at this time.

Action Alternatives

All action alternatives have over-snow seasonal dates during which over-snow activities are allowed (See Big Game Table 2). Alternatives 2 and 3 propose two seasons of use, while Alternative 4 would have one season of use proposed. Alternative 2 proposes two seasons of over-snow use, each with a different amount of area, and roads/routes that are open to over-snow use. Season one runs from Dec. 1 through March 31st and overlaps with the time winter range is important. Season two runs from April 1st to May 31st, with the end coinciding with the beginning of parturition. Alternative 3 proposes the same two seasons of over-snow use as in Alternative 2, but with a different amount of area, and roads/routes that are open to over-snow use. Alternative 4 proposes one season of over-snow use. This season would run from Dec. 1 through March 31st. This alternative has the smallest amount of area, and fewest roads/routes that are open to over-snow use of the three action alternatives (Big Game Table 2). Alternative 4 also includes the construction of a four season pavilion.

Big Game Table 2. Acres of Allowable Over-Snow Area by Season, and Alternative within the Ten Lake Travel Management Project Area

Season of Use	Alternative 1 (No Action) One season. Limited only by snow access	Alternative 2 Season 1: Dec.1-March 31 Season 2: April 1-May 31	Alternative 3 Season 1: Dec.1-March 31 Season 2: April 1-May 31	Alternative 4 One season only Dec. 1 – March 31
Season 1 Acres Over-Snow Vehicle Use Available	64,177	36,703 (57% of existing condition)	48,605 (76% of existing condition)	945 (1% of existing condition)
Season 2 Acres Over-Snow Vehicle Area Use	64,177	0 acres of Areas used (Routes only)	4,380 (7% of existing condition)	NA

All alternatives analyze the potential effects of over-snow use on moose and mule deer winter range. These potential effects are quantified by comparing the allowed over-snow use areas within the mapped winter range habitat within by alternative and season of use.

A. Over-snow Motorized Vehicle Use on Seasonal Habitats

Important Habitats or Seasons of Activity

Winter Range

As discussed in the Existing Condition section, the impacts from existing motorized over-snow vehicle use routes and areas on winter range is very small.

The 2015 Forest Plan has two guidelines related to activities occurring on winter range during its period of use (December 1 through April 30). The intent of both FW-GDL-WL-08 and FW-GDL-WL-09 is to avoid or minimize disturbance associated with management activities to native ungulates on winter range during this timeframe, especially during the critical mid-winter period.

For Alternatives 2, 3 and 4, Season 1 (December 1st through March 31st) falls entirely within the winter range period. Only half of Season 2 (April 1st through May 31st) falls within the winter

range period, which ends April 31st. Both time periods were analyzed as to their effects of over-snow travel in the winter range areas.

Big Game Table 3. Acres/percentage of Moose winter range affected by over-snow area use by alternative, seasons 1 and 2 within the Ten Lake Travel Management Project Area.

Seasons	Alternative 1 (No Action) One season. Limited only by snow access	Alternative 2 Season 1: Dec.1-March 31 Season 2: April 1-May 31	Alternative 3 Season 1: Dec.1-March 31 Season 2: April 1-May 31	Alternative 4 One season only Dec. 1 – March 31
Season 1: acres & % potentially affected by over-snow use	4,981 acres (100% of winter range areas)	2,700 (54 % of winter range areas)	2,700 (54 % of winter range areas)	0 (0% of winter range areas)
Season 2: acres & % potentially affected by over-snow use	4,981 acres (100% of winter range)	0 (Routes Only)	375 (8 % of existing condition)	NA

Big Game Table 4. Acres/Percentage of Mule Deer Winter Range Affected by Over-Snow Area Use by Alternative, Seasons 1 and 2 Within the Ten Lake Travel Management Project Area.

Mule Deer	Alternative 1 (No Action) One season. Limited only by snow access	Alternative 2 Season 1: Dec.1-March 31 Season 2: April 1-May 31	Alternative 3 Season 1: Dec.1-March 31 Season 2: April 1-May 31	Alternative 4 One season only Dec. 1 – March 31
Season 1: acres & % potentially affected by over-snow use	11,027 acres (100% of winter range)	0 acres (0 % of winter range affected)	2,040 acres (19 % of winter range affected)	0 acres (0% of winter range affected)
Season 2 acres & % potentially affected by over-snow use	11,027 acres (100% of winter range)	0 acres (0% of winter range	0 acres (0% of winter range	NA

Currently all acres within the moose and mule deer winter range are available to over-snow vehicles as soon as snow conditions permit. However, not all acres are used due to accessibility

and preference. This includes the Mount Gibralter ridge winter range areas for moose and mule deer.

Moose winter range: There are two areas of potential moose winter range located within TLTM project area, the Mount Gibralter area and the Wigwam/Wolverine area (Big Game Figure 1). All Action Alternatives would remove over-snow motorized use in the Mount Gibralter winter range area. This would be a 46% decrease of allowable over - snow use on the moose winter range in the project area. Alternative 2 and 3 (season 1) would allow over-snow motorized use on the Wigwam/Wolverine winter range area. Although the entire area in these two alternatives allow over-snow motorized use, the majority of the over-snow motorized use occurs in the western quarter of this winter range area as users are accessing Wolverine cabin in the Wolverine Lakes basin (Big Game Figure 2 & 3). This accounts for approximately 14% of the Wigwam/Wolverine moose wintering area and would reduce potential motorized use on 54% of the entire moose winter range (Big Game Table 3). Alternative 2 Season 2 would eliminate the area use in the Wigwam/Wolverine winter range and would allow use only on designated routes. Alternative 3, season 2 would reduce use in this winter range area to 375 acres or 14% of this area, and would allow use from the open route (from road 7086) into Wolverine cabin and basin as described above (Big Game Figure 4). Alternative 4 would eliminate most potential impacts on moose winter range areas because over snow use would be confined to designated routes or areas that do not overlap potential winter range areas, and would be limited in time from December 1st through March 31st only (Big Game Table 3).

All Action Alternatives would retain use on some of the existing groomed as well as ungroomed routes (mainly consisting of existing roads and trails). All routes proposed in the action alternatives would consist of routes or roads already used in the existing condition. All Action Alternatives would retain the route that accesses the southern portion of the Wigwam/Wolverine winter range area (year-round open road 7086).

Mule Deer winter range: In addition to the mule deer winter range area found along Mount Gibralter ridge, potential mule deer winter range is also located along the western edge of the project area extending to Canada (Big Game Figure 1). All Action Alternatives remove over-snow motorized use in the Mount Gibralter winter range area. This would be a 25% decrease of allowable over the snow use on the mule deer winter range in the project area. Alternative 3, season 1 is the only action alternative that would allow over-snow motorized use on the mule deer winter range area occurring on the western portion of the TLTM project area (Big Game Figure 5). This would affect 2,040 acres of mule deer winter range or 19% of the entire mule deer potential winter range within the TLTM project area. No other action alternatives would allow area use within the potential mule deer winter range areas.

All Action Alternatives retain use on some of the existing groomed as well as ungroomed routes (mainly consisting of existing roads and trails). All routes proposed in the action alternatives would consist of routes or roads already used in the existing condition. Alternatives 2 and 3 (season 1) would retain a route that bisects the northern portion of this winter range and is used to access over-snow areas in the Wolverine Lakes area. This same route is not proposed in season 2 of these alternatives. No roads or routes proposed in season 2 (April 1 – May 30) of the action alternatives would bisect mule deer winter range. Alternative 4 would have no roads or routes proposed that bisect mule deer winter range.

Summary: All Actions Alternatives would result in a measureable reduction of over-snow motorized use within both the mule deer and moose winter range areas from the existing condition. All Action Alternatives would set timeframes in which over-snow use could occur within the project area and therefore within the winter range areas. This would limit the

timeframe over-snow use could occur and potentially reduce number of total trips in this area from the existing condition. Alternatives 2 and 3 would include two seasons of use, each with different areas where over-snow motorized would be allowed. Only half of Season 2 (April 1st through May 31st) falls within the winter range period, which ends April 31st. All Action Alternatives would remove over-snow motorized use in the Mount Gibralter winter range area which provides both moose and mule deer winter range. This would reduce potential effects on large portions of available winter range in the TLTM project area. Alternative 4 would reduce potential over-snow motorized effects to wintering animals the most, as it would allow only one season of use and limits this use to mainly existing over-snow routes. However, all Action Alternatives would restrict motorized travel to designated routes, and concentrate use to a limited area. All alternatives meet the intent of Forest-wide guidelines WL-08 & 09, as well as literature recommendations to minimize disturbance associated with management activities on winter range by designating routes and concentrating use to a limited area.

Alternative 4 proposes the construction of a four season pavilion to be located near the Big Therriault Campground along a wide spot in the road. This is not located within winter range areas would therefore have no effect to wintering animals.

Birthing/Parturition Period

The 2015 Forest Plan has one guideline related to activities during the birthing/parturition period. The intent of FW-GDL-WL-11 is to avoid or minimize disturbance to native ungulates during this period.

The birthing/parturition period for big game species within the project area generally occurs in May and June. All action alternatives would reduce the potential impacts big game during this period by eliminating over snow use or designating routes. However, birthing areas chosen by big game tend to have low or no snow depths. As stated earlier, in effect motorized over-snow vehicle use and calving areas would be essentially mutually exclusive.

Alternative 4 proposes the construction of a four season pavilion to be located adjacent to Big Therriault Campground along a wide spot in the road. This is not located within birthing or parturition areas as it is located on an open road and would therefore have no effects birthing or parturition.

B. Effects of Over-Snow Non-Motorized Use

No changes to over-snow non-motorized use are proposed as part of the Ten Lakes Travel Management Analysis, therefore no new effects are expected as part of this proposal.

C. Effects of Mechanized Use

The Ten Lakes Travel Management Project Action Alternatives propose to decrease the available miles of trails open to mechanized use (mountain bikes) in the Project Area. No other changes to the non-motorized trail system in the project area are proposed.

While some of the trails experience more use throughout the summer than others (see recreation section), none of the trails experience high levels throughout the entire season.

Joslin et al. (1999) recommended that designated routes be established within area closures to make human disruption of summer range as predictable as possible. They also recommended reduction of human intrusions (through road or trail restrictions and / or education) into areas where ungulates are limited to easily identified habitat areas (such as areas used by bighorn sheep

and mountain goats) or where limited area of habitat are either desirable or exceptionally productive.

All Action Alternatives would define which trails are available to mechanized use. This would increase the likelihood of knowing where to expect mountain bikes to occur as opposed to the current situation, where they could occur on every trail. All Action Alternatives allow mechanized use with Alternative 2 allowing the fewest miles of mechanized use and percentage of total trails with 16 miles (19% of total trails). Alternative 4 would allow mechanized use on 25.1 miles (29% of total trail miles) while Alternative 3 proposes the most miles of mechanized use with 37.6 miles or 44% of the total trail miles in the project area.

While Alternative 2 would have the greatest reduction in the potential to displace big game or result in potential conflict between trail users and big game, all action alternatives would reduce the existing levels (all trails available) available to mechanized use as well as defined areas of use.

Cumulative Effects

The “Existing Condition” section describes relevant past and present factors affecting travel and use of the project area which influences the relative disturbance to winter range and birthing / parturition. This Cumulative Effects section summarizes the past actions as well as further describes ongoing and other reasonably foreseeable contributions potentially impacting disturbance during these important habitats or seasons of activity.

Spatial and Temporal Context for Cumulative Effects Analysis

The cumulative effects boundary for wintering animals includes the moose or mule deer winter ranges within the project areas, as well as those winter range areas directly adjacent to the project area. Some of the winter range polygons encompasses area within and outside the project area so it is probable that wintering animals could use both areas. These areas were chosen as the appropriate scale for the cumulative effects analysis as effects to winter range that encompasses in and outside the project area could influence big game use of available habitats within the project area.

Temporal boundaries for the big game analysis include both short-term and long-term effects and were also described under “Spatial and Temporal Context for Effects Analysis.” Short-term effects are those that are expected to last between a few days to a season or portion of two seasons, such as big game moving back into a treatment area once the disturbing activities have been completed. Long-term effects are those that are expected to last longer than a season or two and may include the maintenance of understory forage species through proposed treatments or changes in access management.

Past, Present, and Reasonably Foreseeable Activities Relevant to Cumulative Effects Analysis

Past Actions

Over-snow use has been occurring for many years within the Project Area. In 1977, Congress passed the Montana Wilderness Study Act designating the Ten Lakes a Wilderness Study Area. The act requires the Forest Service to administer these acres to “maintain their presently existing wilderness character and potential for inclusion in the National Wilderness Preservation System”. Trail grooming of the area has occurred every year since 1990 and over-snow use has been consistent since before 1977.

Activities affecting big game habitat have changed in recent years. The amount of open roads has dramatically dropped in the past several years as a result of restricting/reclaiming roads through decisions intended to facilitate grizzly bear recovery. This has also resulted in an improvement in secure habitat on NFS lands within the project area for big game.

Alternatives 1, 2, 3, and 4 – On-going and Reasonably Foreseeable Actions

Reasonably foreseeable actions include those federal, state, or private activities that are ongoing or scheduled to occur, independent of this federal action. Those current and foreseeable actions in the project area that were determined to be appropriate for inclusion in the analysis of environmental effects are listed at the beginning of Chapter 3. Ongoing federal actions have been considered and included when formulating the existing condition for this project area.

Vegetation Management - The Galton Vegetation Management Project includes the entire Ten Lakes Travel Management project area. No harvest activities would occur within the WSA boundary. The following are potential harvest acres within the Ten Lakes boundary for two alternatives that could be selected. Alternative 1: 6,150 acres of Ecosystem Burning, 178 acres of Regeneration Harvest. Alternative 3: 899 acres of Ecosystem Burning, 168 acres of Ecosystem Burning designed to benefit whitebark pine, and 74 acres of Regeneration Harvest. Some of these activities would occur within moose and mule deer winter and summer range, both inside the project area and adjacent to the project area and will be largely beneficial and assist in maintaining habitat for these species.

Additionally, B.C. Ministry of Forestry, Lands and Natural Resources in Canada planned two high elevation burns northwest of the project area for the fall of 2016, with other burns planned for 2017 in Phillips creek on the west side of the planning area. These prescribed burns are designed to benefit mule deer, especially in the higher elevations, as well as bighorn sheep (Oestrich, 2016). These projects will be beneficial and assist in maintaining habitat for species that use habitat in both the U.S. and Canada.

Noxious Weed Control - Efforts to treat present infestations of noxious weeds and to eradicate infestations of new invaders are ongoing. All activities will comply with the Kootenai National Forest Invasive plant Management ROD (2007). Weed treatment activities would not lead to any adverse effects on ungulates, or their habitat because treatments isolate non-beneficial weed species and would actually benefit forage (USDA Forest Service 1997, 30). These treatments will benefit existing forage and will help to maintain habitat in the project area.

Fire Suppression – Efforts in wildfire suppression could occur in this area. This could continue to allow encroachment of trees into areas that were historically more open and provided forage areas both for summer and winter range. Effects include a less diverse landscape that would not provide a mosaic of habitats for species to use.

Road Management Activity - Actions such as road maintenance and administrative use associated with permit administration, data collection, and monitoring of NFS lands are not likely to measurably affect wildlife or specialized habitats (e.g. old growth habitat, snags nor down woody debris) because they generally do not result in vegetation removal or persist for long periods of time. The standing tree and snag component would only be affected if considered a hazard to road users. These activities would not result in any change to big game habitat, thus no adverse cumulative effects would be expected.

Public Use - Other forest product activities occurring presently and typically on an annual basis are the gathering of pine cones, boughs and commercial gathering of Christmas trees. These activities occur throughout the project area and have little-to-no effect on the landscape due to the

unspecific nature of the use and the low impact on the resources (foot traffic, hand tools). These activities would be more prominent in the lower elevation habitat, where there are more open roads. Within and adjacent to the project area boundaries, minimal roads in this area reduces some uses, and therefore would occur on a minor percentage of the big game habitat available.

Firewood cutting in the project area will continue to occur. The effect of this would be minor adjustments to movement of big game using the area. This activity would occur next to open roads, which are limited within and adjacent to the project area and are more likely to occur at lower elevations.

Ongoing hunting activities are regulated by the MFWP. The Forest Service influences hunter access through road management. Hunting activities within the analysis area will cumulatively contribute to minor short-term effects (during the general hunting season) to habitat security. Effects from hunting vary with activity levels and can include short-term disturbance. The potential increase of early seral habitat creation through proposed prescribed burns may draw hunters to these areas. However these proposed areas are dispersed throughout the mainly unroaded project area, and would provide options for areas for big game to use. Hunting levels within the project area are not expected to significantly change due to the action alternatives, since no new road construction will occur.

Recreation Maintenance - Routine maintenance of trails and developed and dispersed recreation sites may temporarily displace some wildlife species. Approximately 85 miles of trail are maintained each year within the project area. Routine trail maintenance activities may include brushing; removing blowdown, debris, and hazard trees; repairing or adding waterbars, repairing treads; and repairing or replacing signs. These activities are spread across the district spatially and do not occur frequently within and adjacent to the project area would cumulatively contribute to minor short-term effects.

Special Uses - Operations of outfitter/guides would not result in any change to general and specialized wildlife habitats that listed species may utilize, as they do not involve habitat manipulation. In addition, general public recreational use of the project area is expected to include but is not limited to hiking, camping, fishing, hunting, photography, berry picking, other forest product gathering, Christmas tree cutting, firewood gathering, driving for pleasure, mountain biking, sightseeing, wildlife viewing, cross country skiing, snowshoeing, trapping and snowmobiling. Recreation is likely to increase on all land ownership types, if for no other reason than human population growth. This would increase human disturbance and potentially impact big game on all ownerships. There would be no cumulative effects to big game and their habitats associated with these activities other than possible temporary and local avoidance of an area due to the presence of humans.

Private Land – Private land development may impact suitable forest habitat on non-public lands, and impact connectivity between public lands.

With population growth and development, it is reasonable to assume that some corresponding increase in human use of NFS lands is likely to occur. Recreational activities such as sightseeing, hiking, cross-country skiing, camping, snowmobiling, fishing, and firewood cutting are ongoing and expected to increase over the next 10 years. This increase is likely to be gradual and incremental and tend to be focused on areas along or near roads open to motorized traffic. Big game may, over time, experience more frequent disruption of their daily activities if they are in proximity to roads, though, as discussed earlier, these areas receive proportionately less use by big game than more secure habitats. This low level of increase of recreational use would not

appreciably change the existing condition as big game already tend to avoid open roads. Potential cumulative effects to big game from recreational activities in the project area would be minimal.

Based on the nature and magnitude of potential cumulative effects to big game independent of this project, there are no cumulative effects anticipated that would change the effects determination to big game from implementation of the proposed federal action.

Summary of Cumulative Effects

The temporal occurrence of forest uses such as summer activities (camping, hiking, and berry picking) versus fall (hunting and firewood cutting) or winter (skiing and snowmobiling) activities, and the scheduling of management actions to avoid key time periods (winter range and birth / parturition) when big game may be more sensitive to human disturbances, allow for the avoidance of measurable cumulative impacts to moose and mule deer. There may be some situations where isolated or localized cumulative effects may occur, due to an overlap of forest activities, but these situations are typically short in duration, and do not persist through the lifecycle of any one species, either temporally or spatially.

Regulatory Framework Findings

Land and Resource Management Plan

The 2015 Forest Plan provides desired conditions, objectives, standards, and guidelines for big game within the Wildlife Resource. The following are applicable to the actions in this project:

Forestwide Direction

p. 28, **FW-DC-WL-02**: A forest-wide system of large remote areas is available to accommodate species requiring large home ranges and low disturbances, such as some wide-ranging carnivores (e.g., grizzly bear). *Large areas of secure habitat are found within the project area that currently provide for grizzly bears and elk also provide security for other big game species. These secure habitat areas are found in association with IRAs and MAs that provide non-motorized or limited motorized access during the year. Limited prescribed burning activities would occur in these areas and would not change their existing management with respect to motorized access. Adherence to management direction for grizzly bears (FW-STD-WL-02) and elk (FW-GDL-WL-10, FW-OBJ-WL-02), backcountry areas, and IRAs would continue to maintain secure habitat within the project area for big game use. Although people may still recreate in non-motorized areas, the likelihood of disturbance to big game will be lower and therefore security will be greater. Therefore, the TLTM project would contribute to progress toward achieving FW-DC-WL-02.*

p. 31, **FW-GDL-WL-08. Big Game**: Management activities should avoid or minimize disturbance to native ungulates on winter range between December 1 and April 30, with the exception of routes identified on MVUM as open to motor vehicle use. Management activities that occur on winter range during the winter period should concentrate activities to reduce impacts to native ungulates. *All action alternatives would reduce the area currently allowed for motorized over-snow vehicles. See "Winter Range" within the "Direct and Indirect Effects" discussion. Therefore, the TLTM project was designed in accordance with FW-GDL-WL-08.*

p. 31, **FW-GDL-WL-09. Big Game**: Management activities should be avoided ("or minimized" Anderson, 2015) on native ungulate winter range areas during the critical mid-winter period (January and February) when now depth most likely influence movement and availability of forage. *Proposed management would reduce the area and timeframe over-snow motorized*

vehicles are currently allowed. See "Winter Range" within the "Direct and Indirect Effects" discussion. Therefore, the TLTM project was designed in accordance with FW-GDL-WL-09.

p. 31, **FW-GDL-WL-11. Big Game**: Management activities should avoid or minimize disturbance to native ungulates during the birthing/parturition period. *Proposed management would reduce the area and timeframe over-snow motorized vehicles are currently allowed and therefore would reduce the potential effects to big game during this important period. See "Birthing/Parturition Period" within the "Direct and Indirect Effects" discussion. Therefore, the TLTM project meets the intent of FW-GDL-WL-11.*

Management Area Direction

p. 62, **MA5a and b, MA1c-DC-WL-01 (Backcountry)**: Large remote areas with little human disturbance such as those found in these MAs are retained and contribute habitats for species with large home ranges. Habitat conditions within these management areas contribute to wildlife movement within and across the Forest. These areas also provide foraging, security, denning, and nesting and other birthing and rearing habitat areas for terrestrial threatened, endangered, proposed, or sensitive species. *Large areas of secure habitat are found within the project area that currently provide for grizzly bears and elk also provide security for other big game species. These secure habitat areas are found in association with IRAs and MAs that provide non-motorized or limited motorized access during the year. Limited prescribed burning activities would occur in these areas and would not change their existing management with respect to motorized access. Adherence to management direction for grizzly bears (FW-STD-WL-02) and elk (FW-GDL-WL-10, FW-OBJ-WL-02), backcountry areas, and IRAs would continue to maintain secure habitat within the project area for big game use. Therefore, the TLTM project would contribute to progress toward MA5a and b, MA1c - DC-WL-01.*

Federal Law

State Deer Management Plans

State management of mule deer and white-tailed deer are guided by two documents: "Ecology and Management of Mule Deer and White-tailed Deer in Montana" (MDFWP 1998) and "Ecology of White-tailed Deer in the Salish Mountains" (MDFWP 2006). Both describe the habitat and ecology of deer within different areas of the state, population characteristics, and management implications and recommendations. Recommendations regarding habitat management include managing for a diversity of vegetative conditions and maintaining the availability and suitability of winter ranges. Implementation of the TLTM project would address these recommendations.

Summary of Findings

Alternative 1, would maintain existing level of use which occurs over portions but not the entire winter range habitats for moose and mule deer. Although over-snow use can occur over the entire project area including the winter range areas, however terrain, tree cover and personal preference limit use to a portion of the area, and does not include the majority of the winter ranges in the project area. Therefore potential disturbances are not expected to result in a level of disturbance that would negatively affect big game use or individual health. Also, winter range and birthing / parturition habitat would not be changed.

The Ten Lakes Travel Management Project's Action Alternatives would significantly reduce the area where over-snow activities can occur as well as define starting and ending dates for seasons of over-snow use. The Action Alternatives also define summer time use of trails open to

mechanized use (see Recreation section for definitions). No changes to summer time motorized use of either roads or non-motorized use of trails are proposed.

Alternatives 2 and 3 would allow over-snow activities during the winter (Dec 1 – March 31) and during spring period (April 1 – May 31). Activities occurring on winter range during the winter period would not be expected to result in a level of disturbance that would negatively impact big game use of the winter range or individual health. Similarly, there is minor potential to impact big game during the birthing and parturition periods. Spring use could expose females with young to disturbance which could result in calf mortality. Both alternatives would eliminate the Gibraltar Ridge wintering area from over snow use and would reduce the disturbances in remaining suitable winter ranges within the project area. Therefore, big game would benefit from the reduced recreational use in the long term by proposed action.

Alternative 4 would allow over-snow activities during the winter (Dec 1 – March 31) on specific trails which further reduce the disturbance to big game compared to the other three alternatives. This alternative would prohibit use within the mapped winter ranges for all big game species. This alternative would eliminate potential disturbance by over snow use during parturition.

Other Agencies and Individuals Consulted

Tim Thier, MDFWP Wildlife Biologist

Communications consisted of the type of proposed actions occurring within big game winter range, evaluation of winter range conditions within use area, and determining the potential for disturbance during the winter period associated with the proposed use.

Allana Oestreich, Habitat Biologist from B.C. Ministry of Forestry, Lands and Natural Resources

Communications included informational exchanges of proposed habitat projects on both sides of the border.

Management Indicator Species

The two management indicator species identified in the KNF Forest Plan are elk security habitat, and a landbird assemblage. A landbird assemblage (insectivores) was propose to aid in analyzing the effects of moving towards the desired conditions for vegetation (KNF Forest Plan). Because vegetation management is not part of the proposed action for the TLTM project, this species was not analyzed for this project. Elk security habitat is analyzed during the general hunting season (October – November 30th) and is affected by motorized routes and change in vegetative conditions. No changes to either of these items during this timeframe are part of the proposed action for the TLTM project, therefore this item was not analyzed for the TLTM project.

Other Species

Migratory bird analyses focuses on the effects of a federal action on migratory bird habitat. Key stressors to migratory birds (identified in the Forest Plan) generally involve changes in their habitat (vegetation management/burning) or displacement (fire suppression) or actions causing mortality (wind turbines) (KNF Forest Plan). The TLTM project does not include vegetation management or other actions that would affect this habitat or cause displacement, therefore this species was not analyzed for the TLTM project.

Economics

Introduction

This specialist report provides (1) context to the economic and social conditions surrounding the Ten Lakes Travel Management Plan and (2) an analysis of potential impacts from a decision on designated uses in the Ten Lakes Travel Management Project Area.

For local residents and non-local visitors, the Ten Lakes project area offers recreation opportunities including but not limited to: hiking, fishing, stock, biking, camping, hunting, gathering forest product, snowmobiling, off-highway vehicle use, and cross country skiing. In the 2007 settlement agreement with the Montana Wilderness Association, the KNF agreed to perform travel planning in the Ten Lakes Wilderness Study Area. The project area is larger than the WSA to capture common entrance points to the WSA.

Regulatory Framework

Federal laws regulations, and policy that guide analysis of social and economic conditions related to travel management planning include:

- Amendments to **36 Code of Federal Register** Parts 212, 251, 261, and 295 address travel management and designated routes and areas for motor vehicle use. The Final Rule requires National Forests to designate those roads, trails and areas that are open to motor vehicle use. Once designation is complete for an administrative unit or a ranger district, motor vehicles will not be allowed off the designated system. The rule requires each National Forest to provide for public participation in route and area designations.
- **Executive Orders** including 11644 and 11989 apply to off-road use of motor vehicles on Federal lands.
- The **National Environmental Policy** of 1969 (NEPA) requires that natural and social sciences be integrated in all planning and decision-making that affect the human environment. The human environment includes the biological and physical environment and the relationship of people to that environment. Forest Service land management planning regulations further instructs the consideration of social science knowledge in forest and grassland planning.
- Specific to potential economic consequences in travel management planning, NEPA does not require a monetary benefit-cost analysis (40 CFR 1502.23). Given most values (i.e. costs and benefits) associated with travel management stem from passive uses that do not involve direct market transactions a cost-benefit analysis was not completed for the Ten Lakes Travel Management Plan.
- **Forest Service Manual and Handbook** (FSM, FSH) The Forest Service has developed manual and handbook direction providing basic principles, techniques, and general guidance for assessing social and economic effects. (FSM 1970 and FSH 1909.17)
- Additionally, the **2015 Kootenai National Forest Land and Resource Management Plan** advocates for the provision of a broad spectrum of recreation opportunities made available through functional and updated transportation systems. The plan further enlists the forest-wide goal of “contributing to the social and economic well-being of local communities by promoting sustainable use of renewable natural resources. [And to] provide timber for commercial harvest, forage for livestock grazing, opportunities for gathering firewood and other special forest products; and settings for recreation

consistent with goals for watershed health, sustainable ecosystems, biodiversity, and scenic/recreation opportunities" (GOAL-SES-01, followed by desired conditions FW-DC-SES-01 through 04).

Methodology

This section describes the methods used to understand the existing economy within the analysis area (subsequently referred to as the "economic impact area"), as well as the potential economic impacts from the planning decision. The economic impact area is first described. Then methods to describe the affected environment are summarized. This includes wildland dependency information, data from the most recent national survey on recreation and the environment, and a travel management economic contribution analysis based on Forest Service National Visitor Use Monitoring data.

Resource Indicators and Measures

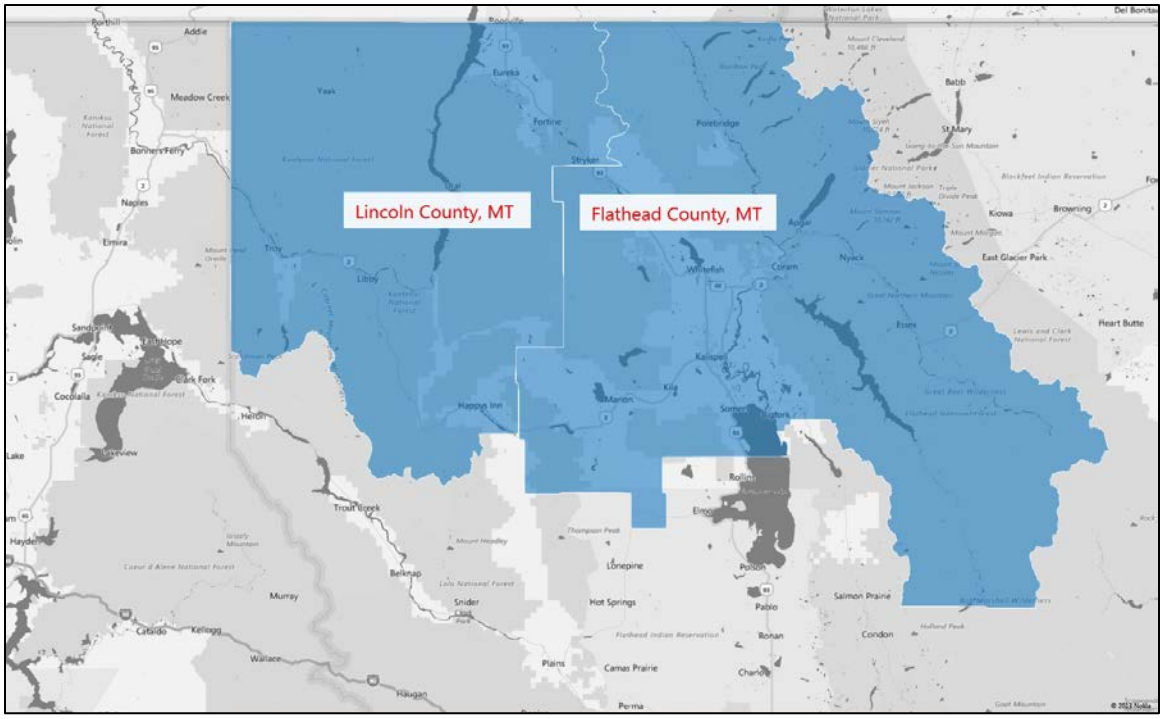
Key indicators and their measures are detailed in Table 1. These indicators are used to identify potential effects to economic and social conditions. Economic indicators include levels of employment in relevant segments, income levels, and tax revenues. Social indicators include mainly those used in monitoring environmental justice communities. This report focuses on poverty levels.

Economics Table 1. Economic and Social Indicators and Measures for Assessing Effects

Resource	Resource Indicator	Measure	Source
Economics	Critical economic segment employment levels, income levels, and subsequent tax base.	Jobs Current U.S. dollars	Economic Impacts – NVUM, IMPLAN (2003 Software with 2014 Data)
Social	Environmental Justice Indicators	% below poverty Current U.S. dollars	Headwaters Economics Populations at Risk 2015

Economic Impact Area

The economic impact area, shown in Figure 1, encompasses Lincoln and Flathead Counties of Montana. Travel management decisions within the project area have the potential to impact economic and social conditions of communities within these counties, more so than others.



Economics Figure 1. The Ten Lakes Travel Management Plan Economic Impact Area

For consistency, the impact area used for the social resource corresponds to the economic impact area, although social issues like values supporting recreational uses are often not limited by immediate geographic boundaries. For example, some visitors from across the Northern Rocky Mountain Region, the US, or even other countries, may have valued connections to, or directly benefit from, Kootenai National Forest amenities.

Although impacts are expected to be small for social and economic conditions in either county, a few service providers or recreation groups in these, or other counties may experience positive or negative impacts. Ultimately, the degree to which the economy and social environment is affected will depend on multiple factors including the availability of alternative recreation opportunities provided by public lands in the greater area including Kootenai and adjoining National Forests.

Affected Environment Methods

Economic information compiled from various government sources is used to describe the affected environment. Specifically, county and national forest-level data is sourced from Headwater Economics profile system (EPS), which compiles primary population and economic data from a variety of government sources. The most recent EPS reports, which include data up to 2015, describe population, employment, and income composition trends for multiple segments of a select region or county economy. Lincoln and Flathead County EPS data are presented in the affected environment section. This data helps place population and economic activity context to travel planning and subsequent management decisions.

Additional data is provided from the Forest Service National Visitor Use Monitoring (NVUM) to show various Kootenai National Forest recreation segments, and their potential economic contribution. Employment and labor income contributions are estimated for all current recreation uses on the Kootenai National Forest, and are displayed in local versus non-local visitation as well as motorized versus non-motorized activities occurring on the Forest. Expenditure profiles

tied to all recreation visitation are estimated to establish the total economic contributions made through recreation activities on the Forest.

Specific economic contributions are generally categorized as direct, indirect, or induced. The difference between these categories depends on the proximity of economic activity to the primary event being analyzed. In the case of recreation management decisions, direct impacts would cover spending by recreationalists, or more generally, changes in spending by those who might be directly affected by travel planning. Indirect impacts would cover spending by analysis area companies or individuals supporting these recreationalists. And finally, induced impacts would cover any residual spending in non-related segments of the economy. This final impact is measured by income multipliers, which estimates how money generally moves into other local sectors of the economy (i.e. the circulation of money locally).

Economic modeling, specifically input-output analysis, is used to estimate the direct, indirect, and induced employment and labor income effects stemming from motorized and non-motorized use. Input-output analysis is a means of examining relationships within an economy both between businesses as well as between businesses and final consumers. It captures all monetary market transactions for consumption in a given time period. The resulting mathematical representation allows one to examine the current contributions a sector makes to an economic impact area, as well as the effect of a change in one or several economic activities on an entire economy. These examinations are called “economic contribution analysis” and “economic impact analysis”, respectively. Input-output analysis requires the identification of an economic impact area. The economic impact area that surrounds the Kootenai National Forest was previously defined, and consists of two counties in western Montana.

The IMPLAN Pro input-output modeling system and 2014 IMPLAN data (the most recent data available with sectors bridged to NVUM data) were used to develop the input-output model for this analysis (IMPLAN Professional 2015). The IMPLAN data and software translates changes in final demand for goods and services into resulting changes in economic effects, such as labor income and employment for the economic impact area. For the economic impact area, employment and labor income contributions that were attributable to all current recreation use (wildlife and non-wildlife activities) and only motorized and non-motorized activities for the Kootenai National Forest were generated.

The NVUM expenditure and use surveys are crucial in conducting the economic analysis. The expenditure information was collected by eight spending categories (Stynes and White 2013). The reported spending for each of the categories was allocated to the appropriate industry within the IMPLAN model (the allocation process, also referred to as “bridging,” was conducted by the USDA Forest Service, Planning Analysis Group in Fort Collins, CO). The bridged IMPLAN files were used to estimate economic contributions (e.g., employment and labor income) related to existing spending.

Estimated existing Kootenai National Forest recreation economic contributions (full and part-time jobs and labor income) are displayed in the following ways:

1) Estimated employment and labor income based on all, local, and non-local recreation visitation occurring on the Kootenai National Forest; and

2) Estimated employment and labor income by motorized and non-motorized activity types

Economic Consequence Methods

Economic impacts are modeled using input/output analysis. This method is often conducted to estimate the expected changes in the contribution of jobs and income to local economies resulting from management decisions. In order to model changes to jobs and income, expectations for changes in forest visitation are needed. Although current recreation visitation contributions are provided for the Kootenai National Forest, due to the uncertainty regarding recreational visitation changes/displacement that may occur following the decision associated with travel planning, an economic impact analysis was not conducted for this assessment. Instead, response coefficients are provided to help the reader estimate changes to the existing contributions. These response coefficients are presented in conjunction with a qualitative description of the likely impacts of the various alternatives.

For final interpretation, job and labor income response coefficients need to be multiplied by marginal or incremental changes in 1,000 party visits for each activity to estimate any potential changes associated with travel planning proposals. In other words, estimates of potential changes to employment or labor income effects would be based on speculation of either increases or decreases of 1,000 party visits to various motorized and non-motorized activities. For example, if the reader believes that hiking would increase by 500 party visits per year under the non-motorized emphasis alternative, the computations to derive effects would require multiplying the hiking response coefficients by 0.5 (500/1,000 party trips) then adding this to current economic contributions. The marginal effects (i.e. response coefficients) are useful for assessing potential changes in the absence of high quality estimates regarding the impacts on visitation under each alternative.

Weaknesses, Limitations, and Assumptions of Analysis Methods

In general, it is believed that people that engage in recreation on the Kootenai NF will continue to find opportunities to enjoy themselves, and will continue to support the types of businesses that cater to their needs. Fluctuations in number of visitors to the Kootenai NF can cause positive or negative economic impacts to local businesses; but these fluctuations are also influenced by much larger trends. The economy and social aspects are affected by a variety of factors including population growth, location of new magnet industries, recession, tax and other economic policies, the amount of wildfires and smoke in the area, the strength of the national economy, and even changing preferences like people preferring several short vacations rather than one long vacation. When compared with these kinds of variables, the management of motorized travel on the Kootenai NF is expected to have a relatively small effect to the economic and social aspects of the local area.

As with nearly all economic reporting, there is a time lag associated with data collection which prevents real-time reporting of economic conditions. The most recent data is typically one or two years old before it is published. Therefore, efforts to describe the existing situation in reality describe the recent past. This is normally not a large problem since many of the changes happen slowly. However, occasionally changes happen rapidly, as was the case in the autumn of 2008 and spring of 2009, when massive structural changes impacted the US economy at large. Much of the data needed to describe these changes will not be available for several years. As a result, some of the data in the tools used in this analysis (e.g. IMPLAN data) may change substantially in the future.

Another limitation of most economic data is the scale at which it is collected and summarized. The smallest level most data is reported at is the county level. Just as in any case where averaging occurs, county-level data essentially represents the average of all the individuals and communities

within that county. Depending on the variability of economic conditions, county-level data may not capture significantly different experiences and conditions across the county.

Yet another similar limitation of this document is the problem of reporting conditions for aggregated economic sectors versus reporting individual industries. The reporting provided in this analysis was done with 2-digit aggregation of the North American Industrial Classification System. Attempting to report data at any finer resolution would cause data omission problems, due to disclosure problems in counties with few firms in any single industry. Even if this data were available, the amount of text needed to cover this type of detail would likely not be advisable given the expected impacts to the economy from travel planning.

One assumption used to estimate the current travel planning economic contributions is that expenditure profiles should be matched with primary activity participation. Some have commented in the past that using total activity participation would change the results. This concern has been voiced by people who feel that if they were surveyed, they might not list their transportation mode of choice as their primary activity, but that due to this transportation preference, their expenditure profile means they contribute more to the local economy. After considering this concern, it has been decided that the best way to handle this is to continue modeling based on primary participation with the caveat that this is the assumption used and may be a source of modeling error.

Also note that much of the money spent in the power sports industry on the goods and services listed in the comment falls into one of two categories that prevent it from being captured in the analysis. First, the money is spent on durable goods, these are goods that are used for more than one trip and/or in more than one location. Because it is theoretically incorrect to include durable goods as economic effects attributable to any single visit, expenditures on items that are used on multiple trips in multiple locations (e.g., hiking boots, over-snow vehicles) are not included in the estimates. The other category that much of the power sports expenditures fall into is for purchases of goods that have nonlocal production. The economic data used estimates how much of the money collected locally funds local production, and therefore recirculates in the economy. When items purchased in connection with motorsports are produced outside the economic impact area, the result is that very little of the spending is captured locally and recirculated. For example, fuel is not produced in the impact area, so only a small portion of each dollar spent on fuel is retained locally, most is sent out of the economic impact area to purchase wholesale products.

Affected Environment

Social Issues

This section describes a contextual social environment and the potential impacts to communities from implementing a travel planning decision. Key social factors evaluated in this analysis include lifestyles, land management perspectives, and recreation preferences. The combination of small towns and rural settings, along with people from a wide variety of backgrounds, provide a diverse social environment for the geographical region around Eureka, Whitefish, and other communities near the Fortine Ranger District of the Kootenai National Forest. Local residents pursue a wide variety of life-styles, but many share a common theme: an orientation to the outdoors and natural resources. This is reflected in both vocational and recreational pursuits including employment in agricultural, logging and milling operations; outfitter and guide businesses; hiking; hunting; fishing; camping; skiing; snowmobiling, riding OHVs, and many other recreational activities.

Timber harvest and processing and tourism are both important to the economy of the local areas. Despite the common concern for, and some dependence on natural resources within the local communities, social attitudes vary widely with respect to public land management. Local residents hold a broad spectrum of perspectives and preferences ranging from complete preservation to maximum development and recreational utilization of natural resources.

Travel management planning and route designation largely involve social issues. Forest Service roads and trails provide opportunities for all types of activities: motorized and non-motorized, summer uses and winter uses, etc., for local users and for non-local visitors. People may use the roads to drive toward the source of their employment (e.g. mining, forest management, or outfitters and guides). People may use the roads to access areas where they can go beyond motorized noises and recreate in quiet places. Others use the roads and trails to recreate and drive on with their motorcycles, ATVs, and over-snow vehicles. In addition, many people who visit the Kootenai National Forest have special attachments to certain activities and to certain places. Consequently, limiting, changing and/or closing their type of access can produce strong reactions. Kootenai National Forest personnel made great efforts to understand people's uses, motivations, and tolerance for change, and to consider these in developing travel plan alternatives.

People do not necessarily have to be active users of Forest Service System roads and trails in order to hold values regarding access to the national forest, or to benefit from road and trail systems. These "passive-use values" are values or benefits people receive from the existence of a specific place, condition, or thing – independent of any intention or expectation of themselves participating in active use of it. For example, some people believe that forest roads should be kept to a minimum because of negative ecological impacts that are sometimes associated with roads. Others believe that it is important to maintain large tracts of unroaded land in order to protect roadless and/or wilderness values, leaving a legacy of undeveloped land for future generations to experience. And, some people may not use the Forest Service roads, but believe it is important to maintain that system for things such as timber harvest, mining, fire protection, and tourism.

Beyond recreation preferences and dependency on natural resources, communities within the analysis area may be subject to concerning socio-economic conditions, or potentially facing barriers to community social or economic development.

A summary approach is used to measure socio-economic conditions, exploring related indicators for Flathead and Lincoln County using the Headwater's "Populations at Risk" tool. Table 2 and Table 3 highlight tool provided demographic, income and social indicators, as well as at-risk social indicators, respectively. In the right two columns, indicators with an absolute deviation of 25 percent or greater from a U.S. mean benchmark are in bold. Most noticeably, per comparison to the U.S. mean, Lincoln and Flathead County are observed to have a much higher proportion of resident Native Americans, although lower ethnic or linguistic diversity, than the U.S. as a whole. Lincoln County, additionally, is home to a higher proportion of individuals over 65, or disabled than the U.S. as a whole. Finally, both counties are found to have higher proportions of vacation homes, mobile homes, and populations without healthcare.

More so than other factors, these county conditions represent the most at risk factors to consider for travel management planning. The extent to which travel planning has a documentable impact on these sensitive groups or conditions will depend on probable causal chains as well as the appropriateness quantitative or qualitative analysis. For some at-risk factors, cause and effect may not be clearly understood, or an analysis approach may not be available.

Economics Table 2. Demographic and Social Indicators by County and US (2014)

Demographic, Income, and Social Indicators		Flathead County	Lincoln County	U.S.	Flathead vs. U.S Ratio	Lincoln vs. U.S Ratio
Demographics	Population Growth	3.3%	24.0%	11.6%	**107%**	**-72%**
	Median Age	50.4	41.9	37.4	12%	**35%**
	% Population White Alone	95.7%	95.4%	73.8%	**29%**	**30%**
	% Population Hispanic or Latino	2.5%	2.5%	16.9%	**-85%**	**-85%**
	% Population American Indian or Alaska Native	2.2%	1.7%	0.8%	**113%**	**175%**
	% of Population 'Baby Boomers'	36.7%	29.2%	23.9%	22%	**54%**
Income	Median Household Income	$35,603	$46,858	$53,482	-12%	**-33%**
	Per Capita Income	$22,464	$25,789	$28,555	-10%	-21%
	% Individuals Below Poverty	17.1%	13.7%	15.6%	-12%	10%
	% Families Below Poverty	11.6%	9.4%	11.5%	-18%	1%
	% of Households with Retirement and Social Security Income	68.9%	47.1%	47.2%	0%	**46%**
	% of Households with Public Assistance Income	21.1%	15.0%	21.1%	**-29%**	0%
Structure	% Population > 25 without High School Degree	11.8%	6.4%	13.7%	**-53%**	-14%
	% Population > 25 Years with Bachelor's Degree or Higher	18.9%	28.1%	29.3%	-4%	**-35%**
	% Population That Speak English Less Than 'Very Well'	0.7%	0.6%	8.6%	**-93%**	**-92%**
	% of Houses that are Seasonal Homes	13.5%	15.0%	4.0%	**275%**	**238%**
	Owner-Occupied Homes / > 30% of Income Spent on Mortgage	41.6%	43.6%	34.0%	**28%**	22%
	Renter-Occupied Homes / > 30% of Income Spent on Gross Rent	37.0%	47.1%	48.3%	-2%	-23%

Economics Table 3. At Risk Social Indicators by County and U.S. (2014)

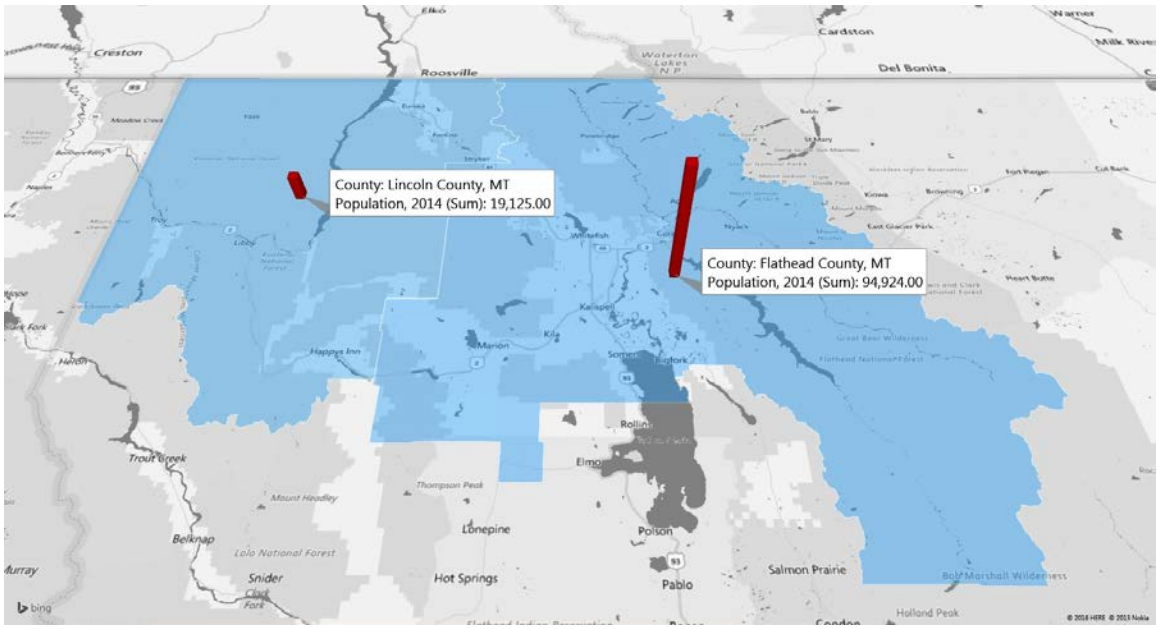
At Risk Social Indicators		Flathead County	Lincoln County	U.S.	Flathead vs. U.S Ratio	Lincoln vs. U.S Ratio
Populations at Risk	% of Population under 5	5.9%	4.6%	6.4%	-8%	**-28%**
	% of Population over 65	15.7%	22.7%	13.7%	15%	**66%**
	% of Population Non-White (all other races)	2.5%	2.5%	16.9%	**-85%**	**-85%**
	% of Population Hispanic	2.5%	2.5%	16.9%	**-85%**	**-85%**
	% of Population without a High School Diploma	6.4%	11.8%	13.7%	**-53%**	-14%
	% of Population that speak English "Not Well"	0.2%	0.2%	4.6%	**-96%**	**-96%**
	% of Population in "Deep Poverty"	5.6%	7.4%	6.9%	-19%	7%
	% of Families Below Poverty	9.4%	11.6%	11.5%	-18%	1%
	% of Families that are Single Mother Households and Below Poverty	3.4%	2.4%	5.2%	**-35%**	**-54%**
	% of Households Receiving Food Stamps (SNAP)	9.0%	14.5%	13.0%	**-31%**	12%
	% of Population that "Did Not Work"	20.6%	31.7%	25.3%	-19%	**25%**
	% of Rentals where Gross Rent > 30% of Household Income	47.1%	37.0%	48.3%	-2%	-23%
	% of Housing that are Mobile Homes	11.6%	17.9%	5.8%	**100%**	**209%**
	% of Households that are Single Female w/ Children under 18	5.3%	3.5%	8.6%	-38%	**-59%**
	% of Households with No Car	3.8%	3.8%	9.1%	**-58%**	**-58%**
	% of Population over 65 and Living Alone	27.7%	39.6%	32.6%	-15%	21%
	% of Population with Disabilities	11.2%	18.3%	12.3%	-9%	**49%**
	% of Population without Health Insurance	19.0%	21.8%	14.2%	**34%**	**54%**

Other key economic factors evaluated in this analysis are population, employment, income, economic diversity, and natural resources dependency. The individual county EPS reports contain various years of data for specific economic indicators, and so there is a mix of durations reported.

Population and Employment

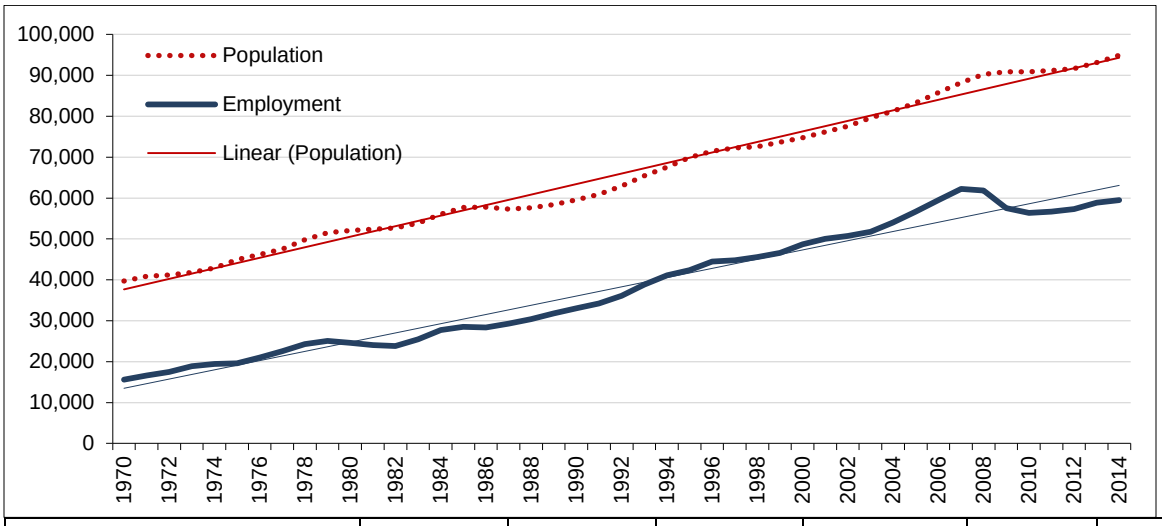
General population counts and employment levels are helpful in summarizing the scale of the human dimension surrounding a project. Additionally, population counts and employment levels help place context on potential social and economic conditions. For example, smaller and larger populations typically relate with rural and urban settings and less or more jobs and economic diversity. Other trends relate with population including but not limited to non-labor income. In the western U.S., proportion of non-labor income in counties with smaller populations is typically higher due to fewer labor opportunities.

Populations in the two-county economic impact area are placed in relative scale in the bar chart provided in Figure 2. In 2014, Flathead and Lincoln County had an estimated 94,924, and 19,125 people, respectively. As visualized by the bar chart, it is estimated that five people live in Flathead County for every one living in Lincoln County.



Economics Figure 2. Economic Impact Area Population by County

Flathead County's population and employment trends are charted in Figure 3. From 1970 to 2014, Flathead County population grew from 39,000 to 94,000people, increasing an average of approximately 1,300 residents annually. Employment trends increased in similar fashion in Flathead County adding on average over 1,100 jobs to the economy annually since 1970. Employment shocks are visible in the late 70's and 2008 recession. Since 2008, job growth has not yet caught up to the long-run average employment trend.

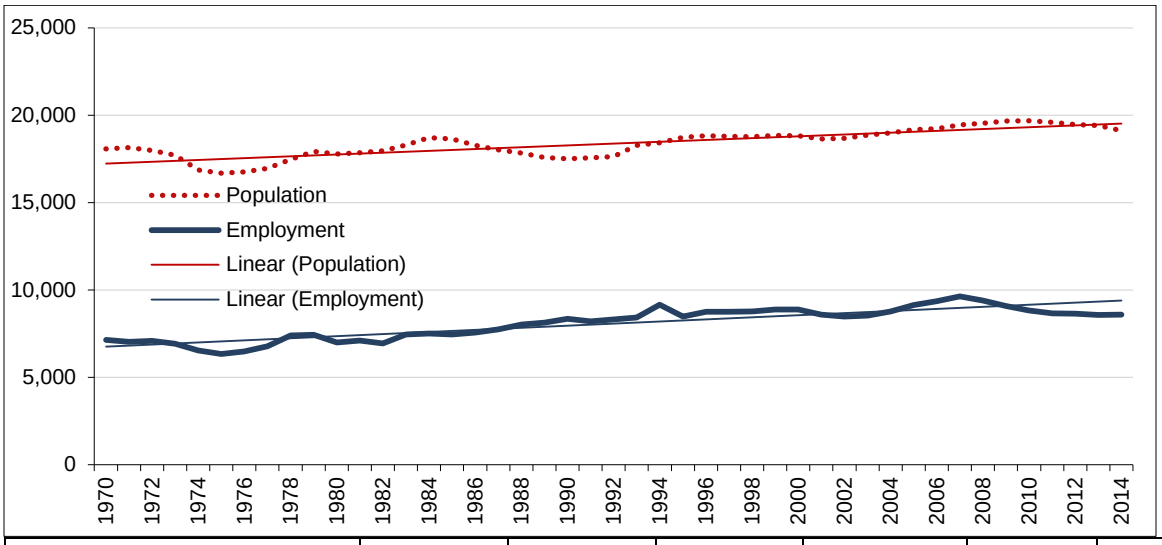


Flathead County, MT	1970	1980	1990	2000	2014	Change 2000-2014
Population	39,716	52,076	59,545	74,774	94,924	20,150
Employment (full & part-time jobs)	15,627	24,609	33,017	48,691	59,487	10,796

Economics Figure 3. Flathead County, Population and Employment Trends (1970-2014)

Lincoln County's population and employment trends are charted in Figure 4. Compared to Flathead County, Lincoln County has experienced much less growth in population and

employment over the last four decades. From 1970 to 2014, Lincoln County population grew by approximately 1,000 people from 18 to 19 thousand people, increasing an average of approximately 52 residents annually. Employment trends increased in similar fashion in Lincoln County adding on average over 60 jobs to the economy annually since 1970. Employment shocks are visible in the mid-70 and 2008 recession.

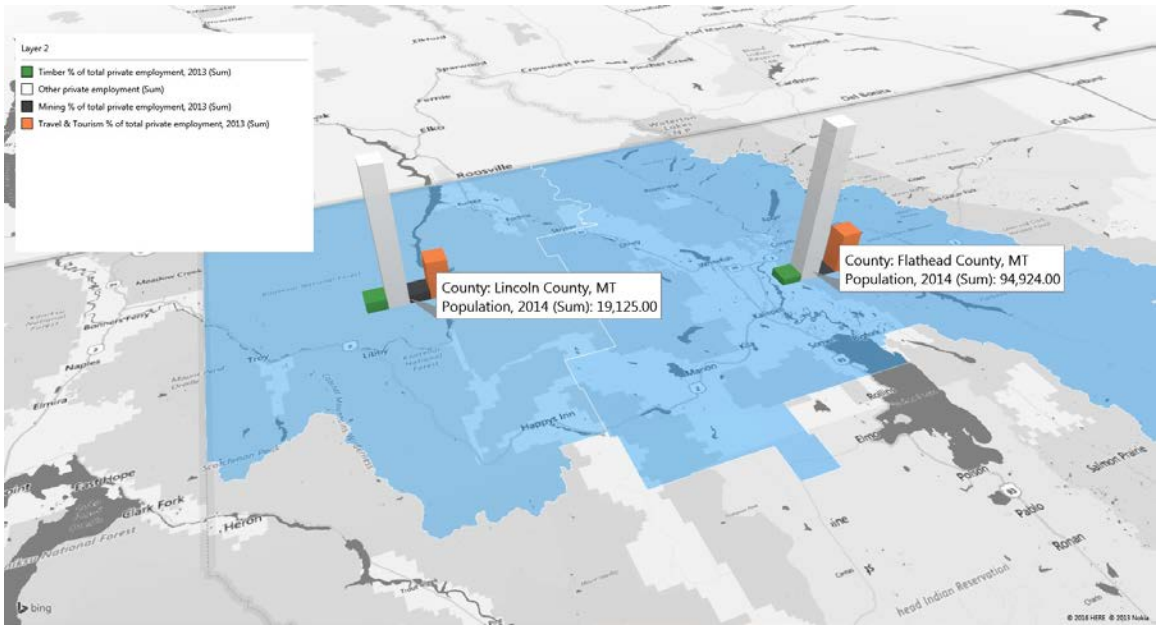


Lincoln County, MT	1970	1980	1990	2000	2014	Change 2000-2014
Population	18,065	17,779	17,499	18,818	19,125	307
Employment (full & part-time jobs)	7,130	6,999	8,353	8,875	8,593	-282

Economics Figure 4. Lincoln County, Population and Employment Trends (1970-2014)

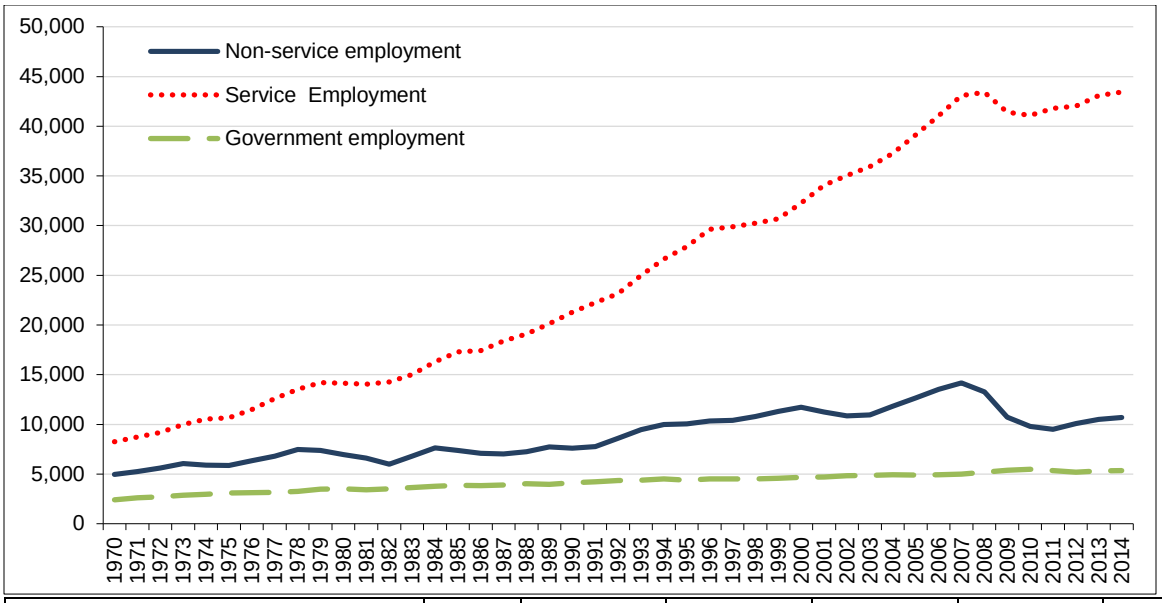
Economic Segments

Changes to access through travel management have the potential to slightly impact the existing configuration of employment and income across numerous economic sectors that support tourism and recreation in the two counties. Information available in EPS helps portray the recent employment situation in these counties, which serves as part of the backdrop for travel planning. Highlighted in Figure 5 are employment proportions by economic segments colored for government, travel and tourism, mining, forestry, and non-colored for all remaining private segments (mainly professional and general services including retail). Most related to travel planning, travel and tourism segment employment in terms of total number of jobs, is greater than mining, forestry, or government, for either county.



Economics Figure 5. Economic Segments in Proportion by County

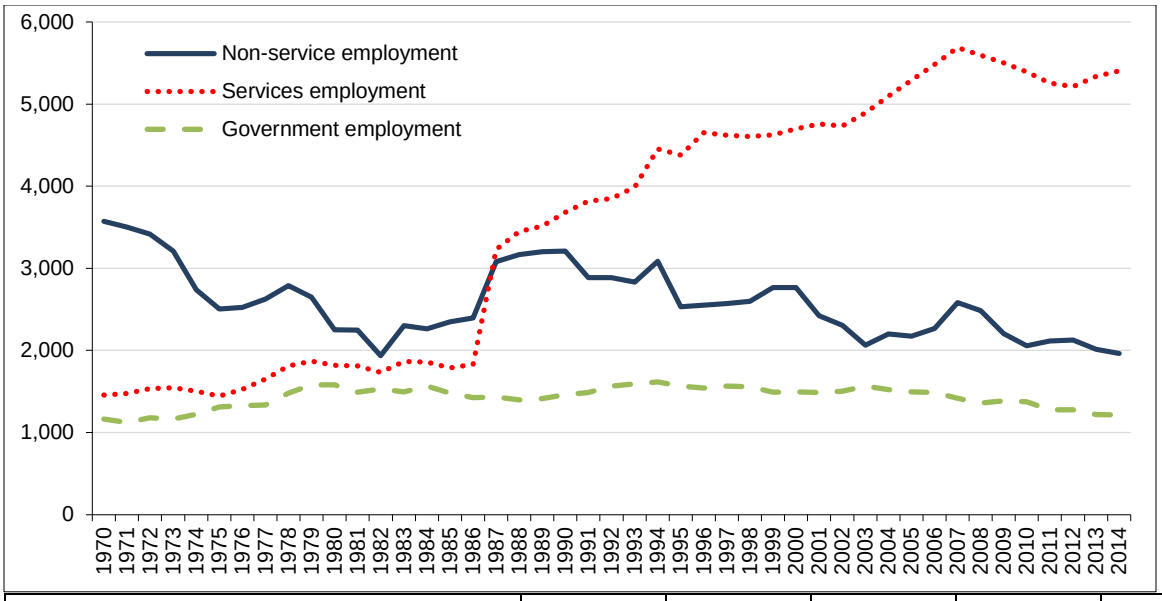
Specific to Flathead County, long-term trends in employment are highlighted in Figure 6. As indicated by the dotted red line, since 1970 Flathead County has experiences substantial growth in service employment, relative to agriculture, industrial, manufacturing or government employment. Services have grown to become the most important segment of Flathead County's employment base. Non-service employment has grown over the same period, but at a slower rate, shifting upward from 5 to 10 thousand jobs. Again, evidence of the 2008 recession appears markedly in this graph where employment in all segments temporarily declined. Total private and public employment in Flathead County is approaching 60,000 as of 2014.



Flathead County, MT		2001	2005	2010	2014	Change 2010-2014
Total Employment (number of jobs)		50,026	56,699	56,386	59,487	3,101
Non-services related		11,233	12,653	9,800	10,704	904
Farm		1,154	1,057	1,047	1,042	-5
Forestry, fishing, & ag. services		784	758	611	618	7
Mining (including fossil fuels)		298	405	531	746	215
Construction		4,858	6,916	4,829	5,021	192
Manufacturing		4,139	3,517	2,782	3,277	495
Services related		34,071	39,133	41,101	43,441	2,340
Utilities		172	199	205	189	-16
Wholesale trade		938	1,278	1,144	1,375	231
Retail trade		6,656	7,512	7,181	7,375	194
Transportation and warehousing		1,394	1,361	1,193	1,535	342
Information		732	818	765	680	-85
Finance and insurance		1,763	2,172	2,328	2,844	516
Real estate and rental and leasing		2,285	3,093	3,865	3,924	59
Professional and technical services		3,343	2,824	3,029	3,240	211
Management of companies and enterprises		126	124	218	184	-34
Administrative and waste services		2,807	3,803	3,463	3,169	-294
Educational services		449	640	722	777	55
Health care and social assistance		4,339	5,238	6,116	6,817	701
Arts, entertainment, and recreation		1,578	2,008	2,161	2,300	139
Accommodation and food services		4,686	5,029	5,539	5,859	320
Other services, except public administration		2,803	3,034	3,172	3,173	1
Government		4,722	4,913	5,485	5,340	-145

Economics Figure 6. Flathead County, Employment Diversification (1970-2014)

Specific to Lincoln County, long-term trends in employment are highlighted in Figure 7. As indicated by the dotted red line, since 1970 Lincoln County has experiences growth in service employment, trading rank with agriculture, industrial, manufacturing and government employment. Services have grown to become the most important segment of Lincoln County's employment base. Non-service employment has declined over the same period, shifting down from 3.6 to under 2 thousand jobs. Total private and public employment in Lincoln County, a much smaller economy, is approximately 8,600 as of 2014.



Lincoln County, MT	2001	2005	2010	2014	Change 2010-2014
Total Employment (number of jobs)	8,585	9,140	8,820	8,593	-227
Non-services related	2,422	2,175	2,055	1,964	-91
Farm	332	324	336	333	-3
Forestry, fishing, & ag. services	576	447	375	322	-53
Mining (including fossil fuels)	42	168	271	128	-143
Construction	668	793	749	828	79
Manufacturing	804	443	324	353	29
Services related	4,759	5,293	5,392	5,406	14
Utilities	5	5	5	3	-2
Wholesale trade	91	101	86	81	-5
Retail trade	1,026	1,173	1,065	1,080	15
Transportation and warehousing	231	247	224	228	4
Information	137	125	109	95	-14
Finance and insurance	227	201	184	203	19
Real estate and rental and leasing	345	402	561	557	-4
Professional and technical services	262	263	307	283	-24
Management of companies and enterprises	0	14	0	0	0
Administrative and waste services	259	244	369	304	-65
Educational services	34	58	47	109	62
Health care and social assistance	815	1,017	1,122	1,088	-34
Arts, entertainment, and recreation	170	222	218	306	88
Accommodation and food services	595	602	546	537	-9
Other services, except public administration	562	619	549	532	-17
Government	1,486	1,494	1,375	1,214	-161

Economics Figure 7. Lincoln County, Employment Diversification (1970-2014)

For both counties, private employment in travel and tourism is juxtaposed in Table 4. Over the entire analysis area, total private employment for these two counties is estimated at approximately 37 thousand jobs, where approximately 20 percent, or 7,400 exists in travel and tourism related occupations. Of these 7,400 jobs the great majority exist in accommodations and food, or amusement, gambling, and recreation.

Economics Table 4. Tourism Private Employment by County

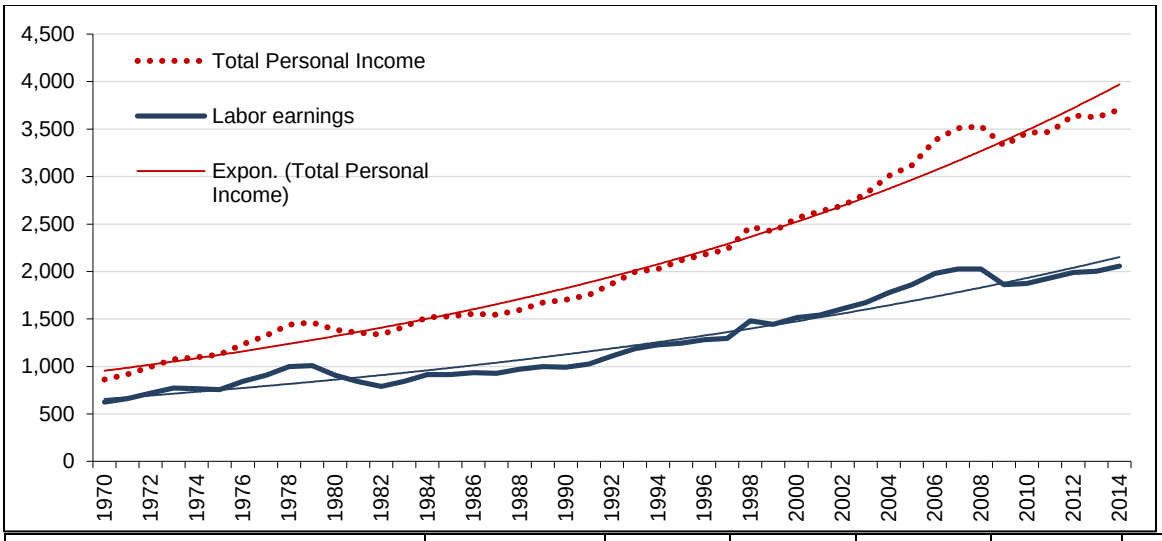
Tourism Segment	Flathead County, MT	Lincoln County, MT
Total Private Employment	33,284	3,820
Travel & Tourism Related	6,690	746
Retail Trade	976	112
Gasoline Stations	334	90
Clothing & Accessory Stores	290	4
Misc. Store Retailers	352	18
Passenger Transportation	76	0
Air Transportation	62	0
Scenic & Sightseeing Transport	14	0
Arts, Entertainment, & Recreation	1,093	130
Performing Arts & Spectator Sports	79	16
Museums, Parks, & Historic Sites	10	0
Amusement, Gambling, & Rec.	1,004	114
Accommodation & Food	4,545	504
Accommodation	923	104
Food Services & Drinking Places	3,622	400
Non-Travel & Tourism	26,594	3,074

Income

Total personal income and per capita personal income (PCPI) are often used to proxy standard of living. Not surprisingly, Flathead County, with a larger population, outpaced more sparsely populated Lincoln County in personal income growth rate, and is currently higher than Lincoln County in PCPI. Although PCPI for both counties was below the national average, this can be explained by the fact that non-metro PCPI is almost always lower than metro PCPI, and this higher income reflects the higher costs associated with living in metro areas which comprise a large portion of the national average. Both counties saw an increase in the portion of income from non-labor sources (dividends, interest, and rent as well as transfer payments from governments to individuals including Medicare, welfare, disability insurance payments, and retirements), which has increased substantially since 1970.

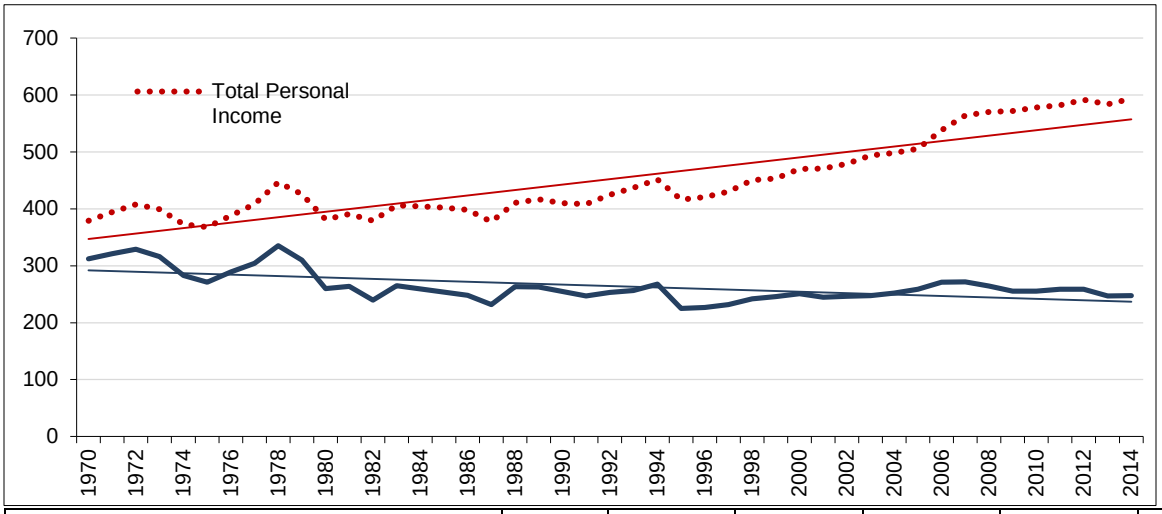
Growth rate in total personal income in Flathead County (Figure 8) has increased relative to the constant rate observed in Lincoln County (Figure 9). Personal income grows at an increasing rate over the long-run where economic development occurs simultaneous to economic diversification and population growth. Not only has Flathead County's per capita income risen over this period, but so too have substantial population growth and opportunities to earn income in different, growing segments of the economy. This dynamic income growth further differentiates the overall economic conditions between the two counties.

Another differentiating factor between counties can be observed as the relative proportion of labor to non-labor income. Over the same period, Flathead and Lincoln County have experienced diverging proportions of labor to total income. Lincoln County has increased its economic dependency on non-labor income over this 44 year period, substantially, where non-labor income has decreased in absolute terms. This trend signals a population and economy that faces significant challenges moving forward, and transitioning into new generations and beyond resource dependency.



Flathead County, MT	1970	1980	1990	2000	2014	Change 2000-2014
Total Personal Income	862,249	1,385,440	1,702,617	2,563,136	3,703,989	1,140,853
Labor Earnings	626,016	908,867	991,868	1,513,498	2,058,418	544,920
Non-Labor Income	236,233	476,572	710,749	1,049,638	1,645,571	595,933
Dividends, Interest, and Rent	147,980	303,477	436,878	668,164	926,880	258,716
Age-Related Transfer Payments	49,512	96,866	156,969	225,888	441,824	215,936
Hardship-Related Transfer Payments	10,794	35,079	50,378	90,900	169,906	79,006
Other Transfer Payments	27,947	41,150	66,523	64,686	106,961	42,275

Economics Figure 8. Flathead County, Income and Labor Earnings Trends 1970-2014



Lincoln County, MT	1970	1980	1990	2000	2014	Change 2000-2014
Total Personal Income	379,050	381,096	410,154	469,835	593,399	123,564
Labor Earnings	312,361	259,638	254,735	251,003	247,246	-3,757
Non-Labor Income	66,689	121,458	155,420	218,832	346,153	127,321
Dividends, Interest, and Rent	39,236	63,881	74,082	97,783	130,533	32,750
Age-Related Transfer Payments	11,850	27,867	45,350	71,688	136,836	65,148
Hardship-Related Transfer Payments	6,987	19,141	20,467	33,789	54,751	20,962
Other Transfer Payments	8,506	10,426	15,521	15,572	24,033	8,461

Economics Figure 9. Lincoln County, Income and Labor Earnings Trends 1970-2014

In general, and considering the entire analysis area population and economy we see the economic impact area profiled in this analysis as somewhat healthy (despite wide disparity) with positive population growth during the last several decades, increases in employment and real personal income, and substantial increases in per capita personal income during the period from 1970 to 2014. More concerning economic conditions exist in Lincoln County, due to multiple factors.

Change is a constant in many geographic areas, especially those dependent on natural resources. Undulations in both the labor income and the growing portion of non-labor income may generate some instability for many of the economic indicators used to proxy economic well-being. Trends, like growth in service-sector employment and income found in these counties, are shared by most peer counties across the Rocky Mountain west. These growth trends are largely driven by population growth of both permanent and seasonal residents, and the changes in travel management in the Kootenai area is unlikely to have a noticeable impact on these economic indicators.

Recreational Use and Conflicts on National Forests

Social issues and impacts from management activities on National Forest System lands are often addressed according to the potential effects that Forest Service management may have on local, county, and regional social and economic systems, and also on the people using and valuing the resources and opportunities that the National Forests provide. People use the Kootenai National Forest for a variety of reasons. Reviewing data collected in 2009 and 2014 shows that estimated visits to the Forest have decrease somewhat since the 2009 NVUM survey (see the NVUM section below). Even so, there remain strong preferences for specific recreation settings (English et al. 1999). The combination of increased use, diversified uses, and attachment to certain places combined with the need to provide for healthy and sustainable environments, along with limited road and trail maintenance budgets, is increasing potential opportunity costs and management challenges.

Social issues concerning travel planning on the Kootenai National Forest have much to do with the variety of uses and allocations, and the values people hold toward those uses, allocations, and places and the potential conflicts between these uses and underlying values. People are concerned about the effects to wilderness characteristics, and also law enforcement, safety, and natural resource conditions (particularly in riparian areas). Some conflict does exist between different types of users including: motorized versus non-motorized, hunting and fishing versus non-consumptive uses, local recreational uses versus tourism, and resource preservation versus resource extraction. Another issue raised by forest users locally and nationally is the concern that with an aging population, that roads perhaps not be decommissioned so that they can be walked on and/or that motorized opportunities remain open for older and/or disabled persons to access.

Motorized and non-motorized use can be broken down into summer versus winter uses. Motorized winter use is done via over-snow vehicles, while motorized summer use is generally done via motorcycles, OHVs, and full-size vehicles driving on system roads. Non-motorized winter use primarily involves cross-country skiing, backcountry skiing, and some snowshoeing, and non-motorized summer use runs the gamut of recreational opportunities, especially hiking, backpacking, mountain bicycling, and horseback riding. Fishing, viewing wildlife and hunting are done as both motorized and non-motorized activities.

The conflict between motorized and non-motorized use is somewhat self-explanatory: motorized users (including over-snow vehicles, OHVs, and motorcycles) like to travel the land on their motorized vehicles. Non-motorized users (including hikers, bicyclists, backpackers, wildlife viewers, stock users, and cross-country skiers) value an experience that does not include noise

and the intrusion of machines. Both groups tend to value their uses for similar reasons, and often desire the same types of settings and experiences. People like to use the forest with their friends and family; they appreciate activities out-of-doors; they appreciate the beauty of the area; the challenges presented. Both groups usually seek destinations, scenery, loop trails, and/or roads.

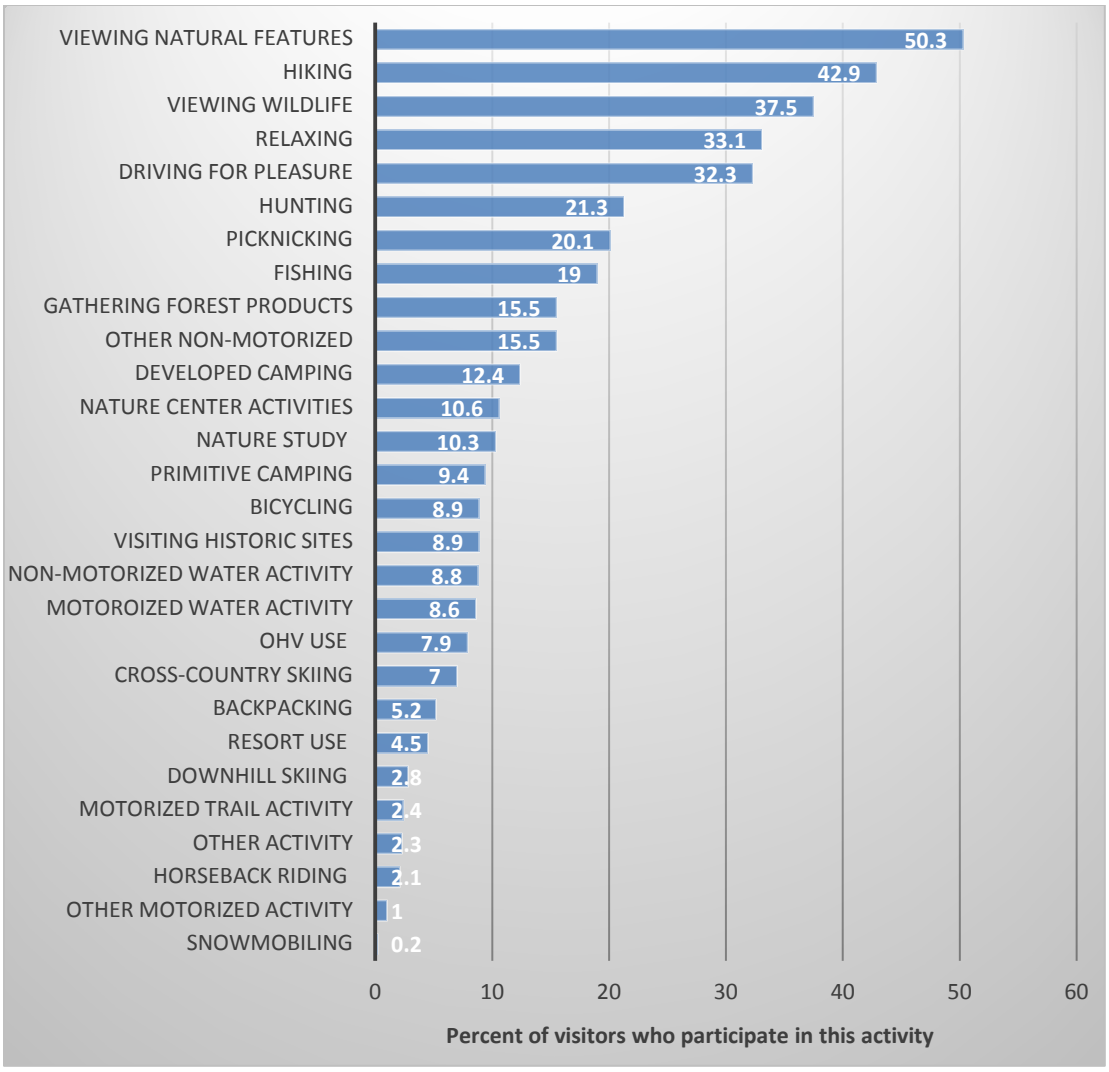
One of the issues raised through comments during travel planning is the economic contributions (i.e., economic impacts) of motorized and non-motorized uses. Various sources of information are used to display use and trends in motorized and non-motorized use in Montana and on the Kootenai National Forest. Vehicle registration data from the Montana Department of Justice, Motor Vehicle Registration Bureau was used to understand the state-wide trend in over-snow vehicles, ATVs, and motorcycles (MT Dept. of Justice, 2015). Results from a statistically rigorous sampling regime used by the Forest Service National Visitor Use Monitoring survey (NVUM) are also displayed to describe total forest-level use (visits) and use by various motorized and non-motorized activities.

National Visitor Use Monitoring

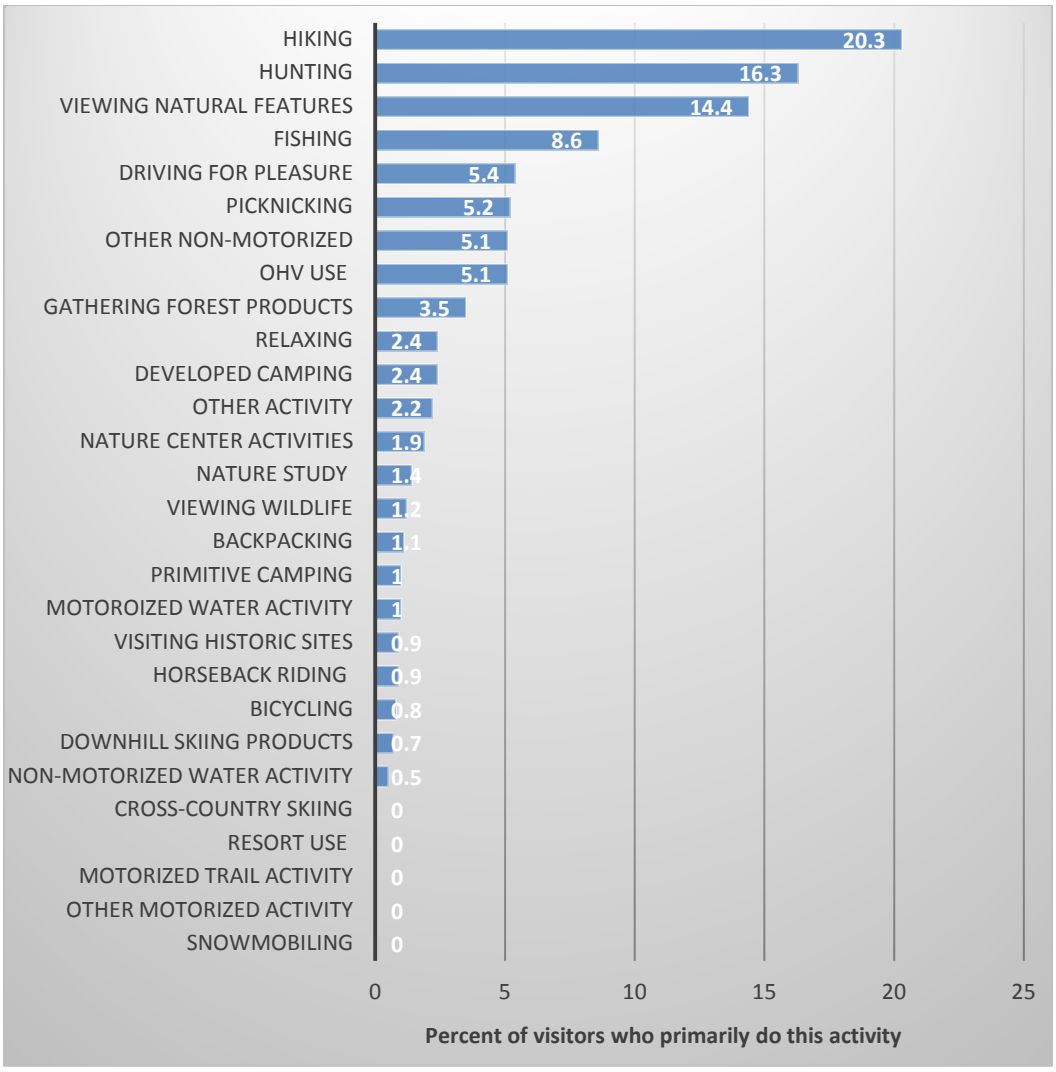
The National Visitor Use Monitoring (NVUM), conducted by the Forest Service, estimated participation rates and spending for various activities specifically on the Kootenai National Forest. The NVUM survey was implemented to better understand recreation use occurring on National Forest System lands (Kocis et al. 2003). In FY 2007 the Kootenai National Forest provided data for round 2 of the NVUM survey process. In 2012 the Kootenai National Forest provided data for the round 3 of the NVUM survey process. Examples of information provided in the 2012 Kootenai National Forest survey include: 1) total number of visits; 2) overall and primary participation rates; and 3) user satisfaction. The survey also collected information regarding user party spending within 50 miles of the National Forest boundary. Users reported expenditures for various spending categories, such as groceries, restaurants, gas/oil, and lodging. The specific spending profiles and expenditures used in this analysis are from NVUM round 3, and are found in Stynes, et al. (2013).

The NVUM Kootenai results estimated 600 thousand total site visits with the round 3 2012 data, down from 789 thousand estimated using the round 2 2007 data. Though this more recent point estimate is down, due to changes between surveys collected it is difficult to accurately gauge trend.

Figure 10 and Figure 11 rank round 3 2012 estimated total and primary participation activity rates, respectively. Across the Forest, the most popular activities are: viewing natural features and wildlife, hiking, hunting, fishing, picnicking and driving for pleasure. OHV and other motorized activities appear not as popular, representing approximately five-to-ten percent of the visitor population, but these groups appear to pursue motorized activity as their primary activity. Generally, the data shows non-motorized recreation representing the strong majority of forest visitation.

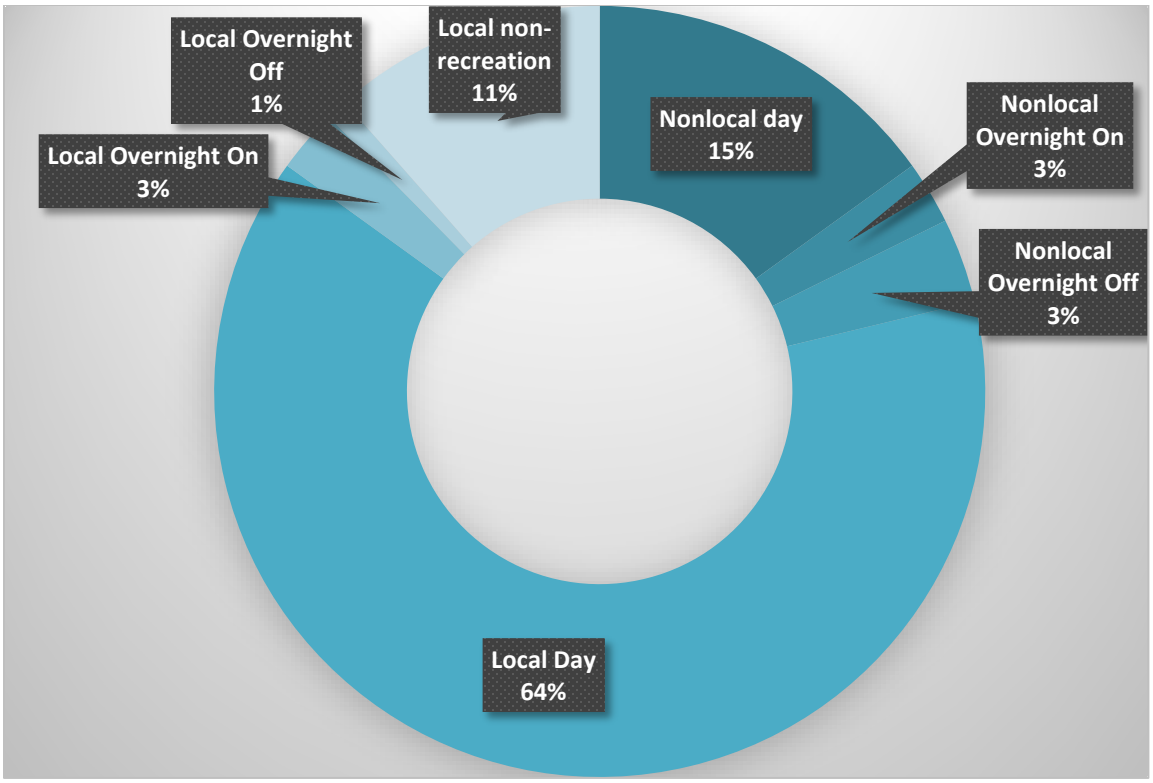


Economics Figure 10. Kootenai National Forest Visitor Activity Participation, NVUM round 3 data



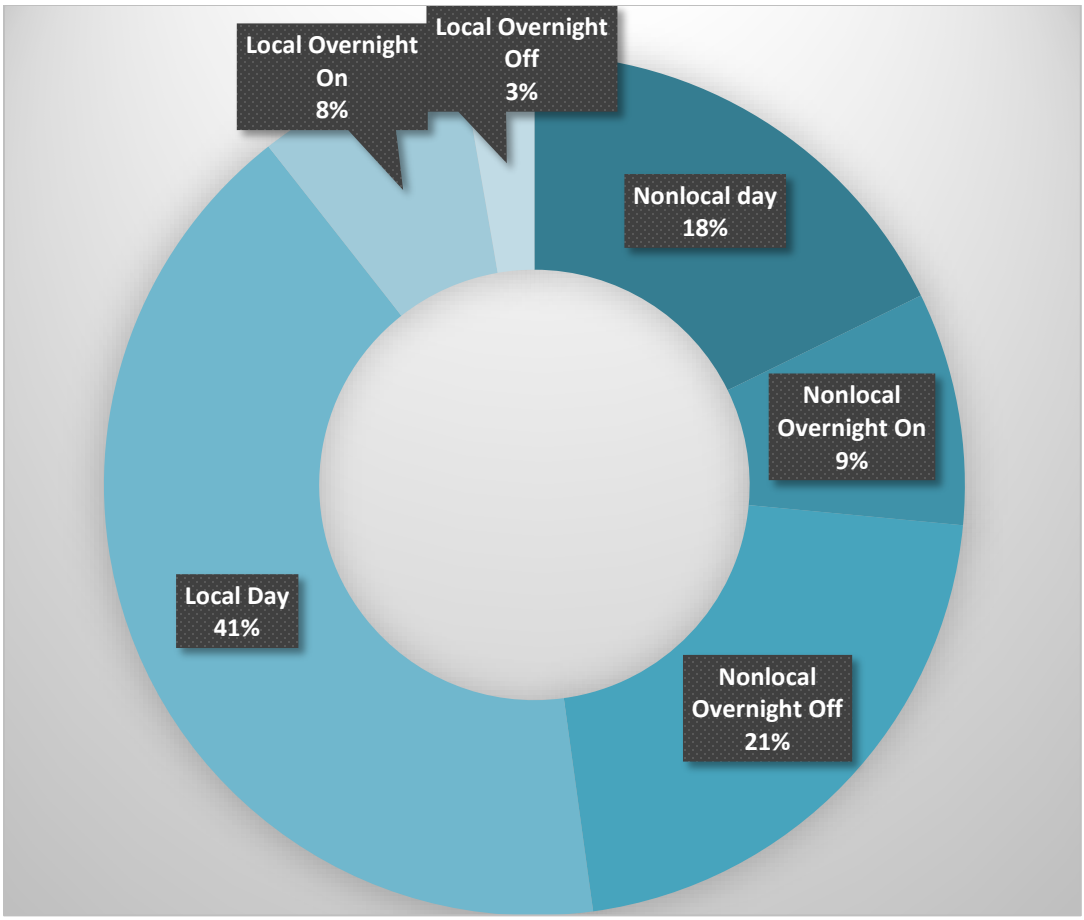
Economics Figure 11. Kootenai National Forest Visitor Main Activity, NVUM round 3 data

Another perspective in NVUM shows information on visitor locality and trip duration. Figure 12 shows the proportion of visits under these categories. Users are determined to be either local or non-local based on the miles from the user's residence to the Forest boundary. If the user reported living within 50 miles of the boundary, they are considered local; if over 50 miles, they are considered non-local. The majority of Kootenai National Forest visitors were local (79.1%) with fewer non-local visitors (20.9%). Generally, non-local visitor spending is considered more impactful to local economies. This is a result of two simple, generally true premises that (1) travelers have greater needs for goods and services when further distances from home and (2) local spending alternatives (i.e. substitutions) often exist within the same local economy. Local spending is still a contributing factor to overall economic impacts, but is proportionally smaller than impacts felt from longer distance travelers.



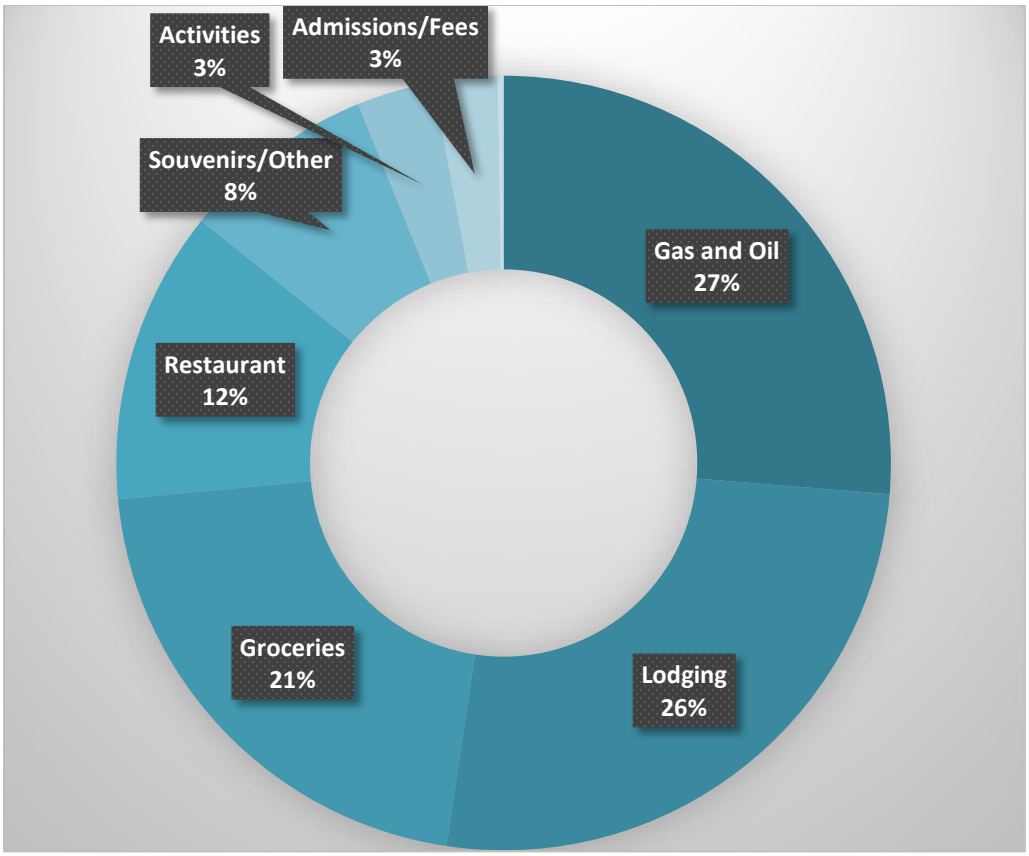
Economics Figure 12. Kootenai National Forest Total Annual Visits by Type, NVUM round 3 data

As observed in Figure 12, though non-local visitation represented only 20 percent of total forest visits, this group collectively contributed approximately 48 percent of total forest visitor spending. This difference between locals and non-local consumption is important when considering economic impacts from a travel planning decisions.



Economics Figure 13. Kootenai National Forest Total Annual Visitor Type Spending, NVUM round 3 data

Among goods and services consumed by parties visiting the Kootenai National Forest, gasoline, lodging, and groceries were the most commonly purchased, in that order. These travel basics, including restaurant services made up approximately three quarters of all spending from national forest visitors.



Economics Figure 14. Kootenai National Forest Total Visitor Spending by Category, NVUM round 3 data

Travel Management Economic Contribution Analysis

In a national summary provided in updated literature (White, et al. 2013), NVUM data is critically linked to employment and income effects by Forest. The first table provides evidence of spending patterns by segment and category. Spending segments are dividing among local and non-local parties, and by day use and overnight on/off National Forests trips. Spending categories are displayed across rows within the table. These categories help relate recreation spending with types of businesses and economic sectors. Most noticeably, Table 5 demonstrates the significantly greater impact of non-local, overnight travelers, who spend approximately $100 more per day, than local day visitors. And, each segment is observed spending most of their money on food, gas and lodging, which is a pattern highlighted in Figure 14 as well.

Economics Table 5. National Forest Visitor Spending Patterns by Spending Segment and Category (2016 dollars spent per party)

	Non-local			Local		
Spending Category	**Day**	**Overnight on**	**Overnight off**	**Day**	**Overnight on**	**Overnight off**
Motel	$0.00	$11.66	$38.37	$0.00	$2.48	$10.18
Camping	$0.00	$9.32	$4.76	$0.00	$10.96	$5.14
Restaurant	$17.02	$9.15	$28.15	$5.77	$3.15	$10.23
Groceries	$9.60	$19.35	$17.27	$7.02	$31.20	$16.40
Gas and Oil	$25.77	$18.31	$18.00	$14.28	$17.41	$12.08
Other Transportation	$0.65	$0.63	$1.00	$0.14	$0.22	$0.32
Entry fees	$5.07	$3.10	$4.65	$2.41	$1.75	$2.06
Rec. and entertainment	$4.83	$2.68	$6.86	$1.67	$1.62	$1.70
Sporting goods	$3.27	$4.24	$3.84	$4.63	$5.21	$3.86
Souvenirs	$3.50	$2.71	$7.11	$0.80	$1.32	$2.07
Total	$69.71	$81.17	$130.02	$36.74	$75.33	$64.04

Source: White, et. al, 2013. Estimation of National Forest Visitors Spending. Pacific Northwest Research Station

To estimate visitors by segment, and activity, Kootenai National Forest NVUM data is combined with economic data provided from White et. al. 2013. The results of table multiplication provides Table 6, which provides the NVUM survey based estimation of Kootenai National Forest primary visitors by activity and spending segment. Table 6 reinforces the popularity of viewing, driving and hiking activities, followed by hunting, fishing, and OHV use. Winter uses including cross-country skiing and snowmobiling show fewer participation across NVUM surveys, and thus have lower estimated annual visits.

Economics Table 6. Estimated Number of Visits by Activity and Spending Segment

	Non-local			Local			
Activity	**Day**	**Overnight on**	**Overnight off**	**Day**	**Overnight on**	**Overnight off**	**Total**
Nature and wildlife viewing	29,401	11,761	35,282	99,965	2,940	2,940	182,289
Driving	900	6,303	45,920	900	900	26,112	81,036
Hiking	7,077	3,538	7,961	54,843	885	885	75,188
General/relaxing	4,457	16,342	8,171	23,770	8,171	743	61,654
Hunting	4,720	7,080	4,720	25,958	2,360	944	45,781
Fishing	4,298	4,298	2,976	18,184	992	331	31,078
OHV	2,452	2,697	1,961	14,220	981	245	22,556
Picnic	2,658	1,772	1,772	11,960	664	221	19,048
Developed	490	7,025	653	327	5,881	327	14,703
Primitive camping/backpacking	652	6,257	521	391	3,650	391	11,863
Biking	601	481	841	8,531	120	120	10,693
Other activity	1,132	755	881	7,548	252	126	10,693
Boating	1,435	1,794	1,555	5,144	478	120	10,526
Other non-motorized	1,003	557	1,003	6,795	223	111	9,691
Cross-country	365	104	677	3,595	52	52	4,845
Snowmobile	571	107	642	1,783	36	36	3,175
Downhill	341	43	832	747	0	43	2,005
Resort	38	627	171	437	361	38	1,671
Horseback	192	224	64	896	112	16	1,504

Source: Kootenai National Forest Round 2 and 3 NVUM and White, et. al, 2013.

Spending patterns by activity differ slightly from activity participation due to the proportion of spending segments involved in each activity. Nonetheless, Table 7 (product of Table 5 and 6) shows that the estimated total spending levels by each activity share nearly the same ranking as activity participation. The most impactful spending occurs from visitors engaged in nature and wildlife viewing, driving, and hiking, and the lowest spending occurs with horseback riding, resort travel, and winter activities. These totals do not identify that hikers tend to spend more than snowmobilers, for example, but more so they demonstrate there are many more hikers visiting the forest from each segment.

Economics Table 7. Estimated Total Annual Spending by Activity and Segment

	Non-local			Local			
Activity	**Day**	**Overnight on**	**Overnight off**	**Day**	**Overnight on**	**Overnight off**	**Total**
Nature and wildlife viewing	$2,049,466	$954,564	$4,587,402	$3,672,617	$221,467	$188,296	$11,673,811
Driving	$62,763	$511,575	$5,970,654	$33,080	$67,823	$1,672,263	$8,318,158
Hiking	$493,277	$287,187	$1,035,115	$2,014,879	$66,630	$56,650	$3,953,739
General/relaxing	$310,676	$1,326,425	$1,062,413	$873,297	$615,483	$47,572	$4,235,867
Hunting	$328,993	$574,622	$613,665	$953,686	$177,756	$60,453	$2,709,174
Fishing	$299,596	$348,851	$386,883	$668,054	$74,710	$21,173	$1,799,269
OHV	$170,905	$218,902	$255,028	$522,441	$73,872	$15,702	$1,256,851
Picnic	$185,266	$143,816	$230,382	$439,404	$50,050	$14,184	$1,063,103
Developed	$34,164	$570,191	$84,967	$12,004	$443,015	$20,926	$1,165,267
Primitive camping/backpacking	$45,435	$507,891	$67,800	$14,368	$274,948	$25,046	$935,488
Biking	$41,876	$39,009	$109,355	$313,409	$9,050	$7,695	$520,395
Other activity	$78,924	$61,267	$114,502	$277,317	$18,952	$8,057	$559,019
Boating	$100,057	$145,633	$202,187	$188,969	$36,041	$7,661	$680,548
Other non-motorized	$69,881	$45,205	$130,348	$249,633	$16,781	$7,134	$518,982
Cross-country	$25,423	$8,458	$88,067	$132,077	$3,925	$3,337	$261,285
Snowmobile	$39,782	$8,686	$83,481	$65,524	$2,687	$2,284	$202,444
Downhill	$23,789	$3,463	$108,161	$27,427	$0	$2,732	$165,572
Resort	$2,647	$50,856	$22,218	$16,044	$27,174	$2,432	$121,371
Horseback	$13,381	$18,178	$8,320	$32,913	$8,435	$1,025	$82,252
Total	$4,376,303	$5,824,780	$15,160,950	$10,507,143	$2,188,798	$2,164,622	$40,222,594

From these estimated spending totals, an IMPLAN model is built within the two-county area and tested for recreation spending induced total impacts to the region's economy. Recreation spending totals are input into the model based on which sector (category) spending occurs. Again, oil and gas, food and restaurants, and motel and camping services are the most common sectors affected by recreation spending according to NVUM data. After approximately $40 million is spent in the two-county area, the IMPLAN model estimates the follow impacts, highlighted in Tables 8 and 9. These tables express the impacts estimated from a year's worth of recreation and visitation on the Kootenai National Forest. This impact includes a total of 484 local jobs, $13 million in labor income, and contributes to many of the two-county area's largest sectors including hotels, health care and retail.

Economics Table 8. Estimated Total Recreation Economic Impact by Effect Type

Impact Type	Employment	Labor Income	Value Added	Output
Direct Effect	367.8	$8,972,971	$11,345,579	$21,171,364
Indirect Effect	52.9	$1,793,731	$3,188,330	$6,428,579
Induced Effect	63.8	$2,366,274	$4,044,380	$7,322,052
Total Effect	484.6	$13,132,976	$18,578,288	$34,921,995

Source: IMPLAN 2014

Economics Table 9. Estimated Total Recreation Economic Impact by Industry

Sector	Description	Employment	Labor Income	Value Added	Output
501	Full-service restaurants	177.9	$3,643,691	$3,528,971	$7,298,349
499	Hotels and motels, including casino hotels	83.1	$2,214,630	$4,003,899	$7,468,904
400	Retail - Food and beverage stores	36.8	$1,122,230	$1,448,176	$2,221,326
496	Other amusement and recreation industries	33.6	$757,936	$913,650	$1,919,279
404	Retail - Sporting goods, hobby, musical instrument and book stores	22.6	$565,095	$683,619	$1,100,854
402	Retail - Gasoline stores	17.2	$710,533	$792,532	$1,250,758
440	Real estate	14.2	$179,202	$1,353,402	$2,147,409
405	Retail - General merchandise stores	9.9	$315,662	$393,285	$635,849
503	All other food and drinking places	4.8	$100,120	$84,368	$163,645
482	Hospitals	4.4	$342,826	$376,361	$673,333

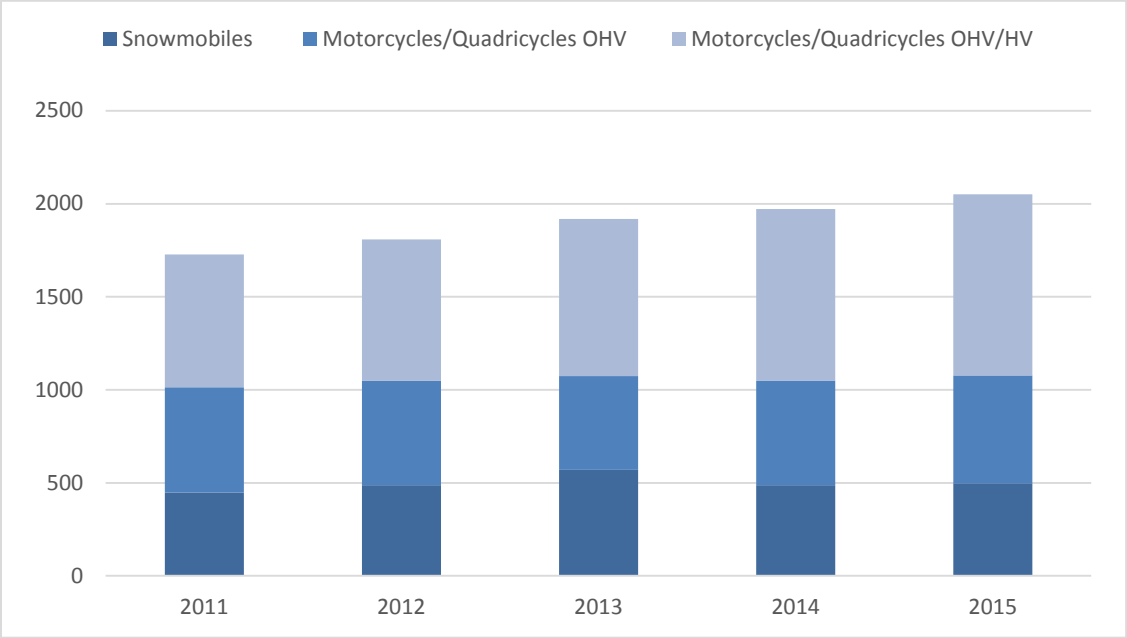
Source: IMPLAN 2014

In the two-county economic impact area, the total employment in 2014 was 69,045 jobs with $2,239 billion dollars in labor income (IMPLAN 2014). All employment and labor income attributable to recreation activities on the Kootenai National Forest account for approximately 0.7% of total employment and 0.59% of total labor income in the two-county economy.

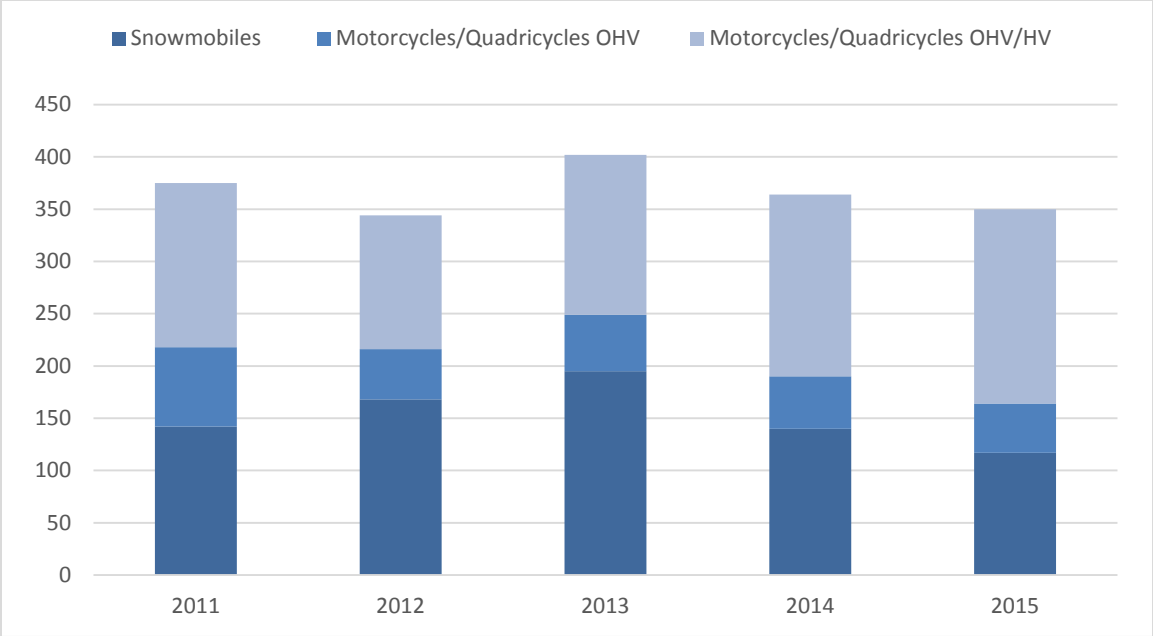
Montana Motorized User Community

Figure 15 and 16 show the trend in the number of registered OHVs, over-snow vehicles, and motorcycles (street and dirt bikes) in Lincoln and Flathead, respectively, for the period 2010-2015 (MT Dept. of Justice 2015). In general, for Flathead County the data indicate an upward OHV ownership trend, which is consistent with the State as a whole. Lincoln County registration rates have experienced volatility (increases and decreases). Due to the availability of permanent registration in 2006, these numbers must be viewed with some precaution, data following 2006 will not as accurately measure use or procurement trends.

It is important to note that within the project area there are no summer, wheeled OHV trails. However, in this section, OHV use data refers to both wheeled and winter vehicles and is being presented as a proxy for data specific to the sub-group of over-snow vehicles and related economics.



Economics Figure 15. Flathead County, OHV and Snowmobile New Registrations (2011-2015)



Economics Figure 16. Lincoln County, OHV and Snowmobile New Registrations (2011-2015)

The Bureau of Business and Economic Research (BBER) conducted an analysis of OHV use and spending patterns for the Montana Department of Fish, Wildlife and Park (FWP) based on a 2013 survey. A summary of BBER (Sylvester 2013) findings are presented in Table 10.

Economics Table 10. Increase in permanent registration of off highway and snowmobile vehicles in Lincoln and Flathead, County.

BBER, James Sylvester Survey	2013	2007	% Change
Sample size	311	424	-27%
Running total registered OHV's	77,200	54,000	43%
Average Household activity days	65	42	55%
OHV resident activity days	4.2 - 5.4 million days	1 - 1.5 million days	320%
OHV non-resident activity days	-	300 thousand	-
OHV non-resident count	-	277 thousand	-
Daily vehicle miles traveled	17-22 miles	15-20 miles	13%
Average vehicle mpg	27 miles/gallon	29 miles/gallon	-7%
Average daily OHV gas spending	$12	$21	-43%
Average daily HV gas spending	$23	$20	15%
Average food service spending	$2	-	-
Total trip spending	$175 million	$43 million	306%
Total fixed spending	$33 million	$27 million	22%
Total spending	$208 million	$123 million	69%
Gasoline consumption	6.6 million gallons	5.3 million gallons	25%
Base tax	$0.27/ gallon	$0.27/ gallon	-
Tax revenue generated	$1.8 million	$1.4 million	29%

- OHV user households own an average of two machines, collectively spending $208 million buying 6.6 million gallons of gasoline, and other goods and services per year. With a base tax of $0.27 per gallon, BBER estimates that OHV users in Montana generate over $1.8 million in revenue for the state highway trust fund.
- Based on interviews with resident OHV users, parties travel between 15 and 20 miles per activity day on their OHVs, and spend about $21 for OHV fuel per activity day.
- OHV riding is a dispersed outdoor activity, so precise counts are unavailable; however, BBER survey data estimates indicate state-wide resident use between 4.2 and 5.9 million days, a trend increase based in higher average annual user days (42-65).
- The Institute for Travel and Tourism (ITRR) estimates that about 2.7 percent of nonresidents participate in OHV activities. This translates in to about 277,500 individuals. A conservative estimate of nonresident activity days is 300,000.
- The BBER survey of resident expenditures suggests that residents typically don't incur lodging costs and spend little on eating and drinking, and other expenses. A majority of residents don't make expenditures in most of the spending categories. Resident's median expenditures were about $41 per day, all on gasoline for machines and transportation.
- Even though resident OHV users are not considered part of the economic base, residents spend substantial money to OHV in Montana. Table 11 summarizes resident's annual expenditures. Residents spend about 43 million dollars on trip expenditures nearly all for gasoline and another 80 million dollars on yearly expenses. Over three-quarters of yearly expenditures are spent on OHVs and trailers.

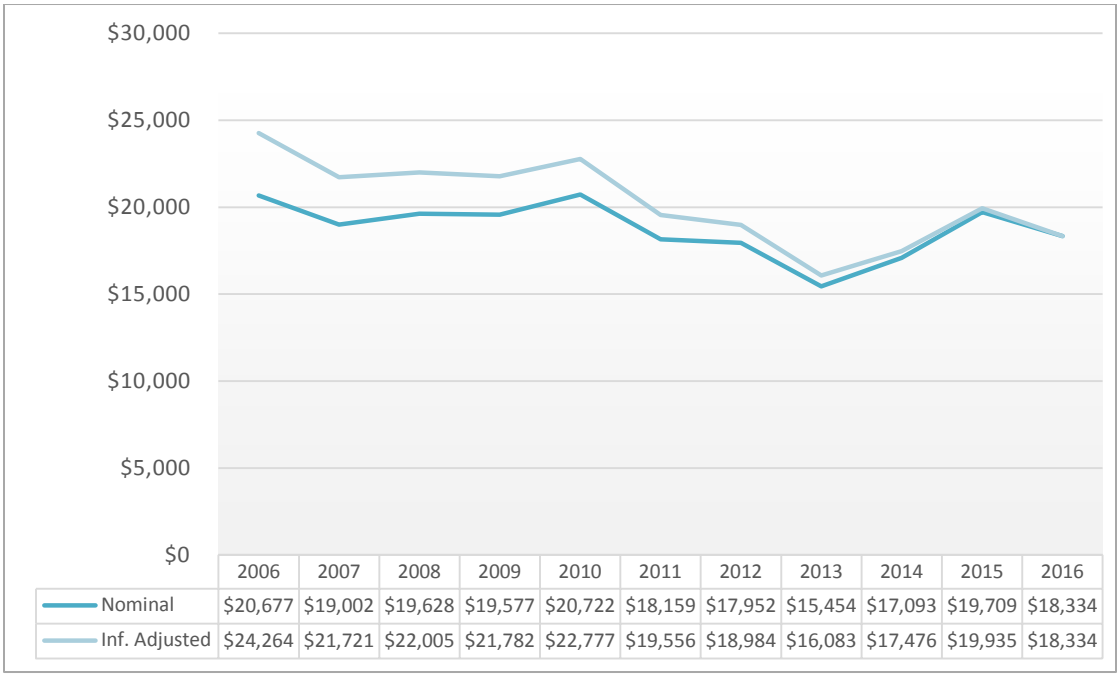
- Southwestern Montana is the hub of OHV activity in Montana, from a participant standpoint as well as a destination. Northwestern Montana receives only a few percent of all long distance OHV travel in the State.

Their survey also offered an opportunity for respondents to comment on what they thought was the most important issue facing off-highway vehicle recreation. All the comments solicited can be found in Appendix 1 of that document. Access to trails was the most frequently cited issue. Sixty percent mentioned access issues. About 23 percent of residents mentioned safety, particularly personal responsibility. Many of the personal responsibility comments reflected a view that the activities of a few were ruining riding opportunities:

> "A lot of trails have been closing. Few people who don't follow rules ruin it for rest."
>
> "Off-highway vehicle users who go off trails to get them shut down."
>
> "Drivers staying on the trails. Young people are riding everywhere, they're going to close it because of it."

Kootenai National Forest Budget Trend

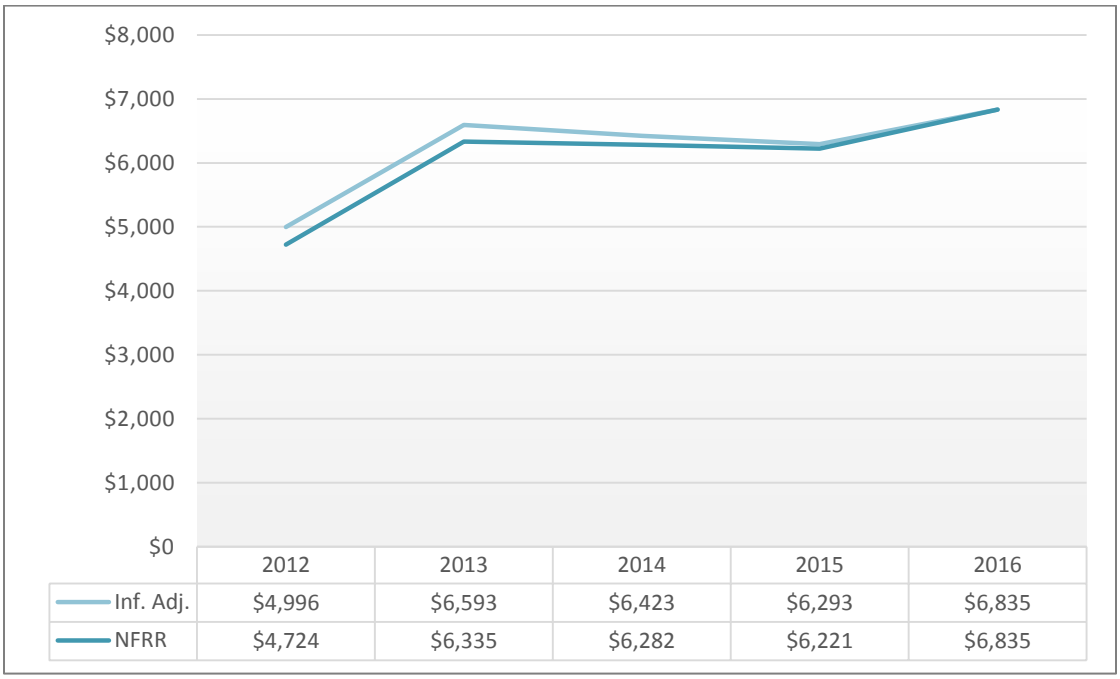
Figure 17 displays the budget for the Kootenai National Forest from 2006 through 2016, inflation adjusted. The budget consists of all line-items available to fund activities on the Forest. The data indicates that the budget decline is persistent with a few exceptions. This budget decline restricts the Forest's use of appropriated funds to accomplish needed work on the Forest. Forest stewardship contracting, a toolkit frequently applied on the Kootenai, allows the Forest to retain receipts from revenues generated by vegetation projects. The retained receipts can be used for vegetation management treatments and required design criteria and other non-timber activities such as road and trail work.



	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Nominal	$20,677	$19,002	$19,628	$19,577	$20,722	$18,159	$17,952	$15,454	$17,093	$19,709	$18,334
Inf. Adjusted	$24,264	$21,721	$22,005	$21,782	$22,777	$19,556	$18,984	$16,083	$17,476	$19,935	$18,334

Economics Figure 17. Total Kootenai National Forest Budget in Non-inflation Adjusted and Real (inflation adjusted) Dollars by FY (Thousands of dollars)

Figure 18 shows the part of the Kootenai National Forest budget from which travel management work can be performed. Road work is accomplished mainly through Best Management Practices during vegetation management and hazardous fuel reduction project implementation. As a portion of the total NF budget, the NRFF allocated funds have increased over the last five years.



	2012	2013	2014	2015	2016
Inf. Adj.	$4,996	$6,593	$6,423	$6,293	$6,835
NFRR	$4,724	$6,335	$6,282	$6,221	$6,835

Economics Figure 18. Resource Restoration budget for the Kootenai National Forest in nominal and inflation adjusted dollars by FY (Thousands of dollars)

Economic and Social Consequences

National Travel Management Rule Benefit Cost Analysis

When the Travel Management Rule was developed, the Forest Service considered the consequences in a qualitative cost benefit analysis. The following text and Table 11 are extracted from that analysis.

> "The benefits and costs of the final rule are described qualitatively because the rule is procedural. Actual transportation decisions will be made at the local level with public input and appropriate environmental analysis and documentation. Neither the costs nor benefits are readily quantifiable, and thus this analysis discusses the costs and benefits to the extent information is available (see Table 10). The benefits of the final rule include gains to users, the agency, and the environment. Sustainable, reliable, high-quality public access to National Forest System lands will lead to enhanced recreation opportunities for visitors. In addition, both users and the agency will benefit from improved public communication, more effective law enforcement, and improved travel management planning. Other benefits include reduced environmental damage and a more consistent and defensible travel planning framework. The costs of the final rule include reductions in unconstrained cross-country motor vehicle use for those that value this activity, and short-term agency planning costs as many National Forests launch travel planning efforts following adoption of the rule."

Economics Table 11. Costs and Benefits of Final Travel Management Rule

Potential Impacts	Current Rule	Final Rule
Public Communication	User confusion from inconsistent policy among national forests. Lack of compliance due to uncertainty and inconsistency of policy.	Increased user benefits and decreased agency management costs due to increased public involvement, user awareness, cooperation with user groups, access, and route management.
Public Safety	Unmanaged user-created routes have potential safety issues. Law enforcement effectiveness limited by inconsistent regulatory framework.	Increased public safety due to better trail design and management Increased law enforcement effectiveness and increased user benefits due to consistent regulatory framework
Travel System Maintenance and Management	Many unmanaged, unmaintained routes result in deterioration of routes and environmental impacts.	Decreased loss of environmental benefits result from a sustainable system of managed, maintained and enforced routes
Short Run Planning Costs	Increased agency planning costs as National Forests take on travel management issues individually without consistent framework.	Increased agency planning costs because many National Forests will launch travel planning
Long Run Planning Costs	Travel management costs continue at high levels without national direction.	Decreased agency planning costs because of known framework and established system.
User Benefits	Potential loss of recreation opportunities over time as use conflicts and environmental damage lead to route and area closures	Increased user benefits, including enhanced recreation opportunities, improved natural environmental setting, reduced user conflicts, and enhanced opportunities for cooperative construction and maintenance of routes because of long-term sustainability and legitimacy of route system. Potential decrease in some user benefits because of loss of unconstrained cross-country motor vehicle use.
Environment	Erosion, sedimentation, and damage to fish and wildlife habitat from unmanaged cross-country motor vehicle use.	Increased environmental benefits due to reduction in erosion, sedimentation, and habitat destruction that result from unmanaged cross-country motor vehicle use.

Economic Impacts

The assessment of economic impacts attempts to identify potential effects that Forest Service travel planning may have on the two-county economic impact area. In particular, this analysis is used to address the questions:

1. Would changes in the management of the Kootenai National Forest for recreation and the amount of change in the motorized/non-motorized designation of Forest roads and trails be large enough or significant enough to cause measurable economic changes?
2. Is the economy of the local area diverse enough and robust enough that the proposed changes will be insignificant or will they be felt in very specific segments of the local economy?

Considering the first question, regarding the potential for impacts from designation, detailed quantified speculation of changes to tourism and recreation visitation in the two economic impact area counties would be required to estimate the direct and multiplier (indirect and induced) economic impacts of any changes in management. This data is not available, and there is no literature suggesting how travel management specifically influences overall use and spending.

Tables 6 through 10 are provided for the reader to produce their own estimates of impacts and future economic contributions.

Regarding the second question, consider again, the macro-perspective of economic activity described in the previous section of this report. It is estimated that all recreation activity, from all local and non-local parties, on the Kootenai National Forest generates approximately $40 million in economic spending, annually. This spending and all subsequent direct, indirect, and induced employment and spending account for less than 1 percent of all employment and income within the two-county model economy. To consider the economic impacts from the Ten Lakes Travel Management Planning area, is to consider a subset of this Forest-level spending and the less than 1 percent of the total economy which is estimated to be related. Therefore, it is quite unlikely for any designation or management direction regarding this travel plan, to have any measurable effect on the two-county economy as a whole.

Considering more vulnerable parts of the economy, to look at potential effects, there are known information gaps. At the micro-level there is missing practical information, such as which exact business or individuals might be impacted. Though some of this anecdotal information might come available from journalistic effort, such information would be challenging to authenticate, or quantify. As an alternative, observed data on certain sectors analyzed at the Forest-level, provide further insight. Using employment a primary indicator, the greatest potential for any level of economic effect, resides in the hotel, motel and gambling industry, where approximately 8 percent of employment is supported by National Forest recreation (IMPLAN 2014). Another sector, full-service restaurants, would be equally vulnerable where it is estimated that 8.1 percent of all employment is supported by National Forest recreation (IMPLAN 2014). All other sectors, including retail sectors, maintain only fractions of a percent of employment which is supported by National Forest recreation.

Direct effect common to all alternatives

Many forms of recreation remain unaffected by designation across alternatives. Activities including the most popular, such as driving, hiking, and viewing natural amenities remain open across the project area. Shifting this to spending, the great majority of estimated spending remains unaffected. Approximately $37.5 million, of the estimated $40 million in spending associated with Kootenai National Forest recreation would remain unaffected by potential decisions in this travel plan. This leaves approximately 6.8 percent of all recreation spending on the Kootenai National Forest within consideration in terms of potential impacts across alternatives.

Alternative 1 – No Action

The two groups set to benefit from a no-action alternative are bicyclists and snowmobilers. Increasing trends in bicycle and snowmobile use in the area indicate the potential for impacts to these groups, especially when considering seasonal designations the action alternatives. However, in the no action alternative, projected growth in bicycle and snowmobile use, provided in this section as well as the Recreation section, would not increase visitor activity enough to produce a measurable change in regional economic data. This is because within the $4 billion dollar regional product between these two counties, a $1 to $3 million difference in spending for example (a figure which would exceed any potential effects) represents a miniscule fraction of total economic activity (or less than 1/1000th). In other words, there are too few jobs and income supporting these recreation activities, within the local economy, for observable impacts.

Alternative 2 – Proposed Action

Alternative 2 was the starting point for scoping the project and assessing public opinion. This alternative was developed to maintain the existing (1977) wilderness character of the Ten Lakes WSA. See the Alternative Descriptions in Chapter 2. As previously stated, alteration of designated mileage of trails, or cross-country areas available to biking, over-snow vehicles, or other users cannot easily be converted into changes in overall recreation levels in the area. Furthermore, the most vulnerable forms of recreation in terms of the project designation and alternatives represent a fraction of total recreation spending in the region.

Alternative 3

Alternative 3 was developed in response to motorized and mechanized user comments to the proposed action (See the Alternative Descriptions in Chapter 2). As previously stated, alteration of designated mileage of trails, or cross-country areas available to biking, over-snow vehicles, or other users cannot easily be converted into changes in overall recreation levels in the area. Furthermore, the most vulnerable forms of recreation in terms of the project designation alternatives represent a fraction of total recreation spending in the region.

Alternative 4

Alternative 4 was developed in response to wilderness advocates and individuals wanting more primitive recreation opportunities (See Alternative Descriptions in Chapter 2). As previously stated. Alteration of designated mileage of trails, or cross-country areas available to biking, over-snow vehicles, or other users cannot easily be converted into changes in overall recreation levels in the area. Furthermore, the most vulnerable forms of recreation represent a fraction of total recreation spending in the region.

Cumulative Effects

Potential cumulative effects exist due to pressure from population growth and lack of alternative areas for recreation in the greater economic region. For example, both population and OHV use are rising in the two-county area signaling increasing demand for OHV use across the landscape. However, within the spectrum of known current and reasonably foreseeable actions, no additional alternations to travel management will be taking place limiting the potential for project specific cumulative effects from agency decisions and actions.

Hydrology

Introduction

This section contains the results of the analysis for the physical aspects of the water resources in the Ten Lakes Travel Management Analysis Area on the Kootenai National Forest (KNF). This analysis shows that the implementation of any of the proposed alternatives would have no effects to water resources. No changes are being proposed to the existing transportation system that would affect water quality because no ground disturbance or vegetation removal is proposed. Furthermore, any changes proposed would maintain or decrease motorized and mechanized use from the existing conditions. Snowmobile or other over-snow winter travel would not have any direct, indirect or cumulative effects on water resources.

Regulatory Framework

The regulatory framework pertaining to Water Resources is summarized below. For additional information, please refer to the Water Project File.

State and Federal Laws and Regulations

The **Clean Water Act (CWA)** established Federal water quality policies, goals and programs. Both the Environmental Protection Agency (EPA) and the State of Montana have responsibility for carrying out the CWA. The objective of the Act is to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters."

> Section 313 of the CWA requires Federal agencies to comply with all Federal, State, interstate and local requirements, administrative authority, processes, and sanctions with respect to control and abatement of non-point sources of water pollutants. For example, section 313 requires the Forest Service to apply all reasonable land, soil and water conservation practices (i.e., specialized National Core Best Management Practices (BMPs) and Montana State BMPs) to all activities.
>
> The CWA also requires states to establish water quality standards that allow for the protection of designated beneficial uses, and to identify water bodies that do not meet these standards. The identified water bodies are called water quality limited segments (WQLS). A WQLS is a water body not fully meeting water quality standards or not fully supporting its intended uses.
>
> Other aspects of the Clean Water Act (e.g., Section 404) do not apply to this project.

The Multiple-Use Sustained-Yield Act of 1960 – states that management of the National Forests must provide sustained yields without impairment of the productivity of the land.

The Forest and Rangelands Renewable Resources Planning Act of 1974 (as amended by the National Forest Management Act of 1976), Section 5 directs the Secretary of Agriculture to use a systematic, interdisciplinary approach to achieve integrated consideration of physical, biological, economic, and other sciences in National Forest land and resource management planning.

Executive Order 11988, Floodplain Management directs that each agency shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impacts of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains in carrying out its responsibilities for: acquiring, managing, and disposing of federal lands and facilities; providing federally undertaken, financed, and assisted construction and improvements; and/or conducting federal activities and programs affecting land use,

including but not limited to water and related land resources planning, regulation, and licensing activities.

Executive Order 11990, Protection of Wetlands Order directs that each agency shall provide leadership and take action to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities for: acquiring, managing, and disposing of federal lands and facilities; providing federally undertaken, financed, and assisted construction and improvements; and/or conducting federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulation, and licensing activities.

The **Montana Administrative Rule Chapter 36.11** states that, "land management activities must not generate pollutants in excess of those that are naturally occurring, regardless of the stream's classification." Naturally occurring, as defined by the Montana Administrative Rule is the water quality condition resulting from runoff or percolation over which man has no control or from developed lands where all 'reasonable' land, soil, and water conservation practices (BMPs) have been applied; BMPs are considered reasonable only if beneficial uses are protected. Non-point source water quality in the Analysis Area is currently managed through the application of BMPs, which are the foundation for maintaining water quality in the State of Montana.

The **Montana Streamside Management Zone Law** (77-5-301 to 307) and rules (26.6.601 to 610) establish a system for classifying streams and determining widths of Streamside Management Zones (SMZs) and allowable activities within them. No activities will be occurring within the streamside management zone for any of the alternatives.

Travel Management Regulations (36 CFR § CFR 212.55)

When designating public off-road motor vehicle use on National Forest System **trails and areas** on National Forest System lands, the 2005 Travel Management Rule requires Forests -to consider effects on National Forest System natural and cultural resources, public safety, provision of recreational opportunities, access needs, conflicts among uses of National Forest System lands, the need for maintenance and administration of roads, trails and areas that would arise if the uses under considerations are designated; and the availability of resources for that maintenance and administration.

In addition to the above direction, **Executive Order 11644**, requires the consideration of effects with the objective of minimizing damage to soil, watershed, vegetation, and other forest resources.

KNF Land Management Plan (USDA Forest Service 2015)

The forest plan provides overall guidance for the management of the lands on the KNF. It describes the goals, desired conditions, and objectives toward which the management of the land should be directed. And it establishes standards and guideline to help achieve or maintain the desired condition or conditions, to avoid or mitigate undesirable effects, or to meet applicable legal requirements.

The plan components which provide specific water resource direction relevant to this project include:

Goals

GOAL-WTR-01. Maintain or improve watershed conditions in order to provide water quality, water quantity, and stream channel conditions that support ecological functions and beneficial uses.

Desired Conditions

FW-DC-WTR-01. Watersheds and associated aquatic ecosystems retain their inherent resilience to respond and adjust to disturbance without long-term, adverse changes to their physical or biological integrity.

FW-DC-WTR-02. Water quality meets applicable state water quality standards and fully supports beneficial uses. Flow conditions in watersheds, streams, lakes, springs, wetlands, and groundwater aquifers fully support beneficial uses, and meet the ecological needs of native and desirable non-native aquatic species and maintain the physical integrity of their habitats.

MA1c-DC-WTR-01, MA1b-DC-WTR-01, MA5a,b,c-DC-WTR-01 – Water bodies and riparian areas provide quality habitat for fish, amphibians, and other aquatic-associated species.

Guidelines

FW-GDL-WTR-01. Management activities in impaired watersheds (listed by the state under section 5 of the Integrated 303(d)/305(b) Report) with approved TMDLs are designed to comply with the TMDL. Management activities in watersheds with streams on the 303(d) list are designed to maintain or improve conditions relative to the cause for impairment and will not cause a decline in water quality or further impair beneficial uses. A short-term or incidental departure from state water quality standards may occur where there is no long-term threat or impairment to the beneficial uses.

Analysis Area and Methods

Analysis Area

The analysis area for water resources includes all watersheds containing proposed activities; watershed boundaries are used as analysis boundaries. These areas are displayed in the Streams, Lakes, and Watersheds Map (See Project File). Watersheds were chosen because, by definition, a watershed is a unit of land upon which water flows downhill to a common outlet (Black 1996). Therefore, activities in adjacent watersheds would typically not affect each other. The upper portion of seven watersheds are within the Analysis Area: Wigwam River, Phillips Creek, Indian Creek, Grave Creek, Sinclair Creek, Therriault Creek, and the Tobacco River.

Direct, indirect, and cumulative effects from past, proposed, current and reasonably foreseeable activities are discussed for the watersheds in the analysis area. In general, a cumulative effects boundary is adequate when all the upstream activities are included and the effects are not discernible at a downstream boundary. For this project the Tobacco River is that boundary for those streams that flow into the Tobacco and the US/Canadian border for the Wigwam Watershed. Therefore the cumulative effects boundary is the same as the direct and indirect effects boundary for this analysis.

Analysis Methods

Water Quantity

Equivalent clearcut acres (ECAs) are often used along with other information (e.g., stream condition) to describe the existing condition and potential impacts resulting from past, current and proposed land management activities. ECAs are commonly used to analyze potential changes in water yield by translating canopy removal from timber harvest, road building or natural disturbances (e.g., wildland fire) to a common unit. No canopy removal is proposed in any of the alternatives, so ECAs will not be carried forward in this analysis.

Water Quality

Effects of road management, large-scale disturbances (i.e., wildfire) and timber harvest can result in impacts to water quality. No road or vegetation management is proposed in any of the alternatives, therefore discussion of these activities as they relate to water quality will not be carried forward in this analysis.

Stream Channel Processes

Stream channels are dynamic and change as a result of both human-caused and natural disturbance. These changes are an indicator of the effect of past disturbance and/or the sensitivity of the drainage to disturbance.

Field data was collected across much of the analysis area. This data is the foundation of the existing condition and the effects analysis for this project. Stream discharge and sediment data was collected using USGS methodology. Stream classification, stability, dimensions and substrate data were collected using the Region 1 Aquatic Ecosystem Unit Inventory (USDA Forest Service, 2006) technical guide which incorporates the Rosgen Stream Classification System (Rosgen, 1996) methodology as well as PACFISH/INFISH Biological Opinion (PIBO) protocols. This data provides an indicator of trends in watershed condition.

The Rosgen Classification (Rosgen, 1996) was used to help explain the processes, functions and patterns of channels and to predict channel responses to management activities. The Rosgen Classification is derived from field measurements of stream attributes including entrenchment, width-depth ratio (W/D), sinuosity, and slope. Water Table 1 gives a brief description of each the channel types in the classification system.

Water Table 1. Stream Channel Types and Associated Attributes (Rosgen, 1996)

Channel Type	Thread	Entrenchment	Width/Depth	Sinuosity	Slope
A	Single Channel	< 1.4	< 12	1 – 1.2	4 – 10%
B	Single Channel	1.4 – 2.2	> 12	> 1.2	2 – 4%
C	Single Channel	> 2.2	> 12	> 1.2	< 2%
D	Multiple Channels	NA	> 40	> 1	< 4%
E	Single Channel	> 2.2	< 12	> 1.5	< 2%
F	Single Channel	< 1.4	> 12	> 1.2	< 2%
G	Single Channel	< 1.4	< 12	> 1.2	2 – 4%

Different channel types operate under different energy conditions (e.g., slope) and input conditions (i.e., type of material delivered to the channel), and have different capacities for stability. The combination of these factors results in different channel structures that range from cascades and waterfalls (Steep A); to step-pools (A and G); to riffles (B); to riffle-pool (C and F); to braided (D) (Rosgen, 1996).

A numerical classification of particle size is added to the basic Rosgen Channel Type to characterize the size of the material that makes up the channel bed. Bed material size is an important factor in determining channel stability and response (e.g., smaller particles can be more easily eroded and transported by lower energy flows than larger particles). The particle size categories are identified in Water Table 2.

Water Table 2. Bed Material Size Categories (Rosgen 1996)

Category	Description	Particle sizes (mm)
1	Bedrock	N/A
2	Boulder	> 256
3	Cobble	64 – 256
4	Gravel	2 – 64
5	Sand	.062 – 2
6	Silt or Clay	< .062

Assumptions and Limitations

Alternatives proposed in the Ten Lakes Travel Management Project do not propose any new ground disturbance or changes in vegetation. The project involves management of existing roads and trails for both non-winter and winter use. Changes would maintain or decrease motorized and mechanized use from the existing conditions. There will be no new roads or trails under any of the proposed alternatives.

Monitored stream reaches are assumed to represent the overall condition of the watershed within the Analysis Areas. These measured reaches comprise a small percentage of each stream network and portions of stream channel that have not been monitored quantitatively may have varying levels of stability. Therefore, in addition to the measured sites, the majority of channels in the Analysis Area have been walked to identify potential concerns that may not have shown up in the measured stream data.

Affected Environment

Introduction

Before forest management-induced changes began to occur, watersheds in the analysis area developed over time by adjusting to changes in flow regimes, sediment inputs and vegetation caused by natural disturbances including insects, disease, wildfire and climate.

Pre-settlement conditions in this area were likely a result of a repetitious cycle of disturbance and recovery; a pattern referred to as a pulse disturbance regime. Under a pulse disturbance regime, a disturbance occurs resulting in a short duration increase in water and/or sediment delivery that would potentially trigger some channel de-stabilization. The affected channel would then recover through time and generally stabilize until the next disturbance event. These disturbances typically

occurred in a patchy, mosaic pattern (in both time and space), so that some areas remained undisturbed by a given event and provided refuge habitat for fish and other aquatic organisms.

Historically, the most prevalent large-scale disturbance in the analysis area was wildfire. High-intensity, stand replacing fires varied in frequency, but had the most pronounced effects to the watersheds in the analysis area. Once high-intensity fire passed through an area, sediment delivery and water yield increased until forest floor and canopy vegetation had sufficiently recovered. During the fire disturbance cycle, large woody debris usually remained within channels and riparian zones and greatly aided the recovery of these areas. It is likely that some erosion followed these fires; especially on steep slopes and in headwater channels where most stabilizing vegetation would have been burned. More frequent and lower-intensity fires likely had little effect on these watersheds due to the minimal loss of tree canopy and understory duff layers.

Other types of disturbances that occurred included floods and debris slides. Floods may have affected several adjacent drainages or even the entire analysis area at the same time and occurred in a similar temporal pattern as the wildfires with time for recovery between major events. Channel stability and aquatic habitat can be affected by floods – steep reaches tend to scour and the material may be deposited in lower gradient reaches.

Over the last century, there has been a change in the watershed disturbance regime from the pulse disturbance regime described above to that of a ‘press’ disturbance regime (Wegner, 1996). Management activities in the Analysis Area (e.g., road building, forest canopy removal) have resulted in changes to water and sediment routing. These changes are lower in magnitude than the immediate post-disturbance effects that result from natural disturbances, but are generally higher than baseline conditions. Watersheds have not returned to their pre-management level due to the persistence of water and sediment increases contributed from roads at stream crossings and other continuing management activities.

In summary, the existing ‘press’ disturbance regime is characterized by nearly constant, moderate levels of effects (changes in water and sediment yields). The historic pulse disturbance regime had higher levels of effects, but the disturbances were less frequent and typically allowed time for system recovery between disturbance events.

Existing Conditions

The existing condition is the result of past management activities (e.g. road construction, timber harvest, prescribed burning) and natural events (e.g. wildfire, floods, landslides) that have occurred within the analysis area.

Geology and Climate

The physical characteristics of streams and lakes are determined by the geology and climate of the watershed. These drivers define the inherent sensitivity of a watershed to disturbance. For example, watersheds with higher mean annual precipitation have greater potential for flood events and erosion on sensitive areas or steep slopes.

The analysis area is within KNF Hydraulic Region III, which is seldom influenced by rain-on-snow events (USDA Forest Service, 1990; Hoffman, 1993; MacDonald et al., 1997). Mean annual precipitation in the Analysis Area ranges from 20 to 68 inches (refer to Average Annual Precipitation Map in the Water Project File). At lower elevations most of the precipitation falls as rain, while at the upper elevations most falls as snow. Elevation ranges from less than 3500 feet near the lower reach of Grave Creek to 7,830 feet at the top of Poorman Mountain near the Canadian Border.

Geology in the analysis area was strongly influenced by alpine and continental glaciers and is underlain by metamorphic sedimentary rocks known as the Belt Formation. These deposits were changed into hard dense rock formations under great pressure and heat. They form a relatively stable foundation for the watersheds in this area (Kuennen and Gerhardt, 1995). For more information on the geology in the analysis area, refer to the Soils Section in this document.

Riparian Areas and Wetlands

Riparian areas are transition zones between permanently saturated wetlands and dryer upland areas. These areas exhibit vegetative or physical properties characteristic of permanent surface or subsurface water influence (USDI Bureau of Land Management, 1993). Natural, undisturbed or well-managed riparian/wetland areas provide values and benefits far in excess of the land area they occupy (Brooks et al., 1997).

Riparian areas are defined based on proximity to streams and rivers. Wetlands are defined by having a water table usually near the ground surface or where the land is at least seasonally covered by shallow water. The Riparian Areas and Wetland Map located in the Water Project File shows locations of riparian areas, wetlands, streams, ponds and lakes in the analysis area. Past concerns with regard to grazing impacts to riparian areas and wetlands have been aggressively restored in the analysis area. There are no existing concerns identified for the riparian areas and/or wetlands within the analysis area.

Water Quantity

The greatest potential for change within a stream channel occurs during high-flow periods (King, 1989). Therefore, changes in magnitude and duration of peak flows are the most concerning potential effect to stream channel stability. Spring peak flows in the Analysis Area normally occur during May or June (Hoffman, 1993), but elevated flows can occur throughout the year in response to precipitation events. The timing, magnitude, and duration of runoff events may be changed by vegetation and road management activities or natural disturbances.

Runoff patterns can be affected when water is rerouted by roads. The compacted soils associated with roads and trails can act as sources of overland flow and can intercept groundwater, converting it to surface flow. If not properly drained, roads and corresponding ditches can extend the stream channel network and increase the drainage efficiency of the watershed. Changes in flow patterns could result in higher but shorter peak flows and/or a series of smaller, more prolonged peak flows depending on aspect, elevation, precipitation, drainage pattern, etc. Map 3 displays the location of roads within the analysis area watersheds.

Water Quality

The Clean Water Act (CWA) requires states to identify WQLS. The WQLS streams and beneficial use concerns within the analysis area are identified in Water Table 3. Many of the watersheds in the project area (Grave Creek, Therriault Creek, and Sinclair Creek) are tributaries to the Tobacco River, and are delineated partially, in the lower parts of the drainage, as source water for the city of Eureka's public water supply in the city's Source Water Delineation and Assessment Report (Richard, 2001). The Source Water Protection Plan for the City of Eureka in the Water Project file provides information on the source water area including its location. A TMDL for Grave Creek was completed in 2005 (MTDEQ, 2005) and the remaining WQLS streams within analysis area are covered in the Tobacco TMDL which was completed in 2011 (MTDEQ, 2011). The TMDL reports assume "median conditions of natural background and natural disturbance" and recognize that water quality targets may not be met under some natural conditions such as a large fire or flood event until the stream and/or watershed recovers from the natural event.

Water Table 3. WQLS in the Ten Lakes Travel Management Analysis Area[1]

Listed Stream Segment	Beneficial Use of Concern	Cause of Concern	Source of Concern
Grave Creek	Aquatic Life Support Cold Water Fishery Recreation	Riparian alteration Flow alterations Sedimentation/siltation	Water diversions Silviculture Roads
Therriault Creek	Aquatic Life Support Cold Water Fishery	Sedimentation/siltation	Grazing Agriculture
Tobacco River	Aquatic Life Cold Water Fishery	Physical substrate & Habitat alteration Sedimentation/siltation	Grazing Channel modification

[1] Information in this table was taken from the 2014 305(b) Reports including 303(d) Lists.

Studies have shown that roads can be the highest contributors of non-point source sediment in forested areas (Brooks et al., 1997; Luce and Wemple, 2001; Reid and Dunne, 1984; Waters, 1995). Roads have the potential to re-route surface runoff and sub-surface flow and/or increase sedimentation. Roads can affect streams directly by accelerating erosion and sedimentation, altering channel morphology, and/or changing the runoff characteristics of the watershed (Furniss et al., 1991; Gucinski et al., 2000). Roads can also intercept groundwater and convert it to surface flow. Water flowing on roads often picks up and carries sediment that is more readily available on non-vegetated native road surfaces. Sediment laden water can be delivered directly into the stream channel where roads cross streams. Predicting the probability of these types of failures is difficult. The frequency and amount of sediment delivery to streams is highly variable and is largely influenced by contributing road segment length, slope and location within the watershed (Luce and Black, 1999; King and Tennyson, 1984; Reid and Dunne, 1984; Schnackenberg and MacDonald, 1998). BMPs are implemented to reduce and in most cases eliminate these effects by disconnecting storm water runoff from streams.

There are 107 miles of existing road within the analysis area; all but one mile are Forest Service Roads. While this project does not propose new road construction, mass soil movement associated with roads could occur due to culvert or road fill failure. However, physical changes in the transportation system within the analysis area are not being addressed with this project. There will be no change in the number of system roads as a result of any alternatives and discussions of road length or number of roads will not be carried forward in the analysis.

Additionally, while forest management activities have the potential to increase suspended sediment through ground disturbance and water routing, which has both physical and biologic implications for stream channel conditions; based on samples collected from 2004 to 2015, suspended sediment regimes appear to be below those expected in undisturbed forested watersheds. Brooks et al. (1997) states that suspended sediment concentrations in undisturbed forested watersheds are relatively low, or approximately 10-20 ppm. Of the samples collected, the 12-year average total suspended solids for Grave Creek is 10 parts per million (ppm).

While Grave Creek is listed as a WQLS stream for sediment, it appears that suspended sediment levels from National Forest Lands have not been the major contributor during the past ten years. Much of this can be attributed to reduced management activity, improved logging practices, designating riparian buffer zones, and improved BMPs for both timber harvest and roads.

Stream Channel Processes

The Rosgen Stream Classification System (Rosgen, 1996), derived from field measurements, was used in this analysis to help explain the processes, functions and patterns of channels and to predict channel responses.

As discussed in the methods section, different channel types have different capacities for stability. The combination of these factors results in a range of potential channel forms that result from different energy conditions and input conditions. The results of the field measurements and classification of streams in the analysis are compared to reference stream data is displayed in Water Table 4.

Water Table 4. Stream Survey Data Compared to Reference Stream Data

Stream	Reach #	Year	Channel Type	Bank Full Width (BFW) ft.	Width-Depth Ratio*	Substrate Percent Fines (PIF) *	% Stable Banks**
Clarence	1	2007	B3	24.5	24	6	100
Clarence	1	2001	B4	17.0	5	2.9	86
Clarence	2	2001	C4	16.4	6	4.3	82
Clarence	3	2001	B4	13.7	11	5.4	99
Clarence	4	2001	B3	16.8	14	3.3	100
Clarence	5	2001	B4	16.6	12	2.4	100
Clarence	6	2001	B4	6.7	9	No Data	No Data
Foundation	1	2001	B4	18.4	23	0.4	96
Foundation	2	2001	B4	12.6	19	No Data	No Data
Foundation	3	2001	B3	6.7	11	No Data	No Data
Foundation	4	2001	A3	6.3	16	No Data	No Data
Grave	1	2003	C3	37.0	30	2	100
Grave	1	2008	C3	41.2	22	4	95
Grave	2	2002	F4b	42.3	19	8.6	99
Grave	3	2002	F2b	52.3	15	7.9	92
Grave	4	2002	B4	79.5	26	5.7	99
Grave	5	2002	B3	49.2	29	3.7	97
Grave	6	2002	B4c	50.2	13	3.8	97
Grave	7	2002	B3	50.8	18	4.3	98
Grave	8	2002	C4	37.7	21	5	99
Grave	9	2002	B4	26.2	13	7.1	100
Grave	10	2002	C4	34.4	20	13.1	99
Grave	11	2002	B4	29.5	17	3.6	100
Bluebird	1	2009	C4	30.5	35	0	100
Otter	1	2009	C4	10.6	20	0	98
Stahl	1	2001	B4	32.9	17	14	96

Stream	Reach #	Year	Channel Type	Bank Full Width (BFW) ft.	Width-Depth Ratio*	Substrate Percent Fines (PIF) *	% Stable Banks**
Stahl	2	2001	A3	19.9	11	6	98
Stahl	3	2001	A3	17.0	10	6	97
Stahl	4	2001	A4	17.0	8	1	98
Stahl	5	2001	B3	16.4	13	No Data	No Data
Stahl	6	2001	B4	12.2	13	No Data	No Data
SF Stahl	1	2001	B4	11.9	18	No Data	No Data
Wigwam	1	2003	B3	34.5	29	1	96
Wigwam	1	2008	B3	37.9	21	No Data	98
Weasel	1	2003	C4	29.1	25	No Data	100
Weasel	1	2008	C3	38.9	16	No Data	95

* PIBO Reference Data from Tobacco TMDL (Montana DEQ, 2011). (BFW < 30 = W/D ≤ 27; BFW > 30 = W/D ≤ 35) (PIF ≤ 6 mm ≤ 15%)
** INFISH 1995, Page A-4 (≥ 80). Are only required on non-forested streams but can be used on forested as well.

The reaches monitored in the analysis area fall close to or completely within reference reach ranges (FW-DC-WTR-03). Review of the physical stream parameters in Water Table 5 show that all stream indicators are within reference ranges. Streams within the analysis area are currently stable and in good condition. The majority of streams in the analysis area have a low to moderate sensitivity to disturbance and a good to excellent recovery potential.

Direct and Indirect Effects

Direct and indirect effects on Water Resources are described below for proposed activities identified in Chapter 2 of the DEIS. This section presents the potential effects of proposed management activities.

There are no direct or indirect effects to water quantity, water quality or stream channel processes as a result of the proposed alternatives. None of the alternatives include management activities that could affect water resources (i.e., vegetation removal, road building or removal).

Cumulative Effects

Cumulative effects described in this section are a result of the sum of potential effects of the proposed (direct and indirect effects), past (existing condition), and current and reasonably foreseeable activities in a watershed (summary listed in Chapter 3). The analysis area for cumulative effects with regard to Water Resources consists of the same watersheds identified earlier in the document for Existing Condition and Direct and Indirect Effects. Reasonably foreseeable activities are summarized in Chapter 3 of the EIS.

Implementation of any of the alternatives would at least maintain Water Resources. This conclusion is based on the cumulative effects analysis of past monitoring of stream flow, water quality, and channel stability. In addition, all laws, regulations and policies related to water resources will be met further ensuring the protection of all beneficial uses.

Consistency with Regulatory Framework

Land and Resource Management Plan

The Kootenai National Forest Land and Resource Management Plan (LRMP) provides desired conditions, objectives, standards, and guidelines for water resources. The following are applicable to the actions in this project:

All alternatives are consistent with the Kootenai National Forest Plan watershed goal to maintain or improve watershed condition in order to provide water quality, water quantity, and stream channel conditions that support ecological functions and beneficial uses (GOAL-WTR-01). In addition, all alternatives are consistent with applicable desired conditions, standards and goals in the Kootenai National Forest Plan. *This statement is based on conclusions from analysis of this project regarding Forest Plan direction discussed below. Implementation of any of the proposed alternatives would maintain the support of ecological functions and beneficial uses within the analysis area.*

FW-DC-WTR-01. The activities proposed in all alternatives would have no change in ECAs in the watersheds of the analysis area, and values would continue to be well within historic ranges. Implementation of the proposed activities would maintain the inherent resilience of the watersheds to respond and adjust to disturbance in the analysis area.

FW-DC-WTR-02, FW-GDL-WTR-01. Each alternative is expected to at least maintain and potentially improve stream conditions in the analysis area. This expectation is based on surveys of existing watershed conditions and the absence of any ground disturbance or canopy removal as a result of any of the alternatives.

MA1c-DC-WTR-01, MA1b-DC-WTR-01, MA5abc-WTR-01. Water bodies and riparian areas will continue to provide quality habitat for fish, amphibians, and other aquatic-associated species. None of the alternatives proposed activities would impact aquatic species habitat.

Federal, State and Local Law

The Clean Water Act, Each alternative is expected to maintain stream conditions in the analysis area. This expectation is based on: surveys of existing watershed conditions; and the conclusion that no change in ECAs would occur and that they would remain within historic ranges. Implementation of the proposed activities would maintain beneficial use conditions for all watersheds including WQLS and TMDL watersheds in the analysis area

Executive Order 11988 and 11990, No impact to riparian areas, wetlands or associated floodplains are anticipated as no activities are proposed in these areas.

Montana Administrative rule Chapter 36.11, No impact to current BMPs or need for additional BMPs are anticipated as no ground disturbing activities are proposed.

Montana Streamside Management Zone Law (77-5-301 to 307 and rules 26.6.601 to 610), No impact to riparian areas and wetlands are anticipated as no activities are proposed in riparian areas or wetlands.

Travel management Regulations (36 CFR § CFR 212.55) and Executive order 11655, require the consideration of effects on forest resources with the objective of minimizing damage to soil, watershed, vegetation, and other forest resources. *Any changes proposed would maintain or*

decrease motorized and mechanized use from the existing conditions. Snowmobile or other over-snow winter travel would not have any direct, indirect or cumulative effects on water resources.

Summary

Through the analysis of the physical aspects of the water resources in the Ten Lakes Travel Management Project Area, all alternatives were found in compliance with the following regulatory framework:

- Clean Water Act and Protection of Beneficial Uses;
- Protection of Riparian and Wetland Areas; and
- 2015 Kootenai National Forest Plan Direction.

Implementation of any alternative would maintain watershed condition and the support of beneficial uses. All alternatives are expected to maintain water quantity, quality and stream channel processes. This conclusion is based on the analysis of direct, indirect, and cumulative effects to sediment delivery, stream flow, riparian condition, and channel stability. Over the 10-year planning period, the condition of the roads would remain nearly the same as the existing condition and effects of roads on aquatic resources would remain about the same. The risk of road erosion during large events would remain the same as the existing condition. Stream channel conditions are expected to be maintained throughout implementation and beneficial uses would be protected.

Soils

Introduction

This section discloses the results of the analysis for the soils resource in the Ten Lakes Travel Management Analysis Area. The implementation of any of the proposed alternatives would have no effects to soils. No changes are being proposed to the existing transportation system that would change the impact on soils because no ground disturbing activities are proposed. Furthermore, any changes prosed would maintain or decrease motorized and mechanized use from the existing conditions. Snowmobile or other over-snow winter travel would not have any direct, indirect or cumulative effects on soils. Because all winter motorized and non-motorized access would take place over snow, there would be no soil disturbance including compaction or erosion. There would be no soil disturbance or effects to areas with sensitive soils. No vegetative structural changes would occur as a result of the proposed alternatives.

Regulatory Framework

The regulatory framework pertaining to soil resources is summarized below. For additional information, please refer to the Soil and Water Regulatory Framework in the Soil and Water Project File.

State and Federal Laws and Regulations

The **Multiple Use-Sustained Yield Act** of 1960 directs the Forest Service to achieve and maintain outputs of various renewable resources in perpetuity without permanent impairment of the land's productivity.

Section 6 of the **National Forest Management Act of 1976** (NFMA) requires that lands are to be managed to ensure the maintenance of long-term soil productivity, soil hydrologic function, and ecosystem health. Soil resource management will be consistent with these goals. Region 1 **Soil Quality Standards** (R-1 Supplement No. 2500-2014-1) in tandem with **Water**

Conservation Practices Handbook R-1/R-4 Amendment No. 1 (FSH 2509.22) define soil quality standards to assure the statutory requirements of NFMA are met. The standards emphasize the protection and/or restoration of soil resources and require management activities to maintain or improve soil quality. Region 1 Soil Quality Standards require that new project activities do not create detrimental soil disturbance on more than 15 percent of an activity area. However, these standards do not apply to developed sites such as permanent roads/landings, mines, developed recreation and administrative sites because they have been removed from the productive land base.

Section 8 of the **National Forest Management Act of 1976** (NFMA) **–** Section 8(b) of the National Forest Management Act states, “any road constructed on land of the National Forest system in connection with a timber contract or other lease shall be designed with the goal of re-establishing vegetation cover on the roadway and areas where vegetation cover has been disturbed by the construction of the road, within ten years after the termination of the contract, permit, or lease”. This section of the Act further states, “Such action shall be taken unless it is determined that the road is needed for use as a part of the National Forest Transportation System”.

Section 8(c) of this act states “Roads constructed on National Forest System lands shall be designed to standards appropriate for the intended uses, considering safety, cost of transportation, and impacts on land resources”.

Travel Management Regulations (36 CFR § CFR 212.55)

When designating public off-road motor vehicle use on National Forest System **trails and areas** on National Forest System lands, the 2005 Travel Management Rule requires Forests -to consider effects on National Forest System natural and cultural resources, public safety, provision of recreational opportunities, access needs, conflicts among uses of National Forest System lands, the need for maintenance and administration of roads, trails and areas that would arise if the uses under considerations are designated; and the availability of resources for that maintenance and administration.

In addition to the above direction, **Executive Order 11644**, requires the consideration of effects with the objective of minimizing damage to soil, watershed, vegetation, and other forest resources.

KNF Land and Resource Management Plan (USDA Forest Service 2015)

The Forest plan provides overall guidance for the management of the lands on the KNF. It describes the goals, desired conditions, and objectives toward which the management of the land should be directed. And it establishes standards and guideline to help achieve or maintain the desired condition or conditions, to avoid or mitigate undesirable effects, or to meet applicable legal requirements.

The plan components which provide specific soil resource direction relevant to this project include:

GOAL-SOIL-01. Maintain soil productivity and ecological processes where functioning properly, and restore where currently degraded. Maintain the physical, chemical and biological properties of soils to support desired vegetation conditions and soil-hydrologic functions and processes within watersheds.

FW-DC-SOIL-02. Areas with sensitive and highly erodible soils or landtypes with mass failure potential are not destabilized as a result of management activities.

Analysis Area and Methods

Soils Analysis Area

The direct, indirect, and cumulative effects analysis of the alternatives for the soil resource is generally limited to the area where ground disturbing activities are proposed as defined by the Forest Service Manual (R-1 Supplement No. 2500-99-1). However, for this analysis, the proposed alternatives do not include new ground disturbing activities (i.e., harvest, fuel treatment, etc.) so the analysis area includes the entire project area and the potential effects of the proposed activities on sensitive soils.

Methods

Existing Condition

Existing condition for the soils resource were determined using aerial photography and GIS data. The Soil Survey of the Kootenai National Forest Area, Montana and Idaho (Kuennen and Gerhardt, 1995) was reviewed to determine landtypes and associated descriptions.

Direct and Indirect Effects

The potential effects to soils was analyzed based on amount of ground disturbing activities proposed. Because no ground disturbing activities are proposed in any alternatives, no direct or indirect effects will occur.

Cumulative Effects

Cumulative effects include the combination of direct and indirect effects from past, present and reasonably foreseeable activities. Direct, indirect and cumulative effects on soils are typically measured within an activity area where ground disturbance may occur. Existing system roads on the National Forest transportation system are considered dedicated lands and are not part of the cumulative effects. Therefore, no cumulative effects are anticipated from the proposed alternatives as this project only addresses existing system roads on the National Forest transportation system.

Assumptions and Limitations

Alternatives proposed in the Ten Lakes Travel Management Project do not propose any ground disturbance or changes in vegetation. The project involves management of existing roads and trails for both non-winter and winter use. There will be no new roads or trails under any of the proposed alternatives. There are no areas where soil degradation would take place as a result of any alternatives.

Affected Environment

The analysis area is underlain by metamorphic sedimentary rocks known as the Belt Formation. These rocks were formed approximately one billion years ago from fine sediments that accumulated at the bottom of ancient seas. These deposits were changed into hard dense rock formations under great pressure and heat. They form a relatively stable foundation for the watersheds in this area (Kuennen and Nielson-Gerhardt, 1995).

Elevation ranges from less than 3,500 feet near the lower reach of Grave Creek to 7,830 feet at the top of Poorman Mountain near the Canadian Border.

Geology in the analysis area was strongly influenced by alpine and continental glaciers. At higher elevations, alpine glaciers created steep bedrock headwalls, valley troughs, cirque basins, and rocky ridges. At lower elevations, continental glaciers generally scoured the ridge tops and noses and filled the side-slopes and valleys. Terraces and rolling topography characterize the base of the mountains. Glacial ice retreated from the area 12,000 to 15,000 years ago. The glacial till soils have a fine sand/silt particle size. They are light in color and contain 30 to 45 percent sub-rounded rocks.

Approximately 6,800 years ago a volcanic eruption (Mt. Mazama) deposited a layer of volcanic ash over northwestern Montana. Where the volcanic ash is present, it forms the topsoil layer ranging in thickness from six to 12 inches and has a yellowish brown to reddish brown color.

From the eruption of Mt. Mazama to the early 1900's, soils in the Analysis Area were relatively undisturbed compared to the large-scale events described above. Naturally occurring surface erosion and small-scale landslides probably occurred, but their magnitude would have been insignificant and localized in terms of long-term soil productivity in the Analysis Area. Recovery in these areas was attained when re-vegetation or a stable angle occurred. Soil productivity was maintained over the long-term as vegetative matter decomposed or burned in low intensity wildfires.

Historically, the most prevalent large-scale disturbance in the Analysis Area was wildfire. Stand replacing fires varied in frequency from 50 – 300 years, depending on vegetation type and location. After fires, erosion increased temporarily until forest floor and canopy vegetation recovered. Soils may have developed some hydrophobic conditions following severe fires, however, little evidence has been found that hydrophobicity occurs following wildfires in this area. More frequent, low-intensity underburns likely had little effect on soils due to the short contact time and lower temperatures associated with these fires.

Soils are the basic support system of forest ecosystems, providing nutrients, water, oxygen, heat, and mechanical support to vegetation. Any environmental stressor that alters the natural function of the soil has the potential to influence the productivity, species composition and hydrology of forest systems. Maintenance of soil quality is dependent upon the protection of surface layers from erosion, displacement and compaction as well as the continual cycling of nutrients and organic material. Soil quality refers to the capacity of a soil to function within ecosystem and land use boundaries, to sustain biological productivity, maintain environmental quality, and promote plant and animal health. Various factors influence soil physical, chemical, biologic and hydrologic properties.

However, the inherent geology and climate does not change as a result of management; it merely set the stage for analysis of effects. Therefore, geology and climate will be discussed further in this analysis only as they pertain to other indicators.

Existing Condition

Existing condition is the result of the past management activities (road construction, timber harvest, prescribed burning, etc.) and natural events (wildfire, floods, landslides, etc.) that occurred in the Analysis Area. These activities and events provide baseline conditions for the affected environment in the Analysis Area. The data used for the analysis of this report is the best available data with regards to accuracy of route location, soil type and associated soil properties.

Two criteria were used to assess existing condition for soil resources:

- Kootenai National Forest **Landtypes**; and
- Identification of **Sensitive Soils**.

Landtypes are units based on soil types. There are 50 recognized landtypes on the KNF of which 16 are found in the Analysis Area. This classification of landtypes is based on landforms, geology, soils, vegetation, drainage type and climate. They describe inherent conditions and do not change as a result of management. The landtypes were compiled in Kuennen and Nielson-Gerhardt (1984) and published in Soil Survey of Kootenai National Forest Area, Montana and Idaho (Kuennen and Nielson-Gerhardt, 1995). A map and a list of landtypes in the Analysis Area is located in the project file.

Landtype classification helps determine management suitability. Sensitive soils are identified based on one of three characteristics: 1) landtypes of concern, 2) riparian/wetland areas and 3) low productivity soils. Sensitive soils are best addressed through avoidance, Best Management

Practices (BMPs) and design criteria. There are seven designated “landtypes of concern” on the KNF that should be given additional consideration prior to the introduction of management activities. The only landtype of concern in the analysis area is 351 and makes up approximately 1% (800 acres).

There are scattered riparian corridors and small patches of wetland areas in the Analysis Area. Riparian and wetland soils are considered sensitive because their moisture levels are high all or most of the year, and moist soils are more prone to compaction, displacement, rutting, and/or puddling. Activities proposed in this project will not disturb these areas.

Past activities in the Analysis Area (e.g., road construction, timber prescribed fire, livestock grazing, firewood gathering) have resulted in impacts that persist today. Road construction affects soils by displacing topsoil layers from the road prism and compacting the road surface and shoulders. Presently, there are approximately 106 miles of Forest Service System Road within the Analysis Area and 1 mile of private road. Forest Service System Roads are considered permanent infrastructure and are not considered part of the suitable land base.

Environmental Consequences

Direct and Indirect Effects

Direct and indirect effects on the soils resource are described below for the proposed alternatives.

Sensitive Soils

No new management activities are proposed for any of the alternatives that would result in changes in ground disturbance in the Analysis Area. Therefore, no direct, indirect or cumulative effect to sensitive soils would result from any of the proposed alternatives.

Permanent Roads

No additional road construction or temporary road re-construction is proposed for any of the proposed alternatives. Therefore, road management would have no cumulative effect on soils in the Analysis Area.

Cumulative Effects

Cumulative effects analysis for soils is the sum of all impacts of past (existing condition), current (direct and indirect effects), and reasonably foreseeable activities on the soil resource. Reasonably foreseeable activities are summarized in Chapter 3 of the EIS. The Analysis Area for consideration of cumulative effects is the same as that used for analysis of existing condition and direct and indirect effects which includes the entire project area.

No additional ground disturbance is proposed, therefore there are no cumulative effects to soil resources are expected to result from implementation of any of the proposed alternatives. The soil resource would be maintained.

Regulatory Framework Findings

Land and Resource Management Plan

The KNF Forest Plan (2015) provides desired conditions, objectives, standards and guidelines for soil resources. All alternatives are consistent with the KNF Forest Plan soil resource goal to maintain soil productivity and ecological processes where functioning properly, and restore where

currently degraded. And to maintain the physical, chemical, and biological properties of soils to support desired vegetation conditions and soil-hydrologic functions and processes within watersheds (FW-GOAL-SOIL-01). *Implementation of any of the proposed alternatives would make progress toward achieving this goal by ensuring that activities would only occur on national forest system lands where soil, slope, and other watershed conditions would not be irreversibly damaged. In addition, all alternatives are consistent with applicable desired conditions and guidelines in the KNF Forest Plan. This statement is based on conclusions from analysis of this project discussed below.*

FW-DC-SOIL-02. *All alternatives would make progress toward meeting this desired condition. Landtypes 351 is the only landtype of concern and comprises approximately 1% of the Analysis Area. In addition, no ground disturbance will occur as a result of the proposed alternatives in any of the landtypes in the project area.*

FW-GDL-SOIL-04. *None of the proposed alternatives include activities that would affect landslide prone areas.*

State and Federal Laws and Regulations

The **National Forest Management Act (NFMA)** requires the Forest Service to manage National Forest System Lands under ecosystem management principles without permanent impairment of land productivity and to maintain or improve soil quality. *All activity areas would remain below 15 percent detrimentally disturbed soils per Regional Soil Quality Standards as there are no ground disturbing activities proposed in any of the alternatives.*

Travel management Regulations (36 CFR § CFR 212.55) and Executive order 11655, require the consideration of effects on forest resources with the objective of minimizing damage to soil, watershed, vegetation, and other forest resources. *Any changes prosed would maintain or decrease motorized and mechanized use from the existing conditions. Snowmobile or other over-snow winter travel would not have any direct, indirect or cumulative effects on soils.*

Summary

In summary, the implementation of any of the proposed alternatives would have no effects to soil resources. No changes are being proposed to the existing transportation system that effects soils because no ground disturbing activities are proposed. Furthermore, any changes in use prosed would maintain or decrease motorized and mechanized use from the existing conditions. Snowmobile or other over-snow winter travel would not have any direct, indirect or cumulative effects on soils. Because all winter motorized and un-motorized access would take place over snow, there would be no soil disturbance including compaction and erosion. There would be no soil disturbance or effects to areas with sensitive soils. No vegetative structural changes would occur as a result of this project.

Invasive Plant Species

Introduction

Invasive species include non-native plants, insects, and pathogens that threaten the health of National Forest and Grasslands (USDA Forest Service 2004). In this document, the terms "noxious weeds", "invasive species", "weeds", and "invasive plants" are used synonymously. "Invasive plants" are defined as non-native species that are likely to cause or have the potential to cause economic or environmental harm to the ecosystem(s) under consideration or harm to human health (USDA Forest Service 2015).

The Forest Service has developed a "National Strategy and Implementation Plan for Invasive Species" to address the threats invasive species pose to National Forests and Grasslands (USDA Forest Service 2004). Short term actions identified in this document include prevention, early detection and rapid response, control and management, and rehabilitation and restoration.

This section discloses the results of the noxious weeds resource analysis in the Ten Lakes Travel Management (TLTM) Analysis Area.

Regulatory Framework

State and Federal Laws and Regulations

The Forest and Rangelands Renewable Resources Planning Act of 1976 – Provides for maintenance of land productivity and the need to protect and improve the soil and water resources.

The National Forest Management Act (NFMA) of 1976 – It is the policy of the Congress that all forested lands in the NFS shall be maintained in appropriate forest cover with species of trees, degree of stocking, rate of growth, and conditions of stand designed to secure the maximum benefits of multiple use sustained yield. Plans developed shall provide for the diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet the overall multiple-use objectives, and within the multiple-use objectives.

Federal Noxious Weed Act of 1974 – Authorizes the Secretary to cooperate with other federal and state agencies and individuals in carrying out measures to eradicate, suppress, control, or prevent the spread of noxious weeds. In 1990, the Act was amended by the 1990 Farm Bill. The revisions included designating a person adequately trained in managing undesirable plant species to develop and coordinate a program to control such plants on the agency's land.

Executive Order 13112 – Directs federal agencies whose actions may affect the status of invasive species to (1) prevent the introduction of invasive species, (2) detect and respond rapidly to and control populations of such species in a cost effective and environmentally sound manner, as appropriations allow.

FSM 2080 – Contains numerous provisions related to the suppression of noxious weeds.

State of Montana County Noxious Weed Management Act – States that it is unlawful for any person to permit any noxious weed to propagate or go to seed on the person's land, except that any person who adheres to the noxious weed management program of the person's weed management district or who has entered into and is in compliance with a noxious weed management agreement is considered to be in compliance with this section. The KNF has entered into an agreement with Lincoln County.

Travel Management Regulations (36 CFR § CFR 212.55) - When designating public **off-road motor vehicle** use on National Forest System **trails and areas** on National Forest System lands, the 2005 Travel Management Rule requires Forests to consider effects on National Forest System natural and cultural resources, public safety, provision of recreational opportunities, access needs, conflicts among uses of National Forest System lands, the need for maintenance and administration of roads, trails and areas that would arise if the uses under considerations are designated; and the availability of resources for that maintenance and administration.

In addition to the above direction, **Executive Order 11644**, requires the consideration of effects on the following, with the objective of **minimizing**:

1) Damage to soil, watershed, vegetation, and other forest resources;
2) Harassment of wildlife and significant disruption of wildlife habitats;
3) Conflicts between motor vehicle use and existing or proposed recreational uses of National Forest System lands or neighboring Federal lands; and
4) Conflicts among different classes of motor vehicle uses of National Forest system lands or neighboring Federal lands.

2015 Kootenai Forest Plan

FW-DC-VEG-10: Newly invading, non-native invasive plant species are treated and populations are contained or eradicated. The weed program on the Forest uses integrated pest management approaches, including prevention and control measures that limit introduction, intensification, and spread due to management activities. Agreements with cooperative weed management areas assist control efforts across jurisdictional boundaries.

FW-OBJ-VEG-02. Non-native Invasive Plant Species – Over the life of the Plan, the outcome per decade is:

- All sites that are discovered with newly invading non-native invasive species are treated.
- The treatment of approximately 30,000 to 75,000 acres to reduce non-native invasive plant density, infestation size, and/or occurrence (these areas are also included in FW-OBJ-VEG-01).

MA1c-GDL-VEG-01. Non-native invasive plant species may be treated and other vegetation restoration projects may occur if the need is linked to human-induced changes and is necessary for the recovery of threatened and endangered species or native ecological communities.

GA-DC-VEG-TOB-02. Noxious weed treatment occurs with cooperation from the state and county to improve habitat conditions for native grasses, forbs, and shrubs.

Methodology

The bounds of analysis for noxious weeds are the Ten Lakes Travel Management project area.

The analysis considers information from yearly weed surveys, volunteer weed surveys, yearly project area herbicide application records, field visits within the project area, as well as, experience across the District and Forest. Intensive weed surveys within the project area were conducted in 2010 by volunteers. Forest Plan monitoring reports provide summary information for the Forest over a number of years.

Affected Environment

Invasive plants have impacted native plant diversity on the Kootenai National Forest. The loss of native plant diversity impacts wildlife forage, causes soil erosion, increases sediment in watersheds, and reduces pollinator populations.

Invasive plants are more common along routes open to motorized vehicles than in other parts of the National Forest. Travel corridors, consisting of constructed roads or trails, whether open to motorized use or not, are considered an invasive plant "vector" (a "vector" being anything which transports a weed to another area). Routes constructed for full-size vehicles create corridors for invasive plant-seed transport by altering the condition of a site through removal of native vegetation, opening the canopy and removing and disturbing soil layers (Hansen and Clevenger 2005, Trombulak and Frissell 2000, Tyser and Worley 1992). Roads can open up previously weed-free areas to human-use, whether motorized or non-motorized, and open areas to wildlife. Even trails where no motorized use occurs can act as corridors for the movement of exotic plant species (Benninger-Truax et al. 1992), although the level of weed spread is not as great as seen with motorized routes open to full size vehicles (Tyser and Worley 1992). Another study showed that areas adjacent to more improved roads were used more frequently and thus contained more invasive plants than areas adjacent to primitive, less utilized, four wheel drive roads (Gelbard and Belnap 2003).

Besides the obvious reason that motorized roads receive more use than other areas on the Forest, it has also been shown that wheeled vehicles transport greater quantities of weed seed than other users. In a controlled study it was found that hundreds of weed seeds became attached to a vehicle when backing over a weed infested field. After driving ten miles, only 8 percent of these seeds remained on the vehicle (Trunkle and Fay 1991). Although seeds can be spread by other users, this study indicates that vehicles are more likely to pick up large quantities of seed. This is dependent, of course, on where vehicles are parked or driven prior to being driven on Forest roads. As long as vehicles stay on designated routes this decreases the risk of spreading weeds off-road. Another risk of vehicles traveling off road is that they can pick up weeds along the cut or fill slopes of a road and transport them to weed-free areas off road.

All open routes within the analysis area have been analyzed in previous NEPA documents for herbicide application and periodic monitoring and spraying will be on-going along these routes.

There are dispersed campsites present along the open roads within the analysis area, which are accessed using motorized wheeled vehicles. These sites and the routes used to access them have the potential to introduce new invasive plant species and to spread these species through the analysis area.

The analysis area contains widespread populations of spotted knapweed (*Centaurea biebersteinii*) along roads and in previously disturbed areas. Other invasive plants found throughout the analysis area include oxeye daisy (*Leucanthemum vulgare*), sulfur cinquefoil (*Potentilla recta*), Canada thistle (*Cirsium arvense*), hounds-tongue (*Cynoglossum officinale*), orange hawkweed (*Hieracium aurantiacum*) and meadow hawkweed (*Hieracium caespitosum*).

Invasive Plant Species Information

Spotted knapweed (*Centaurea biebersteinii*): Spotted knapweed is the most prolific noxious weed on the Kootenai National Forest. It can be found along most open roads, but is also common along trails. Spotted knapweed currently infests over 200,000 acres of the Kootenai National Forest (USDA Forest Service 2007). There is a strong correlation between canopy closure and spotted knapweed infestation; the more sunlight reaching the forest floor, the higher

probability of infestation. Spotted knapweed infestation is also correlated with aspect, soil type, and the degree of soil disturbance. It is most commonly found in pastures on dry sterile gravelly, or sandy soils, and will quickly invade disturbed sites such as road and railroad rights-of-ways, waste places, abandoned fields, timber harvest units, and overgrazed rangeland. Spotted knapweed is usually not found in shaded areas or on cultivated land or irrigated pasture. In western Montana, it appears that the more vegetation consumed in a fire on sites previously infested with spotted knapweed, the higher the probability of spotted knapweed spreading into newly opened areas in the immediate vicinity.

Current treatments for spotted knapweed include mechanical (hand pulling and mowing), biological, and chemical. Hand pulling does not have a high success rate and is expensive, thus it is only effective on small areas, in isolated populations. Mowing is typically done in developed recreation sites and prevents seed heads from forming, but does little to reduce the number of plants. Biological control agents have been dispersed across the forest, but are not located in the vicinity of this project. Biological controls take years to build up populations that impact plant numbers. At this time chemical control methods are the most effective for treating small infestations and containing known existing populations. Currently active chemical treatments occur on the open roads leading to the analysis area, at trail heads, and within campgrounds.

St. Johnswort (*Hypericum perforatum*): St. Johnswort was introduced in the United States in the late 1700s and was established in the western U.S. by the early 1900s. This weed species is common in forested areas across North America. It is commonly associated with disturbances such as roads, trails, logging, grazing, and fire. St. Johnswort reproduces by seed and by sprouting from lateral roots and root crowns. They can produce 15,000 to 34,000 seeds per plant on average (Zouhar 2004).

St Johnswort is controlled primarily by chemical means on the Kootenai National Forest. Though hand pulling has been effective on small isolated populations. Biological controls are not active in the WSA at this time.

Sulfur cinquefoil (*Potentilla recta*): Sulfur cinquefoil is adapted to a wide range of environmental conditions. It has been found growing in open forests, grasslands, and disturbed areas, often in association with spotted knapweed. Sulfur cinquefoil is a prolific seed-producer (about 1,600 seeds per plant) and has been known to displace spotted knapweed in mixed stands. It is unknown whether this is a successional mechanism or a result of herbicide and/or biological controls targeting spotted knapweed (Zouhar 2003).

Current treatment of sulfur cinquefoil is chemical. No other method of control appears to be as effective for this weed species. Biological controls are being studied in other locations in western Montana.

Canada thistle (*Cirsium arvense*): Canada thistle was most likely introduced to the United States as a contaminant of crop seed and/or ship's ballast in the early 1600s. Canada thistle reproduces both by seed and by lateral roots; however most of its reproductive energy is put into vegetative propagation. It can regenerate from root fragments less than an inch long. Male and female flowers are produced on separate plants so cross pollination is necessary for seed production.

Due to its extensive lateral root system Canada thistle is not easily eradicated once it becomes well established, but certain herbicides can be effective. Sites most susceptible for infestation include timber harvest/burned areas, roadsides, and riparian areas.

Oxeye daisy (*Leucanthemum vulgare*): Oxeye daisy is often found in moist sites. Mountain meadows and riparian areas are most susceptible to infestation by this species. Each plant can produce up to 26,000 seeds, but its rhizomatous nature allows it to form dense stands, choking out native vegetation (Krueger and Sheley 2002).

Primary method for reducing oxeye daisy on the Kootenai National Forest is with herbicides. Small infestations may be reduced by hand-pulling, but this has reduced effectiveness due to the spread by rhizomes.

Hounds-tongue (*Cynoglossum officinale*): Hounds-tongue is typically found along roadsides, trails, lakes and areas disturbed by grazing and timber harvest. Infestations are fairly localized, and do not appear to be expanding. Each plant may produce from 300-675 seeds. Long distance dispersal is a threat because a barb-covered husk that sticks to fur and clothing encloses hounds-tongue seeds (Zouhar 2002).

Containment strategies for small hounds-tongue infestations recommend using chemicals, or pulling and removing plants and seeds.

Meadow hawkweed (*Hieracium caespitosum*): Meadow hawkweed likely came to the United States in the early 1800s as an ornamental. Sites most vulnerable to invasion are disturbed areas such as roadsides, mountain meadows, trails, harvest areas, and riparian areas. Meadow hawkweed reproduces by seed and spreads vegetatively via adventitious root buds, stolons, and/or rhizomes (Stone 2011). Individual plants may quickly develop into large, dense patches that displace other vegetation.

Chemical control of meadow hawkweed is most common on the Kootenai National Forest. Timing is important, as the herbicide treatments are most effective early in the growing season when plants are in the rosette stage.

Orange hawkweed (*Hieracium aurantiacum*): Orange hawkweed was introduced to the United States in 1875 as an ornamental. It has continuously escaped cultivation. Sites most vulnerable to infestation include disturbed areas, roadsides, trails, riparian areas, and mountain meadows. Orange hawkweed reproduces by seeds and spreads vegetatively via stolons and rhizomes (Stone 2010). Its ability to dominate an area is attributed to fast vegetative spread, allelopath, and tolerance of low-nutrient sites.

Chemical control of orange hawkweed is the primary method of eradication on the Kootenai National Forest.

Existing Condition

The KNF completes roadside surveys each summer while searching for new invader weed species. These surveys can monitor trends in noxious weed infestation across the Forest. In 2002, approximately 83% of surveys found spotted knapweed, 74% found Canada thistle, 62% located oxeye daisy, and orange hawkweed was listed on 55% of reports.

During the summer of 2010, trails and trailheads located in the Ten Lakes Wilderness Study Area (WSA) were surveyed for noxious weeds. All 85 miles of trail located within the Ten Lakes Wilderness Study Area were surveyed. The survey work was conducted by the Wilderness Institute, affiliated with the College of Forestry and Conservation at the University of Montana. Sampling was primarily conducted along roads and trails. Off-trail areas were sampled if any weed patches were opportunistically encountered. Data collected included: weed species, size of infestation, weed density, and GPS location. Following is a summary of findings:

Weeds Table 1. Weed Survey Summary

2010 Weed Survey Locations	# of patches found	# of species found
Ten Lakes Wilderness Study area (31,942 acres)	9	5
Trails leading into the WSA	23	5

Canada thistle and oxeye daisy were the most common weed species found, averaging 50-60% of overall weed species. Less common species included orange and meadow hawkweed, sulfur cinquefoil, spotted knapweed, and St. Johnswort. The majority of patch sizes in the WSA were <1/10th of an acre. Generally, Canada thistle is located in small patches, while oxeye daisy grows in larger, linear patches.

Because weed patches are generally associated with a disturbance feature, the Wilderness Institute documented the primary and secondary disturbance factors for each weed patch identified. The primary disturbance is the most likely vector for infestation and the secondary disturbance reflects the broader disturbance matrix that may be present. The primary disturbances associated with most mapped weed patches were trails (59%) and roads (38%). The remaining patch was associated with a recent fire. Secondary associations were primarily trails (38%) but also included stock, trailheads, roads, water, and recent fire. Because the majority of sampling occurred along trails, this bias makes sense. It is also important to recall that trails and roads are the primary vector for weed dissemination in the WSA.

Environmental Consequences

Effects Common to All Alternatives

Non-Snow

There will be no change to the motor vehicle use map (wheeled motorized use) within the analysis area. These routes currently have weed infestations along them. These invasive plants will continue to spread at their current rate. As long as vehicles stay on the designated routes, the risk of spreading weeds outside the travel corridor is minimal. Some motorized use may occur to travel to dispersed camping sites. It is unlikely that many additional dispersed camping sites will be created, as travel is limited by vegetation and topography. The existing sites and travel corridors provide a vector for weed dispersal. Existing known weed infestations are currently managed by the Forest.

There is a potential for new invasive plants to be introduced along open roads and trails by motorized vehicles, mechanized equipment, livestock, and hikers. Any new invaders would be aggressively managed utilizing the tools available in the 2007 KNF Invasive Plant EIS.

Noxious weeds are capable of out-competing native vegetation and proliferating freely. Native vegetation provides forage for deer, elk, and other bird, animal, and insect species. Noxious weed species do not provide forage for deer and elk and can displace native vegetation. Decreases in the total number of plant species as a result of noxious weed infestations has been observed on the Kootenai. By displacing native vegetation, noxious weeds reduce the ability of wild communities to support plants and animals native to the ecosystem and reduce the ability of communities to recover from disturbance.

The National Strategy and Implementation Plan for Invasive Species Management discusses prevention as one of the most important strategies for reducing new infestations and thus preventing future losses. In all alternatives it will be imperative to educate user groups on ways to prevent weed spread. Prevention includes many things, such as utilizing weed-free feed for livestock, washing mechanized equipment before and after use, and cleaning debris off shoes before and after hiking.

Direct and Indirect Effects

This analysis will not include details on invasive weed infestations along the Forest roads open to highway legal vehicles within the analysis area since virtually all these roads have spotted knapweed or other invasive plants along the cut and fill slopes.

A comparison of the alternatives will be made by analyzing (1) miles of trail open to hikers and horses in the analysis area, (2) miles of trail open to mechanized use in analysis area, (3) miles of trail open to mechanized use in the WSA.

Weeds Table 2. Comparison of Alternatives by Miles of Trail

Alternative	1	2	3	4
Miles of trail open to hikers/horses in analysis area	88.4	83.9	83.9	83.9
Miles of trail open to mechanized use in analysis area	88.4	17.0	41.0	25.9
Miles of trail open to mechanized use in WSA	54.6	8.7	16.2	3.5

It is also important to understand where the current weed populations are in relation to the trails and the proposed future uses. The Invasive species Table 2 displays the current information regarding presence of invasive species. All other trails within the WSA and analysis area did not have documented weeds infestations at the time of the surveys.

Weeds Table 3. Invasive Plants Present Along Trails in the Analysis Area with Proposed Future Use

Trail #	Name	Species	Alt 1*	Alt 2*	Alt 3*	Alt 4*
77	Foundation/Camp	Canada thistle, meadow hawkweed, sulfur cinquefoil, oxeye daisy, orange hawkweed	All	HH	All	All
78	Clarence/Rich	Canada thistle, meadow hawkweed, orange hawkweed	All	HH	HH	HH
80	Stahl Creek	sulfur cinquefoil	All	HH	HH	HH
81	Stahl Peak	oxeye daisy	All	HH	HH	HH
87	Therriault Pass	Canada thistle, oxeye daisy	All	HH	HH	HH
88	Sinclair Creek	Canada thistle, meadow hawkweed, oxeye daisy	All	HH	HH	HH
92	Blacktail	orange hawkweed	All	All/HH	All	All/HH
333	Cat Creek	Canada thistle	All	All	All	HH
335	Gibralter Ridge	Canada thistle, oxeye daisy	All	All/HH	All/HH	HH

*All = hikers, horses, and mechanical use; HH = hikers and horses

Alternative 1 (No Action)

Under Alternative 1, there would be no change from the current condition. At this time all user groups are allowed on all trails. The user groups include mechanized users, horses, and hikers. There are weed sites located on portions of trails. These are described above in Invasive species Table 2. By keeping all trails open to all user groups this alternative would have the highest threat of weed spread.

Alternative 2

Under Alternative 2, all trails within the WSA and analysis area would be open to hiker and horse users. Mechanized use would be allowed on 8.7 miles of trail within the WSA and 17.0 miles of trail within the analysis area. Trails proposed for mechanized use have minimal weed populations located close to trailheads. All but one of the weed populations on the proposed routes are currently located outside of the WSA. Alternative 2 proposes less trails open to all user groups than Alternative 3 and more trails than Alternative 4. Therefore the threat of weed spread will be greater than Alternative 4 and less than Alternative 3.

Alternative 3

Under Alternative 3, all trails within the WSA and analysis area would be open to hiker and horse users. Mechanized use would be allowed on 16.2 miles of trail within the WSA and 41.0 miles of trail within the analysis area. This alternative has the most miles proposed for mechanized use, however only one current weed population is located within the WSA. Other known weed locations are outside the WSA and usually located close to trailheads. Due to the number of trail miles open to all user groups, this alternative would have the second highest threat of weed spread behind Alternative 1 (No Action).

Alternative 4

Under Alternative 4, all trails within the WSA and analysis area would be open to hiker and horse users. Mechanized use would be allowed on 3.5 miles of trail within the WSA and 25.9 miles of trail within the analysis area. Known weed populations on proposed mechanized use trails are located outside of the WSA, generally close to trail heads. This alternative proposes the least number of trail miles open to all user groups, thus the least expected number of users. This alternative would have the lowest threat of weed spread.

Over-Snow

Over-snow vehicle use has the potential for introducing or spreading invasive plants if weed seeds are present in the undercarriage of over-snow equipment. Minimizing introduction and spread of invasive species thru the project design features, including public education efforts regarding the threats posed by invasive plants, and the need to clean vehicle undercarriages prior to accessing National Forest System lands, addresses criteria 1 of Executive Order 11644. This will be carried out during implementation of the TLTM project.

Weeds Table 4. Comparison of Over Snow Alternatives

		Alternative 1 No Action	Alternative 2 Proposed Action	Alternative 3	Alternative 4
Over-snow Motorized Season 1 **December 1 to March 31**	Area Open to Over-snow Motorized (Acres)	64,177	36,703	48,605	945
	Area Open to Over-snow Motorized in WSA (Acres)	34,000	15,838	22,516	0
	Designated Routes (Total Miles) Miles Groomed	33.8 33.8	48.8 33.8	49.9 33.8	38.4 31.0
	Designated Routes in WSA	0	0.7	1.1	1.6
Over-snow Motorized Season 2 **April 1 to May 31**	Area Open to Over-snow Motorized (Acres)	64,177	0	4,380	-
	Area Open to Over-snow Motorized in WSA (Acres)	34,000	0	2,980	-
	Designated Routes (Total Miles) Miles Groomed	33.8 0	41.4 0	36.8 0	-
	Designated Routes in WSA	0	0	0	-
Over-snow Motorized **June 1 to November 30**	Area Open to Over-snow Motorized (Acres)	Limited only by snow cover	0	0	0
	Area Open to Over-snow Motorized in WSA (Acres)	Limited only by snow cover	0	0	0

Alternative 1 (No Action)

Under Alternative 1, there would be no change from the current condition. At this time all areas are open to over the snow use year round. This alternative has the greatest threat of weed spread.

Alternative 2

Alternative 2 allows for a use between that of Alternative 3 and Alternative 4. There are a greater number of designative routes open for use during Season 2 than in all other alternatives. However there are no areas open for over snow use during Season 2. Therefore the threat of weed spread will be greater than Alternative 4 and less than Alternative 3.

Alternative 3

Alternative 3 maintains the largest area of over snow use both within the WSA and outside of it. This alternative also maintains the highest miles of designated routes and an equal number of groomed miles to alternatives 1 and 2. Weeds are present along all groomed routes, which although usually snow covered, may be exposed during periods of low snow. Alternative 3 also has a number of acres and routes open for over snow activity during Season 2. Again, this is a time when weeds may be exposed due to reduced snow and seed dispersal may be more prevalent. Alternative 3 provides the greatest threat to weed dispersal for the action alternatives.

Alternative 4

Under Alternative 4, the least acres and miles are open for over snow use. There are no Season 2 over snow activities allowed. This alternative has the lowest threat for the spread of weeds.

Cumulative Effects

The Cumulative Effects consider and describe proposed activities in addition to the past, current, and reasonably foreseeable activities listed in Chapter 3. Those activities that cumulatively contribute indiscernible effects on noxious weeds are not included in this section. Those activities that cumulatively affect the species or habitat are discussed below.

Effects of Current and Reasonably Foreseeable Actions

All activities identified to occur within the analysis area that have the potential to affect proposed, threatened, endangered, and sensitive plants are discussed below.

Vegetation Management and Fuels Reduction Activities – All proposed management activities have been analyzed under the Galton Vegetation project. This analysis includes design criteria to minimize the spread of weed during vegetation management and ecosystem burning activities.

Noxious Weed Treatment – Noxious weed treatments typically occur adjacent to roads, trailheads, trails, or recreation sites. Treatments are compliant with the 2007 KNF Invasive Species EIS. Planned treatments will reduce the threat of invasive species spreading within the analysis area.

Fire Suppression – Current Forest Plan direction allows for the use of natural, unplanned ignitions to meet resource objectives on appropriate lands. Fire suppression may also be utilized, thus construction of fire lines, safety zones, or other fire control actions. These disturbances can create opportunities for invasive species to spread. Fire suppression activities incorporate design criteria to minimize invasive species spread.

Road Management - Due to the presence of invasive species adjacent to all road corridors within the analysis area there is a likelihood that invasive species will be spread due to basic road maintenance and administrative use actions.

Recreation Maintenance - Routine maintenance of trails would be limited to existing hardened trails and sites. In areas where there are existing invasive species spread is likely if ground disturbing management actions occur.

Special Uses - Operations of outfitter/guides would not result in any change to the invasive plant resource. Design criteria to minimize invasive species spread are included in special use permits.

Public Use (firewood gathering, hunting, trapping, fishing, etc.) - Public use activities associated with roads would be minimal due to the mostly roadless nature of the analysis area. Recreation activities such as hunting, berry picking, fishing, etc. are not expected to contribute cumulative effects on the invasive species resource.

Other Agency – It is not expected that other agency activities will take place off of roads and trails, therefore, no cumulative effects can be anticipated.

Summary of Cumulative Effects

Past soil-disturbing activity and vehicle traffic have helped spread noxious weeds into the analysis area. Monitoring of roads has been conducted in the analysis area and results were used

to compile the most recent published Kootenai National Forest Monitoring and Evaluation Report (USDA Forest Service, 2013).

Spraying of roads in the analysis area would reduce weed infestations along open roads in the short term. All alternatives, including the No Action Alternative, would add cumulatively to the amount of area infested with noxious weeds in the analysis area. The best, and likely the only way to avoid this increase, are through intensive weed management actions.

There are no activities or actions that are expected to have a cumulative effect on noxious weeds except for recreation, road activity, fire suppression, and vegetation management.

Most of these activities are expected to continue into the future, and noxious weed spread is likely to continue accordingly. Wildlife movement has a minor contribution to the expansion of weed populations in the analysis area. Sites that become infested are likely to experience a decrease in plant species diversity and a decrease in wildlife forage.

Regulatory Framework Findings

State and Federal Laws and Regulations

The design features described in Chapter 2 would be applied to this project to help meet the goal for noxious weed management as stated in the 2015 Kootenai National Forest Plan, and in compliance with the Participating Agreement with the Lincoln County Weed District and the Federal Noxious Weed Act. Forest Service Regional Supplement 2000-2001-1 requires that BMPs be used for many aspects of the operations required to accomplish the activities discussed above. Those practices, designed to protect soil and water, would also help reduce the potential negative effects on the spread of noxious weeds from the activities. Herbicide application is authorized under the Forest's Invasive Plan Management decision (USDA Forest Service 2007).

The project also complies with the National Strategy and Implementation Plan for Invasive Species Management with noxious weed management as outlined by FSM 2900 (USDA 2011) which stipulate that all proposed projects analyze potential weed risk and ensure that unnecessary increases of weeds does not occur.

Travel Management Regulations (36 CFR § CFR 212.55) – Criteria 2-4 do not have effects from invasive plant species. Criteria 1 will be minimized through the project design features. Meeting these design features will minimize impacts to the resource and meet the forest plan direction as summarized in the next section.

Forest Plan Direction

Accordingly, the Kootenai Forest established weed management direction with the 2015 Forest Plan. The Forest Plan addresses noxious weed species under the Forest-wide management direction and states in its goals that:

> "Plant communities are trending toward the desired conditions for composition, structure, patterns, and processes. The ecological integrity of the communities is high and they exhibit resistance and resiliency to natural and man-caused disturbances and stressors, including climate change."

The Kootenai National Forest annually conducts weed monitoring as part of its Forest Plan Monitoring and Evaluation Report. The KNF Forest Plan Monitoring and Evaluation Report 2013 states that "monitoring indicates that several noxious weeds have increased more than 10% in the numbers of acres affected and some have had a 10% or more increase in density of existing

infestation since 1987. In addition, with the discovery of new invaders over the last several years, it is apparent that the diversity of noxious weed species is continuing to increase over time."

In summary, the proposed project maintains or contributes toward achieving the goals, desired conditions and objectives, and was designed in accordance with the standards and guidelines for noxious weeds resources set forth in the 2015 Kootenai Forest Plan. Refer to the following:

Kootenai National Forest Noxious Weeds Desired Conditions and Objectives

FW-DC-VEG-10: *The Forest will continue their weed management program using herbicides and biological controls across the TLTM project area. New invaders will be identified and incorporated into the Forest weed management strategy. The Ten Lakes Travel Management project maintains this desired condition.*

FW-OBJ-VEG-02: *The alternatives follow the Forest Plan direction to treat new non-native invaders immediately. Treatment of approximately 1,000 acres across the Rexford and Fortine Districts annually, which will include treatments in the analysis area, contribute to meeting this objective.*

MA1c-GDL-VEG-01. *Invasive species risk will be ascertained and treatments may occur. The Ten Lakes Travel Management Project is designed in accordance with this guideline.*

GA-DC-VEG-TOB-02: *The alternatives continue cooperating with the state and county to complete invasive plant treatments and improve habitat conditions. The Ten Lakes Travel Management project maintains this desired condition.*

Proposed, Threatened, Endangered, and Sensitive Plants

Introduction

The Forest Service has a legal requirement to maintain or improve habitat conditions for threatened, endangered, proposed, or candidate species under the Endangered Species Act (ESA). Sensitive species are protected under the Regional Forester's Sensitive Species Program. The Kootenai National Forest is required to identify and mitigate potential effects to these species from federal land disturbance actions. In order to comply with the ESA and Sensitive Species Program, forest botanists conduct inventories during project planning to locate and protect any threatened, endangered, proposed, candidate, and sensitive plant species.

Regulatory Framework

The regulatory framework pertaining to threatened and sensitive plants is summarized below.

State and Federal Laws and Regulations

- **The Forest and Rangelands Renewable Resources Planning Act of 1974** – Provides for maintenance of land productivity and the need to protect and improve the soil and water resources.
- **The National Forest Management Act (NFMA) of 1976** – It is the policy of the Congress that all forested lands in the NFS shall be maintained in appropriate forest cover with species of trees, degree of stocking, rate of growth, and conditions of stand designed to secure the maximum benefits of multiple-use sustained yield. Plans developed shall provide for the diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet the overall multiple-use objectives, and within the multiple-use objectives.
- **The Endangered Species Act (ESA) of 1973** – Requires federal agencies to conserve threatened and endangered species. USFWS has identified Whitebark pine as a candidate species for listing.
- **FSM 2670.22 -** (1) Develop and implement management practices to ensure that species do not become threatened or endangered species because of Forest Service actions; (2) maintain viable populations of all native and desired non-native wildlife, fish, and plant species in habitats distributed throughout their geographic range on NFS lands; (3) Develop and implement management objectives for populations and or habitats of sensitive species.
- **Departmental Regulation 9500-4 -** Habitats for all native and desired non-native plants, fish, and wildlife species will be managed to maintain at least viable populations of such species. In achieving this objective, habitat must be provided for the number and distribution of reproductive individuals to ensure continued existence of a species throughout its geographic range.
- **Travel Management Regulations (36 CFR § CFR 212.55) -** When designating public **off-road motor vehicle** use on National Forest System **trails and areas** on National Forest System lands, the 2005 Travel Management Rule requires Forests to consider effects on National Forest System natural and cultural resources, public safety, provision of recreational opportunities, access needs, conflicts among uses of National Forest System lands, the need for maintenance and administration of roads, trails and areas that

would arise if the uses under considerations are designated; and the availability of resources for that maintenance and administration.

In addition to the above direction, **Executive Order 11644**, requires the consideration of effects on the following, with the objective of **minimizing**:

1. Damage to soil, watershed, vegetation, and other forest resources;
2. Harassment of wildlife and significant disruption of wildlife habitats;
3. Conflicts between motor vehicle use and existing or proposed recreational uses of National Forest System lands or neighboring Federal lands; and
4. Conflicts among different classes of motor vehicle uses of National Forest system lands or neighboring Federal lands.

2015 Kootenai Forest Plan

FW-DC-VEG-09: Habitat for plant species listed under the Endangered Species Act (ESA) is maintained or restored on NFS lands, thus contributing to species recovery or delisting. Ecological conditions and processes that sustain the habitats currently or potentially occupied by sensitive plant species are retained or restored. The geographic distributions of sensitive plant species in the Forest Plan area are maintained.

FW-GDL-VEG-07. Evaluate proposed management activities and project areas for the presence of occupied or suitable habitat for any plant species listed under the ESA or on the regional sensitive species list. If needed, based on pre-field reviews, conduct field surveys and provide mitigation or protection to maintain occurrences or habitats that are important for species sustainability.

GA-DC-VEG-TOB-01. Whitebark pine structure, composition, and function trend toward the desired vegetation condition within appropriate high-elevation areas.

GA-DC-VEG-TOB-03. Management of vegetation towards the desired vegetation condition improves or possibly increases Spalding's catchfly. Calcareous soils and wetlands provide habitat for species such as lady's-slipper and cottongrass.

Analysis Area and Methods

The bounds of analysis for direct impacts to the sensitive plant resource are the federal lands within the Ten Lakes Travel Management (TLTM) Analysis Area. This area represents the NFS lands where changes may occur to rare plants or habitats from activities that result from the various alternatives. The rare plant species included in the analysis are those that are either listed under the ESA or occur on the Regional Forester's Sensitive Species list. The analysis area for species viability is range-wide for each plant species. Potential adverse effects were considered based upon the likelihood and intensity to which the various alternatives may affect the threats/stressors described for each guild.

Affected Environment

Threatened Plants

Threatened plant species are species listed as threatened by the US Fish and Wildlife Service (US FWS) under the Endangered Species Act. Two species of threatened plants are found in northwestern Montana. These two species are *Howellia aquatilis* and *Silene spaldingii*. Another species, *Botrychium lineare* was formerly proposed for listing as threatened, but is now considered a species of special concern (Category 4). Whitebark pine is a sensitive plant in the

Northern Rockies, because of its decline, US FWS determined that listing the species as threatened or endangered is warranted.

Howellia aquatilis (water howellia; family *Campanulaceae*) is federally listed as threatened and occurs on the Flathead National Forest. The US Fish and Wildlife Service (USFWS) have notified the Kootenai National Forest that this species does not occur within Kootenai National Forest boundaries and therefore it will not be addressed further with this analysis.

Silene spaldingii (Spalding's campion or catchfly; family *Caryophyllaceae*) is listed as threatened and is suspected of occurring on Forest Service lands on the Kootenai Forest. Spalding's catchfly is a plant of dry, bunchgrass steppe habitats (USDI Fish and Wildlife Service, 1999a). This plant is known from private land within the overall perimeter of the Kootenai Forest and is within 1 mile west of the TLTM Analysis Area, but is as yet not known on Forest Service lands in Montana. Neither this species, nor its habitat, has been found on Forest lands in the TLTM Analysis Area. As such, it has low probability of occurring. Furthermore, there is no significant physical or biological connection between the analysis area and known populations or critical habitat. Therefore, Spalding's catchfly will not be considered further with this analysis.

Botrychium lineare (linear moonwort; family *Ophioglossaceae*) was formerly considered a candidate species for listing as threatened, but its listing was precluded by other priorities (USDI Fish and Wildlife Service, 2001). It is now considered a Species of Special Concern (Category 4) plant on the Kootenai National Forest. It occurs on the Rexford Ranger District on the Kootenai Forest. Linear moonwort occupies dry, disturbed limestone habitats in the grassland-forest ecotone on the east side of the Rocky Mountains and at other scattered locations in continental climates of North America (USDI Fish and Wildlife Service, 2001). This species is not known in the TLTM Analysis Area nor is its habitat found in the analysis area. As such, it has low probability of occurring. Furthermore, there is no significant physical or biological connection between the analysis area and known populations or critical habitat. Therefore, linear moonwort will not be considered further with this analysis.

Pinus albicaulis (whitebark pine; family *Pinaceae*) was evaluated by the US FWS for inclusion under the ESA because of its decline. It has been determined that listing the species as threatened or endangered is warranted within the Northern Rockies. Primary habitat for whitebark pine occurs above 6,000 feet. There are known populations of whitebark pine within the TLTM analysis area. Therefore, whitebark pine will be considered under the analysis as a sensitive species.

No other Proposed, Endangered, or Threatened plant species are known or suspected of occurring in the analysis area.

Sensitive Plants

Sensitive plant species are those species that have been designated by the Regional Forester because of concern for population viability, as evidenced by 1) significant current or predicted downward trends in population numbers or density, or 2) significant current or predicted downward trends in habitat capability that would reduce an existing species distribution (Forest Service Manual 2600 Series 2670.22). Sensitive species are not protected under the Endangered Species Act. The principal objective of the sensitive plant program is to manage for sensitive species viability and to preclude their listing as threatened or endangered (36 CFR 219).

With the issuance of a sensitive species list by the Regional Forester, Region One implements the direction contained in the Forest Service Manual. The Region One Sensitive Plant Species List was first published in Reel et al. (1989) and has been since updated periodically in formal internal

memos to reflect new information. The most recent update was on December 21, 2011. Species on this list that are known or suspected of occurring on the Kootenai National Forest are listed in the Sensitive Plants Project File.

All sensitive plant resources are considered in the sensitive plant program. Sensitive plant resources are existing populations and their habitats as well as unoccupied but suitable habitat. This sensitive plant analysis contains two fundamental parts: 1) identification of suitable habitats for sensitive plants, and 2) an assessment of effects to sensitive plant resources by the proposed alternatives.

The analysis area is dominated by low relief mountainous topography formed from sedimentary rocks, especially argillite, dolomite and calcareous glacial till (Harrison et al., 1992). Montane coniferous forests dominate the vegetation. Sensitive plant habitats are more or less confined to specialized niches on the landscape, such as riparian forests and open sedge meadows. These habitats were subjected to a variety of different natural disturbance factors in the past. The recurrence of wildfire in the northern Rocky Mountain ecosystems has played a key role in the ecology of its vegetation (Habeck, 1987), including sensitive plant habitats. In addition, sensitive plant habitats are now also affected by humans, through timber harvest, road building, suppression of wildfires, cattle grazing, and invasion of noxious weeds.

The assessment of sensitive plants and sensitive plant habitat followed the methods outlined for the Kootenai National Forest by Leavell and Triepke (1995). Suitable habitats for each sensitive species known or suspected of occurring on the KNF have been identified by consultation with sensitive plant field guides and published and unpublished literature on sensitive plants (Lesica and Shelly, 1992; Vanderhorst, 1996, 1997) as well as through extensive field experience. Probability of occurrence of sensitive species was estimated, including both historic and existing conditions. The species included in this assessment are those with a moderate to high probability of occurrence in the analysis area. The probability analyses took into consideration numerous factors, including:

- Locations of known populations.
- Results of past field surveys.
- Ecological requirements of the individual species (e.g., elevation, potential vegetation, land type, lithology, shade and moisture regimes).
- Past disturbance.

Rare plant inventories were conducted subsequent to these assessments for a Galton Environmental Assessment (EA) in 1995. Further detailed surveys were carried out in 2004 and 2005. More recent surveys were conducted in 2007-2010. All surveys took into consideration rare plants and rare habitats in addition to sensitive species. These surveys took place in addition to other past and concurrent surveys of sensitive plants in and around the analysis area (Vanderhorst, 1996, 1997). A total of 9 plant species currently listed as sensitive by the USDA Forest Service (PTES Plants Table 1) have been documented in the analysis area. In addition, 8 other species tracked as “Species of Special Concern” (SSC) by the Natural Resource Information System/Montana Natural Heritage Program have been found in the analysis area (PTES Plants Table 2). This list is important because Forest Service sensitive plant species are often designated based on review of this list.

PTES Plants Table 1. Sensitive Plant Species, Status, Occurrence, and Habitat Guilds in TLTM Analysis Area

Scientific Name	Common Name	Status[1]	Occurrence[2]	Habitat Guild[3]
Botrychium ascendens	Upswept moonwort	S	K	M
Botrychium crenulatum	Dainty moonwort	S	K	M
Botrychium hesperium	Western moonwort	S	K	M
Botrychium paradoxum	Paradox moonwort	S	K	C
Cypripedium parviflorum	Small yellow lady's-slipper	S	S	DR
Eriophorum viridicatinatum	Green keeled cottongrass	S	S	P
Meesia triquetra	Meesia moss	S	K	P
Pinus albicaulis	Whitebark pine	S	K	C
Viola selkirkii	Selkirk's violet	S	K	M

[1]Status: S=Sensitive; T=Threatened; E=Endangered
[2]Occurrence: K=Known; S=Suspected; H=Historically Known
[3]Habitat Guild: A=Aquatic; P=Peatland; DR=Deciduous Riparian; M=Moist Forest; D=Dry Forest; C=Cold Forest & Forested Subalpine; S=Subalpine Grassland

PTES Plants Table 2. Plant Species of Special Concern, Status, Occurrence, and Habitat Guilds in TLTM Analysis Area

Scientific Name	Common Name	Forest Service Sensitive[1]	State Rank[2]	Occurrence[3]	Habitat Guild[4]
Botrychium michiganense	Michigan moonwort	NS	S2	S	M
Botrychium montanum	Mountain moonwort	NS	S3/S4	K	M
Carex magellanica	Poor sedge	NS	S4	K	P
Cetraria subalpina	Lichen	NS	S2	K	C
Lilium philadelphicum	Wood lily	NS	S3	K	M
Lobaria hallii	Lichen	NS	S2	H	DR
Lycopodum sitchense	Alaskan clubmoss	NS	S3	H	S
Viola renifolia	Kidney-leaf white violet	NS	S3	K	A

[1]Forest Service Sensitive Species Listing: S=Sensitive; NS=Not sensitive
[2]State Rank: S2=at risk because of very limited and/or potentially declining population numbers, range and/or habitat; S3=potentially at risk because of limited and/or declining numbers, range and/or habitat; S4=apparently secure, though it may be quite rare in parts of its range, and/or suspected to be declining
[3]Occurrence: K=Known; S=Suspected; H=Historically Known
[4]Habitat Guild: A=Aquatic; P=Peatland; DR=Deciduous Riparian; M=Moist Forest; D=Dry Forest; C=Cold Forest & Forested Subalpine; S=Subalpine Grassland

Potential Threats

Threats are defined as activities or natural conditions that currently or potentially have negative effects on the diversity of rare plant communities or their habitat. Threats can be divided into three types: direct (e.g. livestock grazing, trampling, herbivory, recreational activities), alteration

of ecological factors (e.g. fire exclusion, insects, and disease), and habitat reduction (e.g. road construction, trail construction).

Habitat Guilds

Each of the plant species described in PTES Plant Table 1 and 2 were placed into a habitat group or guild. These guilds are described briefly below. These guilds include aquatic, peatland, deciduous riparian, moist forest, dry forest, cold forest and forested subalpine, and subalpine grassland.

PTES Plants Table 3. Habitat Guilds with Key Stressors

Habitat Guild	Key Stressors	# of Plant Species
Aquatic	Short and long term climate change, boating, aquatic herbicides, lake shore development.	1
Peatland	Short and long term climate change, livestock grazing/trampling, off road vehicle use.	3
Deciduous riparian	Alternations to hydrologic regimes, changes to flooding, invasive plant species, off road vehicle use, recreation use, short and long term climate change.	2
Moist forest	Fire, road/trail construction, short and long term climate change.	7
Dry forest	Timber harvest, fire, road/trail construction, other ground disturbing activities, short and long term climate change.	0
Cold forest & forested subalpine	Timber harvest, fire, road/trail construction, other ground disturbing activities, short and long term climate change.	2
Subalpine grassland	Recreation use, trail construction, invasive plant species, maintenance of lookouts and other administrative sites, short and long term climate change.	1

Environmental Consequences

Direct and indirect effects on sensitive plant species are described below for proposed activities identified in Chapter 2. Cumulative effects were considered for all past, proposed, current and reasonably foreseeable actions listed and described in Chapter 3 and are described at the end of this section.

The following effects analysis will focus on 1) measurable effects to sensitive plant habitat and 2) effects on known populations. Habitats with moderate to high probability of occurrence of sensitive plants are considered. Sensitive plant population trends are the ultimate measure for this analysis.

Non-Snow

Effects Common to All Action Alternatives

Effects from Motorized Use

All action alternatives have open designated routes for motorized vehicles and the mileage is consistent for all alternatives. As long as vehicles stay on designated routes, rare plants and their habitats would not be adversely affected.

Some sensitive plants that prefer disturbed habitats, such as the Botrychiums, also occur along roadsides. These populations may be affected by localized road maintenance that occurs on open routes, such as blading, increased road use, and road dust, because it can enhance the habitat for these species, but it can negatively impact individuals if they are present at the time of the road maintenance. However, these activities are compatible with those that originally created these habitats. All action alternatives may impact individuals but would not likely contribute to a trend towards federal listing or cause a loss of viability for *Botrychium ascendens* and *B. crenulatum*. There is no difference in this respect between alternatives.

Motorized travel off of designate routes is generally prohibited, but may occur to access dispersed camping sites. There may be areas where rare plants are located close to dispersed campsites, and it is unknown how many acres of potential invasive plant spread may be possible. Topographic and forest features limit off road travel to what is currently existing therefore it is unlikely that there would be a wider distribution of these effects.

Effects from Trail Management

PTES Plants Table 4 shows the number of miles of trail open to each user group under all alternatives. At this time, whitebark pine is the only sensitive species that is located adjacent to trails. All other known rare plant sites do not occur open trail routes. Therefore, the threat of direct impacts such as trampling, livestock grazing, and recreational activities are minimal. No adverse effects are expected for whitebark pine under the action alternatives. Their proximity to trails is a nature of their presence over 6000 feet in elevation within the analysis area. It is unlikely that users would trample or cut down live whitebark pine.

PTES Plants Table 4. Comparison of Alternatives by Miles of Trail

Alternative	1	2	3	4
Miles of trail open to hikers/horses in analysis area	88.4	83.9	83.9	83.9
Miles of trail open to mechanized use in analysis area	88.4	17.0	41.0	25.9
Miles of trail open to mechanized use in WSA	54.6	8.7	16.2	3.5

Road construction and trail construction are not proposed in this project, therefore no direct or indirect effects are anticipated. Alteration of ecological factors (e.g. fire, insects, and disease) are possible for all alternatives, at this time there is no way to quantify these possible future events.

Effects by Alternative

Alternative 1 (No Action), Alternative 2, and Alternative 3

At this time all activities are allowed on all trails in Alternative 1 and in the amounts listed in the table above for Alternatives 2 and 3. Whitebark pine is the only sensitive species known to occur adjacent to trails within the analysis area. No adverse effects are anticipated due to this proximity. All other known populations of rare plants do not occur on trail routes. No adverse impacts are anticipated for rare plants as a result of these alternatives.

Alternative 4

A warming hut is proposed (location designated on map 10) in Alternative 4. This action is proposed to occur on a previously disturbed and hardened site. Prior to construction, the area would be surveyed for the presence of sensitive plants. At this time none are known to occur at

the proposed location, therefore there would be no impact to sensitive species. Same effects anticipated from all other activities as those disclosed above.

Over-Snow

Effects Common to All Action Alternatives

Over-snow motorized and mechanized use should not have any direct effects on rare plants since they would be snow covered and dormant. There is some potential, however, for indirect effects through introduction or spreading of noxious plants if weed seeds are present on the undercarriage of over-snow motorized and mechanized equipment. Project design features, including public education efforts regarding the threats posed by invasive plants and the need to clean vehicle undercarriages prior to accessing National Forest System lands, would be carried out during implementation of the TLTM project.

Cumulative Effects

Effects of Current and Reasonably Foreseeable Actions

All activities identified to occur within the analysis area that have the potential to affect proposed, threatened, endangered, and sensitive plants are discussed below.

Vegetation Management and Fuels Reduction Activities – All proposed management activities have been analyzed under the Galton Vegetation project. Proposed, threatened, endangered, and sensitive plants were considered under that analysis and no concerns were raised. The analysis includes design criteria to minimize disturbance to plants of concern during vegetation management and ecosystem burning activities.

Noxious Weed Treatment – Noxious weed treatments typically occur adjacent to roads, trailheads, trails, or recreation sites. Identified sensitive plant sites will be avoided during noxious weed treatments.

Fire Suppression – Current Forest Plan direction allows for the use of natural, unplanned ignitions to meet resource objectives on appropriate lands. These ignitions could reduce encroachment of subalpine fir in whitebark pine habitats, although it is likely that individuals would be killed by fire. Other sensitive plants may be affected during fire activities. Fire suppression may also be utilized, thus construction of fire lines, safety zones, or other fire control related disturbance could impact whitebark pine on a site specific basis. Avoidance of these areas would be attempted during suppression efforts but some impacts to individuals may still occur.

Road Management - Basic road maintenance and administrative use described in the Current and Reasonably Foreseeable Actions section, would not negatively impact the resource.

Recreation Maintenance - Routine maintenance of trails would be limited to existing hardened trails and sites. These uses would not negatively impact the sensitive plant resource.

Special Uses - Operations of outfitter/guides would not result in any change to the sensitive plant resource. It is not anticipated that outfitter and guide users would damage whitebark pine individuals.

Public Use (firewood gathering, hunting, trapping, fishing, etc.) - Public use activities associated with roads would be minimal due to the mostly roadless nature of the

analysis area. Recreation activities such as hunting, berry picking, fishing, etc. are not expected to contribute cumulative effects on the sensitive plant resource.

Other Agency – It is not expected that other agency activities will take place off of roads and trails, therefore, no cumulative effects can be anticipated.

Summary of Cumulative Effects

Past effects to sensitive plant species in the analysis area may have occurred due to soil disturbance, overstory removal, burning, fire suppression, grazing, and the recent introduction of noxious weeds. Considering proposed activities in addition to the past, current and reasonably foreseeable activities listed in Chapter 3, there are no activities or actions that would have a cumulative effect on sensitive plant species or their habitats.

None of the alternatives would likely contribute to a trend towards federal listing or cause a loss of population viability to any of the known sensitive plant species in the analysis area.

Determination of Effects

The proposed actions are not expected to threaten the presence or viability of proposed, threatened, endangered, or sensitive plant species in the project area.

Consistency with Regulatory Framework

State and Federal Laws and Regulations

- **The Forest and Rangelands Renewable Resources Planning Act of 1974** – By providing appropriate habitat and ensuring species presence productivity would be accomplished. All alternatives developed comply with this act.
- **The National Forest Management Act (NFMA) of 1976** – Plant diversity would not be affected by the proposed activities in this analysis. Habitat niches for rare plants would be maintained.
- **The Endangered Species Act (ESA) of 1973** – Requires federal agencies to conserve threatened and endangered species. Though not listed as Threatened or Endangered at this time, whitebark pine has been listed as a Candidate species. There is no significant physical or biological connection between the analysis area and known populations or critical habitat of Endangered, Threatened or Proposed plant species. As such, all alternatives comply with the Endangered Species Act.
- **FSM 2670.22** - Though not listed as Threatened or Endangered at this time whitebark pine has been listed as a Candidate species. No adverse effects to rare plants or their potential habitat is anticipated as a result of the actions proposed by this analysis.
- **Departmental Regulation 9500-4** –Habitat for rare plants would be maintained at the current level.
- **Travel Management Regulations (36 CFR § CFR 212.55) –** Criteria 1 listed in Executive Order 11644 is applicable to PTES plants. It requires that damage to soil, watershed, vegetation, and other forest resources be minimized. This is accomplished under all alternatives, as they will minimize impacts to sensitive plants over the No Action alternative, since trails will have designated uses instead of no restrictions.

Forest Plan Direction

Accordingly, the Kootenai National Forest established threatened and sensitive plant management direction with the 2015 Forest Plan. The Forest Plan addresses these species under the Forest-wide management direction and states in its goals that:

> "Plant communities are trending toward the desired conditions for composition, structure, patterns, and processes. The ecological integrity of the communities is high and they exhibit resistance and resiliency to natural and man-caused disturbances and stressors, including climate change."

In terms of threatened and sensitive plants, the TLTM analysis is consistent with Forest Plan direction because all action alternatives would maintain appropriate habitats for threatened and sensitive plant species of concern.

In summary, the proposed project is consistent with the goals, objectives, and standards and guidelines for all threatened and sensitive plant resources set forth in the 2015 Kootenai Forest Plan. Refer to the following:

Kootenai National Forest Whitebark pine Goals, Desired Conditions, Guidelines, and Objectives

FW-DC-VEG-09: Though not listed as Threatened or Endangered at this time whitebark pine has been listed as a Candidate species. The alternatives analyzed in this document would maintain rare plant species and their habitats. Geographic distributions of rare plants within the analysis area would be maintained.

FW-GDL-VEG-07: Multiple surveys have occurred across the analysis area (1995, 2004, 2005, and 2007-2010). At this time no effects on known plant locations or potential habitats are anticipated as a result of the alternatives. Ten Lakes Travel Management was designed in accordance with this guideline.

GA-DC-VEG-TOB-01: The described alternatives would not have an effect on the structure, composition, and function of whitebark pine and would therefore be maintained in regards to progress toward this desired condition.

GA-DC-VEG-TOB-03: No habitat for Spalding's catchfly or cottongrass occurs within the analysis area. Habitat for lady's slipper would not be affected by the actions described in the alternatives. Therefore Ten Lakes Travel Management would be neutral in regards to progress toward this desired condition.

Effects Determination

Based on the analysis of all alternatives, including the No Action alternative, other related and connected activities, and the cumulative effects of the other federal and non-federal activities within the planning area, it has been determined that the implementation of the No Action alternative or the Action Alternatives would have a **may impact individuals or their habitat, but would not likely result in a trend towards federal listing or loss of viability** for those plant species listed by the Regional Forester as being sensitive. The effects analysis provided in this document meet the requirements for a biological evaluation as outlined in FSM 2672.42.

Cultural Resources

Abstract

The Kootenai National Forest (KNF) proposed the Ten Lakes Travel Management Project, which was originally part of and encompassed within, the Galton Vegetation Project area. Alternatives 1-3 would have no direct or indirect effect on cultural resources. Under these alternatives no ground-disturbing actions are proposed, and any previously recorded or as yet undiscovered sites would remain undisturbed. The current condition and trend of the area would continue. The no action alternatives are consistent with the laws, regulations and treaties concerning cultural resources. The only Action Alternative that has potential for a direct effect on cultural resources is Alternative 4. Under Alternative 4, the Forest Service proposes to build a snowmobile warming hut along the Ten Lakes Road near Big Therriault Lake. This is the only ground-disturbing activity proposed under the Ten Lakes Travel Management Project and it would have the potential to impact cultural resource sites. This area would be inventoried prior to implementation. Implementation of the Ten Lakes Travel Project will be in compliance with the appropriate cultural resource guidelines and consistent with KNF Forest Management Plan standards for cultural resources.

Introduction

Cultural Resources are non-renewable resources representing the physical remains of past human activity. They include a range of different resource types. These resources include locations containing archeological and architectural remains resulting from human activity in the pre-historic and historic periods which document past human use of the forest as well as locations of continued traditional use activities, primarily associated with areas of religious or traditional subsistence concern to American Indians.

This document is meant as an overview of information from various documents for planning purposes. This is not meant to provide project clearance. Any particular project for any of the proposed activities will usually require an on the ground cultural resource inventory to ensure legal compliance.

Existing Conditions and Trends

The Analysis Area for Cultural Resources is the same as the Decision Area. The Decision Area contains mostly steep and moderately steep mountain slopes adjacent to permanent flowing water. It has a low-to-high probability of containing cultural resources. Valley bottoms, ridge areas and areas along creeks have been determined to have a moderate-to-high probability of containing sites; side hills and steep mountain slopes have a low probability of containing sites.

District and Forest records provide an understanding of the expected cultural resources within the Decision Area. Additionally, over 40 cultural resource inventories have occurred within the Decision Area. A total of 10 sites were located. Information concerning the nature and location of cultural resources is confidential, and is not subject to public disclosure per Public Law 94-456 (16 U.S.C.470 sec. 9 (a) (1) (2)). Both the *National Historic Preservation Act (NHPA)* and the *Archeological Resources Protection Act (ARPA)* provide that the location of historic properties is exempt from public disclosure. This exemption protects historic properties from vandalism and looting and protects properties culturally significant to American Indians (FSH 6209.13 11.22). *ARPA* also establishes civil and criminal penalties for individuals removing or damaging archeological resources on federal lands.

Analysis of Direct and Indirect Effects

Alternatives 1, 2 and 3

Alternatives 1 (No Action), 2 and 3. Alternatives 1-3 would have no direct or indirect effects on cultural resources. Under these alternatives, no ground-disturbing actions are proposed, only travel management decisions determining uses of existing road, trails and areas, which will have no effect to cultural resources. Any previously recorded, or as yet undiscovered sites, would remain undisturbed. The current condition and trend of the area would continue. The alternatives are consistent with the laws, regulations and treaties concerning cultural resources.

Effects Alternative for Alternative 4

Under Alternative 4, the Forest Service proposes to build a four season pavilion along the Ten Lakes Road near Big Therriault Lake, in addition to travel management decisions. This is the only ground-disturbing activity proposed under the Ten Lakes Travel Management Project and it would have the potential to impact cultural resource sites. This area was inventoried with negative results on August 29, 2016.

Although management's intent is to identify all cultural resource sites, and avoid or mitigate prior to proposed ground-disturbing activities, there is the potential for unidentified sites to be located during project implementation. As natural weathering and erosion, and land alteration projects remove forest ground cover, there is a chance that subsurface archeological sites, impossible to detect on a surface survey, will be exposed where the cultural resource inventory is now considered complete. Recognizing the difficulty of locating ephemeral American Indian sites with even the most intensive inventories, the KNF timber sale contracts have a standard clause #C6.24. Similar clauses can be included in any contract, if that is the method used to construct the warming hut. Contract clause **#C6.24** allows the Forest Service to unilaterally modify or cancel the contract to protect cultural resources, regardless of when they are identified. It can require project implementation to cease if a property is discovered during project implementation so that forest archeologists can complete Section 106 consultation on property eligibility and project effects. The discovery of any cultural resource sites during the implementation of the proposed project could result in implementation delays (USDA Forest Service 1987b Appendix 19).

The Forest Archaeologist will notify and consult with the State Historic Preservation Office, as required by law, to determine the significance of the discovery and the effects of the project. The Confederated Salish and Kootenai Tribes and the Kootenai Tribe of Idaho would be included in discussions where American Indian affiliated sites are involved.

Ongoing and Reasonably Foreseeable Actions

The activities listed below may have an effect to the cultural resources.

Livestock Grazing – Currently, there are no known effects to any sites occurring from cattle grazing.

Noxious Weed Treatment – Most noxious weed treatment is along roadways. This activity would have no ground disturbing activities, and would not involve the use of heavy equipment other than on existing road surfaces. There would be no effects to cultural resources.

Fire Suppression – Fire suppression and rehabilitation activities may affect cultural resource sites. An archeologist would be available to provide information regarding known sites. When avoidance during a wildland fire is not possible, management would follow measures outlined in the Region 1 Programmatic Agreement. Appendix 3 of the Northern Region Programmatic

Agreement regarding Cultural Resource Management on National Forests in the State of Montana seeks to limit the potential for fire suppression activities to impact sites by setting guidelines to protect cultural resources during these activities. In addition, the forest works with the tribal liaison of the Confederated Salish and Kootenai Tribes during wildfires to allow protection of resources important to the tribe.

Road Activities – Road maintenance and use associated with permit administration, data collection, monitoring, and administration of NFS lands does not involve the use of heavy equipment other than on existing road surfaces. Based on the types and extent of these uses in the Decision Area, there should be no impacts to cultural resources.

Recreation Maintenance – Fee campgrounds, building construction, and new trail construction or reconstruction would require a cultural resource inventory prior to the implementation of the project. There would be no cumulative effects to cultural resources.

Special Uses – Outfitter/guides confined to known trails and road surfaces will have no cumulative effects to cultural resources.

Public Actions – Recreation activities occur off existing road surfaces and are small in scale. Based on the types and extent of these uses in the Decision Area, there will be no cumulative impacts to cultural resources.

Actions such as small forest product gathering (Christmas trees, boughs, mushrooms, and cones), other special uses, and firewood cutting will continue. These activities do not involve the use of heavy equipment other than on existing road surfaces. There should be no cumulative effects to cultural resources.

Private land or state land - Development on private or state land has the potential to impact cultural resources. However, the Forest Service has no authority over private or state land use.

Department of Homeland Security-Border Action- The project is adjacent to the United States/Canada border and receives a great deal of use year-round by The Department of Homeland Security and Forest Service Law Enforcement. This use is expected to continue.

Combined Effects from Past, Proposed, Ongoing and Foreseeable Actions: The Ten Lakes Travel Management Project would not exacerbate effects to cultural resources when considering the cumulative past, proposed, ongoing and reasonably foreseeable actions. The post-project condition and trend would continue the current condition and trend which protects resources important to the tribes through ongoing consultation.

Regulatory Framework

The specific laws, regulations and treaties are further described below.

36 CFR 800 describes the process for meeting compliance with the **National Historic Preservation Act (NHPA),** as amended **(16USC 470-470t, 110).**

Antiquities Act of 1906 protects any object of antiquity on federal lands.

American Indian Religious Freedom Act of 1978 (AIRFA) (P.L. 95-442) preserves the inherent rights of American Indians ‘for freedom to believe, express and exercise “ their traditional religions.

Archaeological Resources Protection Act of 1979(ARPA) provides for criminal and civil penalties for anyone collecting artifacts or damaging archaeological sites on federal lands without a federally issued permit to excavate for research purposes, and provides for consultation with affected tribal governments.

Executive Order 11593-Protection and Enhancement of the Cultural Environment of 1971 provides for the protection and enhancement of the cultural environment.

Executive Order 13007-Indian Sacred Sites of 1966 directs federal land managers to "(1) accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and (2) avoid adversely affecting the physical integrity of such sacred sites" and to "where appropriate, agencies shall maintain the confidentiality of sacred sites".

Executive Order 13084-Consultation with Indian Tribal Governments of 1998 directs agencies to grant fee waivers in areas where the agency has the discretion to do so, when a tribal government makes a request. When a request is denied, the agency must respond to the tribe in writing with the rationale for denial.

Forest Service Handbook (FSH 6209. 13 11.2, 11.22) describes the exemption of the location and nature of archaeologic and historic sites from disclosure under the Freedom of Information Act.

Forest Service Manual (FSM 2360.1-2361.32d) describes administrative policies and guidelines applicable to cultural resource management.

Hellgate Treaty of 1855 The Salish (Flathead), Kootenai, and Upper Pend d 'Oreilles have rights reserved under the Hellgate Treaty. The rights reserved include the "right of taking fish at all usual and accustomed places, in common with the citizens of the Territory, and of erecting temporary buildings for curing; together with the privilege of hunting, gathering roots and berries, and pasturing their horses and cattle upon open and unclaimed land".

Interior Executive Order (EO) 3175 of 1992 requires all federal agencies to carry out the trust responsibilities of the federal government, to assess the impacts of their actions on Indian trust resources and to consult with tribes when impacts are identified.

National Environmental PolicyAct (NEPA) of 1969 establishes national policy for the protection and enhancement of the environment. Part of the function in protecting the environment is to "preserve important historic, cultural, and natural aspects of our national heritage."

National Historic Preservation Act (NHPA) of 1966 as amended through 2000 requires federal agencies to take into consideration the effects of their activities or permitted activities on cultural properties, and provides for the participation of Indian tribes where there is the potential to affect sites identified as "Traditional Cultural Properties" or culturally significant to Americans Indians. It is the federal law governing the preservation of historic and archeological resources of national, regional, state, and local significance on all proposed ground disturbing activities. Section 106 of the NHPA requires that the head of a federal agency having any jurisdiction over an undertaking, or authority to license any undertaking, shall take into account the effect of the undertaking on any site, district, building, structure, or object that is included in, or eligible to, the National Register of Historic Places. The standard review process is described in federal regulations issued by the Advisory Council on Historic Preservation. Entitled, "Protection of Historic Properties," the regulations appear in the U.S. Code of Federal Regulations at 36 CFR Part 800. This act pertains to tangible properties important in history and prehistory. 1992 amendments reflect the

increased importance placed on tribal relations. A section of the act directs state and federal governments to assist in the establishment of preservation programs on Indian lands.

Native American Graves Protection and Repatriation Act (NAGPRA), recognizes the rights of the Indian Tribes and American Indian organizations as caretakers of human remains, funerary objects, sacred objects, and objects of cultural patrimony with which they can demonstrate a reasonable biological or cultural affiliation, and conveys to such groups the rights to decide upon the disposition of such items.

Kootenai NF MOU with CSKT Facility Regarding Curation of Prehistoric Artifacts This MOU formalizes the curation arrangement between the Kootenai NF and The CSKT.

Kootenai National Forest Plan

The forest plan provides goals, desired conditions, objectives and guidelines for cultural resources to satisfy federal guidelines, laws, and policy and integrates them into its overall resource management effort. In addition, the forest must work closely with the appropriate American Indian tribes concerning this resource.

Goals

Goal-Cultural Resources (CR)-01. Provide education about the importance of protecting cultural resources and the consequences for unlawful damage to or taking of cultural resources to reduce looting, vandalism, and incidental damage.

Desired Conditions

Forest Wide (FW)-DC-CR-01. Cultural Resources are inventoried, evaluated for inclusion on the National Register of Historic Places, and managed according to their allocation category, including preservation, enhancement, public use, or scientific investigation. National Register ineligible cultural resources may be released from active management. Until evaluated, cultural resources are treated as National Register eligible. Historically and archaeologically important cultural resources and traditional cultural properties are nominated to the National Register.

FW-DC-CR-02. Cultural Resources are safeguarded from vandalism, looting, and environmental damage through monitoring, condition assessment, protection, and law enforcement measures. Interpretation and adaptive use of cultural resources provide public benefits and enhance understanding and appreciation of KNF prehistory and history. Cultural resource studies provide relevant knowledge and perspectives to KNF land management. Artifacts and records are stored in appropriate curation facilities and are available for academic research, interpretation, and public education.

Objectives

FW-OBJ-CR-01. Annually complete an inventory of 50 to 100 acres containing or predicted to contain, highly valuable, threatened, or vulnerable cultural resources (non- project acres).

FW-OBJ-CR-02. Over the life of the Plan, evaluate and nominate 5 to 10 significant cultural resources to the National Register of Historic Places.

FW-OBJ-CR-03. Over the life of the Plan, develop 5 historic contexts, overviews, thematic studies, or cultural resource property preservation plans to help guide management and use of National Register eligible or listed properties, districts, traditional cultural properties, and cultural landscapes.

FW-OBJ-CR-04. Annually complete one public outreach or interpretive project that enhances public understanding and awareness of cultural resources and/or history of the Plan area.

Guidelines

FW-Guideline (GDL)-CR-01. Cultural resource protection provisions should be included in applicable contracts, agreements, and special use permits for National Register listed or eligible properties.

FW-GDL-CR-02. Historic human remains should be left undisturbed unless there is an urgent reason (e.g. human health and safety, natural event, etc.) for their disturbance.

Environmental Consequences: No tribal comments on the management activities proposed in the project area action alternatives have been received to date. Therefore, all alternatives would be consistent with forest plan direction and laws and regulations pertaining to cultural resources.

Regulatory Consistency. All alternatives are consistent with the appropriate guidelines, laws, regulations and treaties concerning cultural resources.

American Indian Rights and Tribal Consultation

Abstract

The Kootenai National Forest (KNF) proposed the Ten Lakes Travel Management Project, originally part of the Galton Vegetation Analysis Area, and sent project information and maps during both the scoping and comment phases to the Confederated Salish and Kootenai Tribes (CSKT) and the Kootenai Tribe of Idaho (KTI) to solicit their concerns and determine project effects. Project proposals were submitted to the tribes during the early planning phase to help the Forest Service meet their responsibilities to consult with federally-recognized American Indian tribes under a government-to-government relationship. In addition, the tribal liaison provided by the CSKT worked in partnership between the Tribal Historic Preservation Office and the KNF to review project proposals and provide tribal input. Information obtained from the CSKT and KTI is taken into account to assess impacts for issues related to cultural sites, traditional plants, and other resources related to treaty rights. Consultation centered on the project area but took into account any adjacent area that might be affected by the proposed alternatives.

Introduction

The Forest Service has the responsibility to consult with federally-recognized American Indian tribes under a government-to-government relationship. In addition, American Indian Tribes have special rights under the National Historic Preservation Act (NHPA), the Native American Graves Protection and Repatriation Act (NAGPRA), and the American Indian Religious Freedom Act (AIRFA) among various other federal statutes, Executive Orders, and policies. Federal guidelines direct federal agencies to consult with modern American Indian tribal representatives who may have concerns about federal land management actions that may affect religious practices and other traditional cultural uses, as well as cultural resource sites and remains associated with American Indian heritage. Any tribe whose aboriginal territory falls within a project area has the opportunity to voice concerns for issues governed by relevant legislation. The KNF including the Ten Lakes Travel analysis area lies within the aboriginal territory of the Kootenai Tribe. The CSKT and the KTI are the federally-recognized tribes representing the modern members of the Kootenai Tribe.

The Ten Lakes Travel analysis area is located within lands encompassed by the Hellgate Treaty of 1855, signed between the United States and the Flathead Indians, Upper Pend d ‘Oreilles Indians, and the Kootenai Tribe and associated bands. In addition to the Federal laws affecting all modern tribal groups, the Kootenai, Salish (Flathead), and Upper Pend d ‘Oreilles have rights reserved under the Hellgate Treaty. These rights include the “right of taking fish at all usual and accustomed places, in common with the citizens of the Territory, and of erecting temporary buildings for curing; together with the privilege of hunting, gathering roots and berries, and pasturing their horses and cattle upon open and unclaimed land.” Consultation ensures consideration of Tribal rights. The specific laws, regulations and treaties are further described under regulatory framework below.

The CSKT and KTI have general concerns about the management of the forest including the project area. These concerns include, but are not limited to, hunting, fishing, gathering plants, grazing, site protection, access to sites, use and possession of sacred objects, and the freedom to practice sacred worship ceremonies. Mitigation measures are developed in consultation with the CSKT as well as with the Montana State Historic Preservation Office (MTSHPO) when properties associated with aboriginal occupation are affected. Where warranted, consultation continues through project design and implementation. Additional information and documentation of response may be available in the project file. Information exchanged through consultation is

considered confidential and follows the KNF and CSKT communications protocol and may not be available under the Freedom of Information Act.

Regulatory Framework

The specific laws, regulations and treaties are further described below.

Antiquities Act of 1906 protects any object of antiquity on federal lands.

American Indian Religious Freedom Act of 1978 (AIRFA) preserves the inherent rights of American Indians "for freedom to believe, express and exercise their traditional religions" **(P.L. 95-442, 92 Stat. 1065; 7 U.S.C. 2269)**.

Archaeological Resources Protection Act of 1979 (ARPA) provides for criminal and civil penalties for anyone collecting artifacts or damaging archaeological sites on federal lands without a federally issued permit to excavate for research purposes, and provides for consultation with affected tribal governments.

Executive Order 11593-Protection and Enhancement of the Cultural Environment of 1971 provides for the protection and enhancement of the cultural environment. The Federal Government shall provide leadership in preserving, restoring and maintaining the historic and cultural environment of the Nation. Agencies of the executive branch of the Government (hereinafter referred to as "Federal agencies") shall (1) administer the cultural properties under their control in a spirit of stewardship and trusteeship for future generations, (2) initiate measures necessary to direct their policies, plans and programs in such a way that federally owned sites, structures, and objects of historical, architectural or archaeological significance are preserved, restored, and maintained for the inspiration and benefit of the people, and (3), in consultation with the Advisory Council on Historic Preservation (16 U.S.C. 470i), institute procedures to assure that Federal plans and programs contribute to the preservation and enhancement of non-federally owned sites, structures and objects of historical, architectural or archaeological significance.

Executive Order 13007-Indian Sacred Sites of 1966 directs federal land managers to "(1) accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and (2) avoid adversely affecting the physical integrity of such sacred sites" and to "where appropriate, agencies shall maintain the confidentiality of sacred sites..."

Executive Order 13084-Consultation with Indian Tribal Governments of 1998 directs agencies to grant fee waivers in areas where the agency has the discretion to do so, when a tribal government makes a request. When a request is denied, the agency must respond to the tribe in writing with the rationale for denial.

Forest Service Handbook (FSH 6209. 13 11.2, 11.22) describes the exemption of the location and nature of archaeologic and historic sites from disclosure under the Freedom of Information Act.

Forest Service Manual (FSM 2360.1-2361.32d) describes administrative policies and guidelines applicable to cultural resource management.

Hellgate Treaty of 1855 The Salish (Flathead), Kootenai, and Upper Pend d 'Oreilles have rights reserved under the Hellgate Treaty. The rights reserved include the "right of taking fish at all usual and accustomed places, in common with the citizens of the Territory, and of erecting temporary buildings for curing; together with the privilege of hunting, gathering roots and berries, and pasturing their horses and cattle upon open and unclaimed land."

Historic Sites Act of 1935- established that "it is a national policy to preserve for public use historic sites, buildings, and objects of national significance for the inspiration and benefit of the people of the United States," and gave the Secretary of the Interior broad powers to conduct a national historic preservation program.

Interior Executive Order (EO) 3175 of 1992 requires all federal agencies to carry out the trust responsibilities of the federal government, to assess the impacts of their actions on Indian trust resources and to consult with tribes when impacts are identified.

National Environmental Policy Act (NEPA) of 1969 establishes national policy for the protection and enhancement of the environment. Part of the function in protecting the environment is to "preserve important historic, cultural, and natural aspects of our national heritage."

National Historic Preservation Act (NHPA) of 1966 as amended through 2000 **(16USC 470-470t, 110)** requires federal agencies to take into consideration the effects of their activities or permitted activities on cultural properties, and provides for the participation of Indian tribes where there is the potential to affect sites identified as "Traditional Cultural Properties" or culturally significant to Americans Indians. It is the federal law governing the preservation of historic and archeological resources of national, regional, state, and local significance on all proposed ground disturbing activities. Section 106 of the NHPA requires that the head of a federal agency having any jurisdiction over an undertaking, or authority to license any undertaking, shall take into account the effect of the undertaking on any site, district, building, structure, or object that is included in, or eligible to, the National Register of Historic Places. The standard review process is described in federal regulations issued by the Advisory Council on Historic Preservation that is entitled, "Protection of Historic Properties." The regulations appear in the **U.S. Code of Federal Regulations** at **36 CFR Part 800**. This act pertains to tangible properties important in history and prehistory. Amendments in 1992 reflect the increased importance placed on tribal relations. A section of the act directs state and federal governments to assist in the establishment of preservation programs on Indian lands.

Native American Graves Protection and Repatriation Act (NAGPRA) recognizes the rights of the Indian Tribes and American Indian organizations as caretakers of human remains, funerary objects, sacred objects, and objects of cultural patrimony with which they can demonstrate a reasonable biological or cultural affiliation and conveys to such groups the rights to decide upon the disposition of such items.

Kootenai NF MOU with CSKT Facility Regarding Curation of Prehistoric Artifacts This MOU formalizes the curation arrangement between the Kootenai NF and the CSKT.

Kootenai National Forest Plan

The forest plan provides goals, desired condition, objectives and guidelines for American Indian Rights and Interests to satisfy federal guidelines, laws, and policy and integrates them into its overall resource management effort. In addition, the forest must work closely with the appropriate American Indian tribes concerning this resource.

Goals

Goal-American Indian (AI)-01. Respect Indian tribal self-government and sovereignty, honor tribal Treaty and other rights through protection or enhancement of such, and meet the responsibilities that arise from the unique legal relationship between the Federal Government and

Indian tribal governments. Manage the Forest to address and be sensitive to traditional American Indian religious beliefs and practices.

Desired Condition (DC)

Forest Wide (FW)-DC-AI-01. The KNF recognizes and maintains culturally significant species and the habitat necessary to support healthy, sustainable, and harvestable plant and animal populations to ensure that rights reserved by Tribes in the Hellgate Treaty of 1855 are protected or enhanced.

FW-DC-AI-02. The KNF recognizes, ensures, and accommodates Tribal member access to the Forest for the exercise of treaty rights and cultural uses consistent with laws, policies, and regulations.

FW-DC-AI-03. The KNF recognizes and protects traditional cultural areas as associated with the traditional beliefs of a Tribe about its cultural history.

Objectives (OBJ)

FW-OBJ-AI-01. Over the life of the Plan**,** the outcome is continued access and acquisition of forest products for each federally recognized Tribe with historical or treaty interests in KNF lands for traditional cultural uses by tribal members, through a cooperatively established agreement.

FW-OBJ-AI-02. Over the life of the Plan**,** the outcome is management of traditional cultural areas, through the development of 6 to 25 management plans, in consultation with the tribes.

FW-OBJ-AI-03. Over the life of the Plan, the outcome is ongoing government-to-government and staff consultation for each federally recognized Tribe with historical or treaty interests in KNF lands, through a cooperatively established tribal consultation protocol.

Guidelines (GDL)

FW-GDL-AI-01. Consult with Tribes when management activities may impact treaty rights and/or cultural sites and cultural use, according to consultation protocol.

In addition, the laws and policies that govern cultural resource protection on federal and state lands are coordinated with the MTSHPO who serves in an advisory capacity.

Environmental Consequences

Effects of Ongoing and Reasonably Foreseeable Actions: The ongoing and foreseeable activities for the analysis area were considered. Fire suppression activities can affect cultural and other resources important to the tribes; however, Appendix 3 of the Northern Region Programmatic Agreement regarding Cultural Resource Management on National Forests in the State of Montana seeks to limit the potential for fire suppression activities to impact sites by setting guidelines to protect cultural resources during these activities. In addition, the forest works with the tribal liaison of the Confederated Salish and Kootenai Tribes during wildfires to allow protection of resources important to the tribes.

Combined Effects from Past, Proposed, Ongoing and Foreseeable Actions: The Ten Lakes Travel Management Project would not exacerbate effects to American Indian rights and interests when considering the cumulative past, proposed, ongoing and foreseeable actions. The post-project condition and trend would continue the current condition and trend which protects resources important to the tribes through ongoing consultation.

Regulatory Consistency. All alternatives are consistent with the laws, regulations and treaties concerning American Indian rights and interests as well as government-to-government consultation between the Forest Service and the CSKT and KTI. The tribes have been consulted from early in the planning process throughout the Galton Vegetation and Ten Lakes Travel Management Project phases to solicit their concerns and determine project effects. No tribal comments on the management activities proposed in the Galton Vegetation project area, which encompasses the Ten Lakes Travel project area, have been received to date. Since on-going tribal consultation has not indicated any direct or indirect effects from the Galton Vegetation Project, all alternatives of the Ten Lakes Travel Management project would be consistent with forest plan direction and laws and regulations pertaining to tribal consultation of cultural resources.

Other Required Disclosures

NEPA at 40 CFR 1502.25(a) directs "to the fullest extent possible, agencies shall prepare draft environmental impact statements concurrently with and integrated with …other environmental review laws and executive orders."

American Indian Religious Freedom Act

The Federal government has a unique government-to-government relationship with American Indian Tribes. This relationship requires federal agencies to consult with tribes regarding agency actions, in order to protect tribal rights reserved by treaty with the United States. The Ten Lakes Travel Management Planning Project decision area encompasses lands addressed by the Hellgate Treaty of 1855, signed between the United States and the Flathead Indians, Upper Pend d 'Oreilles Indians, and the Kootenai Tribe and associated bands. In addition to the Federal laws affecting all modern tribal groups, the Kootenai, Salish (Flathead), and Upper Pend d 'Oreilles have rights reserved including the "right of taking fish at all usual and accustomed places, in common with the citizens of the Territory, and of erecting temporary buildings for curing; together with the privilege of hunting, gathering roots and berries, and pasturing their horses and cattle upon open and unclaimed land." Consultation ensures consideration of Tribal rights.

These tribal rights are protected under the National Historic Preservation Act (NHPA), the Native American Graves Protection and Repatriation Act (NAGPRA), and the American Indian Religious Freedom Act (AIRFA). Federal guidelines direct federal agencies to consult with tribal governments regarding federal actions that may affect religious practices and other traditional cultural uses, as well as cultural resource sites and remains associated with American Indian heritage. Any tribe whose traditional territory falls within a project area is afforded the opportunity to voice concerns for issues governed by NHPA, NAGPRA, or AIRFA. The American Indian Religious Freedom Act of 1978 protects the "inherent right of the freedom to believe, express, and exercise their traditional religions." These concerns include, but are not limited to, access to sites, use, and possession of sacred objects, and the freedom to practice sacred worship ceremonies. The Archaeological Resource Protection Act of 1979, as amended in 1988 (ARPA) also describes the role of Tribes in the federal decision-making process in the area of cultural resource management.

The Confederated Salish and Kootenai Tribe (CSKT) and the Kootenai Tribe of Idaho (KTI) have general concerns about the management of the forest, including the project area. These concerns include, but are not limited to: hunting, fishing, gathering plants, grazing, site protection, access to sites, use and possession of sacred objects, and the freedom to practice sacred worship ceremonies. Mitigation measures are developed in consultation with the CSKT as well as with the Montana State Historic Preservation Office (MTSHPO) when properties associated with aboriginal occupation are affected. Where warranted, consultation continues through project design and implementation.

All alternatives are consistent with the laws, regulations and treaties concerning American Indian rights and interests as well as government-to-government consultation between the Forest Service and the CSKT and KTI. The tribes have been consulted from early in the planning process throughout the Galton Vegetation and Ten Lakes Travel Management Project phases to solicit their concerns and determine project effects. No tribal comments on the management activities proposed in the Galton Vegetation project area, which encompasses the Ten Lakes Travel Management project area, have been received to date. Since on-going tribal consultation has not indicated any direct or indirect effects from the Galton Vegetation Project, all alternatives of the

Ten Lakes Travel Management project would be consistent with forest plan direction and laws and regulations pertaining to tribal consultation of cultural resources.

Environmental Justice Act

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations," directs federal agencies to integrate environmental justice considerations into federal programs and activities. "Environmental justice" means that, to the greatest extent practical and permitted by law, all populations are provided the opportunity to comment before decisions are rendered or 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. The Forest Service has provided notice of comment opportunities and has considered all public input from persons or groups regardless of age, race, income status, or other social/economic characteristics. There would be no adverse effects to human health, or disproportionate impacts to minority or low income populations, with the implementation of any alternative.

Potential Conflicts with Plans and Policies of Other Jurisdictions

Cultural Resources - The laws and policies that govern cultural resource protection on federal lands are coordinated with the State Historic Preservation Offices (SHPO) of Montana, which serve in an advisory capacity. The policies for the Forest Service and SHPO are consistent: the Forest Service would inform and consult with the CSKT and the KTI on proposed activities, site information, and potential impacts.

Wildlife - The Forest Service and the State of Montana's Fish, Wildlife & Parks work together to manage wildlife, but the missions of the two agencies differ. The Forest Service manages the land, and affects wildlife by adjusting cover/forage relationships, or through travel management. The State of Montana manages the animals, and affects wildlife by adjusting hunting seasons and bag limits, and by enforcing other rules that affect the populations of fish and wildlife.

The Forest Service works with the US Fish and Wildlife Service for the recovery of Threatened and Endangered Species. The Forest Service consults with the US Fish and Wildlife Service when Threatened and Endangered Species may be affected.

Water Quality - Section 313 of the Clean Water Act requires Federal agencies to comply with all Federal, State, interstate, and local requirements, administrative authority, and process and sanctions with respect to the control and abatement of water pollution. Executive Order 12088 also requires the Forest Service to meet the requirements of the Act. All alternatives would comply with the Clean Water Act and Montana State Water Quality Standards. All alternatives would incorporate reasonable Soil and Water Conservation Practices, avoid channel degradation, and comply with the Forest Plan.

Air Quality – No prescribed burning activities are proposed in any of the alternatives. There would be no conflicts with plans and policies of other jurisdictions.

Adverse Environmental Effects That Cannot Be Avoided

Chapter 3 addresses the potential environmental consequences of the alternatives analyzed in detail for the Ten Lakes Travel Management Planning Project. Implementation of any alternative may result in some adverse effects; the severity of the effects can be minimized by adhering to the

project design features of the alternatives. If management activities occur, however, some effects cannot be avoided. Even the No Action alternative has effects.

In general, any "adverse" environmental effects can be avoided through increased restrictions on human use. However, increased restrictions also limit recreation opportunities. The alternatives were developed, in part, to sharply define the issues and to provide a clear basis for comparison.

Cultural Resources – There is no assurance that every cultural resource site will be located in advance of all planned management activities, although little ground disturbance is proposed and only in Alternative 4. It is possible to disturb an undiscovered historic or prehistoric site. However, sites discovered in this manner would immediately be protected from further disturbance.

Wildlife – Motorized recreation in wildlife habitat disturbs many wildlife species to various degrees. Since some recreational access is desirable, it is unavoidable that there will be some level of disturbance impacts to wildlife. However, reducing motorized disturbance and access would be beneficial to many wildlife species.

Recreation – The Ten Lakes WSA has been carved out by Congress for special protection. Public demand for motorized or mechanized uses, the balancing of competing interests, and "managed growth" are not the governing standards under the Montana Wilderness Study Act. Instead, Congress has directed the Forest Service to maintain the 1977 wilderness character of the area. That is the primary duty of the Forest Service, and it must guide all decisions as the first and foremost standard of review for any proposed action. Over-snow motorized and mechanized uses have increased in intensity and scope within the Ten Lakes WSA, degrading the 1977 wilderness character, which can only be maintained by decreasing these uses.

Relationship between Short-Term Uses and Long-Term Productivity

Short-term uses are those that generally occur annually. Long-term productivity refers to the ability of the land to produce a continuous supply of a resource.

Chapter 3 discusses the potential impacts to resources including soils, water resources, wildlife, and rare plants in each of the alternatives analyzed in detail. Motorized and mechanized use within the Ten Lakes Travel Management Project area would not be considered a short-term consumptive use such as timber harvest or mining and would not affect the ability of the land to produce continuous supplies of other Forest resources. The project proposes no vegetation management and only minor ground disturbance in one alternative, no impacts to long-term productivity are anticipated.

Irreversible and Irretrievable Commitment of Resources

An "irreversible" commitment of resources refers to the loss of production or use of a resource due to a land use decision that, once executed, cannot be changed. "Irretrievable" commitments of resources are opportunities forgone; they represent tradeoffs in the use and management of Forest resources.

The Ten Lakes Travel Management Plan would not result in any irreversible commitment of resources. Each of the action alternatives would result in an irretrievable commitment of resources because the action alternatives would offer fewer opportunities for motorized and mechanized use than the no action alternative. This action could result in certain effects which are described in Chapter 3, including potential effects to wildlife and recreation opportunity.

Specifically Required Disclosures

Energy Requirements and Conservation Potential of Alternatives – The energy required to implement the alternatives, in terms of petroleum products, would be insignificant when viewed in the light of the production costs and effects of the national and worldwide petroleum reserves.

Motorized vehicles, including OSVs, burn fossil fuel; however, this project does not authorize whether or not motorized activity occurs, but rather where it may occur on this part of the Kootenai National Forest. No evidence has been seen to indicate that the general public will meaningfully alter the amount of their use because of the designation of routes on National Forest lands, whether their preferred use is to drive to a trailhead to hike, tour in a passenger vehicle, or to recreate with off highway vehicles on or off the Forest. Under the action alternatives, less area would be available for over-snow motorized use than is currently available, but there is no indication that would result in less motorized use or energy consumption by the general public.

Effects on Floodplains and Wetlands – Executive Order 11988 and 11990 – No impact to riparian areas, wetlands or associated floodplains are anticipated as no activities are proposed in these areas.

Effects of Alternatives on Threatened and Endangered Species – Plants – No significant physical or biological connection exists between the analysis area and known populations or critical habitat of threatened, endangered or proposed plant species, so a biological assessment (BA) was not prepared. All alternatives comply with the Endangered Species Act. **Wildlife –** Threatened and endangered wildlife species may be affected by the proposed activities in the project area. A biological assessment will be prepared and submitted to the U.S. Fish and Wildlife Service for concurrence according to the Endangered Species Act, to insure protection of these species.

Effects of Alternatives on Prime Rangeland, Forest Land, and Farm Land - The alternatives analyzed are in compliance with Federal regulations for “prime land.” The definition of prime forest land does not apply to lands within the National Forest System. The project area contains no prime farm lands or rangelands. In all alternatives, Federal lands would be managed with the appropriate consideration to the effects on adjacent lands.

Migratory Bird Treaty Act – Migratory bird analyses focuses on the effects of a federal action on migratory bird habitat. Key stressors to migratory birds (identified in the Forest Plan) generally involve changes in their habitat (vegetation management/burning) or displacement (fire suppression) or actions causing mortality (wind turbines) (KNF Forest Plan). The TLTM project does not include vegetation management or other actions that would affect this habitat or cause displacement, therefore this species was not analyzed for the TLTM project.

Chapter 4. Preparation and Distribution

List of Preparers and Contributors

Interdisciplinary Team Members

Table 15. Interdisciplinary Team Members

Name	Position
Anderson, Nancy	Archeologist
Garrison, Trini	GIS Specialist
Johnson, Lynn	Wildlife Biologist
Jungst, Laura	Hydrologist
Larson, Jordan	Regional Economist
Laws, Mary	Recreation Specialist
McKelvey, Moira	NEPA Planner, Writer/Editor
Strom, Megan	Silviculturist, Vegetation Specialist
Villwock, Amanda	NEPA Planner

Cover Photo: Wolverine Lake, Dan Ward

Distribution of the DEIS

Agencies and Organizations

Director, Planning and Review – Advisory Council on Historic Preservation

Deputy Director, APHIS PPD/EAD

National Environmental Coordinator, NRCS

Acquisitions and Serials Branch, National Agriculture Library

Chief of Naval Operations

Confederated Salish and Kootenai Tribes

US Coast Guard Commandant

US Army Corps of Engineers, Northwestern Division

US EPA

Director of NEPA Policy and Compliance, Dept. of Energy

Director OEPC

Northwest Power Planning Council

Regional Director, Northwest Mountain Region, Federal Aviation Administration

Montana Division Administrator, Federal Highway Administration

Alliance for the Wild Rockies – Michael Garrity

Bitterroot Backcountry Cyclists – Lance Pysher

Bladerigger, LLC – Steve Curtiss

Blue Ribbon Coalition – Don Amador

Capital Trail Vehicles Association

Crowley Fleck PLLP – Ian McIntosh

Flathead Fat Tires – Erin Bodman

Glen Lake Irrigation District – Steve Curtiss

Headwaters Montana – Dave Hadden

High Country Horsemen – Mark Petersen

International Mountain Bike Association – Aimee Ross

Kootenai Tribe of Idaho

Lincoln County Snokats – Dave Nitschke

Lincoln County Commissioners

Montana Fish Wildlife and Parks

Montana Mountain Bike Association – Greg Beardslee

Montana Wilderness Association – Amy Robinson

Montanans for Multiple Use – North Lincoln County Chapter – Scott Mattheis

National Parks Conservation Association – Sarah Lundstrum

Ten Lakes Forestry and Excavation – Wayne Finch

The Wilderness Society Northern Rockies Office – Peter Aengst

Troy Snowmobile Club – Jerry Wandler

Whitefish Bike Retreat – Cricket Butler

Winter Wildlands Alliance – Hilary Eisen

Wildlands Defense – Jeff Juel

Individuals

Marti Alexander

Mary Alexine

Casile Almer

Eric Anderson

Mike Antonczyk

Hans Axelson

Alex B.

Alex Baer

Brandon Barefield

Andrew Barinowski

Matt Barnes

Scott Bates

Colin Baxter

Jan Bertelson-James

Konrad Binder

Brent Blackshaw

Dee Blank

Noah Bodman

Ronald Brandt

Rita Braun

Anders Broste

Lynn Brown

Marti Bruce

Larry and Molly Bruce

Cassie Buhl

Tim Buhl

Arlie Burk

Lorna Burk

Dennis Burns

Spencer Bushnell

Mike Bussard

Todd Butts

Jacob Carroll

Chad Castren

Wayne Chamberlin

Jake Christiansen

Rita Collins

Chris Connelly

Lane Cooper

Chad Corah

Jerry Croskey

Mike Cuffe

Tom Danley

Trevor Davis

Randy and Penny DePaul

Dave Dodrill

Ryan Donahue

David Downing

Amanda Duley

Mark Dzikowski

R. Eich

Mary and Justin Elings

Ray Ellis

Kurt Erbach

David Erickson

Cayla Erslev

Brett Erslev

Paul Feldt

Courtney Feldt

Peter Ferrell

Edwin Fields

Carlos Florey

Lisa Flynn

Jason Forrest

Pete Francisco

Dave French

Vonda Garcia

James Gardner

Bret George

Tom Gilmore

Emily Glasson

Nathaniel Gordon

Rich Graves

Rodney Gray

Mike Gullette

Jake Gunther

Jason Hanchett

Adam Hannigan

Scott Hanson

Diann Heivilin

Jeffrey Heninger

Brad Hodge

Betty Holder

Stan Holder

Sharon Holmes

Philip Hornung

Gordon Howe

John Hubert

Darryl Iblings

Richard Infusino

Ryan Ivie

Kevin Jacks

Seth Jarsky

Carrie Johnson

Mark Johnston

Britt Kanter

Len Kopec

Vladyslav Kosulin

Tell Kuehn

Brad Lamson

Mark Lannen

Danny Laroche

John Larson

Lonny Larson

Matthew Lawrance

Penny Leistiko

Shawn Lenzner

Chris Leoniak

Matt Lessmeier

Josh Letcher

Judi Liedes

Mike Lilly

Erin Linley

Dennis Linneman

Norma Linsky

Heather Lister

Jens MacAller

Ron and Nancy MacDowell

Patrick Manley

Garrett Martin

Jeremiah Martin

Julianna Marttila

Peter Marvin

Brenda Mattheis

Benjamin Mattheis

Steve Mattheis

Scott Mattheis

Michael Meador

Charlie Meienberg

Jim Mepham

Scott Merrell

Zachary Miller

Neil Miner

Clint Muhlfeld

Toivo Mykkanen

Marc O'Brien

Lauren Olson

Kenneth Pannell

Laura Persson

Jeremy Persson

Scott Persson

Andrew Plant

Calvin Plum

Matt Radlowski

Carter Raines

Marc Rancourt

Gardner Raymond

David Rockwell

Andy Rowe

Kevin Ruble

Crandell Ruholl

Reid Sabin

Deborah Schatz

Joe Schletz

Jason Schmidt

Roger Sherman

Jared Sherwood

Pete Siudara

Gordon Smith

Ken Smith

Stan Spencer

Brandon Stam

Ed Stein

Derek Stiegemeier

David Street

JeanAnne Swope

Midge Tate

Pete Thomas

Abby Thompson

Randy Tornquist

Dave Vogelman

Jim Voyles

Twila Webb

George Wells

Kyle West

Kurt West

Brian Wiley

George Williams

Tania Williamson

Alex Worthington

Mark Yanoski

Lewis Young

Tony Zammit

Rob

Appendix 1

Effect of OSV Use on Resources Cited in Minimization Criteria

This considers the effects of over-snow vehicles in areas open to winter motorized use on the resources enumerated in 36 CFR 212.55(b), with the objective of minimizing those effects. The analysis identifies and analyzes potential (1) damage to soil, watershed, vegetation, and other forest resources; (2) harassment of wildlife and significant disruption of wildlife habitats; (3) conflicts between motor vehicle use and existing or proposed recreational uses of NFS land or neighboring federal lands; and (4) conflicts among different classes of motor vehicle uses of NFS lands or neighboring federal lands.

The forest has a long history of over-snow motorized use management in the project area. Beginning in the 1960s, with U-Regulations, motor vehicle use restrictions were proposed in the newly established Ten Lakes Scenic Area to *"preserve the wilderness atmosphere and back up the management goals for these areas.*" Trail conditions, existing uses, and potential for conflict were the rational used for the restrictions.

In response to EO and regulations from 36 CFR 295 (1973), the KNF published its first Travel Plan in February 1977 which included the project area. This travel plan identified 'National Forest land designated open', 'Area closed to all motorized vehicles', and 'area with restrictions or closures', as well as designated roads open or with restrictions to motor vehicle use. The Travel Plan Map index listed reasons for restrictions including: elk calving, winter game range, primitive recreation, and fragile soils (Rec Vol. 4-36). Subsequent travel plans were published forestwide in 1978 and a color map circa 1980-1983.

In 1980, the KNF reexamined road closures and motorized restrictions with the public; looking at the basic purposes of the restriction, alternative ways to carry out the restrictions necessary, and ways to simplify the travel map. On the KNF, road, trail, and off-road motorized vehicle planning was combined to produce travel plan maps for public information. Areas and routes where motorized use was restricted, and areas that were managed for motorized uses, were noted on the circa 1980-1983 KNF Travel/Recreation Guide. Reasons for restrictions included wildlife habitat protection, soil erosion hazard, and non-motorized recreation. In addition, site-specific areas and roads were mapped that were 'open to motorized vehicles managed primarily for recreation'.

Fortine District specific access maps were published from 1984 through 2005. The access maps were updated as needed, not necessarily on a yearly basis. These maps stated that 'Many of these road management decisions were developed in cooperation with the State of Montana Fish, Wildlife, and Parks Department, primarily to protect wildlife habitat and provide security. Use of roads is also restricted to protect soil and water quality, and provide non-motorized recreation opportunities'. These maps displayed route and area restriction by season and mode of use (all motorized vehicles, over-snow vehicles). In addition recreation sites, routes, and areas that were open year round to all use were displayed.

In 2001, the Off-Highway Vehicle Record of Decision and Plan Amendment for Montana, North Dakota, and Portions of South Dakota amended nine forest plans, including the 1987 Kootenai Forest Plan. This decision prohibited "wheeled" cross-country motor vehicle use on all NFS and BLM public lands in the three state areas except within 300 feet of roads and trails for access to a

campsite. This decision provided direction to minimize resource damage and user-conflicts per the requirements of EO 11644 and the prohibition was implemented by Forest Order.

In 2006, a Fortine district map was published, which also had travel management information. This map displayed motorized use route and area restrictions by season and mode of use (all motorized vehicles, over-snow vehicles). In addition recreation sites, snowmobile trails, routes, and areas that were open year round to all use were displayed.

In response to the roads and travel management regulations at 36 CFR 212, the Fortine district completed a 2009 Travel Analysis Report (TAP) for trails and maintenance level 2 through 5 roads. The analysis process included; describing the situation, identifying issues, assessing benefits, problems and concerns; and describing opportunities and setting priorities. The assessment of opportunities included benefit and concern criteria such as; known public desire for motorized access, user conflict, user safety, wildlife concerns, aquatic/watershed concerns, and spread of noxious weeds.

In 2009, the Rexford and Fortine districts published a motor vehicle use maps (MVUMS) as required by 36 CFR 2012 Subpart B, designating the roads, trails, and areas for motor vehicle use. Once the MVUMs were published, the use of motor vehicles (except over-snow vehicles) off designated NFS roads, trails, and areas was prohibited. Although the KNF continues to offer district access maps for recreation planning, the MVUMs are the legal order reflecting where motor vehicle use (except over-snow) is allowed. Over-snow vehicle use continues to be governed by Forest Orders pursuant to 36 CFR 261.54, until completion of this analysis, when an OSVUM will be published.

Soil, Watershed, Vegetation and Other Forest Resources

Specialists are aware that over-snow vehicle use during low-snow conditions could detrimentally affect soils, watershed and vegetation resources. However, specialists have been unable to identify any locations were the effects are discernible on the ground.

In regards to soils, the DEIS (Page 287), found that no cumulative effects to soil resources are expected to result from implementation of any of the proposed alternatives. The soil resource would be maintained.

In regards to the water resource, the DEIS (Page 280), found that there are no direct or indirect effects to water quantity, water quality or stream channel processes as a result of the proposed alternatives. None of the alternatives include management activities that could affect water resources (i.e., vegetation removal, road building or removal). Implementation of any of the alternatives would at least maintain the water resource. In regards to vegetation, the DEIS (page 309) found that the proposed actions are not expected to threaten the presence or viability of proposed, threatened, endangered, or sensitive plant species in the project area.

Other forest resources include cultural resources. The DEIS (page 313) states that the post-project condition and trend would continue the current condition and trend which protects resources important to the tribes through ongoing consultation.

Harassment of Wildlife and Significant Disruption of Wildlife Habitat

It is illegal in the state of Montana to harass wildlife from snowmobiles. Based on the MFWP statutes, “ A person while operating a snowmobile may not: (1) use the snowmobile for the purpose of driving, rallying, or harassing game animals, game birds, or fur-bearing animals of the

state or livestock, including ostriches, rheas, and emus…(2) discharge a firearm from or upon a snowmobile…"

Grizzly Bear

The proposed action and action alternatives would significantly reduce the area where over-snow activities can occur as well as define starting and ending dates for seasons of over-snow use. These actions would reduce potential disturbances to bears, particularly females with young, directly after den emergence and in spring habitat. The Action Alternatives also define use of trails open to mechanized use. No changes to motorized use of either roads or trails are proposed. Action Alternative 3 could result in disturbance of females with cubs due to an overlap of over-snow activities and mapped denning habitat during emergence from the den. Therefore implementation of **Alternative 3** would result in a determination of **may affect, is likely to adversely affect** grizzly bears. Alternative 2 does not include any overlap of over-snow activities and mapped denning habitat during emergence from the den and Alternative 4 ends motorized over the snow activities on March 31st, before den emergence typically starts. Therefore implementation of **Alternatives 2 and 4** would result in a determination of **may affect, is not likely to adversely affect** grizzly bears. In all action alternatives, the potential for disturbance is greatly reduced from the existing condition.

Canada Lynx

Alternatives 2, 3 and 4 **may affect, are not likely to adversely affect the Canada lynx**. This determination is based on: 1) existing lynx habitat conditions meet all NRLMD vegetation standards and no vegetation manipulation is proposed in any alternative; 2) all action alternatives reduce the area and routes available for over-snow vehicles and therefore snow-compacting activities in the project areas and affected LAU's; 3) all action alternatives define timeframes in which motorized over-snow activities can occur; all action alternatives would maintain existing movement within and between LAU's as well as areas adjacent to the project area; 4) no increase in lynx mortality is expected; 5) effects of snow compaction providing increased competition with other predators was not found to be a valid concern Kolbe (et al. 2007) and 6) project activities could disturb a lynx in activity areas and may cause temporary avoidance of the affected areas although lynx are generally considered tolerant of human activity.

Alternative 1 (no action), **may affect, is not likely to adversely affect the Canada lynx** based on no increased areas of over snow compaction with this alternative as well as reasons 1, 5 and 6 listed above.

Canada Lynx Critical Habitat

Alternatives 2, 3 and 4 **may affect, are not likely to adversely affect the Canada lynx**. This determination is based on: 1) existing lynx habitat conditions meet PCE sub-elements 1a, 1c, and 1d and no vegetation manipulation is proposed in any alternative; 2) all action alternatives define timeframes in which motorized over-snow activities can occur; and reduce the area and routes available for over-snow vehicles which reduces potential snow-compacting activities in the project areas and affected LAU's, and therefore meets PCE sub-element 1b; 3); all action alternatives would maintain existing movement within and between LAU's as well as areas adjacent to the project area.

Alternative 1 (No Action) **may affect, is not likely to adversely affect the Canada lynx.** This determination is based on reasons 1 and 3 listed above.

Wolverine

Alternatives 2, 3 and 4 **will not jeopardize the continued existence of the wolverine**. This determination is based on: All Alternatives are consistent with the findings of the proposed federal rule stating that wolverine be listed as a threatened species. Wolverine are not tied to a specific vegetation type, and proposed activities would not change the amount of persistent spring snow, (activities listed on page 7890, of USDI (2013) of the proposed rule). The proposed Action Alternatives would not impact the extent of persistent spring snow, or the impact of trapping mortalities. Those are the two factors identified in USDI (2013) as most likely to impact wolverine populations.

Bighorn Sheep

Action Alternative 2 and 4 will have no impact on individual sheep or their habitat. This determination is based on: 1) the reduction of motorized over-snow area and routes available during the timeframe sheep may use the lambing habitat within the project area; 2) no changes to vegetation or existing road or trail miles in the project area results in maintenance of connectivity for sheep movement within and outside of the project area and home range; 3) no activities or potential for disturbance to sheep on winter range located on the Woods Ranch WMA within the known home range of the Ten Lakes herd, 4) no increased potential for interaction with domestic sheep or goats that could introduce zoonotic diseases.

Fisher

Alternative 1 (No Action) would have no impact on the fisher or its habitat due to lack of action and lack of change from the existing condition.

Alternatives 2 and 3 would have no impact on the fisher or its habitat. This determination is based on: 1) the Ten Lakes Travel Management project area provides low probability habitat (based on literature) and was assessed primarily as dispersal habitat; 2) documentation of fisher has not been found in recent years (1959 on) in the project area or Galton range; 3) no vegetation management would occur with any alternative; 4) project activities consist of enacting temporal and spatial limits on winter over-snow motorized travel and designating where summer mechanized use can occur and does not propose any new recreational activities.

Alternative 4 may impact individuals and/or their habitat, but will not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species. This determination is based on: four season pavilion construction and use in Alternative 4 may cause short-term displacement of fisher using the travel/dispersal habitat; no vegetation management would occur with any alternative.

Big Game

The Action Alternatives would significantly reduce the area where over-snow activities can occur as well as define the start and end dates for seasons of over-snow use. These actions reduce the potential disturbance in the winter range and parturition areas of big game. The Action Alternatives also define use of trails open to mechanized use which reduces disturbance to big game in general.

Conflicts between Motorized Over-snow Vehicle Use and Existing Proposed Recreational Uses of NFS Land or Neighboring Federal Lands

Over snow vehicle use can have a negative effect, due to primarily to noise and exhaust pollution, on primitive, semi-primitive non-motorized dispersed recreation. Over snow vehicle use has a positive effect on semi-primitive motorized classes of dispersed recreation, allowing winter recreationists to enjoy the winter landscapes of the backcountry.

There is a great difference in opinions regarding the effects on a person's recreational experience when they encounter others on a road or trail. Some people using non-motorized modes of travel become upset when they encounter or hear motorized equipment. Some express concern about safety when encountering motorized vehicles. The reverse situation is not as frequently true; most people using motorized modes of travel do not seem to be disturbed when they encounter people on foot, horseback, or bicycles.

Often the situation is defined as "conflict of use," but there generally is not physical or safety conflict associated with one party encountering another party on the trail. The situation is more accurately described/defined as failure to fully meet the social expectation of the visitor. Face-to-face trail encounters between different kinds of users are usually polite. Use conflict involves one's willingness to accept other uses on trails, fear about losing one's use of a trail, or concern for the natural resource. Non-motorized users may become dissatisfied, disappointed, or angry when recent motorized use has changed a smooth and compacted trail tread into loose, churned, or eroded tread, or users went off the existing trail tread, especially when using a favorite trail.

Typical findings is that use conflicts are almost always one way. For example, skiers perceive snowmobilers interfering with their activity, but snowmobilers are generally indifferent to skiers (Jackson and Wong 1982). Trail users may have different understanding regarding who has the right of way. Use conflict can occur when use restrictions on roads and trails are not clearly understood, observed, or enforced. The degree of use conflict depends on the individual, the group they identify with, their experience, and the recreational setting of the particular road, trail, or area.

Best management practices for addressing conflict between users and safety of users include a separation of uses (Vol 4-121) readily available information such as OSVUM maps and signs (Vol 4-83). Primitive uses would be allowed in 100% of the project area in all alternative. Separation of uses considered included providing quite areas, where motorized travel is prohibited.

Alternatives

In Alternative 1, Season 1-2 there would be no quiet areas in the project area for over snow users. All of the project area would remain open to over-snow motorized use. Alternative 1 has the highest potential for conflict between quiet and over-snow motorized users and they share all of the same area and routes. In the 2009 TAR conflict, or safety issues between snowmobilers and cross-country users was noted. Since there are no partners to manage cross country ski routes, skiers may utilize groomed or regularly used snowmobile routes, creating potential conflict as snowmobilers must be on the lookout for skiers. Conversely, as 100% of the project area is open to over-snow use, quite users may feel they have no place to go to 'get away from it all'. Motorized uses would be maintained, with no quite areas identified.

Alternative 2, Season 1 includes area and temporal restriction, with over-snow motorized use permitted on approximately 57% of the area, with 43% of the area for quite use. Access to

recreation sites such as Weasel and Wolverine Cabins would be in motorized areas. The area where a motorized free (quite) area would be designated includes west of Poorman and Green Mountains in the Blacktail basin, Ksanka face, and south of Mt. Gibralter. On the south side of the project area Road #756 outside of the WSA would remain open to motorized use. However Therriault Creek route (Trail #87), an access route off Road #756, to Therriault Lakes through the WSA would be restricted to primitive uses only. Therriault Creek (Trail #87) was identified by motorized/mechanized users to help reduce drive time (Vol 4-85). This area was previously identified by cross country non-motorized users and designated as NFS SNO-Trail 95 (Vol 4-86). Access to the Therriault Creek route on Road #756 is narrow and can become icy creating safety concern with mixed primitive and motorized travel. Restricting Therriault Creek (Trail #87) to primitive uses would reduce the number of motorized users (would not be a through route to Therriault Lakes), and potentially reduce conflicts and safety concerns between on Road #756. While this route is designated as a NFS Snow Trail, there is currently no club or organization that manages or grooms this areas. Motorized use would be maintained in most of the area, with some quiet use areas being designated.

Alternative 2, Season 2 includes area and temporal restrictions, with over-snow motorized uses only permitted on designated routes, and areas outside of the WSA. The area around Wolverine cabin would be quite, while access to Weasel Cabin would be in a motorized area. This would provide for large contiguous areas designated for quite user in high elevation back country, and a quiet route up Therriault Creek, , Motorized uses would be restricted to lower elevations along open roads. The physical separation of use would potentially reducing conflict between primitive and motorized/mechanized users. However over-snow motorized use would be concentrated in smaller areas and designated routes only, which may increase safety issues between motorized users with the concentration of use and limited opportunity. Clearly designated areas where over snow motorized uses are allowed (OSMVUM), and subsequently quiet areas are, would potentially reduce conflicts between motorized and primitive (stock, hike, cross country ski) users. Motorized use would be reduced over all, with larger quite use areas being designated.

Alternative 3, Season 1 includes area and temporal restrictions, with over-snow motorized use permitted on approximately 75% of the area, with 25% of the area for primitive uses. Access to recreation sites such as Weasel and Wolverine Cabins would be in motorized areas. The area where quite use would be in limited to lower sections of Ksanka Face and south of Mt. Gibralter. The Ksanka face area faces the valley, private property, and community of Eureka, where outside motorize noises may be heard. Over-snow motorized user would be allowed on Therriault Creek (Trail #87), which would potentially increase conflict and reduce safety due to narrow and icy conditions on road #756. Motorized use would be maintained in most of the area, with limited quite areas being designated.

Alternative 3, Season 2 includes area and temporal restriction, with over-snow motorized use on permitted on only 7% of the area and designated routes, with 93% of the area for primitive uses. Access to recreation sites Weasel and Wolverine Cabins would be in motorized areas. The area where quite use would designated would include higher elevations with the exception of a route between Therriault lakes and Stahl Creek. Clearly designated areas where over snow motorized uses are allowed (OSMVUM), and subsequently quiet areas are, would potentially reduce conflicts between motorized and primitive (stock, hike, cross country ski) users by providing separate areas. Motorized use would be maintained is most of the areas identified as most used by users, with quiet areas designated in higher elevations.

Alternative 4, Season 1 includes area and temporal restriction with over snow-motorized uses permitted on 1% of the area, and designated routes, with 99% of the area for primitive uses. Access to Weasel Cabin and immediately around Therriault Lakes would remain motorized.

Access to Wolverine Cabin would be non-motorized. This would provide for the largest contiguous quite areas. Over-snow motorized uses would be concentrated on designated routes only, which may increase safety issues between motorized users with the concentration of motorized use with limited opportunity. Alternative 4, season 2 would provide 100% quite use in the project area, eliminating potential for conflict with motorized uses. Clearly designated areas where over snow motorized uses are allowed (OSMVUM), and subsequently quiet areas are, would potentially reduce conflicts between motorized and primitive (stock, hike, cross country ski) users by providing separate areas. Motorized use areas would be reduced, with quite areas increased.

Conflicts among Different Classes of Motor Vehicle Uses of NFS Lands or Neighboring Federal Land

There is very little use by any other motorized vehicles during the Season 1 or 2 in areas proposed for snowmobile use. Snowmobiles are the primary motor vehicles in the project area. The only potential conflict among different classes of motor vehicle use in winter is early spring ATV use on roads designated for wheeled motor vehicle use yearlong and tracked OHVs. Full size vehicles also occasionally use open routes when snow levels are low. Legal ATV and full size vehicle use can rut the snow enough to make snowmobile use difficult.

An example of changing technology is the use of snow bikes (created by installing an aftermarket kit that allows dirt bikes to be converted to include a ski on the front and a track on the rear). There has been very limited use of these machines believed to be occurring in the project area; however, there is concern amongst some members of the public that snow bikes are being used in places previously inaccessible to snowmobiles.

Montana Department of Fish, Wildlife and Parks (FWP) defines a snowmobile as “a self-propelled vehicle of an overall width of 48" or less, excluding accessories, designed primarily for travel on snow or ice, that may be steered by skis or runners and that is not otherwise registered or licensed under the laws of Montana” (please see http://fwp.mt.gov/education/outdoorRec/snowmobile.html). Under this definition, snow bikes are subject to the same allowances, restrictions and prohibitions as snowmobiles in the project area.

The OSV Rule (2015) requires that the Forest Service designates over snow use by class of vehicle and time of year. 36 CFR 212.81(a). The Department included class of vehicle to enhance consistency with subpart B, to allow Responsible Officials to take into account changing technology in OSVs. As national forests and grasslands make decisions for OSV use, an over snow vehicle use map (OSVUM) is published, showing what roads, trails and areas are open to OSVs, by class of vehicle and time of year. Snow bikes are regulated along with snowmobiles to meet state definitions and law, and Forest Service regulations.

Conflicts between classes of motor vehicle uses have not been observed. There are no other classes of motor vehicle uses that would potentially conflict with snowmobile use. There are no projected conflicts between different classes of motor vehicles in Season 1 or 2 in any alternative.

Appendix 2

Literature Cited

Cultural Resources

Fredlund, L. (1992). The Pinkham project: cultural resources 30% sample survey, Rexford and Fortine Ranger Districts, Kootenai National Forest, Lincoln County, Montana, volume 1. (pp. 12). Butte, MT: GCM Services, Inc. Submitted to USDA Forest Service, Contract No. 53-03J1-1-0084.

Aarstad, R.R. (1997). Montana's other strike: The 1917 IWW Strike in the Kootenai Valley (pp. 16). Missoula, MT: University of Montana.

Johnson, D. (1990). Indian tribes of the northern region: a brief history, description of hunting and fishing treaty rights, and fish and wildlife management programs (pp. 16-17). Missoula, MT: USDA Forest Service, Northern Regional Office, Wildlife and Fisheries.

Johnson, O.W., et al. (1950). The story of the Tobacco Plains country: the autobiography of a community (pp. 6, 7, 174, and 225). Caldwell, Idaho: Caxton Printers, LTD.

Matthews, J.A. and Frost, A. (1972). Archaeological survey of the Grave Creek trail. Archaeology in Montana 13(1): 21-23.

Miss, C. J., et. al. (1994). Historic overview of the Kootenai National Forest, volume 1 (pp. 4, 7-10, 228, 229. 275-276). Seattle, WA: Northwest Archaeological Associates. Submitted to USDA Forest Service, Contract No. 53-03J1-2-088.

Montgomery, M.B. (1995). Pinkham ecosystem historic overview (pp. 1 and 7).

Smiley, H.D. (1978). The naming of the Tobacco Plains (pp. 2-3).

Smiley, H.D. (1990). Harvesting shadows: untold tales from the fur trade (pp. 26). Manhattan, KS: Sunflower University Press.

Thoms, A.V., Schalk, R.F., Mierendorf, R.R., Olson, D.L., Bailey, M., & Cochran, B.D. (1984). Environment, archaeology, and land use patterns in the middle Kootenai River valley, vol. 1. Cultural resource investigations for Libby reservoir, Lincoln County, northwest Montana (pp. 17-19). Pullman, WA: Center for Northwest Anthropology, Washington State University, Project Report No. 2.

Thoms, A.V., Burtchard, G.C., Choquette, W.T., Draper, J.A., Hathaway, J.H., & Wyss, M.I. (1987). Prehistoric land use in the Northern Rocky Mountains: a perspective from the middle Kootenai River valley (Chapter 4 pp. 123-126 and 171-174). Pullman, WA: Center for Northwest Anthropology, Washington State University, Project Report No. 4.

Economics

English, D.B.K., Cordell, H.K. & Bowker, J.M. (1999). Implications of this assessment (pp. 433-440). In: Cordell, H.K. and McKinney, S.M., eds. Outdoor Recreation in American Life: A National Assessment of Demand and Supply Trends. Champaign, IL: Sagamore Publishing.

Kocis, S.M., English, D.B.K., Zarnok, S.J., Arnold, R. & Warren L. (2003). National visitor use monitoring results. Libby, MT: USDA Forest Service, Kootenai National Forest. 23 p.

Minnnesota IMPLAN Group (2014). IMPLAN Pro Version 3.1 [Computer software].

Montana Department of Justice (2015). Motorbike, ATV and OHV registrations 2015. Deer Lodge, MT: Title and Registration Bureau.

Sylvester, J.B. (2014). Montana recreational off-highway vehicles 2013: fuel use and spending patterns 2013. Missoula, MT: Bureau of Business and Economic Research and University of Montana. 30 p.

White, E.M., Goodding, D.B. & Stynes, D.J. (2013). Estimation of National Forest visitor spending averages from national visitor use monitoring, round 2. Gen. Tech. Rep. PNW-GTR-883. Portland, OR: USDA Forest Service, Pacific Northwest Research Station. 65 p.

Hydrology

Black, P.E. (1996). Watershed hydrology. Second Edition. Boca Raton, FL: CRC Press LLC, Lewis Publishers. 278 p.

Brooks, K.N., Folliott, P.F., Gregersen, H.M., & DeBano, L.F. (1997). Hydrology and the management of watersheds (pp 211-212, 338-339). Ames, IA: Iowa State University Press.

Furniss, M.J., Roelofs T.D. and Yee, C.S. (1991). Road construction and maintenance. Chapter 8 in influences of forest and rangeland management on salmonid fishes and their habitats. Meehan, W. R., (ed.). AFS Special Publication. 19: 297-323.

Gucinski, H., Furniss, M.J., Ziemer, R.R., & Brookes, M.H. (2001). Forest roads: a synthesis of scientific information. PNW-GTR-509. Portland, OR: USDA Forest Service.

Hoffman, J.A. (1993). Hydro-climatic analysis of peak flows in northwest Montana and northeast Idaho, MS Thesis (pp 5 and 17). Fort Collins, CO: Colorado State University.

King, J.G. (1989). Streamflow responses to road building and harvesting: a comparison with the equivalent clearcut area procedure. Research Paper INT-401. Ogden, UT: USDA Forest Service, Intermountain Research Station. 13 p.

King, J.G. and Tennyson, L.C. (1984). Alteration of streamflow characteristics following road construction in north central Idaho. Water Resources Research 20(8): 1159-1163.

Kuennen, L. and Nielsen-Gerhardt, M. (1995). Soil survey of the Kootenai National Forest area, Montana and Idaho. Libby, MT: USDA Forest Service and Natural Resources Conservation Service in cooperation with the Montana Agricultural Experiment Station. 242 p.

Luce, C.H. and Black, T.A. (1999). Sediment production from forest roads in western Oregon. Water Resources Research 35(8): 2561-2570.

Luce, C.H. and Wemple, B.C. (2001). Introduction to special issue on hydrologic and geomorphic effects of forest roads. Earth Surface Processes and Landforms 26: 111-113.

MacDonald, L., Wohl, E., & Madsen, S. (1997). Validation of water yield thresholds on the Kootenai National Forest: final report (pp 5, 30 & 124). Libby, MT: USDA Forest Service, Kootenai National Forest and the Montana Department of Lands.

Montana Department of Environmental Quality. (2005). Grave creek watershed water quality and habitat restoration plan and sediment total maximum daily loads. Helena, MT: Montana Department of Environmental Quality.

Montana Department of Environmental Quality. (2011). Tobacco planning area sediment TMDLs and framework water quality improvement plan. Helena, MT: Montana Department of Environmental Quality. 395 p.

Reid, L.M. and Dunne, T. (1984). Sediment production from forest road surfaces. Water Resources Research, 20(11): 1753-1761.

Richard, J. (2001). Town of Eureka public water system: source water delineation and assessment report. PWSID # MT0000210.

Rosgen, D.L. (1996). Applied river morphology. Pagosa Springs, CO: Wildland Hydrology. Minneapolis, MN: Printed Media Companies.

Schnackenberg, E.S. and MacDonald, L.H. (1998). Detecting cumulative effects on headwater streams in the Routt National Forest, CO. Journal of the American Water Resources Association 34(5): 1163-1177.

USDA Forest Service. (1990). Kootenai National Forest hydraulic guide. Libby, MT: USDA Forest Service, Kootenai National Forest.

USDA Forest Service. (2006). Draft Region 1 aquatic ecological unit inventory technical guide. Unpublished. Missoula, MT: USDA Forest Service, Region 1.

USDI Bureau of Land Management. (1993). Riparian area management: process for assessing proper functioning condition. Technical Reference 1737-9. Denver, CO: USDI Bureau of Land Management. 58 p.

Waters, T.F. (1995). Sediment in streams: sources, biological effects, and control. Bethesda, MD: American Fisheries Society Monograph 7. 251 p.

Wegner, S. (1996). Using ecosystem management principles to describe watershed effects of salvage logging. Libby, MT: USDA Forest Service, Kootenai National Forest.

Proposed, Threatened, Endangered and Sensitive Plants

Habeck, J.R. (1987). Present-day vegetation in the Northern Rocky Mountains. Annuals of the Missouri Botanical Garden 74: 804-809.

Harrison, J.E., Cressman, E.R., & Whipple, J.W. (1992). Geologic and structure maps of the Kalispell 1°x2° quadrangle, Montana, Alberta, and British Columbia,1:250,000, Map I-2267. Reston, VA: US Geological Survey.

Leavell, D.M. and Triepke, F.J. (1995). Sensitive plant program for the Kootenai National Forest. Libby, MT: USDA Forest Service, Kootenai National Forest. 12 p.

Lesica, P. and Shelly, J.S. (1992). Sensitive, threatened, and endangered vascular plants of Montana. Montana Natural Heritage Program Occ. Publ. 1: 1-88.

USDI Fish and Wildlife Service. (1999a). Endangered and threatened wildlife and plants: proposed threatened status for the plant Silene spaldingii (Spalding's catchfly). Federal Register 64(232): 67814-67821.

USDI, Fish and Wildlife Service. (2001). U.S. Fish and Wildlife Service March 6, 2001 concurrence letter from Mark R. Wilson, on maps of threatened and endangered species potential distribution on the Kootenai National Forest. Helena MT: USDI Fish and Wildlife Service Montana Field Office. 2 p.

Vanderhorst, J. (1997). Conservation assessment of sensitive moonworts (ophioglossaceae; botrychium subgenus botrychium) on the Kootenai National Forest. Unpublished report. Montana National Heritage Program, iv. 82 p.

Noxious Weeds

Benninger-Truax, M., Vankat, J.L., & Schaefer, R.L. (1992). Trail corridors as habitat and conduits for movement of plant species in Rocky Mountain National Park, Colorado. Landscape Ecology 6(4): 269-278.

Gelbard, J.L. and Belnap, J. (2003). Roads as conduits for exotic plant invasions in a semiarid landscape. Conservation Biology 17(2): 420-432.

Hansen, M.J. and Clevenger, A.P. (2005). The influence of disturbance and habitat on the presence of non-native plant species along transport corridors. Biological Conservation 125: 249–259.

Krueger, J.M. and Sheley, R.L. (2002). Oxeye daisy (*Chrysanthemum leucanthemum*) Fact Sheet. Bozeman, MT: Montana State University Extension Service. MONTGUIDE MT200002 AG. [0944].

Stone, K.R. (2010). Hieracium aurantiacum. In: Fire Effects Information System. [Online]. USDA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: http://www.fs.fed.us/database/feis/plants/forb/hieaur/all.html [2016, August 26].

Stone, K.R. (2011). *Hieracium caespitosum*. In: Fire Effects Information System. [Online]. Missoula, MT: USDA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: http://www.fs.fed.us/database/feis/plants/forb/hiecae/all.html [2016, August 26].

Trombulak, S.C. and Frissel, C.A. (2000). Review of ecological effects of roads on terrestrial and aquatic communities. Conservation Biology 14(1): 18-30.

Trunkle, P. and Fay, P. (1991). Transportation of spotted knapweed seeds by vehicles. 1991 Proceedings of the Montana Weed Control Association.

Tyser, R.W. and Worley, C.A. (1992). Alien flora in grasslands adjacent to road and trail corridors in Glacier National Park. Conservation Biology 6(2): 253-262.

USDA Forest Service. (2004). National strategy and implementation plan for invasive species management. 24 p. http://www.fs.fed.us/invasivespecies/documents/Final_National_Strategy_100804.pdf.

USDA Forest Service. (2007). Kootenai National Forest invasive plant management FEIS and ROD. Libby, MT: USDA Forest Service, Kootenai National Forest; Lincoln, Sanders, and Flathead County, Montana; Bonner and Boundary County, Idaho.

Zouhar, K. (2002). *Cynoglossum officinale*. In: Fire Effects Information System. [Online]. Missoula, MT: USDA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: http://www.fs.fed.us/database/feis/ [2016, August 26].

Zouhar, K. (2003). Potentilla recta. In: Fire Effects Information System. [Online]. Missoula, MT: USDA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: http://www.fs.fed.us/database/feis/plants/forb/potrec/all.html [2016, August 26].

Zouhar, K. (2004). Hypericum perforatum. In: Fire Effects Information System. [Online]. Missoula, MT: USDA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: http://www.fs.fed.us/database/feis/ [2016, August 26].

Recreation and Wilderness

Archie, M.L. (2007). Six strategies for success: effective enforcement of off-road vehicle use on public lands. Missoula, MT: Wildlands CPR and the Natural Trails and Waters Coalition. 40 p.

Citizens of Eureka, Rexford, Fortine and Trego, Montana. (2013). Draft: Ten Lakes Wilderness Study Area historic snowmobile usage report. 9 p.

Enghersen, G. (1973). Snowmobiling…. News Article. Eureka, MT: Tobacco Valley News. 2 p.

English, D., Kocis, S. & Hales, D. (2004). Off-highway vehicle use on national forests: Volume and Characteristics of Visitors. Special Report to the National OHV Implementation Team.

Gorte, R.W. (2011). Wilderness laws: statutory provisions and prohibited and permitted uses. CRS Report for Congress R41649. Congressional Research Service. 86 p.

International Mountain Bicycling Association [IMBA]. (2016). Fat bike (winter mountain biking) best practices. Accessed 4/11/06. https://www.imba.com/resources/land-protection/fat-bikes.

International Snowmobile Manufacturers Association [ISMA]. (2011). Snowmobiling fact book. Haslet, MI: International Snowmobile Manufacturers Association and American Council of Snowmobile Associations. 20 p.

Izaak Walton League of America v. Tidwell. (2015). Civil No. 06-3357. United States District Court for the District of Minnesota. 18 p.

Kaye, R.W. (2000). The Arctic National Wildlife Refuge: an exploration of the meanings embodied in America's last great wilderness (pp. 73-80). In: Wilderness Science in a Time of Change Conference, Volume 2: Wilderness within the Context of Larger Systems

(McCool, S.F., Cole, D.N., Borrie, W.T., and O'Loughlin, J., compilers). RMRS-P-15-VOL-2. Ogden, UT: USDA Forest Service, Rocky Mountain Research Station.

Kaye, R.W. (2002). Wilderness character: the historical basis, meaning, and function of the concept in the U.S. Fish and Wildlife Service draft wilderness stewardship policy of 2001. Missoula, MT: Manuscript on file at the Aldo Leopold Wilderness Research Institute.

Landres, P., Boutcher, S., Merigliano, L., Barns, C., Davis, D., Hall, T., Henry, S., & Sater, S. (2005). Monitoring selected conditions related to wilderness character: a national framework. Gen. Tech. Rep. RMRS-GTR-151. Fort Collins, CO: USDA Forest Service, Rocky Mountain Research Station. 48 p.

Landres, P., Barns, C., Dennis, J.G., Devine, T., Geissler, P., McCasland, C.S., Merigliano, L., Seastrand, J. & Swain, R. (2008). Keeping it wild: an interagency strategy to monitor trends in wilderness character across the National Wilderness Preservation System. Gen. Tech. Rep. RMRS-GTR-212. Fort Collins, CO: USDA Forest Service, Rocky Mountain Research Station. 85 p.

Landres, P., Barns, C., Boutcher, S., Devine, T., Dratch, P., Lindholm, A., Merigliano, L., Roeper, N., & Simpson, E. (2015). Keeping it wild 2: an updated interagency strategy to monitor trends in wilderness character across the National Wilderness Preservation System. Gen. Tech. Rep. RMRS-GTR-340. Fort Collins, CO: USDA Forest Service, Rocky Mountain Research Station. 114 p.

Laws, M. (2015). Ten Lakes WSA wilderness character evaluations. Libby, MT: USDA Forest Service, Kootenai National Forest. 2 p.

Laws, M. (2016a). Trail no. over time. Libby, MT: USDA Forest Service, Kootenai National Forest. 1 p.

Laws, M. (2016b). Table of roads in Ten Lakes travel management project area. Libby, MT: USDA Forest Service, Kootenai National Forest. 2 p.

Laws, M. (2016c). Ten Lakes Snowmobile Club approved trails for grooming. Libby, MT: USDA Forest Service, Kootenai National Forest. 2 p.

Laws, M. (2016d). Ten Lakes snowmobile numbers. Libby, MT: USDA Forest Service, Kootenai National Forest. 2 p.

Laws, M. (2016e). Summary of use in Ten Lakes WSA 1977-2015. Libby, MT: USDA Forest Service, Kootenai National Forest. 15 p.

Montana Fish, Wildlife and Parks [MFWP]. (2014). Creating a vibrant future for Montana's outdoor recreation heritage: Montana 2014-2018 statewide comprehensive outdoor recreation plan. Helena, MT: Montana Fish, Wildlife and Parks, Division of Montana State Parks. 37 p.

Montana Wilderness Association v. United States Forest Service. (2001). CV-96-152-M-DWM. United States District Court for the District of Montana. 19 p.

Montana Wilderness Association v. United States Forest Service. (2006). CV-96-152-M-DWM. Settlement agreement and stipulation for dismissal. United States District Court for the District of Montana. 14 p.

Montana Wilderness Association v. McAllister. (2009). CV-07-39-M-DWM and CV-07-59-BLG-DWM (consolidated). United States District Court for the District of Montana. 39 p.

Montana Wilderness Association v. McAllister. (2011). No. 09-36051; D.C. Nos. 9:07-cv-00039-DWM and 1:07-cv-00059-DWM. United States Court of Appeals for the Ninth Circuit. 23 p.

Northern Rockies Adaptation Partnership [NRAP]. (2015). Northern Rockies Adaptation Partnership: vulnerability assessment summaries. Northern Rockies Adaptation Partnership. 86 p.

Noson A. and Filardi, C. (2010). Wilderness character monitoring Ten Lakes Wilderness Study Area 2010. Missoula, MT: University of Montana, Wilderness Institute, College of Forestry and Conservation. 99 p.

Noson A. and Filardi, C. (2010). Wilderness character monitoring Thompson-Seton & Tuchuck inventoried roadless areas, Kootenai National Forest. Missoula, MT: University of Montana, Wilderness Institute, College of Forestry and Conservation. 67 p.

Raap, K. (2014). Facts and myths about snowmobiling and winter trails. East Lansing, MI: American Council of Snowmobile Associations and the US Dept. of Transportation – Federal Highway Administration. 40 p.

Rivers, K.E. and Melove, M. (2006). Winter recreation on western National Forest lands: a comprehensive analysis of motorized and non-motorized opportunity and access. Boise, ID: Winter Wildlands Alliance. 44 p.

Scott, D.W. (2002). “Untrammeled,” “wilderness character,” and the challenges of wilderness preservation. Wild Earth 11 (3/4): 72-79.

Stankey, G., Brown, P., Buscher, D., Driver, B., Gale, D., Hendee, J., Litton, B., Muth, B…& Wingle, P. (1977). RARE II wilderness attribute rating system: a user’s manual. Wilderness Attribute Rating System Task Force. 71 p.

Switalski, A. (2015). Snowmobile best management practices for Forest Service travel planning: a comprehensive literature review and recommendations for management. Boise, ID: Winter Wildlands Alliance. 20 p.

The Wilderness Society. (2016). Achieving compliance with the executive order “minimization criteria” for off-road vehicle use on Federal public lands: background, case studies, and recommendations. Washington D.C.: The Wilderness Society. 41 p.

University of Montana. (1974). Report and comments on Ten Lakes area report. Missoula, MT: University of Montana, School of Forestry, Wilderness Institute. 17 p.

USDA Forest Service. Law, regulation and policy for wheelchair/mobility device use in federally designated wilderness. White paper. USDA Forest Service. 1 p.

USDA Forest Service. (1964). Ten Lakes Scenic Area designation. Missoula, MT: USDA Forest Service, Northern Region. 8 p.

USDA Forest Service. (1970). Letter to Mr. Dale Burke. Fortine, MT: USDA Forest Service, Kootenai National Forest, Fortine Ranger District. 4 p.

USDA Forest Service. (1972). RARE I Kootenai National Forest. USDA Forest Service, Kootenai National Forest. 6 p.

USDA Forest Service. (1974). Ten Lakes area, RARE numbers: 170, 275. Fortine, MT: USDA Forest Service, Kootenai National Forest, Fortine Ranger District. 4 p.

USDA Forest Service. (1975). Final environmental statement: multiple-use plan Eureka-Grave Creek planning unit. Libby, MT: USDA Forest Service, Kootenai National Forest. 158 p.

USDA Forest Service. (1976). Montana Wilderness area study bill (S.393). Internal letter. Libby, MT: USDA Forest Service, Kootenai National Forest. 4 p.

USDA Forest Service. (1977). Kootenai National Forest public notice national forest travel plan. Missoula, MT: USDA Forest Service, Kootenai National Forest. 1 p.

USDA Forest Service. (1978a). Ten Lakes wilderness attribute rating system, worksheet 1-4. USDA Forest Service, Kootenai National Forest. 11 p.

USDA Forest Service. (1978b). National forest development transportation plan. Libby, MT: USDA Forest Service, Northern Region, Kootenai National Forest. 8 p.

USDA Forest Service. (1979). 1920 resource planning S. 393 public issues. Memo to Regional Forester, Issue Statements Ten Lakes. 13 p.

USDA Forest Service. (1982). Letter to Mike Baker. Fortine, MT: USDA Forest Service, Kootenai National Forest, Fortine Ranger District. 2 p.

USDA Forest Service. (1983). Snowmobile grooming report. USDA Forest Service, Kootenai National Forest. 4 p.

USDA Forest Service. (1985a). Ten Lakes Montana Wilderness Study Act area final report & proposal. Libby, MT: USDA Forest Service, Kootenai National Forest. 38 p.

USDA Forest Service. (1985b). Road management plan Fortine Ranger District Kootenai National Forest. Fortine, MT: USDA Forest Service, Kootenai National Forest, Fortine Ranger District. 32 p.

USDA Forest Service. (1985c). Rexford/Fortine Ranger Districts road access map, 1985-86. USDA Forest Service, Rexford and Fortine Ranger Districts. 1 p.

USDA Forest Service. (1985d). Ten Lakes Montana Wilderness Study Act area final report and proposal. Libby, MT: USDA Forest Service, Northern Region, Kootenai National Forest. 131 p.

USDA Forest Service. (1987). Wilderness briefing material. Internal letter. Libby, MT: USDA Forest Service, Kootenai National Forest. 5 p.

USDA Forest Service. (1997). Letter to Ms. Duryee, Montana Wilderness Association. Libby, MT: USDA Forest Service, Kootenai National Forest. 16 p.

USDA Forest Service. (2003a). Ten Lakes Wilderness Study Area wilderness character assessment Kootenai National Forest. USDA Forest Service, Kootenai National Forest. 9 p.

USDA Forest Service. (2003b). Wolverine trailhead. USDA Forest Service, Kootenai National Forest. 17 p.

USDA Forest Service. (2003c). Bluebird trailhead. USDA Forest Service, Kootenai National Forest. 13 p.

USDA Forest Service. (2005). Travel management; designated routes and areas for motor vehicle use; final rule. Federal Register, November 9, 2005, v 70(216): 68264-68291.

USDA Forest Service. (2006a). Winter motorized recreation plan record of decision. Kalispell, MT: USDA Forest Service, Flathead National Forest. 42 p.

USDA Forest Service. (2006b). Forest Service trail accessibility guidelines. USDA Forest Service. 86 p.

USDA Forest Service. (2008a). National visitor use monitoring results. Libby, MT: USDA Forest Service, Northern Region, Kootenai National Forest. 68 p.

USDA Forest Service. (2008b). Information and education strategy for the prevention of over snow vehicle trespass. Missoula, MT: USDA Forest Service, Northern Region. 36 p.

USDA Forest Service. (2009). Travel analysis report: Galton project. Fortine, MT: USDA Forest Service, Kootenai National Forest, Fortine Ranger District. 84 p.

USDA Forest Service. (2010). Our approach to roadless area analysis and analysis of unroaded lands contiguous to roadless areas. Missoula, MT: USDA Forest Service, Northern Region. 13 p.

USDA Forest Service. (2011). Kootenai National Forest 36 CFR 261.54, national forest system roads. Libby, MT: USDA Forest Service, Kootenai National Forest, Rexford and Fortine Ranger Districts. 30 p.

USDA Forest Service. (2012). Visitor use report, Kootenai National Forest. National Visitor Use Monitoring Program. Libby, MT: USDA Forest Service, Northern Region, Kootenai National Forest. 51 p.

USDA Forest Service. (2013). Wolverine trailhead. USDA Forest Service, Kootenai National Forest. 2 p.

USDA Forest Service. (2013). Bluebird trailhead. USDA Forest Service, Kootenai National Forest. 3 p.

USDA Forest Service. (2015a). Final environmental impact statement, for revised land management plan, Kootenai National Forest. Libby, MT: USDA Forest Service, Northern Region, Kootenai National Forest. 682 p.

USDA Forest Service. (2015b). National visitor use monitoring program visitor use report Kootenai National Forest. Libby, MT: USDA Forest Service, Kootenai National Forest.

USDA Forest Service. (2015c). Motor vehicle use map Kootenai National Forest, Rexford and Fortine Ranger Districts. Libby, MT: USDA Forest Service, Kootenai National Forest.

USDI National Park Service. (2013). Yellowstone National Park winter use plan supplemental environmental impact statement. USDI National Park Service, Yellowstone National Park, WY. 674 p.

US House of Representatives. (1977). Providing for the study of certain lands to determine their suitability for designation as wilderness in accordance with the Wilderness Act of 1964, and for other purposes. Report No. 95-620. 95th Congress, 1st Session, Committee on Interior and Insular Affairs. 4 p.

Vermonters for a Clean Environment v. Madrid. (2014). Docket No. 1:12-CV-73. United States District Court for the District of Vermont. 71 p.

Webb, T. (2016). Personal communication with Mary Laws regarding Ten Lakes Snowmobile Club user counts 2011-2015. April 11, 2016. Email. 2 p.

Wild Earth Guardians v. Montana Snowmobile Association. (2015). No. 12-35434; D.C. No. 9:10-cv-00104-DWM. United States Court of Appeals for the Ninth Circuit. 30 p.

Soils

Kuennen, L., and Nielsen-Gerhardt, M. (1995). Soil survey of the Kootenai National Forest area, Montana and Idaho. Libby, MT: USDA Forest Service and Natural Resources Conservation Service in cooperation with the Montana Agricultural Experiment Station. 242 p.

USDA Forest Service. (1988). Soil and water conservation practices handbook R-1/R-4 amendment no. 1, FSH 2509.22. Missoula, MT and Ogden, UT: USDA Forest Service, Region 1 and Region 4. 104 p.

USDA Forest Service. (1999). Region 1 soil quality standards: 2554 soil quality monitoring. R-1 Supplement 2500-99-1. Missoula, MT: USDA Forest Service, Northern Region. 6 p.

Wildlife

Bighorn Sheep

Buechner, H.K. (1960). The bighorn sheep in the United States, its past, present and future. Wildlife Monographs 4:3-174.

Couey, F. (1950). Rocky Mountain bighorn sheep of Montana, bulletin #2. Unpublished Report. Montana Fish and Game Commission.

Geist, V. (1971). Mountain sheep: a study in behavior and evolution. Chicago, IL: University of Chicago Press. 400 p.

Johnsen, S.H. (1993). Evaluation of bighorn sheep in the Ten Lakes Scenic Area. M.S. Thesis, Paper 6418. Missoula, MT: University of Montana, Missoula, Wildlife Biology. 132 p.

Montana Fish, Wildlife, and Parks [MFWP]. (2010). Montana bighorn sheep conservation strategy. Helena, MT: Montana Fish, Wildlife, and Parks, Wildlife Division. 322 p.

Shackleton, D.M., Shank C.C. & Wikeem, B.M. (1999). Natural history of Rocky Mountain and California bighorn sheep (pp. 78-138). In: Valdez, R. and Krausman, P.R., eds. Mountain Sheep of North America. Tucson, AZ: The University of Arizona Press.

Thier, T. (2015). May 6, 2015. Personal communication with Susan Chin, Wildlife Technician, regarding bighorn sheep numbers and movements.

Tomasik, E. (2011). Some information accompanying the addition of bighorns to the R1 sensitive species list. Unpublished white paper. Missoula, MT: USDA Forest Service, Northern Region. 6 p.

USDA Forest Service. (2011). Region 1, Regional Forester's sensitive species list (wildlife). Missoula, MT: USDA Forest Service, Northern Region. 5 p.

USDA Forest Service. (2013). KIPZ management indicator species selection documentation. Unpublished report. 10 p.

Weldon, L.A.C. (2012). June 11, 2012. Letter to Regional Foresters regarding bighorn sheep analysis for NEPA documents. USDA Forest Service. 4 p.

Canada Lynx

Bertram, T. and Claar, J. (2008). Horizontal cover: interim guidance for assessing multi-storied stands within lynx habitat. Unpublished report. Missoula, MT: USDA Forest Service Northern Region. 3 p.

Bush, R. and Reyes, B. (2013a). Estimates of old growth on the Kootenai National Forest. Region 1 Vegetation Classification, Mapping, Inventory, and Analysis Report #13-6 v1.0. Missoula, MT: USDA Forest Service, Region 1, Renewable Resource Management.

Bush, R. and Reyes, B. (2013b). Future old growth estimates for the Kootenai National Forest. Region 1 Vegetation Classification, Mapping, Inventory, and Analysis Report #13-8 v1.0. Missoula, MT: USDA Forest Service, Region 1, Renewable Resource Management.

Clark, J.R. (2000). Endangered and threatened wildlife and plants: determination of threatened status for the contiguous U.S. distinct population segment of the Canada lynx and related rule; final rule. Federal Register, March 24, 2000, v 65(58): 16051-16086.

Ecosystem Research Group [ERG]. (2012). Wildlife habitat assessment for the Kootenai and Idaho Panhandle plan revision zone (KIPZ). Unpublished Report. Missoula, MT: Ecosystem Research Group. 134 p (plus appendix).

Interagency Lynx Biology Team [ILBT]. (2013). Canada lynx conservation assessment and strategy (3rd ed). Forest Service Publication R1-13-19. Missoula, MT: USDA Forest Service, USDI Fish and Wildlife Service, USDI Bureau of Land Management and USDI National Park Service. 128 p.

Ruediger, B., Claar, J., Gniadek, S., Holt, B., Lewis, L., Mighton, S., Naney, B…& Williamson, A. (2000). Canada lynx conservation assessment and strategy. Forest Service Publication R1-00-53. Missoula, MT: USDA Forest Service, USDI Fish and Wildlife Service, USDI Bureau of Land Management and USDI National Park Service. 142 p.

Ruggiero, L.F., Aubry, K.B., Buskirk, S.W., Lyon, L.J. & Zielinski, W.J., tech. eds. (1994). The scientific basis for conserving forest carnivores: American martin, fisher, lynx and

wolverine in the western United States. Gen. Tech. Rep. RM-254. Ft. Collins, CO: USDA Forest Service, Rocky Mountain Forest and Range Experiment Station. 184 p.

Ruggiero, L.F., Aubry, K.B., Buskirk, S.W., Koehler, G.M., Krebs, C.J., McKelvey, K.S. & Squires, J.R. (1999). Ecology and conservation of lynx in the United States. General Technical Report RMRS-GTR-30WWW. Fort Collins, CO: USDA Forest Service, Rocky Mountain Research Station. 474 p (plus appendix).

Squires, J. (2012). September 6, 2012. Personal communication with Jeremy Anderson, Wildlife Biologist, Kootenai National Forest Supervisor's Office, Libby, Montana.

Squires, J., Decesare, N., Kolbe, J. & Ruggiero, L. (2010). Seasonal resource selection of Canada lynx in managed forests of the Northern Rockies. Journal of Wildlife Management 74(8): 1648-1660.

Squires, J., Ruggiero, L., Kolbe, J. & Decesare, N. (2006). Lynx ecology in the intermountain west: research program summary. Unpublished Report. Missoula, MT: USDA Forest Service, Rocky Mountain Research Station. 51 p.

USDA Forest Service. (2004). Draft environmental impact statement northern Rockies lynx amendment: national forests in Montana, parts of Idaho, Wyoming and Utah and Bureau of Land Management units in Idaho and parts of Utah. Missoula, MT: USDA Forest Service, Northern Region and USDI Bureau of Land Management. 416 p.

USDA Forest Service. (2007a). Final environmental impact statement, northern Rockies lynx management direction. Missoula, MT: USDA Forest Service, Northern Region. 534 p.

USDA Forest Service. (2007b). Record of decision, northern Rockies lynx management direction. Missoula, MT: USDA Forest Service, Northern Region. 52 p (plus attachment).

USDI Fish and Wildlife Service. (2000). Final rule for the determination of threatened status for the contiguous United States distinct population segment of the Canada lynx and related rule. Federal Register, March 24, 2000, v 65(58): 16051-16086.

USDI Fish and Wildlife Service. (2006). Designation of critical habitat for the contiguous United States distinct population segment of the Canada lynx; final rule. Federal Register, November 9, 2006, v 71(217): 66008-66016.

USDI Fish and Wildlife Service. (2008). Proposal to revise designated critical habitat for the contiguous United States distinct population segment of the Canada lynx *(Lynx canadensis*). Federal Register, February 28, 2008, v 73(40): 10860-10896.

USDI Fish and Wildlife Service. (2009). Final rule to designate critical habitat for the contiguous United States distinct population segment of the Canada lynx (Lynx canadensis). Federal Register, February 25, 2009, v 74(36): 8616-8702.

USDI Fish and Wildlife Service. (2013). Proposed rule for the revised designation of critical habitat for the contiguous United States distinct population segment of the Canada lynx and revised distinct population segment boundary. Federal Register, September 26, 2013, v 78(187): 59430-59474.

USDI Fish and Wildlife Service. (2014). Final rule for the revised designation of critical habitat for the contiguous United States distinct population segment of the Canada lynx and

revised distinct population segment boundary. Federal Register, September 12, 2014, v 79(177): 54782-54846.

Fisher

Heinemeyer, K.S. (1993). Temporal dynamics in the movements, habitat use, activity, and spacing of reintroduced fishers in northwestern Montana. Master Thesis. Missoula, MT: University of Montana. 169 p.

Heinemeyer, K.S. and Jones, J.L. (1994). Fisher biology and management in the western United States: a literature review and adaptive management strategy. Missoula, MT: USDA Forest Service, Northern Region. 109 p.

Lofroth, E., Raley, C., Higley, J., Truex, R., Yaeger, J., Lewis, J., Happe, P., Finley, L…and Brown, R. (2010). Conservation of fishers (*Martes pennanti*) in south-central British Columbia, western Washington, western Oregon, and California. Volume I: Conservation Assessment. Denver, CO: USDI Bureau of Land Management.

Olson, L., Sauder, J., Albrecht, N., Vinkey, R., Cushman, S. & Schwartz, M. (2014). Modeling the effects of dispersal and patch size on predicted fisher (*Pekania [Martes] pennanti*) distribution in the United States Rocky Mountains. Biological Conservation 169: 89-98.

Powell, R. and Zielinski, W. (1994). Fisher (pp. 38-73). In: The scientific basis for conserving forest carnivores: American marten, fisher, lynx, and wolverine in the western United States. General Technical Report RM-254. Fort Collins, CO: USDA Forest Service, Rocky Mountain Forest and Range Experiment Station.

Ruggiero, L.F., Aubry, K.B., Buskirk, S.W., Lyon, L.J. & Zielinski, W.J., tech. eds. (1994). The scientific basis for conserving forest carnivores: American martin, fisher, lynx and wolverine in the western United States. Gen. Tech. Rep. RM-254. Ft. Collins, CO: USDA Forest Service, Rocky Mountain Forest and Range Experiment Station. 184 p.

Sauder, J. (2014). Landscape ecology of fishers (*Pekania pennanti*) in north-central Idaho. Dissertation. Moscow, ID: University of Idaho, College of Graduate Studies. 107 p.

Sauder, J. and Rachlow, J. (2014). Both forest composition and configuration influence landscape-scale habitat selection by fishers (*Pekania pennanti*) in mixed coniferous forests of the northern Rocky Mountains. Forest Ecology and Management 314: 75-84.

Sauder, J. and Rachlow, J. (2015). Forest heterogeneity influences habitat selection by fishers (*Pekania pennanti*) within home ranges. Forest Ecology and Management 347: 49-56.

Schwartz, M., DeCesare, N., Jimenez, B., Copeland, J. & Melquist, W. (2013). Stand and landscape-scale selection of large trees by fishers in the Rocky Mountains of Montana and Idaho. Forest Ecology and Management 305: 103-111.

USDA Forest Service. (2012). Fisher monitoring report for the northern United States Rocky Mountains. Unpublished Report. Missoula, MT: USDA Forest Service, Northern Region. 3 p.

USDI Fish and Wildlife Service. (2011). 12-Month finding on a petition to list a distinct population segment of the fisher in its United States northern Rocky Mountain range as endangered or threatened with critical habitat. Federal Register, June 30, 2011, v 76(126): 38504-38532.

USDI Fish and Wildlife Service. (2016). Evaluation of a petition to list the fisher (northern Rockies population) as an endangered or threatened species under the act. Federal Register, January 12, 2016, v 81(7): 1373- 1374.

Vinkey, R. (2003). An evaluation of fisher (*Martes pennanti*): introductions in Montana. M.S. Thesis. Missoula, MT: University of Montana. 97 p.

General

Anderson, J.L. (2014). Specialist Report, KNF Forest Plan Revision, Wildlife. Libby, MT: USDA Forest Service, Kootenai National Forest. 475 p.

USDA Forest Service. (2003). Kootenai National Forest, FY 2002 Forest Plan Monitoring Report. Libby, MT: Kootenai National Forest. 60p.

USDI Fish and Wildlife Service. (2001). U.S. Fish and Wildlife Service March 6, 2001 concurrence letter from Mark R. Wilson, on maps of threatened and endangered species potential distribution on the Kootenai National Forest. Helena, MT: USDI Fish and Wildlife Service, Montana Field Office. 2 p (plus attachments).

USDA Forest Service. (2011). Region 1, Regional Forester's sensitive species list (wildlife). Missoula, MT: USDA Forest Service, Northern Region. 5 p.

USDI Fish and Wildlife Service. (2013). Biological opinion for the revised land and resource management plan (forest plan) for the Kootenai National Forest. Helena, MT: USDI Fish and Wildlife Service, Ecological Services Montana Field Office. 77 p.

Grizzly Bear

Christensen, G. and Madel, M. (1982). Cumulative effects analysis process: grizzly bear habitat component mapping. Unpublished report. Libby, MT: USDA Forest Service, Kootenai National Forest. 38 p.

Interagency Grizzly Bear Committee [IGBC]. (1994). Grizzly bear motorized access management task force report. Unpublished report. Missoula, MT: Interagency Grizzly Bear Committee. 8 p.

Interagency Grizzly Bear Committee [IGBC]. (1998). Selkirk/Cabinet-Yaak grizzly bear recovery areas: interim access management rule set. Unpublished report. Missoula, MT: Interagency Grizzly Bear Committee. 10 p.

Interagency Grizzly Bear Committee [IGBC]. (1998). Interagency grizzly bear committee taskforce report: grizzly bear motorized access management. Missoula, MT: Interagency Grizzly Bear Committee. 8 p.

Interagency Grizzly Bear Committee [IGBC]. (1990). CEM: a model for assessing effects on grizzly bears. Unpublished report. Missoula, MT: Interagency Grizzly Bear Committee. 24 p.

Joslin, G. and Youmans, H., coordinators. (1999). Effects of recreation on Rocky Mountain wildlife: a review for Montana. Montana Chapter of the Wildlife Society, Committee on Effects of Recreation on Wildlife. 307 p.

Kendall, K.C., Stetz, J.B., Boulanger, J., MacLeod, A.C., Paetkau, D. & White, G.C. (2009). Demography and genetic structure of a recovering grizzly bear population. Journal of Wildlife Management 73(1):3-17.

Linnell, J.D.C., Barnes, B., Swenson, J.E. & Andersen, R. (2000) How vulnerable are denning bears to disturbance? Wildlife Society Bulletin 28:400-413.

Mace, R.D. and Manley, T.L. (1993). South fork Flathead River grizzly bear project: progress report for 1992. Montana Fish, Wildlife and Parks, USDA Forest Service, Intermountain Research Station, USDI Fish and Wildlife Service, National Fish and Wildlife Foundation. 34 p.

Mace, R.D. and Roberts, L.L. (2012). Northern Continental Divide Ecosystem grizzly bear monitoring team annual report, 2011. Kalispell, MT: Montana Fish, Wildlife and Parks. 46 p.

Mace, R., Waller, J., Manley, T., Lyon, L. & Zuuring, H. (1996). Relationships among grizzly bears, roads, and habitat in the Swan Mountains, Montana. Journal of Applied Ecology 33: 1395-1404.

Mace, R. and Waller, J. (1997). Final report: grizzly bear ecology in the Swan Mountains, Montana. Unpublished report. Helena, MT: Montana Fish, Wildlife and Parks. 191 p.

McMaster, K. (1995). Amended biological opinion on the Kootenai Forest Plan to include an incidental take statement. Helena, MT: USDI Fish and Wildlife Service. 15 p.

Servheen, C., et al. (2001). Identification and management of linkage zones for grizzly bears between the large blocks of public land in the northern Rocky Mountains.

USDA Forest Service. (2011). Food storage and sanitation special order. Forest Supervisor Order F14-083-L-11. Libby, MT: USDA Forest Service, Kootenai National Forest. 5 p.

USDI Fish and Wildlife Service. (1993). Grizzly bear recovery plan. Missoula, MT: USDI Fish and Wildlife Service. 181 p.

USDI Fish and Wildlife Service. (2011). Endangered species act section 7 consultation biological opinion on the forest plan amendments for motorized access management within the Selkirk and Cabinet-Yaak grizzly bear recovery zones on the Kootenai, Idaho Panhandle, and Lolo National Forests. Kalispell, MT: USDI Fish and Wildlife Service, Montana Field Office. Spokane, WA: Northern Idaho Field Office. 227 pp.

Wittinger, T., et al. (2002). Grizzly bear distribution outside of recovery zones. Unpublished white paper. Missoula, MT: USDA Forest Service, Northern Region. 2 p.

North American Wolverine

Aubry, K.B., McKelvey, K.S. & Copeland, J.P. (2007). Distribution and broad scale habitat relations of the wolverine in the contiguous United States. The Journal of Wildlife Management 71(7): 2147-2158.

Banci, V. (1994). Wolverine. In: The scientific basis for conserving forest carnivores: American marten, fisher, lynx, and wolverine in the western United States. General Technical Report RM-254. Fort Collins, CO: USDA Forest Service, Rocky Mountain Forest and Range Experiment Station. 184 pp.

Butts, T.W. (1992). Wolverine (*Gulo gulo*) biology and management: a literature review and annotated bibliography. Missoula, MT: USDA Forest Service, Northern Region. 106 p (plus attachments).

Copeland, J.P. (1996). Biology of the wolverine in central Idaho. M.S. Thesis. Moscow, ID: University of Idaho.

Copeland, J., McKelvey, K., Aubry, K., Landa, A., Persson, J., Inman, R., Krebs, J…& May, R. (2010). The bioclimatic envelope of the wolverine (*Gulo gulo*): Do climatic constraints limit its geographic distribution? Canadian Journal of Zoology 88: 233-246.

Copeland, J.P., Peek, J.M., Groves, C.R., Melquist, W.E., McKelvey, K.S., McDaniel, G.W., Long, C.D. & Harris, C.E. (2007). Seasonal habitat associations of the wolverine in central Idaho. Journal of Wildlife Management 71(7), 2201-2212.

Copeland, J. and Yates, R. (2006). Wolverine population assessment in Glacier National Park: spring 2006 progress report 2004-2005. Unpublished report. Missoula, MT: USDA Forest Service, Rocky Mountain Research Station. 42 p.

Copeland, J. and Yates, R. (2008). Wolverine population assessment in Glacier National Park: comprehensive summary update. Unpublished report. Missoula, MT: USDA Forest Service, Rocky Mountain Research Station. 16 p.

Committee on the Status of Endangered Wildlife in Canada [COSEWIC]. (2003). Assessment and update report on the wolverine, *Gulo gulo*. eastern population, western population in Canada. Ottawa, Canada: Committee on the Status of Endangered Wildlife in Canada. 41 p.

Heinemeyer, K. (2012). Central Idaho wolverine and winter recreation research study: project update. Unpublished Report. Report available at www.forestcarnivores.org.

Heinemeyer, K. and Squires, J. (2012). Idaho wolverine winter recreation research project: investigating the interactions between wolverines and winter recreation, 2011-2012 progress report. Unpublished Report. Report available at www.forestcarnivores.org.

Hornocker, M. and Hash, H. (1981). Ecology of the wolverine and northwestern Montana. Canadian Journal of Zoology 59: 1286-1301.

Idaho Fish and Game [IDFG]. (2005). Wolverine: conservation status and map. Boise, ID: Idaho Fish and Game, Idaho Conservation Data Center. 3 p.

Inman, R.M., Brock, B.L., Inman, K.H., Sartorius, S.S., Aber, B.C., Giddings, B…& Chapron, G. (2013). Developing priorities for metapopulation conservation at the landscape scale: wolverines in the western United States. Biological Conservation 166: 276-286.

Johnson, W., ed. (2004). A conservation plan based on the 1987 Kootenai National Forest Land Management Plan as amended. Unpublished report. Libby, MT: USDA Forest Service, Kootenai National Forest. 17 p (plus appendices).

Magoun, A. and Copeland, J. (1998). Characteristics of wolverine reproductive den sites. The Journal of Wildlife Management 62(4): 1313-1320.

May, R., van Dijk, J., Landa, A. & Anderson, R. (2010). Spatio-temporal ranging behavior and its relevance to foraging strategies in wide-ranging wolverines. Ecological Monitoring 221: 936-943.

Ruggiero, L.F., Aubry, K.B., Buskirk, S.W., Lyon, L.J. & Zielinski, W.J., tech. eds. (1994). The scientific basis for conserving forest carnivores: American martin, fisher, lynx and wolverine in the western United States. Gen. Tech. Rep. RM-254. Ft. Collins, CO: USDA Forest Service, Rocky Mountain Forest and Range Experiment Station. 184 p.

Schwartz, M., Copeland, J., Anderson, N., Squires, J., Inman, R., McKelvey, K., Pilgrim, K., Waits, L. & Cushman, S. (2009). Wolverine gene flow across a narrow climatic niche. Ecology 90(11): 3222-3232.

Thomas, A. (1995). Forest carnivores in Idaho: habitat conservation assessments and conservation strategies. Boise, ID: Idaho Fish and Game, Nez Perce Tribe and Sawtooth National Forest. 126 p.

USDI Fish and Wildlife Service. (2003). 90-day finding for a petition to list as endangered or threatened wolverine in the contiguous United States. Federal Register, October 21, 2003, v 68(203): 60112-60115.

USDI Fish and Wildlife Service. (2013). Proposed rule to list the distinct population segment of the North American wolverine occurring in the contiguous United States, as a threatened species under the Endangered Species Act. Federal Register, February 4, 2013, v 78(23): 7864-7890.

USDI Fish and Wildlife Service. (2014). Withdrawal of the proposed rule to list the distinct population segment of the North American wolverine occurring in the contiguous United States as a threatened species under the Endangered Species Act. Federal Register, August 13, 2014, v 79(156): 47522-47545.

Weaver, J.L. (2011). Conservation value of roadless areas for vulnerable fish and wildlife species in the Crown of the Continent ecosystem, Montana. Wildlife Conservation Society Working Paper No. 40, April 2011. 171 p.

Whitetail and Mule Deer

Baty, G.R. (1995). Resource partitioning and browse use by sympatric elk, mule deer and whitetail deer on a winter range in western Montana. M.S. Thesis. Missoula, MT: University of Montana. 228 p.

Berner, K.L., Fiedler, C.E. & Pletscher, D.H. (1988). White-tailed deer winter habitat use in western Montana second-growth forests (No. 2). Missoula, MT: University of Montana. 7 p.

Kramer, A. (1973). Interspecific competition and dispersion of two sympatric deer species. The Journal of Wildlife Management 37(3): 299-300.

Lyon, L.J. (1966). Problems of habitat management for deer and elk in the northern forests. Research Paper INT-24. Ogden, UT: USDA Forest Service, Intermountain Forestry and Range Experiment Station. 15 p.

Montana Fish, Wildlife and Parks [MFWP]. (1998). Ecology and management of mule deer and whitetail deer in Montana. Federal Aid Project W-120-R. Helena, MT: Montana Fish, Wildlife and Parks. 180 p.

Morgan, J.T. (1993). Summer habitat use of whitetail deer on the Talley Lake Ranger District, Flathead National Forest. Ph.D. Thesis. Bozeman, MT: Montana State University. 103 p.

Mundinger, J.G. (1981). Impacts of timber harvest on whitetail deer in the coniferous forests of northwestern Montana. Kalispell, MT: Montana Fish, Wildlife and Parks. NW Wildlife Society Meeting, April 1981. 15 p.

Swenson, J.E., Knapp, S.J., & Wentland, H.J. (1983). Winter distribution and habitat use by mule deer and white-tailed deer in southeastern Montana. Prairie Naturalist 15: 97-112.

Thomas, J.W., tech. ed. (1979). Wildlife habitats in managed forests, the Blue Mountains of Oregon and Washington. Handbook No. 553. Washington D.C.: USDA Forest Service and Wildlife Management Institute.

Appendix 3

Glossary

Action Alternative – An alternative that proposes some management action, as contrasted to the No Action Alternative.

Administrative Appeal – A request to a higher authority for review of a decision related to an Environmental Impact Statement, Environmental Analysis, or Categorical Exclusion.

Affected Environment – The biological and physical environment that will or may be changed by actions proposed and the relationship of people to that environment.

Alternative – A combination of management prescriptions applied in specific amounts and locations to achieve a desired management emphasis. One of the several policies, plans or projects, proposed for decision-making.

Apparent Naturalness – The environment looks natural to most people using the area. It is a measure of importance of visitors' perceptions of human impacts to the area. Even though some long-term ecological processes of an area may have been interrupted, generally the area landscape appears to be affected by forces of nature. If the landscape has been modified by human activity, the evidence is not obvious to the casual observer, or it is disappearing due to natural processes.

Bear Management Subunit – An area approximately the size of an average female home range (about 50 mi2), generally from ridge top to valley bottom, and including all seasonal habitats.

Best Management Practices (BMPs) – Methods, measures or practices to prevent or reduce water pollution, including but not limited to, structural and non-structural controls, operation and maintenance procedures, other requirements, and scheduling and distribution of activities.

Usually BMPs are applied as a system of practices rather than a single practice. BMPs are selected on the basis of site-specific conditions that reflect natural background conditions and political, social, economic, and technical feasibility.

Biological Assessment (BA) – A document prepared by a federal agency for the purpose of identifying any endangered species or threatened species, which is likely to be affected by an agency action. This document facilitates compliance with the Endangered Species Act. The federal agency, in consultation with the Secretary of Interior, must insure that any action authorized, funded, or carried out by a federal agency is not likely to jeopardize the continued existence of any endangered or threatened species, or result in the destruction or adverse modification of its habitat.

Biological Evaluation (BE) – A document prepared by the Forest Service to review programs or activities to determine how an action might affect any threatened, endangered, proposed, or sensitive species. This document often focuses only on sensitive species if the Threatened, Endangered, and Proposed Species will be covered in a Biological Assessment.

Conflict – For the purpose of this analysis, conflict refers to recreational and wilderness uses and values and their compatibility. Conflict is defined as "incompatibility or variance," and conflicting recreational use can cause serious impacts to recreation experiences, to the point of causing some users to end their use or to be displaced by other users. Conflict does not refer to "a

serious disagreement or argument" and does not mean a physical or verbal disagreement between recreation users.

Consultation – A process required by Section 7 of the Endangered Species Act whereby Federal agencies proposing activities in a listed species habitat confer with the U.S. Fish and Wildlife Service about the impacts of the activity on the species. Consultation may be informal, and thus advisory, or formal, and thus binding.

Council on Environmental Quality (CEQ) – An advisory council to the President established by the National Environmental Policy Act of 1969. It reviews Federal programs for their effect on the environment, conducts environmental studies, and advises the President on environmental matters.

Cultural Resources – The physical remains of human activity (artifacts, ruins, burial mounds, petroglyphs, etc.) and conceptual content or context (as a setting for legendary, historic, or prehistoric events; as a sacred area of native peoples, etc.) of an area of prehistoric or historic occupation.

Cumulative Effect – The impact on the environment, which results from the incremental impact of the action when added to other actions. Cumulative impacts can also result from individually minor but collectively significant actions taking place over a period of time.

Designated Road or Trail (Route) or Area – A National Forest System road, a National Forest System trail, or an area on National Forest System lands that is designated for motor vehicle use pursuant to 36 CFR §212.51 on a motor vehicle use map (MVUM) (36 CFR §212.1). A designation for a road or trail includes all terminal facilities, trailheads, parking lots, and turnouts associated with the designated road or trail. The designation also includes parking within one vehicle width from the edge of the road surface when it is safe to do so.

Designation of Over-snow Vehicle Use – Designation of a National Forest System road, National Forest System trail, or area on National Forest System lands where over-snow vehicle use is allowed, restricted, or prohibited pursuant to 36 CFR §212.81 on an over-snow vehicle use map (OSVUM).

Effects (Impacts, Direct Effects, Indirect Effects) – Effects include: (a) direct effects, which are caused by the action and occur at the same time and place; (b) indirect effects, which are caused by the action and are later in time or farther removed in distance, but 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 and water and other natural systems, including ecosystems. Effects and impacts as used in these regulations are synonymous. Effects include ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative. Effects may also include those resulting from actions which may have both beneficial and detrimental effects, even if on balance the agency believes that the effect will be beneficial.

Forb – Any herbaceous (herb-like) plant other than grass or grass-like plants that has little or no wood on it. For example, wildflowers are forbs.

Forest Plan – The Kootenai National Forest Land and Resource Management Plan. A Forest Plan is a document prepared under the National Forest Management Act by each national forest that generally describes how the resources in the forest will be managed for a 10 to 15 year period.

Forest Trail – A trail wholly or partly within or adjacent to and serving the National Forest System that the Forest Service determines is necessary for the protection, administration, and utilization of the National Forest System and the use and development of its resources (36 CFR §212.1).

Geographic Information System (GIS) – An integrated collection of computer software and data used to view and manage information about geographic places, analyze spatial relationships, and model spatial processes. A GIS provides a framework for gathering and organizing spatial data and related information so that it can be displayed and analyzed.

Goal – A concise statement that describes a desired condition to be achieved. It is normally expressed in broad, general terms and is timeless in that it has no specific date that it is to be completed. Goal statements form the principal basis upon which objectives are developed.

Guideline – An indication or outline of policy or conduct dealing with the basic management of the Forest. Forest-wide management standards and guidelines apply to all areas of the Forest regardless of the other management prescriptions applied.

Habitat Type – An aggregation of all land areas potentially capable of producing similar plant communities at climax.

Home Range – An area, from which intruders may or may not be excluded, to which an individual restricts most of its usual activities.

Interdisciplinary Team (ID Team) – A group of individuals with different training assembled to solve a problem or perform a task. The team is assembled out of recognition that no one scientific discipline is sufficiently broad to adequately solve the problem. Through interaction, participants bring different points of view to bear on the problem.

Invasive Plant – All State and county listed "noxious weeds" are considered invasive plants. Also, other exotic species (not listed by State or counties as noxious weeds) that can successfully out compete and displace native plant communities.

Inventoried Roadless Areas (IRA) – Inventoried roadless areas are those areas mapped under the 2001 Roadless Area Conservation Rule (36 CFR 294 Subpart B, 66 Fed Reg. 3244-3273). These areas are identified in appendix C of the FEIS for the revised Forest Plan. The official set of maps is maintained at the national headquarters office of the Forest Service. The definition of a roadless area for the 2001 Roadless Rule included: undeveloped areas typically exceeding 5,000 acres that met the minimum criteria for wilderness consideration under the Wilderness Act and that were inventoried during the Forest Service's Roadless Area Review and Evaluation (RARE II) process, subsequent assessments, or forest planning.

Management Area (MA) – An aggregation of capability areas that have common management direction and may be dispersed over the Forest. Consists of a grouping of capability areas selected through evaluation procedures and used to locate decisions and resolve issues and concerns.

Management Indicator Species (MIS) – Species identified in a planning process that are used to monitor the effects of planned management activities on viable populations of wildlife and fish including those that are socially or economically important.

Mechanical Use (Mechanized Transport) – Any contrivance for moving people or material in or over land, water, or air, having moving parts, that provides a mechanical advantage to the user, and that is powered by a living or nonliving power source. This includes, but is not limited to,

sailboats, hang gliders, parachutes, bicycles, game carriers, carts, and wagons. It does not include wheelchairs when used as necessary medical appliances. It also does not include skis, snowshoes, rafts, canoes, sleds, travois, or similar primitive devices without moving parts (FSM 2320.5(3)).

Monitoring and Evaluation – The periodic evaluation on a sample basis of Forest Plan management practices to determine how well objectives have been met and how closely management standards have been applied.

Motor Vehicle – Any vehicle which is self-propelled, other than:

A vehicle operated on rails; and

Any wheelchair or mobility device, including one that is battery-powered, that is designed solely for use by a mobility-impaired person for locomotion, and that is suitable for use in an indoor pedestrian area (36 CFR §212.1).

Motor Vehicle Use Map (MVUM) – A map reflecting designated roads, trails, and areas on an administrative unit or a Ranger District on the National Forest System (36 CFR §212.1).

National Environmental Policy Act (NEPA) – An act which encourages productive and enjoyable harmony between man and his environment; promotes efforts to prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; enriches the understanding of the ecological systems and natural resources important to the Nation; and establishes a Council on Environmental Quality.

National Forest Management Act (NFMA) – A law passed in 1976 as amendments to the Forest and Rangeland Renewable Resources Planning Act that requires the preparation of Regional and Forest Plans and the preparation of regulations to guide that development.

National Forest System (NFS) – All national forest lands reserved or withdrawn from the public domain of the United States, all national forests lands acquired through purchase, exchange, donation, or other means, the national grasslands and land utilization projects administered under Title III.

National Forest System Trail – A forest trail other than a trail which has been authorized by a legally documented right-of-way held by a State, county, or other local public road authority (36 CFR §212.1).

National Wilderness Preservation System – A system of federally managed wilderness areas designated for preservation in their natural condition under the provisions of the wilderness act of 1964.

Native Species – Species that are indigenous to a region, as opposed to introduced or exotic species.

Natural – An attribute of wilderness: ecological systems are substantially free from the effects of modern civilization.

Natural Integrity – The extent to which long-term ecological processes are intact and functioning. Impacts to natural integrity are measured by the presence and magnitude of human-induced change to an area. Such impacts include physical developments (for example, roads, trails, utility rights-of-way, fences, lookouts, cabins, recreation developments, livestock grazing,

mineral developments, wildlife/fisheries management activities, vegetative manipulation, and fire-suppression activities).

No Action Alternative – The management direction, activities, outputs, and effects most likely to exist in the future if the current plan would continue unchanged.

Non-conforming – Section 4(d) of the Wilderness Act is titled "special provisions." These so-called non-conforming uses are compromises that diminish wilderness character, but were nonetheless written into the original law. These special exceptions are qualified to various degrees so as to provide federal wilderness managers with the ability to regulate these uses to minimize their impacts on wilderness.

Non-motorized Use – All use by other than motor vehicles, including wheelchairs or mobility devices and battery-powered mobility devices described under 36 CFR §212.1 (Adapted from Mode of Travel List of Values). Non-motorized use can occur on roads or trails open to motorized use.

Non-snow (Non-winter, summer) – Non-winter or non-snow refer to the season of recreational use that is associated with no snow cover. Non-snow is more correct and used interchangeably with summer throughout the document because it could also include spring and fall, assuming there is no snow cover. Elevational gradients also affect the timing and quantity of snow cover, with high elevations receiving snow in early fall and retaining snow well into summer.

Noxious Weed – Any exotic plant species established or that may be introduced in the area which may render land unfit for agriculture, forestry, livestock, wildlife, or other beneficial uses.

Off-highway Vehicle (OHV) - Any motor vehicle designed for or capable of cross-country travel on or immediately over land, water, sand, snow, ice, marsh, swampland, or other natural terrain (36 CFR §212.1). Includes four wheel drive trucks, ATVs, UTVs, motorcycles, and snowmobiles.

Over-snow Vehicle – A motor vehicle that is designed for use over snow and that runs on a track or tracks and/or a ski or skis, while in use over snow (36 CFR §212.1).

Preferred Alternative – The Agency's preferred alternative is the alternative that the agency believes would best fulfill its statutory mission and responsibilities, giving consideration to economic, environmental, technical and other factors, and which meets the purpose and need of the NEPA document.

Primitive (Primitive Recreation) –Primitive recreation has largely been interpreted as travel by non-motorized and non-mechanical means (for example by horse, foot, or canoe) that reinforce the connection to our ancestors and our American heritage.

Proposed Action – The proposed action or proposal exists at that stage in the development of an action when an agency subject to the Act (NEPA) has a goal and is actively preparing to make a decision on one or more alternative means of accomplishing that goal and the effects can be meaningfully evaluated.

Public Involvement – A process designed to broaden the information base upon which agency decisions are made by informing the public about Forest Service activities, plans, and decisions, and participation in the planning processes which lead to final decision making.

Public Issue (Issue) – A subject or question of widespread public interest identified through public participation relating to management of NFS lands.

Quiet Users – People who seek out and depend on natural areas on public lands to hike, fish, relax, view nature and wildlife, escape the hustle of civilization, camp, bicycle, paddle, etc. They are particularly averse to noise generated by personal motorized recreational vehicles, which symbolizes all of the negative effects they produce (excerpt from http://www.quietuse.org).

Ranger District – Administrative subdivision of the Forest supervised by a District Ranger.

Recreation Opportunity Spectrum (ROS) – A framework of land delineations that identifies a variety of recreation experience opportunities categorized into classes on a continuum. The Spectrum's continuum has been divided into six major classes for Forest Service use: Urban (U), Rural (R), Roaded Natural (RN), Semi-primitive Motorized (SPM), Semi-Primitive Non-Motorized (SPNM), and Primitive (P).

Remoteness – Primitive recreation provides the opportunity and the perceived condition of being secluded, inaccessible, and out of the way.

Responsible Official – The Forest Service employee who has the authority to select and/or carry out a specific planning action.

Road – A motor vehicle route over 50 inches wide, unless identified and managed as a trail (36 CFR §212.1).

Route – A road or trail (FSM 7705).

Scoping Process – An early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to the proposed action. Identifying the significant environmental issues deserving of study and deemphasizing insignificant issues, narrowing the scope of the environmental impact statement accordingly (CEQ regulations, 40 CFR 1501.7).

Sediment – Solid material, both mineral and organic, that is in suspension, being transported, or has been moved from its site of origin by air, water, gravity, or ice.

Sensitive Species – Those wildlife and plant species identified by the Regional Forester for which population viability is a concern because of significant current or predicted downward trends in (a) population numbers or density, or (b) habitat capability that would reduce a species' existing distribution.

Sno-trail – A trail wholly or partly within or adjacent to and serving the National Forest System that the Forest Service determines is necessary for the protection, administration, and utilization of the National Forest System and the use and development of its resources (36 CFR §212.1). Sno-trail can be motorized (snowmobile) or non-motorized (cross country ski). Many of these routes are roads or trails, designated as sno-trails in winter.

Snowmobile – See Over-Snow Vehicle.

Solitude – Personal subjective value defined as the isolation from sights, sounds, presence of others and developments of man. The focus is on features of the area that offer users outstanding opportunities for solitude such as size of the area, presence of vegetation and topographic screening.

Species – A group of actually or potentially interbreeding populations that are reproductively isolated from all other kinds of organisms.

Standards and Guidelines – An indication or outline of policy or conduct dealing with the basic management of the Forest. Forest-wide management standards and guidelines apply to all areas of the Forest regardless of the other management prescriptions applied.

Subspecies – Subpopulations or races within a species that are distinguishable by morphological characteristics and, sometimes, by physiological or behavioral characteristics.

Summer Range – Land used by wildlife species (specifically big game and/or grizzly bear) during the summer months.

Threatened Species – Any species, plant or animal, which is likely to become an endangered species within the near future throughout all, or a significant portion, of its range. In accordance with the 1973 ESA, the Secretary of the Interior identifies endangered species.

Trail – A route 50 inches or less in width or a route over 50 inches wide that is identified and managed as a trail (36 CFR §212.1).

Unauthorized Road or Trail (Unauthorized Route) – A road or trail that is not a forest road or trail or a temporary road or trail and that is not included in a forest transportation atlas (36 CFR §212.1).

Undeveloped – An attribute of wilderness: essentially without permanent improvements or modern human occupation

Unique Features – Unique and/or special geological, biological, ecological, cultural, or scenic features.

Untrammeled – An attribute of wilderness: unhindered and free from modern human control or manipulation.

User-created Route – Any route currently not managed as a component of the Forest's Transportation System. These include off-highway vehicle tracks which have not been designated and managed as a trail, and which may or may not be legal under the 2001 Tri-State Off-Highway Vehicle Decision. They also include travel ways abandoned from the Forest Transportation System, but which still exist on the ground and continue to receive use by the public. For this project, user-created routes are referred to as "unauthorized routes."

Vegetative Screening – Vegetation (trees, shrubs, etc.) that ameliorates the visual effect of management activities adjacent to viewing areas (i.e. main roads).

Viability – A viable animal or plant species is defined as consisting of self-sustaining populations that are well distributed throughout the specie's range. Self-sustaining populations are those that are sufficiently large, and have sufficient genetic diversity to display the array of life history strategies and forms that will provide for their persistence and adaptability in the planning area over time.

Visual Resource – The composite of basic terrain, geologic features, water features, vegetative patterns, and land use effects that typify a land unit and influence the visual appeal the unit may have for visitors.

Water Quality – The physical, chemical, and biological properties of water.

Watershed – The land area drained by a river system.

Wilderness (Designated) – Federal land included in the National Wilderness Preservation System, retaining its primeval character and influence without permanent improvements or human habitation as defined under the 1964 Wilderness Act. It is protected and managed so as to preserve its natural conditions, which (1) generally appear to have been affected primarily by forces of nature with the imprint of man's activity substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and confined type of recreation; (3) has at least 5000 acres or is of sufficient size to make practical its preservation, enjoyment, and use in an unimpaired condition, and (4) may contain features of scientific, educational, scenic, or historical value as well as ecologic and geologic interest.

Designated Wilderness is managed as Management Area 1a according to the Kootenai National Forest's Land and Resource Management Plan.

Wilderness (Recommended or RWA) – Wilderness study areas recommended to Congress for wilderness designation in the Kootenai National Forest Plan. Recommended wilderness is managed as Management Area 1b according to the Kootenai National Forest's Land and Resource Management Plan.

Wilderness Character – The combination of biophysical, experiential, and symbolic ideals that distinguishes wilderness from other lands. These ideals combine to form a complex and subtle set of relationships among the land, its management, its users, and the meanings people associate with wilderness. The definition of wilderness from section 2 (c) of the Wilderness Act identifies four qualities of wilderness related to wilderness character: untrammeled, natural, undeveloped and outstanding opportunities for solitude or a primitive and unconfined type of recreation.

Wilderness Character, Trend – In this analysis, the overall trend of improved, degraded, or preserved (maintained) is derived by combining the trend of qualities. The Wilderness Act does not state that any one aspect of the Section 2(c) Definition of Wilderness is more or less important than another, so this analysis assumes that all five qualities are equally important.

Wilderness Study Area (WSA) – An area of land maintained to retain its primeval character and managed to preserve its natural conditions. They are not included in the National Wilderness Preservation System until they are included in wilderness legislation passed by Congress. The wilderness study areas on the Kootenai National Forest were established by the Montana Wilderness Study Act of 1977 (Public Law 95-150). A wilderness study area is managed as Management Area 1c according to the Kootenai National Forest's Land and Resource Management Plan.

WSA Quality – Congressional intent for the meaning of wilderness character is expressed in the Definition of Wilderness, Section 2(c) of the 1964 Wilderness Act. The Forest Service national framework applied this legal definition to identify four tangible qualities of wilderness that make the idealized description of wilderness character relevant and practical to wilderness stewardship. In this analysis, WSA qualities are used from the 1977 WARS of: natural integrity, apparent naturalness, solitude and opportunities for primitive recreation, remoteness, and unique features.

WSA Quality, Trend – in this analysis a trend of stable, offsetting stable, upward, or downward is derived for each measure based on the data values and the threshold for significant change defined in this case by the Montana Wilderness Study Act as 'presently existing (1977) condition'. The measures used are based on the 1978 WARS measures, with the addition of use for Primitive and Unconfined Recreation measures. These measures may not be the same those

used in the National Wilderness Preservation System. Offsetting stable indicates that is an equal number or upward and downward treading measures, or the upward and downward measures off set each other.

Winter Range – The areas available to and used by big game during the winter season. Must contain forage or browse to feed big game. Winter range areas tend to have a relatively low amount of snow cover which enables the animals to reach the forage.

Appendix 4

Maps