

CHAPTER 3 EFFECTS OF THE ALTERNATIVES

Introduction

This chapter provides a summary of the key environmental effects of the alternatives as described in the specialist reports prepared for this project. The analysis and conclusions about the potential effects are synopsised and cited in the respective resource sections. The Resource Specialist Reports, which disclose the full analysis of the direct, indirect, and cumulative effects, are incorporated by reference and are available in the project file, located at the Newport District Office in Newport, Washington. This document incorporates by reference the recommendations from the Colville National Forest Roads Analysis Report, and the South End Roads Analysis Report, which was compiled by members of the core interdisciplinary team.

This assessment of effects assumes compliance with standards and guidelines established in the Colville National Forest Land and Resource Management Plan (Forest Plan) as amended, by the Inland Native Fish Strategy (INFISH), Regional standards, State and Federal laws, and National policies. These standards, guidelines, policies, and laws provide measures which minimize and sometimes avoid adverse impacts, and require rehabilitation of resources affected by Forest programs. A summary of effects of the alternatives is listed by resource and the discussion centers on effects that are direct, indirect, or cumulative. These impacts can be either beneficial or adverse.

The consequences of implementing each alternative are summarized in terms of changes in the affected environment from the current situation. Forest Service Handbook 1909.15, Environmental Policy and Procedures Handbook (USDA Forest Service, 2008), identifies a list of environmental factors to be considered in data collection and environmental analysis. Factors which would not be affected by the proposed activity are:

- The American Indian Religious Freedom Act (AIRFA),
- Consumers, civil rights, minority groups, and women.
- This project is not adjacent to, nor would it have any effect on, existing wilderness areas, Forest Plan designated roadless areas, or Research Natural Areas.
- The area does not contain nor would it affect farmlands.

The alternatives were assessed to determine whether they would disproportionately impact minority or low income populations, in accordance with Executive Order 12898. No local minority or low-income populations were identified during scoping or effects assessment. No minority or low-income populations are expected to be impacted by implementation of any of the alternatives.

Data and Analysis Used in the Effects Analyses

Past, Present and Reasonably Foreseeable Activities

All past, present, and reasonably foreseeable actions, both federal and nonfederal were researched and considered by the specialist in their reports. The activities that may trigger cumulative effects vary by resource. Some of the past, present and reasonably foreseeable activities that were considered are:

Other Recreation and Public Activities

These on-going activities include both legal and illegal activities.

- On-going recreation activities include dispersed camping, driving for pleasure, OHV and motorcycle riding, hiking, hunting, viewing, etc.
- On-going public gathering of forest products, primarily firewood, wild berries, and mushrooms.

Road Activities

- Regular road maintenance such as blading, clearing, replacement of signs and barriers, etc.
- Culvert replacements under the Aquatic Habitat Restoration Program. This program has been steadily replacing culverts that are fish-barriers across the Forest.
- Road decommissioning. When analyzing areas for timber sales, the Forest Service has been decommissioning unnecessary closed roads. This process is expected to continue.

Range Activities

- The Forest Service has several range improvement projects scheduled for eventual implementation across the planning area. These improvements include repair and replacement of fencing, cattle guards, stock watering facilities, etc.

Vegetation Management Activities

- Timber management and prescribe fire are the primary vegetation management activities would occur in the planning area. The Forest Service and industrial landowners have a long history of timber harvest, and this activity is expected to continue at a similar rate. Currently, the Forest has active timber sales in the planning area, and is preparing another.

Roads Analysis

A forest-wide roads analysis, focusing on Operational Maintenance Level 2, 3, 4 and 5 roads was completed in 2005 (USDA Forest Service, 2005). Prior to this project, road analysis had been completed on about 40% of the planning area. The previous roads analysis had focused on roads for timber management. This document incorporates by reference the recommendations from the Colville National Forest Roads Analysis Report, and the South End Roads Analysis Report, which was compiled by members of the core interdisciplinary team.

Landforms in the Planning Area

The concept of landform is used extensively throughout this analysis. The landforms used in the analysis are from Landtype Associations of North Central Washington (Davis, et al., 2004). The planning area contains 9 landforms that can be grouped into three general categories – uplands, midlands and lowlands. The following table shows the acreage for each landform.

Table 12. Landforms in the planning area

Landform	Percent of Planning Area	Category
Glacial moraines	38%	Midland
Glaciated mountain slopes	23%	Upland
Scoured glaciated mountain slopes	15%	Upland
Structurally controlled mountain slopes	11%	Upland
Valley bottom and outwash terraces	5%	Lowland
Rounded ridgetops	4%	Upland
Dissected mountain slopes	2%	Upland
Lacustrine benches and deposits	1%	Midland
Meltwater canyons	1%	Lowland

Uplands

Upland landforms make up about half the planning area. The upland landforms area glaciated mountain slopes, scoured glaciated mountain slopes, structurally controlled mountain slopes, rounded ridgetops, and dissected mountain slopes.

Rounded Ridgetops occur on smooth, broad, gently rolling convex ridges, such as Calispell Peak and Chewelah Mountain. Periglacial processes such as frost action and erosion are the primary land forming processes. This landform is found in narrow bands along some of the primary ridges. Slopes range from gentle to moderately steep (25-45%).

Structurally Controlled Mountain Slopes occur on steep (>45%), high relief mountain slopes underlain by inclined or folded metasedimentary rock. Erosion and mass wasting are the primary land forming processes. Slope shape is strongly influenced by the orientation of the underlying bedded rocks. Typically ridgetops are narrow, and the sideslopes are steep, long and straight.

Dissected Glaciated Mountain Slopes consist of steep (>45%), high-relief upper mountain slopes, mostly along the divide between east and west sides of the project area. Glaciation followed by wearing down and scouring by fluvial erosion formed the steep, dissected slopes of this land form. Ridges are generally narrower here than in the glaciated mountain slopes and the slopes are dissected by numerous incised,

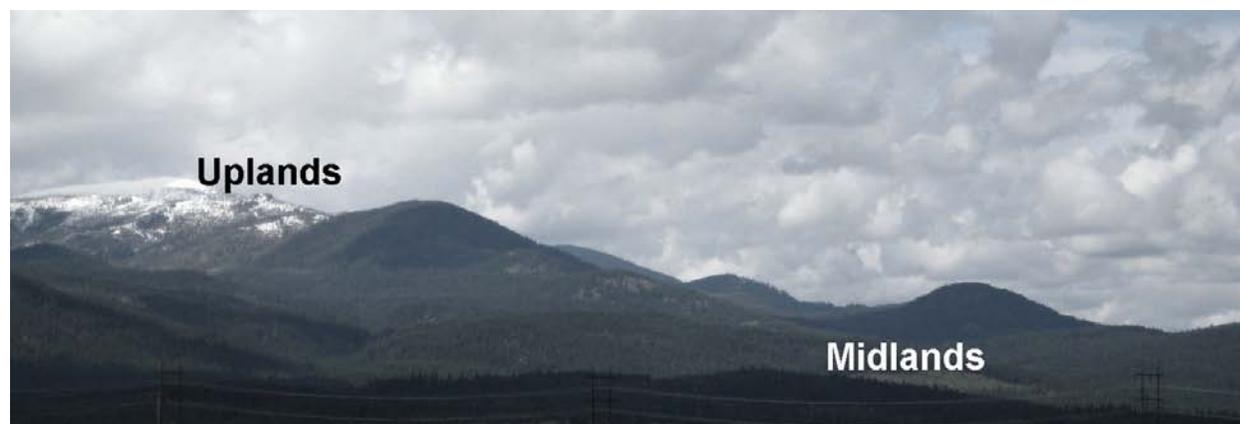


Figure 5. Relative location of upland and midland landforms

bedrock controlled, high gradient streams.

Scoured Glaciated Mountain Slopes are one of the landforms created by the continental glaciations. Rock bluffs and broad rock expanses are common in this landform. Almost all of the glacial till and other loose material was scraped off by the glaciers and deposited elsewhere. The slopes are variable and often broken. Vegetation is often sparse with trees growing mostly in pockets of deeper soil.

Glaciated Mountain Slopes have also been shaped by the continental ice sheets. Slopes are moderately steep, generally between 35 and 60%. Ridges are rounded and broad from being ground down by continental glaciers.

Midlands

Midland landforms make up about forty-percent of the planning area. In this planning area midland landforms are glacial moraines and lacustrine benches and deposits.

Glacial Moraines are thick glacial deposits of rock, sand, and soil that were ground up, transported, and deposited by the continental ice sheet. Moraine landforms in this area have relatively gentle slopes usually less than 35%, irregular topography, and local relief (ridge top to valley bottom) is somewhat low (<100ft). There are scattered wetlands and ‘muddy areas’ where the till has a high clay content.

Lacustrine benches and deposits: Lacustrine means these are old lake deposits. In most cases, the retreating glaciers created lakes at the end or along the margins. This landform occurs on flat to gently undulating slopes (0-25%). Wetlands are common, though not extensive. Boulders and rock outcrops are rare. These areas are often very wet in the spring and are very slow to dry in the summer¹⁵.

Lowlands and riparian areas

These landforms are similar to the midland landforms, but they are located in lower slope positions. While these landforms make up about 6% of the planning area, they are the most heavily used and the most sensitive to recreation impacts.

Valley Bottoms/Outwash landform is found in valley bottoms and terraces low on the slopes. This landform is made up of both recent alluvium and alluvial deposits from the glacial period. As the



Figure 6. Valley bottom riparian area

glaciers melted, the water moved large amounts of sandy, gravelly sediment and deposited it in low lying areas in broad valleys. Where outwash slowed or pooled, silt and clay were deposited. Where modern streams have cut down through the outwash deposits, flat sandy terraces with steep scarps flank the lower slopes of the mountains. Wide swathes of riparian wetlands and meadows are common in the valley bottoms. The meadows along both forks of Chewelah Creek are considered wet-dry meadows. That is, riparian areas along the creek area have wetland soils and support riparian plants,

¹⁵ Seasonally perched water tables are common.

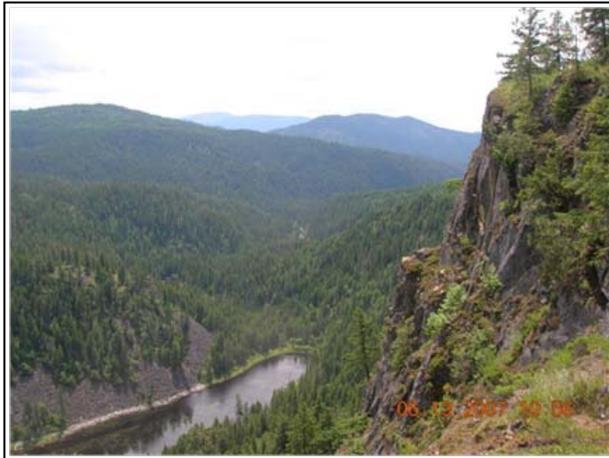


Figure 7. Bayley Lake meltwater canyon

while back further from the creek, the soil is dry and supports upland vegetation. All of these meadows were cleared or expanded for farming or pasture when the area was homesteaded.

Meltwater Canyons are steep-walled, flat-bottomed canyons that often seem disproportionate to the size of the streams that occupy them. Floods from the melting glaciers released huge quantities of water which scoured out weak spots in the bedrock and transported rock, gravel, and sediment downstream. The meltwater canyons in this area are relatively narrow and deep with very steep sides. Wetlands and small lakes are common where the streamflow is constrained by small moraines or

irregularities in the bedrock. The Bailey Lake area is the most prominent meltwater canyon in the planning area.

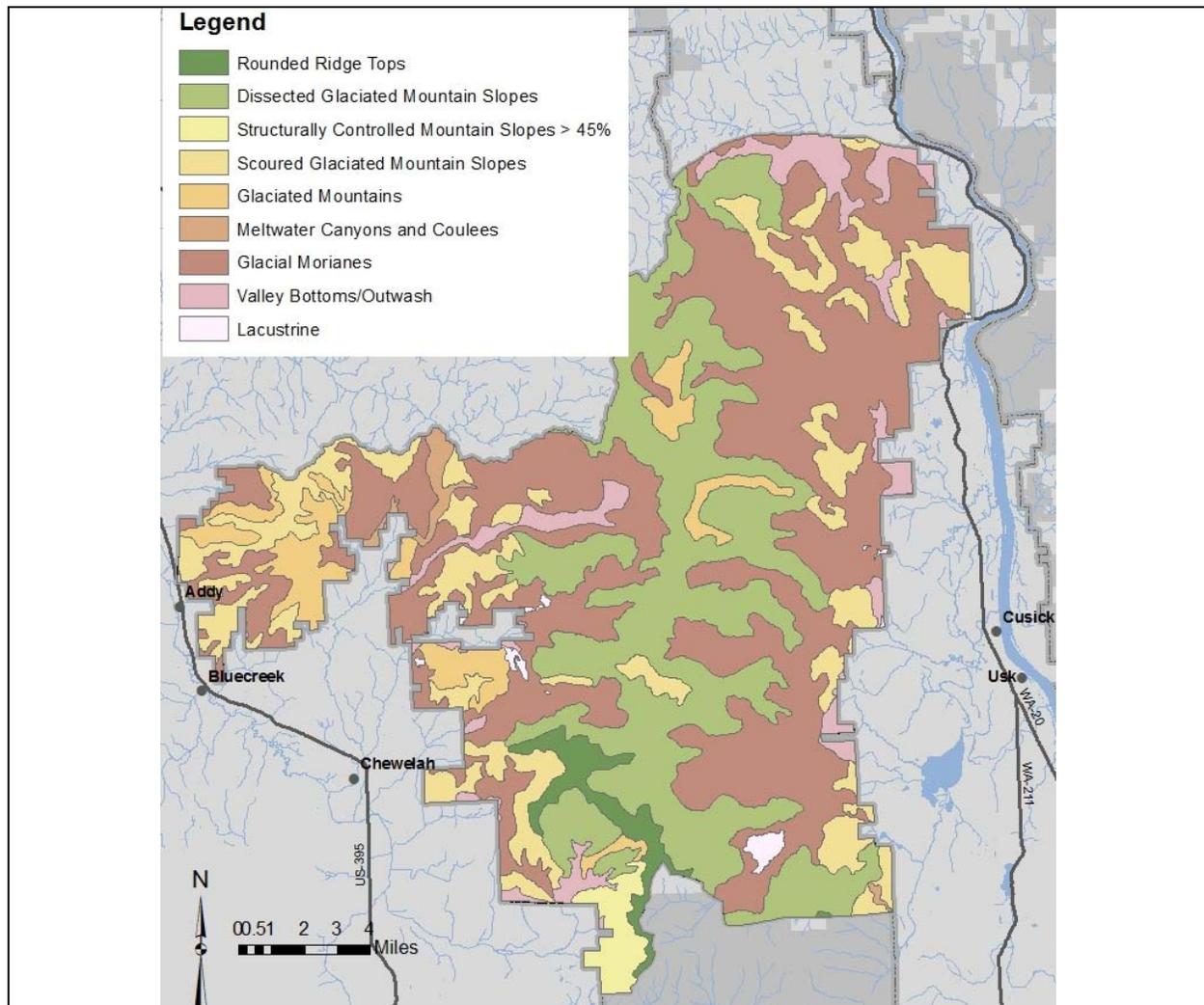


Figure 8. Landforms of the planning area



Figure 9. Homestead at Delaney Meadows circa 1930's

Analysis of Illegal Off-Road and Illegal On-Road Travel

Nancy Glines, South End ID Team Leader, prepared an analysis of off-road and illegal on-road travel for this environmental assessment. This is a summary of the findings. A copy of the entire report is in the analysis files, located at the Newport District Office.

A concern has been raised that opening closed roads and allowing mixed use on existing open roads would increase the amount of off-road and illegal on-road travel. In order to analyze the risk of illegal uses the existing density of off-road trails and use of closed roads was estimated using a Digital Grid Cell Analysis (Werstak, et al., 2004). These areas were compared with various site conditions to determine if certain locations, vegetation types and landforms are at a higher risk of off-road intrusions.

This information was used by resource specialists to analyze the effects of off-road travel of various resources.

Off road travel – vehicle travel outside the road prism, and not for the purposes of dispersed camping.

Illegal on-road travel -- vehicles travel on NFS roads that are not open to public vehicle traffic as per the current MVUM.

Methodology

Existing off-road and illegal on-road travel was analyzed using the Digital Grid Cell Analysis (Werstak, et al., 2004) on a 5-acre grid. The analysis was applied to National Forest System Lands only¹⁶. For this

¹⁶ Because of the difference between the grid and the planning area boundary, the total grid size is slightly smaller than the planning area.

analysis 4 categories of off-road and illegal use were identified. Cells were coded for the most impacting activity present.

Areas of off-road and illegal on-road activity were identified through comments provided by several people, both within and outside the Forest Service. The public proposals were reviewed on the ground, and many are currently used routes. Finally, aerial imagery (1 meter NAIP 2009¹⁷) was used to identify routes¹⁸.

Analysis

The following tables and charts show the results of this analysis. Over 90% of the grids showed no evidence of off-road or illegal on-road travel.

Table 13. Acres by off-road and illegal on-road travel category

Category	Acres	Percent of Planning Area
0 - No off-road or illegal travel	129,845	94%
1 – Illegal travel on closed roads	5,685	4%
2 – Off-road travel, one trail per 5 acre grid	2,190	2%
3 – Off-road travel, more than one trail per 5 acre grid	820	1%
Total	138,540	100%

The statistical analysis was conducted using GIS. Linear and point features like campsites, streams, roads and trails were buffered at various distances to create polygon features. Using GIS, the Digital Grid Cell cover was intersected with the polygon features individually; creating a subset of the digital grid cell data. In order to determine if the subset created using these GIS features was statistically significant, random subsets were created. From those randomly generated subsets a mean and standard deviation was calculated. The values generated through the GIS selection subsets were compared to the values from the randomly generated subsets to determine if the difference was significant.

If the proportion in the subset differs from the true proportion by more than 2.6X the standard deviation, that subset is statistically different.

Off-Road Travel

Off-road travel cells are coded as Category 2 and Category 3. About 60% of the off-road travel cells were characterized as ‘play areas’, and about one third were characterized as ‘connectors’, the remaining 10% are challenge areas and trails to specific features. Some off-road travel is by highway vehicles -- primarily hill-climbs, mud bogging, and firewood gathering.

The flatter, low-lying landforms when combined with campsites are a strong predictor for off-road travel. Most off-road travel occurs on slopes less than 15%, on landforms at or near the valley bottoms, within 500 feet of open roads, and within ¼ mile of campsites.

17 NAIP is the National Agricultural Imagery Program. Aerial images are obtained annually and orthorectified to use by GIS systems.

18 Active travelways bare ground, and the color on the imagery is ‘bright’. Roads not being used are a dull brown, dark yellow or green.

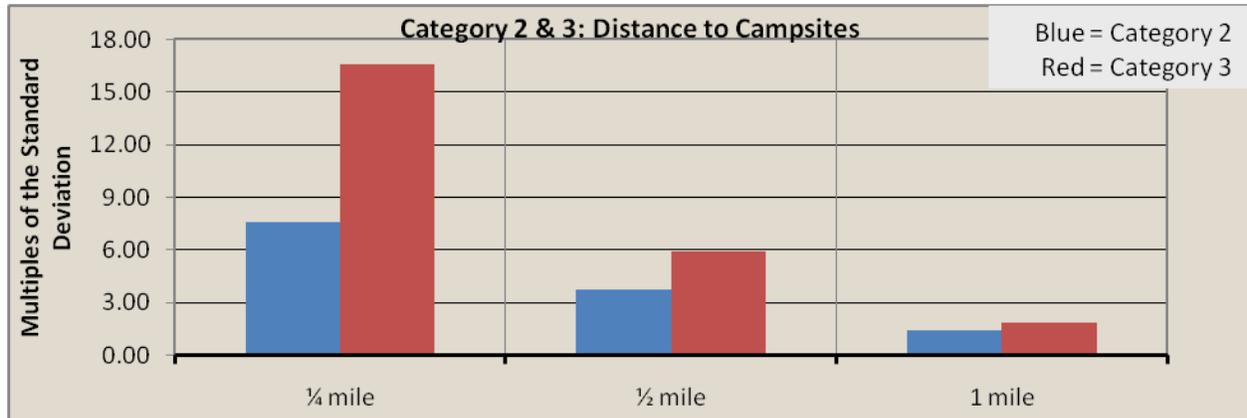


Figure 10. The relationship between off-road travel and the distance to campsites

Proximity to campsites has the strongest positive correlation to off-road travel for all distances analyzed. The correlation is strongest at the smallest distance – for both categories of off-road travel. Campsites are especially strongly linked to category 3 travel – high density of trails, play areas and challenge areas. While the zone within 1/4 mile of campsites makes up less than 10% of the planning area, it accounts for more than 80% of all Category 3 travel.

Campsites are fairly strongly linked to landforms, and landforms tend to mirror the slope classes. It is

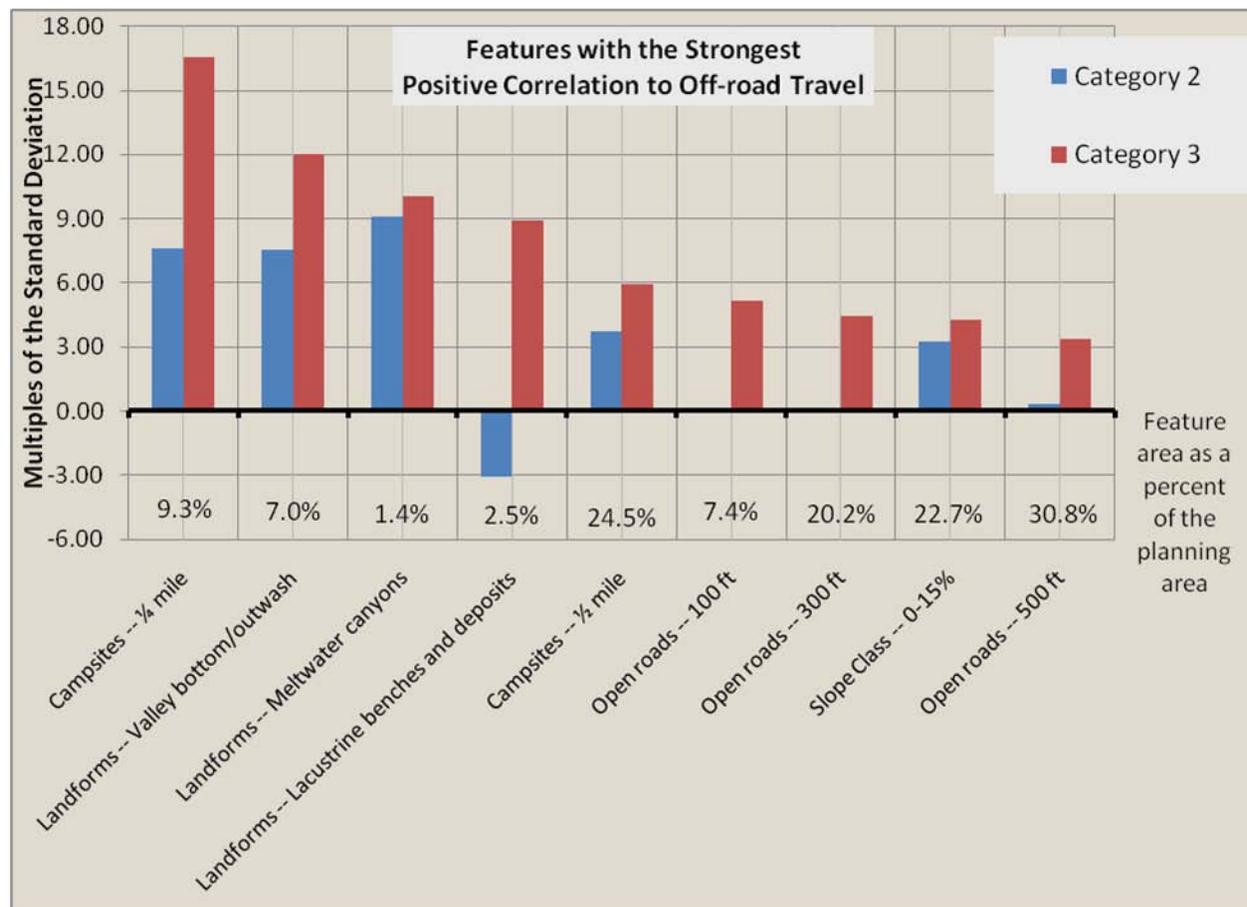


Figure 11. Features with the strongest positive correlation to off-road travel

not surprising that off-road travel is also linked to landforms. Typical slopes in the valley bottom, meltwater canyon and lacustrine landforms are less than 15%. About 98% of the play and challenge areas are located in the glacial moraine, valley bottom, lacustrine bench, and meltwater canyon landforms.

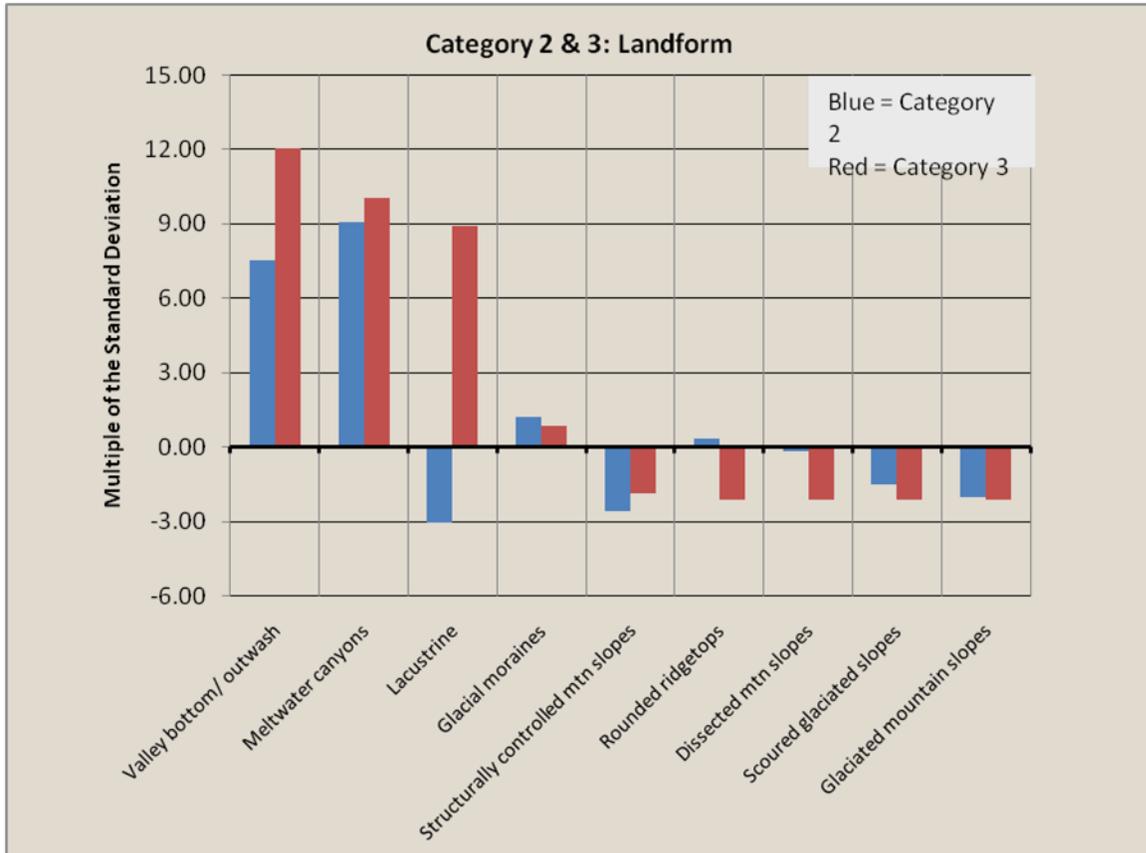


Figure 12. Relationship between landforms and off-road travel

Conversely, off-road travel is less likely to occur in the higher, steeper, mountainous landforms.

Off-road travel, especially category 3 travel, is moderately linked to open roads up to a distance of about 500 feet. About 7% of the planning area is within 100 feet of open roads, but that area accounts for about 25% of all category 3 travel.

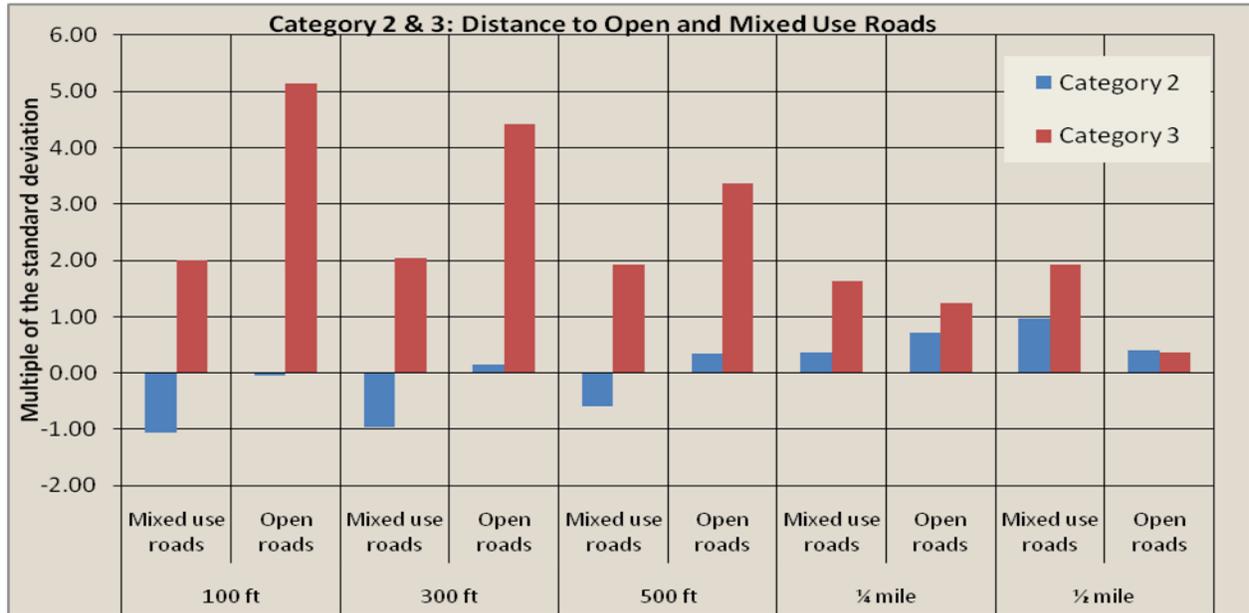


Figure 13. Relationship between open and mixed use roads and off-road travel

The data suggests that the link between mixed use roads and off-road travel is weak. Mixed use roads show a weak negative correlation to category 2 off-road travel; and a slightly stronger positive correlation to category 3 off-road travel. Most of the category 3 off-road travel is along county roads. These areas, with a combination of an open road (generally county), valley bottom, flat slopes, and many campsites, have all the components for high levels of category 3 off-road travel. It does not appear that the fact that these county roads allow OHVs plays a significant role in the relationship to off-road travel.

Play Areas

About 60% of the off-road travel cells were characterized as ‘Play areas’. Play areas include short trails that don’t seem to go anywhere in particular, and racetracks¹⁹. Many of these play areas are not particularly challenging, though some also include challenge terrain. For many, these trails appear to be the OHV equivalent of a short ‘pleasure drive’. Play areas make up about half of category 2 and 75% of category 3 cells.

Play areas are almost exclusively associated with campsites, and almost entirely located on valley bottom, moraine and lacustrine landforms. Play areas appear to be highly constrained by slope (most occur on slopes less than 20%).

All the “racetracks” are located in meadows adjacent to campsites. Racetracks appear to be relatively transient features – they may appear one year, be heavily used for a year or two, and then use will stop. Some campers particularly like these “racetracks” because it gives their smaller children a place to ride ATVs within view of adults²⁰.

¹⁹ Racetracks are small loops, often only 100-200 feet across. Generally located in dry meadows, they are primarily used by children and young teens on motorcycles or ATVs. Over time, the motorized use creates a banked track.

²⁰ Nancy Glines, personal communication with a woman camping at a campsite with a racetrack feature.

Most play areas are not found in old timber sale areas, and occur regardless of whether OHV use on the access road is allowed or prohibited under the current MVUM.

Challenge Areas

About 10% of the cells are characterized as hill climbs or mud bogging sites. These areas are the least common, but are the most visible and most destructive to natural resources. All challenge areas are within ¼ mile of campsites; many are immediately adjacent to campsites.

Most hill climbs are found in open vegetation types, brush and meadows, but a few are found in forested settings. Hill climbers appear to prefer short steep slopes about 50-200 feet long, gradients of 20-40%, and loose sandy soil with few rocks. Glacial outwash escarpments appear to be a favored area for hill climbs. Some hill climbing is done with highway legal 4-wheel drive vehicles.

Hill climbs are found scattered throughout the planning area. Known hill climbs are located in the Leslie Creek area, Calispell Basin area, Ruby Creek, Tacoma Creek and Middle Fork Calispell. Hill climbs do not appear to be transient – once established they tend to continue to be used. All hill climbs are located along open roads, and most are located along main roads. Two are located near OHV use areas – Leslie Creek and the Middle Fork Calispell Creek.



Figure 14. Photo: directions to the sand hill

Highway legal vehicles are responsible for most of the mud bogging, though OHVs have been observed mud bogging as well. Mud bogging may be found wherever mud is found, but it is more common in meadows. Historically active mud bogging areas include the meadows at Middle Fork Calispell, Woodward Meadows and Hartill Meadow. All mud bogging activity observed for this project was within ¼ mile of campsites, and many are immediately adjacent to campsites. Mud bogging appears to be an ‘activity of opportunity’ that combines group camping, motorized vehicles, and mud. Mud bogging appears to be very transient – in one location one year, in another location another year.

Connectors

About 30% of the off-road travel cells were characterized as ‘connectors’. Many of these trails connect roads that are currently closed to all vehicles. Connectors are the only form of off-road travel that appears to be correlated with old timber sale harvest units. These trails are generally less than ¼ mile long and most follow an old temporary road, skid trail, or fireline.

These trails are not associated with campsites, and are found on a wider variety of slopes and landforms than other types of off-road travel. Trails are found on slopes up to 40%, but are more typically found on slopes less than 30%. These trails are found at an equal rate regardless of whether the road is open to OHV travel on the current MVUM.

Illegal Travel on Closed Roads

Illegal travel on closed roads provided a lower level of correlation with most of the criteria used in this analysis. Four percent of the grid cells were characterized as category 1. Illegal on-road travel includes both highway vehicles and off-highway vehicles. People travel on closed roads for a wide variety of

purposes – pleasure driving, as part of an OHV experience, firewood cutting and gathering, berry picking, and hunting.

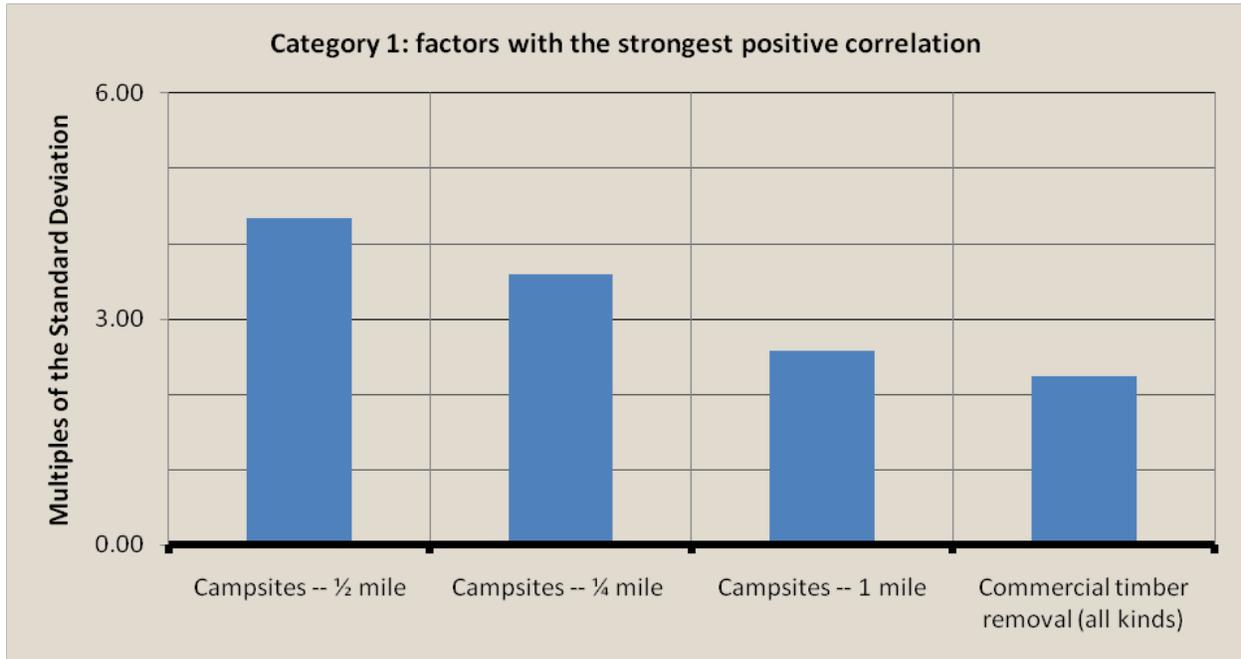


Figure 15. Factors with the strongest positive correlation with illegal on-road travel

Illegal on-road travel appears to have a modest correlation with proximity to campsites. While the majority of the closed roads that are being used were constructed for commercial timber sales, the correlation with commercial timber harvest units is too weak to be statistically significant. Travel on closed roads has a moderate negative correlation with proximity to open roads, mixed use roads, and OHV trails. This suggests that people go onto closed roads to access something that is not accessible from the open road and trail system.

Overall, the relationship to camping appears to be weaker for illegal on-road travel than for off-road travel. While the area within 1/4 mile of campsites makes up about 9% of the planning area, it accounts for about 15% of the illegal on-road travel. The relationship may be weak because some of the reasons people are using these closed roads -- firewood gathering and huckleberry picking – are not particularly associated with camping.



Figure 16. Illegal on-road travel and distance to campsites

Recreation

This is summarized from the Recreation Report for the South End Motor Vehicle Management Project by Bjorn Frederickson dated August 13, 2010, with additional information and comment by Eric McQuay, Carmen Nielsen, and Nan Berger. The full report is available in the analysis files, located at the Newport District office.

Existing Condition

Recreation Setting

The recreation setting will be described through the Recreation Opportunity Spectrum (ROS). Research in environmental psychology found that one of the most fundamental ways people differentiate their environment is on a continuum from “natural” to “manmade” (Cognitive Set and Perception of Place, 1981). The Recreation Opportunity Spectrum is a way of describing the environment along this spectrum (Clark, et al., 1979). The following table shows the Forest Plan management areas and ROS in the planning area.

The proposed activities are located in MAs 1, 3A, 5, 6, 7 and 8. Motorized recreation and dispersed camping are allowed in these management areas. Motorized access may be modified in MA 6 and 8 in order to protect big game winter range.

Table 14. Forest Plan Management Areas and ROS Designation

MA	Title/Emphasis	% of Planning Area	ROS and Recreation Setting
1	Old growth dependent species.	4%	Semi-Primitive Nonmotorized. Nonmotorized activities occur. The area is not roaded, and travel is by foot or animal.
3A	Recreation	3%	Roaded Natural. The recreation setting provides both roaded and unroaded opportunities in a natural appearing setting. Both motorized and nonmotorized activities occur.
3C	Downhill skiing	1%	Rural: Special use permit for 49 Degrees North Mtn. Resort
5 6	Scenic/Timber Scenic/Winter Range	42%	Roaded Natural: The recreation setting provides both roaded primitive and roaded natural settings. Both motorized and nonmotorized activities occur.
7 8	Timber Winter Range	50%	Roaded Modified: The recreation setting provides both roaded natural and roaded modified settings. Both motorized and nonmotorized activities occur.

Management area 3A emphasizes both roaded and unroaded recreation in a natural appearing setting. In this planning area, MA 3A is found along the main roads and Phillips Lake. Figure 17 shows the location of MA 3A. The Forest Plan envisioned 3A as areas along major travelways or recreation lakes where people could utilize dispersed campsites to establish an interest in the natural environment and to develop and test outdoor skills associated with either motorized or nonmotorized recreation use with little challenge or risk. The setting for this class of recreation is characterized by an environment where alterations to the environment appear subordinate to the surrounding areas. The Visual Quality Objective (VQO) is Retention or Partial Retention. (Forest Plan 4-77).

The Visual Quality Objectives (VQO) for the planning area are: 52% Modification, 46% Partial Retention, and 2% Retention. In general, this landscape is heavily roaded and modified due to its history of homesteading, timber management and numerous in-holdings by timber companies. Given the existing recreation settings, visual quality objectives and Management Areas, the area is well suited for motorized recreation. The planning area is a recognized destination for OHV use on the Forest. Wheeled vehicle activity is typically limited to the 'snow-free' period – from late April into late November. Generally speaking, visitors to the Forest use motorized vehicles for many purposes, including accessing both motorized and nonmotorized activities. The Recreation Use and Demand section, below, describes some of these activities in greater detail.

Recreation Use and Demand

Forestwide Use Visitor Activities

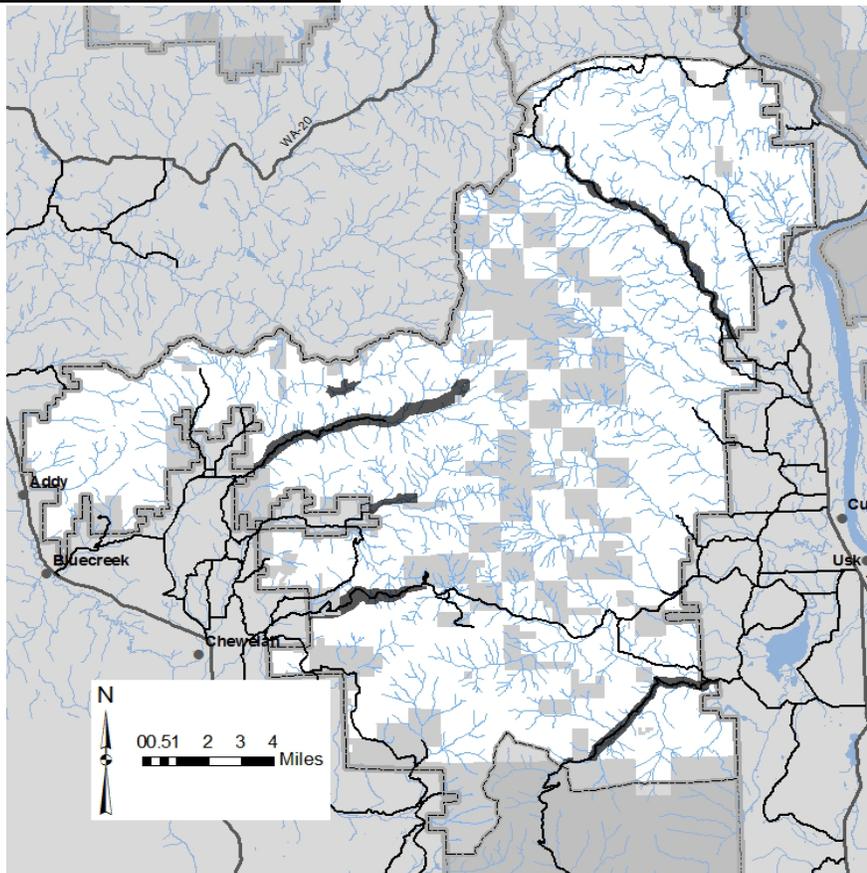


Figure 17. MA 3A in the South End Planning Area

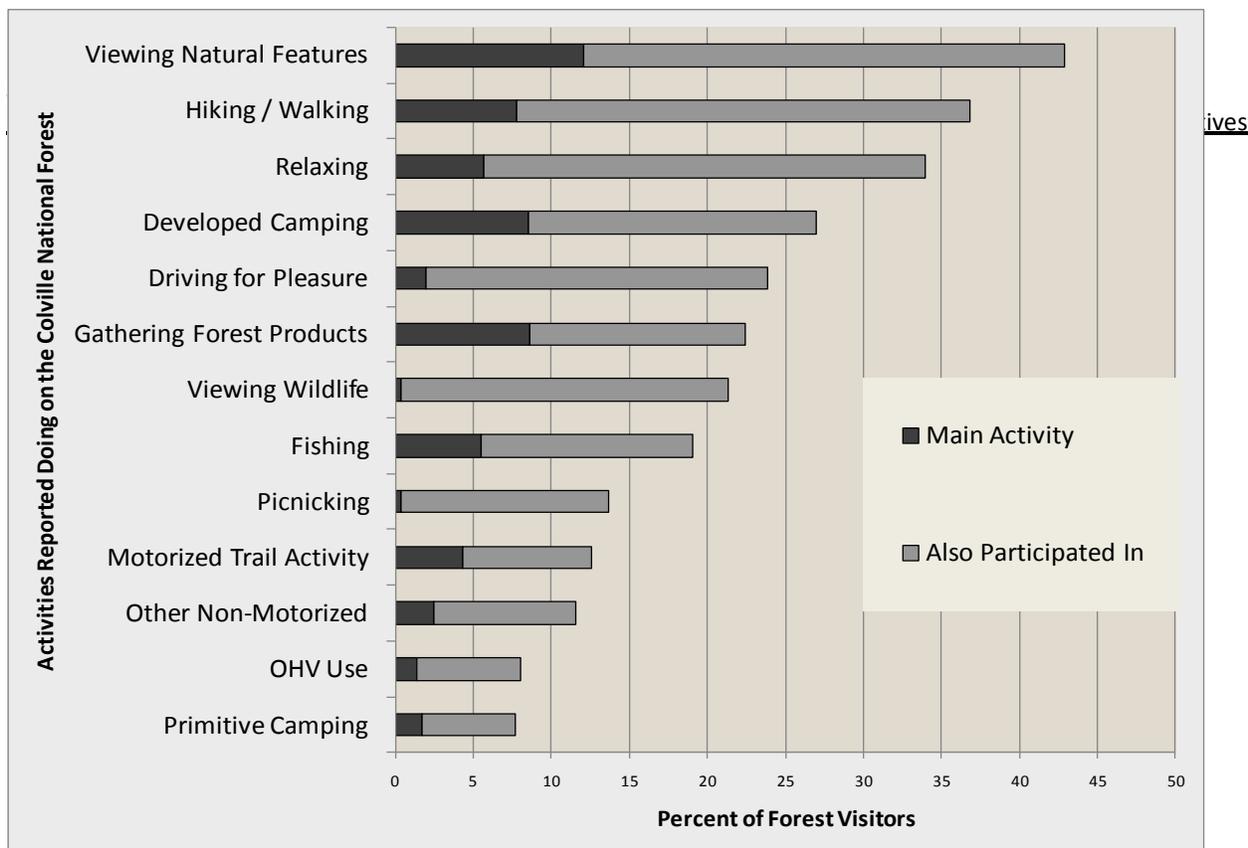


Figure 18. Selected Forest Visitor Activities. Source: 2009 NVUM Colville National Forest

The Forest Service conducts visitor use monitoring (National Visitor Use Monitoring – NVUM) on each forest. On the Colville National Forest, the most recent NVUM was conducted in 2009. The National Visitor Use Monitoring was conducted across the forest, and the data is generalized across the Forest. Visitors were asked to identify a primary activity, and other activities in which they engaged.

Some categories are ambiguous, and visitors did not use categories consistently. For example:

- The NVUM does not distinguish between walking short distances and hiking. Backpacking is another category.
- Motorized vehicle activities may have been categorized differently by different users, as “motorized trail activity”, “OHV use”, “other motorized activities” or “driving for pleasure”.
- Some people camping at dispersed sites consider that “primitive camping” while others consider it “developed camping”.

The Figure 18 displays selected NVUM data²¹. The NVUM reports both primary activity and other activities in which the visitor engaged. Downhill skiing (23%) is the most popular activity on the Forest. Primitive camping is not among the most popular activities, but developed camping is popular – but these categories were not used consistently²². If the OHV use, motorized trail activity, and other motorized activity categories are combined, 15.7% of NVUM respondents engaged in some form of motorized activity, 6.4% of whom engaged in these activities as their main activity (USDA Forest Service, 2011).

²¹ Not all NVUM data is included in this graph. Activities that are not associated with this project (winter sports, motorized water sports), activities that are not found in this area (Resort Use, Nature Center Activities), and activities that occur at very low levels (horseback riding, backpacking, visiting historic sites, hunting, nonmotorized water, nature study and bicycling) were not included. The complete NVUM data for the Colville National Forest is available at <http://apps.fs.usda.gov/nrm/nvum/results/>.

²² Much of the camping in the planning area is trailer or motorhome. To many visitors, this is not “primitive camping”.

Planning Area Activities and Use Patterns

The planning area is used heavily for recreation year-round; this report will focus on summer recreation. The roaded, rolling terrain, stream systems, and homestead meadows offer a matrix of high-quality dispersed camping, forest product gathering, hunting and fishing, and pleasure driving opportunities.

The three summer holidays – Memorial Day, Fourth of July, and Labor Day – typically have the most use. Use on non-holiday weekends is variable, depending on weather and competing activities in the region (e.g., Hoopfest). On nice weekends in July and August, use may approach the level of holiday weekends. On more typical weekends, the use is moderate to high. Weekdays in July and August often have a moderate level of use. Use in the spring and fall ranges from low to moderate.

The majority of users live in the towns surrounding the Forest, or travel from the Spokane area. The South End Planning Area is the closest part of the Forest to Spokane, and thus receives a high level of use from this major population center. Figure 19 shows the distance people travel to use this area.

The planning area is well-roaded. Overall open road density is about 1.8 miles/mile² (including NFS and County, not including private roads). The road system is a legacy of homesteading and timber management. Logging has been a major activity throughout the planning area over the past century. Over 80% of the private land in the planning area is owned by timber companies (mostly Stimson Lumber Co.). Logging activities of various ages is evident along most roads. Most of the higher peaks are private, and show visible evidence of logging. Thus, the planning area is not particularly used by people seeking a ‘pristine’ nature experience.

Holiday weekends: Campsite occupancy in the high-use areas is 80-100% or greater. Occupancy in upland sites is generally greater than 50%.

High use level: Campsite occupancy in the high-use areas is 60-80%. Occupancy in upland sites is about 25-50%.

Moderate use level: Campsite occupancy in the high-use areas is 25-60%. Occupancy in upland sites is less than 25%.

Low use level: Campsite occupancy in the high-use areas is less than 25%.

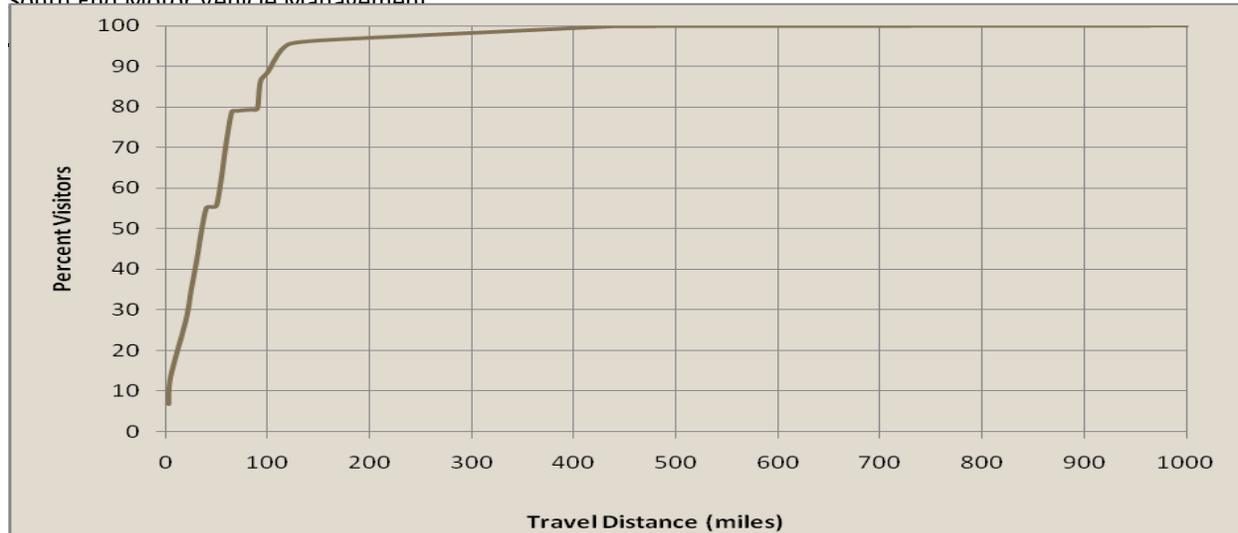


Figure 19. Distance people travel for OHV activities on the Colville National Forest
 Source: NVUM (USDA, 2010).

Activity Descriptions

Although the character of the landscape in the South End Planning Area is not well suited to activities that rely on a ‘primitive’ or ‘pristine’ aesthetic, the planning area is still heavily used by recreationists. The most popular activities occurring on this part of the Colville NF, along with their general characteristics and use patterns, are described below.

Motor Vehicle Recreation

Driving for pleasure and viewing scenery

Some visitors enjoy the beauty of the Colville NF by driving the South End Planning Area’s many miles of roads; those with high clearance vehicles travel not only the many gravel roads suitable for passenger cars, but the rougher back roads, too. The peaceful forest and meadow settings viewed from their vehicles are one draw for these visitors, as well as the possibility of seeing wildlife. Many are also scoping out the area for future hunting, firewood, and huckleberries.

OHV Recreation

Dispersed motorized recreation use has grown considerably on the Colville NF over the past few decades, as is the case more generally across the United States. Visitation to the South End Planning Area is consistent with this trend. The majority of individuals who participated in OHV use (either as their main or secondary activity) on the Colville NF are relatively local. In 2009 about 90% traveled less than 100 miles from home to reach their destination on the Forest and about 55% traveled less than 50 miles. Spokane is located approximately 50 miles from both Chewelah and Usk, the two major gateways to the South End Planning Area.

No changes are proposed to the Batey-Bould Motorcycle Trail System.

The Batey-Bould Motorcycle Trail system (41 miles) was designed specifically for motorcycles. The trails that make up the system provide a range of challenges – from moderate to very challenging.

Today, many individuals and families come to the Colville NF with their ATVs and motorcycles for the sole purpose of riding in the forest. While the South End area is a popular OHV destination, only 15% of the open NFS roads may be utilized by OHVs. The planning area has 63 miles of NFS roads open to

OHVs, and 10 miles of NFS OHV trail (Middle Fork Calispell OHV Trail). The counties have about 70 miles of road open to OHVs. See Table 15.

The Middle Fork OHV Trail system (10 miles) was created from an old logging road system, and provides a low level of technical challenge.

Table 15. Existing Condition – total miles of designated routes by vehicle type

Motorized Vehicle Designation	Miles
Routes open only to motorcycles (year-round) Batey-Bould Trail System	41
Routes open only to vehicles 50 inches or less (OHVs) Middle Fork Calispell Trail System	10
Routes open only to highway-legal vehicles	347
Routes open to all types of vehicles including OHVs (mixed use)	63
County roads designated as mixed use (approximate)	70

Nearly ¾ of the NFS OHV routes are dead-end roads that provide an ‘out and back’ ride. These routes range in length from 0.2 to 7.4 miles, and have a mean length of 2.5 miles. Some of these routes connect to county roads which are also open to OHVs, providing a longer riding experience. Even with the county roads, they do not provide a travel loop.

Altogether, these roads and trails provide about 29 miles of loop trails. The loop routes are located in 3 distinct areas and are not close together.

- The Leslie Creek mixed use roads include about 7.2 miles in three nested loops, about 1 mile of county road makes up part of the loop.
- The Middle Fork OHV Trail is about 10 miles long, and has a single loop that is about 7.5 miles long.
- The Tacoma Creek mixed use roads create two loops, with the county road forming one side of both loops. The 2600210 loop is about 6.3 miles long (2.7 miles county road) and the 2600440 loop is about 7.5 miles long (2.4 miles county road).

Figure 16 shows the existing routes and loops.

Quality of the Existing OHV Experience Provided

Successful OHV trail systems provide sufficient distance for the duration of one’s recreation visit. Depending on trail difficulty and the skill of the rider, motorcyclists may ride 25 to 100 miles per day, and OHV riders may travel 15 to 80 miles per day. For many riders a full days ride, a variety of scenery and terrain types, and the opportunity for some challenge (not too much), contribute to perceptions of quality (Crimmins, 2006).

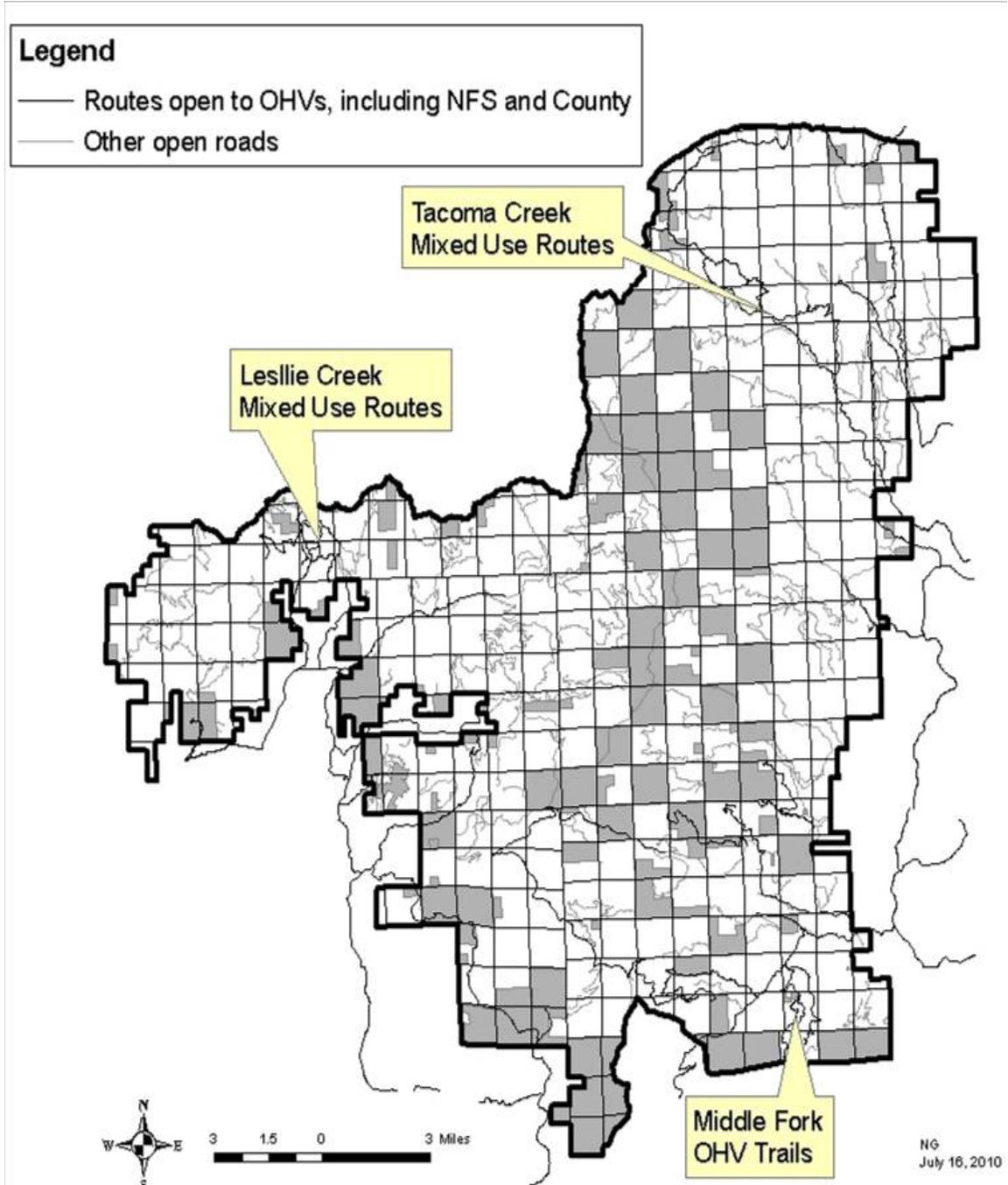


Figure 20. Existing OHV Routes and Loops, including both NFS and County

The network of designated routes in the planning area as it currently exists, does not provide for a high quality OHV experience. Routes are too short with little connection. The area provides few loops, and the loops provided are too short and are not connected. The many dead-end roads do not end at a scenic vista or other attraction. The area provides a very limited amount of OHV trail. The challenge elements present are entirely user-created, and are damaging resources, are unsightly, and are not compatible with National Forest management. Given that the majority of routes are mixed use roads, the riding experience is fairly homogeneous.



Figure 21. Example of an unauthorized road. This is an old homestead era road. Many people do not realize this is NOT a NFS Road and is NOT open for use.

One consequence of having a poor quality route system in the planning area is a preponderance of illegal, off-road and off-route use. OHV users, in the field and during their club meetings, also report that the Motor Vehicle Use Maps are extremely confusing, which makes it difficult for them to know when they are on or off a designated route. A lack of signs on the ground adds to this confusion, thus creating a situation in which user error and confusion contribute to motor vehicle use on unauthorized and user-created routes²³ (see Figure 20). Mike Mumford, the East Zone Law Enforcement Officer estimates that upwards of 90% of visitors engage

in good-faith OHV recreation, and so find themselves on closed roads and user-created trails by mistake²⁴.

Hill climbs and mud-bogging are illegal on the Colville National Forest since there are no designated OHV play areas on the Forest's 2010 MVUM. The planning area has a few de-facto play areas that were established by users prior to the 2005 Travel Management Rule. Established hill climbs are found at "Sand Hill" on Ruby Creek and across from the Middle Fork OHV Trail. Schreyer, Knopf and Williams (Reconceptualizing the Motive/Environment Link in Choice Behavior, 1985) argue that riders seek out a specific experience – like 'relaxation' or 'challenge'. OHV riders appear to create hill climbs to create a more challenging experience. The proliferation of hill climbs across from the Middle Fork OHV Trailhead appears to be in response to the unsatisfactory trail experience²⁵.

A result of unauthorized motorized use, regardless of whether the use is intentional or not, is that user-created routes tend to draw increased use, thus increasing the impacts of these routes. In essence, the more use a route gets the more 'official' it looks and the more use, in turn, it draws.

Yet, illegal OHV use does not occur everywhere in the planning area. Rather, it is correlated most strongly with dispersed campsite location, and has little relationship to the designation of a route as open to mixed use, among other things. These findings are explored in greater depth in the Analysis of Off-Road and Illegal On-Road Travel section.

²³ Many riders object to the term "user created". Many are very old roads that are not part of the NFS.

²⁴ Personal communication June 2, 2010.

²⁵ Personal observations from Nancy Glines: people do the hill climbs after they have finished the trail, before leaving the area. When asked, many are surprised that the area across from the trailhead is not open for OHV activities.

Dispersed Site Activities (camping, picnicking, etc.)

Nearly all camping in the South End Planning Area is done via motorized vehicle – from basic car-camping with tents to large motor homes and fifth-wheel trailers. Many people prefer dispersed camping, and are willing to forgo campground amenities (toilet, water, garbage) for the freedom from campground requirements (dogs on leash, quiet hours from 10 pm to 6 am, vehicle and people per site limitations, etc.). The demand for this type of motor-based recreation is increasing.

A total of 236 dispersed campsites have been inventoried in the planning area. In general, the existence of a fire ring or group of fire rings in close proximity to one another was used to identify existing sites. However, dispersed camping can also occur outside of these inventoried sites, particularly during the late summer when the meadow areas are dry. Highly transitory sites lacking fire rings are typically not inventoried.

Of the 236 inventoried sites, 219 are located between 0 and 300 feet from an open authorized road; the 17 remaining sites are located further off these roads, up to a distance of 3,000 feet.

The low elevation meadow areas have by far the most dispersed camping activity within the planning area. Their primary season of use is summer, with holidays and weekends experiencing the highest use (although one can expect to frequently encounter dispersed campers on weekdays during the summer, particularly in July and August). During periods of the highest use in the summer, at times up to 50 vehicles may be parked in the most popular meadows such as Delaney Meadow, where large groups and multiple parties tend to camp.

Dispersed campsites vary greatly in regards to development level. Some sites show signs of heavy use, with indicators such as exposed mineral soil, soil compaction, developed ingress/egress routes, tree root exposure, damaged trees, well-used rock fire rings, garbage, sanitation problems, and rutting. Other sites may be barely noticeable, with little evidence of overnight camping. These sites may have little exposed soil, simple rock fire rings covered in vegetation, and little or no evidence of routes leading in or out.

Quality of the Existing Dispersed Site Experience

In this area, keys to the perception of a quality dispersed campsite include size and slope, proximity to water, and scenic views – which is why the majority of these sites are located in the meadows and adjacent to the various streams in the planning area. Still, a large number of sites exist in the forested uplands throughout the planning area; these sites are often more isolated and private than those in the low-elevation meadows, and tend to be in better condition. The upland sites generally fill when the meadows are heavily occupied – though some prefer these sites. The sites in the forested uplands are often closer to the road than those in the

This planning area has no fee campgrounds. In the context of this report, dispersed camping is defined as camping on the Forest outside of a developed fee campground.

Travel off of the authorized road to access a dispersed campsite is allowed under the current MVUM. Such travel is limited to a distance of 300 feet from the centerline of the authorized road. Off-road travel between sites and play activities is prohibited.



Figure 22. Many campsites are muddy through Memorial Day weekend. Campsite on the North Fork Calispell Creek, June 1, 2010.

meadows, where travel is less inhibited by terrain and vegetation. Generally speaking, campsites across the planning area range from outstanding to satisfactory in recreation value.

Some dispersed campsites tend to be wet during the early season and remain wet through Memorial Day weekend. They are thus particularly sensitive to and show evidence of resource impacts, both soil exposure in the camp area and rutting in areas of ingress/egress, during these times. As these sites comprise the most highly prized settings for dispersed camping in all of the planning area, they tend to receive higher levels of visitation and impact than the sites scattered in the upland areas of the planning area.

Other Activities

Geocaching²⁶: Geocaching is a popular activity in the Inland Northwest, and within the South End planning area. The proximity of the South End Planning Area to large population centers such as Spokane, along with its extensive road system, allows geocachers to access remote parts of the Forest, thus providing for popular, high-quality geocaching experiences. Based on the caches listed on geocaching.com, the South End planning area probably has 20-50 geocaches.

Hunting and fishing: Hunting and fishing are popular recreational activities in the South End Planning Area, for both state residents and visitors alike. High clearance all-wheel drive vehicles, four-wheel drive OHVs, and other specialty vehicles allow easy access to rugged and remote parts of the planning area in nearly all weather conditions.

Washington State has designated a number of hunting seasons by weapon type. This has helped to optimize hunters' experiences, increasing the number of options for individuals pursuing high-quality hunting experiences in the planning area.

A portion of the planning area is closed to hunting (Parker Closure).

General season deer, elk, moose, and turkey hunts bring hunters to the planning area in the late fall, typically after the other common recreational uses described in this section have slowed for the season. Many hunters also engage in dispersed camping. The common tradition of motorized big game retrieval coupled with often wet, late-season conditions can result in rutting and soil exposure associated with game takes. In general, total resource disturbance caused by game retrieval is often minor compared to the level of disturbance caused by off-road motorized travel during the summer months.

Popular fishing sites along the streams in the planning area are numerous and include opportunities for anglers to catch a variety of trout species. Many anglers also engage in dispersed camping in conjunction with their fishing trips.

Firewood and forest product gathering: While forest products can be gathered across the National Forest, the South End Planning Area is the closest part of the Colville NF to Spokane that is open to noncommercial firewood cutting. Firewood is a highly important forest product on the Colville, so this planning area is of particular value to the public and is highly popular for gathering firewood. Huckleberry picking and mushroom hunting are also popular pastimes in the planning area, as the network of roads and routes allows for relatively easy access to remote Forest locations.

Nonmotorized trail activities: The planning area contains no National Forest System nonmotorized trails. Nonetheless, the South End Planning Area experiences some nonmotorized trail use. The Batey-Bould Motorcycle Trail in particular is popular with some mountain bikers and equestrians. As this is the

²⁶ Participants use a Global Positioning System (GPS) receiver or other navigational techniques to place and locate "hide and seek" containers ("geocaches" or "caches"), the coordinates of which are posted on geocaching websites.

only single track trail system within the planning area, a characteristic that makes for more challenging and interesting mountain biking and horseback riding, it receives the majority of these other trail uses in the planning area. Nonmotorized use of the Middle Fork OHV Trail has not been observed.

Effects of the Alternatives

All alternatives would meet the Forest Plan with regard to the range of recreation opportunities allowed for each Management Area. All of the alternatives would meet the Forest Plan ROS and Visual Quality Objectives. None of the alternatives propose changes to the Batey-Bould Motorcycle Trail system.

Effects Common to Alternatives 1 and 2

Both alternatives retain an unsatisfactory OHV system, and decline to address dispersed camping. The existing open road system would not change.

Direct and Indirect Effects

Motor Vehicle Use

Neither alternative would change the amount of road open to motor vehicles. Access for pleasure driving would remain the same. The type of vehicles that may be used would differ by alternative.

Both alternatives would result in a poor quality OHV system. These alternatives would not reduce illegal travel and user-created routes, since the quality of the OHV opportunities would remain poor, and illegal travel bears little relation to mixed use routes. With fewer opportunities for legal OHV travel, illegal travel, especially near campsites, would be expected to intensify. Continued illegal use, especially hill climbs and play areas, would result in continued aesthetic and scenery impacts at a local level.

These alternatives would result in a substantial loss of social capital with local clubs and OHV users, which would impact Forest Service relationships with the communities in Northeast Washington; this would likely negatively impact the Forest's volunteer program.

Dispersed Camping

Neither alternative would change dispersed camping in this area. The existing campsites would remain, and the potential camping opportunities would remain. At least 60% of the dispersed campsites would remain accessible with an OHV, these campsites are located along county roads where OHVs are allowed.

Other Activities

Vehicle access for firewood gathering would remain unchanged. Overall motorized access for activities like hunting, fishing, Geocaching would remain unchanged, though the type of vehicle that could be used varies between the alternatives.

Nonmotorized recreation opportunities would continue without change.

Alternative 1 – No Change

This alternative would result in no changes to the existing MVUM or to dispersed camping practices. The existing road system would not change. The motorized recreation opportunities displayed in Table 15 would continue.

Direct and Indirect Effects

Motor Vehicle Use

Alternative 1 would not change the amount of road open to motor vehicles. Access for pleasure driving would remain the same; and OHVs may be used for limited pleasure driving.

Alternative 1 would allow mixed use on 63 miles of road, OHV use on 10 miles of trail, and motorcycle use on 41 miles of single track trail, as described in the Existing Condition (page 51).

Because of the poor quality OHV system, it is probable that current unauthorized use patterns would continue. Continued illegal use would result in continued aesthetic and scenery impacts to the landscape from user-created routes, hill climbs, and play areas.

Dispersed Camping

Campsites along the existing mixed use roads would remain accessible with an OHV (about 63% of the dispersed campsites).

Other Activities

Overall motorized access for activities like hunting, fishing, and geocaching would remain unchanged, but OHVs may be used to pursue these activities on the existing 63 miles of mixed use roads.

Forest Plan

No activities are proposed, therefore no changes to the existing ROS classifications or impacts to the visual quality objectives would occur.

Cumulative Effects

Forestwide, the Colville provides about 600 miles of mixed-use road, and about 160 miles of motorized trails. About 70% of the motorized trails are motorcycle trails. The 56 miles of OHV trails include:

- Seven jeep trails on the Forest are open to all vehicle types: a total of 40 miles. All are located in the Kettle Crest area.
- Little Pend Oreille Motorized Trail system: 6 miles. While the Little Pend Oreille Trail system is 67 miles long, most are open to motorcycles only²⁷.
- Middle Fork Calispell OHV Trail System: 10 miles.

If no changes are made to the OHV route system, it is likely that unauthorized use and route creation would continue due to a lack of quality OHV use opportunities – users would seek to create their own quality experiences.

With limited opportunities, OHV use may migrate to other parts of the forest. This displacement could result in increased perceptions of crowding and resource impacts in those locations.

Alternative 2 – No Action

This alternative would result in the nullification of the MVUM, which would drastically limit OHV opportunities and some changes to OHV access to dispersed campsites.

²⁷ As shown on the 2010 MVUM maps.

Direct and Indirect Effects

Motor Vehicle Use

Alternative 2 would prohibit all mixed use on NFS roads. Alternative 2 would NOT impact the Middle Fork Calispell ORV Trail or the Batey-Bould Motorcycle Trail, because they were established prior to the implementation of the Travel Management Rule and the MVUM.

Alternative 2 would not change the amount of road open to motor vehicles. Access for pleasure driving using highway vehicles would remain the same.

It is unlikely that this alternative would result in a reduction in illegal travel and user-created routes since illegal travel bears little relation to mixed use routes. With fewer opportunities for legal OHV travel, illegal travel, especially near campsites, would be expected to intensify.

This alternative would severely restrict the recreation opportunities for users and their families who wish to responsibly ride OHVs. This may result in increased use of the Middle Fork OHV Trail – the only legal OHV opportunity remaining in this part of the National Forest. Increased use could result in crowding.

It is also likely that the Batey-Bould Trail System, which is only open to motorcycles only, would face increased intrusion by OHVs. The social conflicts resulting from this increased intrusion would require additional management intervention. Many of these impacts would likely also be experienced in neighboring drainages on the Forest.

Dispersed Camping

The existing campsites would remain, and the potential camping opportunities would remain. About 60% of the dispersed campsites would remain accessible with an OHV, these campsites are located along County Roads where OHVs are allowed. The remaining 40% would only be accessible with highway vehicles.

Other Activities

Currently, the Batey-Bould Trail has some nonmotorized use. Increased intrusions by OHVs onto the trail would likely increase conflicts between motorized and nonmotorized users. These nonmotorized users would thus likely perceive increased motorized use as an intrusion into their favored trail systems.

Forest Plan

No activities are proposed, therefore no changes to the existing ROS classifications or impacts to the visual quality objectives would occur.

Cumulative Effects

The removal of 63 miles of mixed use roads would likely displace a great deal of the existing OHV use in the South End Planning Area to other parts of the Forest and to nearby state, county, and private lands. The businesses in the communities surrounding the planning area would likely experience a noticeable decrease in OHV-related patrons.

Forest-wide, the Colville would provide about 570 miles of mixed-use road, with no change to the motorized trails. This represents a 10% reduction in mixed use roads.

With limited opportunities, OHV use may migrate to other parts of the forest. This displacement could result in increased perceptions of crowding and resource impacts in those locations.

Alternative 3 – Proposed Action

This alternative would designate many roads that are currently open to only highway legal vehicles as roads open to all vehicle types, would construct some trail segments in order to create loops, would adopt some existing unauthorized OHV routes in order to create loops and alternative routes, and designate campsites in the highest use areas. With regard to motor vehicle recreation, alternative 3 would:

- Miles of road available to highway vehicles would remain the same.
- Provide about 270 miles of OHV routes. In addition to the existing routes this alternative would:
 - Designate about 180 miles as mixed use road from the existing open roads.
 - Construct 1.9 miles of new OHV trail in order to create connections.
 - Adopt and designate 4.5 miles of existing unauthorized OHV routes as OHV trail.
 - Open and designate 8 miles of existing closed roads as dual uses OHV trail and Level I road.
- Construct 3 trailheads.

With regard to dispersed camping, alternative 3 would:

- Identify about 40 miles of road where camping would be regulated.
 - Designate 130 dispersed campsites.
 - Construct 17 new campsites.
 - Close 46 dispersed campsites that are causing resource damage, and because of the location, were not considered suitable for continued use.
- Along all other roads, dispersed camping would be regulated by the existing MVUM. Ingress/egress to dispersed campsites would be allowed by direct access only; off-road travel between sites and play activities would be prohibited.

Direct and Indirect Effects

Motor Vehicle Use

Alternative 3 would increase the amount of road open to motor vehicles from about 460 miles to about 475 (increase of 3%). Access for pleasure driving using highway vehicles would remain the same. Access for pleasure driving using OHVs would increase.

Alternative 3 would provide about 260 miles of new OHV routes as described above. Forest Roads 9521100, 120 and 130 would remain closed to OHVs pending watershed restoration at Phillips Lake.

Within this planning area, alternative 3 increases the miles of NFS OHV routes by 3.5 times (from 73 miles to 260 miles). Most of the increase is by allowing all vehicle types to utilize many of the existing open roads.

The addition of 14.4 miles of OHV trails would result in an OHV trail system totaling nearly 25 miles in length within the planning area. The additional trails serve to connect roads and/or create loops, and cannot be characterized as creating a single new or more extensive OHV trail.

The proposed action would create or complete a large number of loops and loop opportunities. The loops would range in size from about 4 miles to over 100 miles. Because of the use of connecting routes, there would be dozens of various loops available. This alternative would offer many variations for loops and nested loop systems. The number of possible small loop opportunities that could be linked together is even greater; one could feasibly link a series of small and medium loops to create a “nest” of loops allowing travel around and throughout the entirety of the planning area.

This alternative would create or complete a number of connector routes. One would be able to ride between Addy, Chewelah, Cusick/Usk, Blue Slide, and Beaver Lodge. This could allow visitors to get food and gas at these communities without trailering.

OHV riders would be able to ride directly from more than 90% of the campsites in the planning area. Campsites that would not be accessible include 6 campsites near the Little Pend Oreille Wildlife Refuge. Because of existing problems with OHV incursions into the Refuge, none of the roads near the Refuge allow OHVs; therefore, campsites accessed by those roads are not accessible by OHV.

Under the current MVUM, the planning area has 10 'out-and-back' OHV routes totaling about 15 miles. This alternative would join two of those routes (4300470 and 471) making them a through-route. This alternative would also add 12 new 'out-and-back' routes totaling about 30 miles. Upon completion, the planning area would have about 40 miles of 'out-and-back' routes. The primary reason 'out-and-back' routes are proposed is to provide access for hunting, berry picking, sightseeing, and access to special places and campsites. Proposed trail T-1-1 accesses a scenic overlook. Forest Roads 9535230, 9521030, 2600638, 2600649 access campsites. The Calispell Peak Road (FR 2600629) accesses campsites, provides connectivity to the Stimson LC road to Calispell Peak²⁸, and provides a go-back route for motorcyclists on the Batey-Bould Trail²⁹. With the monitoring plan, each 'out-and-back' route would be reviewed annually to see if they are contributing to off-road use.

The proposed action would develop trailheads in the North Fork Chewelah, Tacoma and Middle Fork Calispell areas. Currently people park along the roadsides and at some 'user created' parking areas. The trailheads would improve the recreation experience.

In addition, the trailheads provide an opportunity to inform and educate riders. Bulletin boards would be used to notify riders about the MVUM, and could be used for fire precautions and to provide warnings about the location of logging traffic.

Quality of the OHV Experience

The creation of a multitude of loop opportunities for OHV users would result in a higher-quality OHV system that allows for individuals and their families to ride across new terrain for multiple days. These routes would also connect other parts of the planning area to the Middle Fork Calispell OHV Trails and the Batey-Bould Motorcycle Trails, allowing riders to challenge themselves on more difficult and varied terrain.

The designation of extensive loop routes, as well as the connection of mixed use roads to communities and to trail systems would offer higher quality, desirable recreation experiences as described by Crimmins (2006) and Schreyer et al. (1985). The vastly improved motorized recreation opportunities within the planning area would thus also likely contribute to increased compliance among OHV users (Vail & Heldt, 2004). A focus on closing and rehabilitating user-created and illegal routes; educating the public via signs, brochures, and supplemental navigation maps; and enforcing the MVUM at strategic times and places would serve to effectively reinforce already improved compliance due to the designation of a higher-quality OHV system.

This alternative, because it would result in the designation of a far more extensive mixed use system than currently exists, would result in the perception of less crowding among OHV users and fewer resource impacts associated with OHV use on mixed use roads. Despite increases in motorized use in the

²⁸ Stimson has a gate on this road; sometimes the gate is open, allowing the public to access the mountaintop viewpoint.

²⁹ The Batey-Bould Trail is arduous, and riders have indicated a desire to return to the Trailhead via the roads.

planning area as a result of improved recreation opportunities, a 316% increase in mixed use road mileage and 73% increase in trail mileage (as described above) should easily offset increased visitation.

Dispersed Camping

This alternative would designate campsites in high use areas adjacent to streams and wetlands. Of the 236 inventoried dispersed campsites, 176 are located in the high use areas. Thirty-six campsites would be closed and restored³⁰. Seventeen new sites would be developed in the high use areas. This alternative would result in an overall net loss of 28 sites, or 12% of those in the planning area.

The proposal seeks to reduce or eliminate campsites right on the shoreline. Of the 41 sites within 50 feet of water, 31 would be closed. The remainder would be modified to reduce riparian damage. Many visitors enjoy camping close to water. This would reduce the opportunities for riparian camping. The new sites would be designated away from streams in less sensitive areas. There is a high probability that some individuals would find some of the new sites of lower aesthetic quality; however, sites would be designated to retain an acceptable level of recreational value.

The proposal seeks to control use levels in the high use areas. On high use weekends, people literally fill some of the meadows. By designating campsites, this alternative would reduce the maximum number of campers in the high use areas. For campers who enjoy large and lively social gatherings, this could result in a decline in satisfaction. For campers who prefer a less crowded camping experience, this could improve satisfaction.

One of the draws of dispersed camping is the “natural”, less regulated environment. Campsite designation would affect those looking for this type of “unregulated” experience. In the high use areas, dispersed campsites would become more regulated to the extent that campers would be limited to specific locations. This may negatively impact campers’ perceptions of experience quality.

Both the Calispell and Tacoma areas would experience net losses in designated dispersed campsites, while the North Fork Chewelah area would experience a net gain. Thus, the greatest impacts to the dispersed camping experience would occur in the Calispell and Tacoma Creek drainages. Some visitors could choose to establish new campsites in more remote parts of the planning area.

Other Activities

The increase in the size of the mixed use road system under this alternative would result in increased motorized access opportunities for hunting and fishing, forest product gathering, driving for pleasure and viewing scenery, other trail activities, and other nonmotorized activities because visitors would have the option to engage in these activities by OHV across a larger area than they are currently able; opportunities to engage in these activities by highway vehicle would not change.

Forest Plan

There would be no changes to the ROS designations in the planning area.

All proposals are consistent with the Forest Plan Management Areas and their ROS designations. All new trails are proposed in management areas 3A, 5, 6, 7 and 8 – Roaded Natural and Roaded Modified settings. OHV trails are consistent with these designations. All 3 trailheads would be located in Management Area 3A. Trailheads are consistent with this management area.

³⁰ An additional 8 campsites have been inventoried, but have not been used in the past 2-4 years.

The VQOs as designated in the Forest Plan would be met. No new trails would be constructed in areas of Retention. Proposed trail T-5-14 (0.1 miles) would cross an area of Retention. This trail is actually an old section of the Flowery Trail Road that was eliminated during the recent realignment and reconstruction – the road prism already exists. The trail would allow riders to cross Flowery Trail and get onto FR 4300300. The impacts associated with a short trail segment would be minor in comparison to that of a county highway.

Cumulative Effects

At a Forest-wide level, this alternative would increase total miles available to OHV riders by about 30%, including an increase of 25% in OHV trails. Total mileage available to OHV riders would increase by about 29%.

Table 16. Cumulative Effects of the South End Project on OHV Opportunities on the Colville NF

	Mixed Use		OHV Trails		Total OHV Miles	
	Forest	South End	Forest	South End	Forest	South End
Existing Condition	607	63	56	10	663	73
Alternative 3	784	240	70	24	854	264

It is likely that this area would become known as an OHV destination in northeast Washington due to improvements in route quality, which would draw increased use and relieve pressure on other OHV areas. The businesses in the nearby communities may have more patrons due to both an increase in total visitors, and to the connection of the rides to the adjacent communities³¹. This could improve the local economies.

In northeast Washington, this alternative emphasizes long trail rides with limited challenge. The Idaho Panhandle National Forest offers a similar OHV experience. The motorized recreation parks at Liberty Lake and Riverside State Park are smaller areas that include hill climbs, mud bogs and sandy areas. This alternative would appear to complement other OHV opportunities in northeast Washington and north Idaho.

As the number and unregulated quality of dispersed campsites in the planning area decreases, it is likely that some visitors would choose to engage in dispersed camping in other areas of the Forest. Depending on where they go, this may contribute to a perception of crowding in other dispersed camping areas.

Liberty Lake ORV Park is 350 acres with about 16 miles of trails. Terrain ranges from beginner to advanced with a mixture of gentle to steep slopes including scenic trail rides, mud bogs, and hill climbs.

The Riverside State Park ORV area is about 600 acres. The terrain provides hill climbs, sand areas, and trails through wooded areas.

Consistency with Laws, Regulations, Policy and the Forest Plan

All the alternatives analyzed are consistent with Forest Service policy and the 1988 Colville National Forest Land and Resource Management Plan.

³¹ The designation of county and city roads that connect to the OHV system in the Planning Area as mixed use would serve to further boost these businesses, as visitors would have the opportunity to ride into town to buy provisions, eat out, or spend the night.

Law Enforcement

This is summarized from discussions with Mike Mumford, Matt Valenta, Nan Berger and Eric McQuay. This analysis addresses law enforcement activities in the summer recreation months of May – September.

Existing Condition

Law enforcement is done with Law Enforcement Officers (LEO) and Forest Protection Officers (FPO). FPOs are regular National Forest employees who receive additional training, and can issue warning and citations. LEOs are National Forest System law enforcement personnel who work for the law enforcement branch of the agency.

This area is typically patrolled by 2 LEOs – one stationed in Newport and one stationed in Kettle Falls. Altogether, they spend about 5-15 days in the planning area every month. They issue both warnings and citations. The most common contacts, warnings and citations regard:

- Riding motorcycles or OHVs without a helmet,
- Riding OHVs on roads open only to highway vehicles,
- Failure to have firewood permit and failure to properly mark the load.

Each Ranger District has about 5-10 FPOs. Altogether, Forest FPOs spend about 8-10 person-days in the South End area every week. Approximately 90% of their time is in support of dispersed sites and OHV management, with the remainder in firewood cutting and other resource concerns. For FPOs, the most common contacts, warnings and citations regard:

- Unattended campfires and/or campfires during fire closures,
- Garbage in the campsite and/or failure to properly secure food,
- Riding motorcycles or OHVs without a helmet,
- Driving vehicles off the designated roads, not for dispersed camping³².

Environmental Consequences

Effects Common to All Alternatives

Funding for LEOs would remain the same. FPO workload is expected to increase regardless of alternative selected, and vary somewhat by alternative.

Alternative 1 – No Change

This alternative would result in no changes to the existing MVUM or to dispersed camping practices.

Alternative 2 – No Action

This alternative would drastically limit OHV opportunities on this portion of the National Forest.

While this alternative does eliminate all OHV travel on NFS roads, OHV travel on County Roads would continue. Many of the areas of off-road travel are on county roads.

³² Both off-road and highway vehicles.

Alternative 3 – Proposed Action

This alternative would designate many roads that are currently open to highway vehicles to all vehicle types, would construct some trail segments in order to create loops, would adopt some existing unauthorized OHV routes in order to create loops and alternative routes, and designate campsites in the highest use areas.

Designated Dispersed Campsites

Initially, the time spent enforcing the campsite designations would be expected to increase. The Colville has no other areas of designated dispersed camping³³. Traditionally, campsite enforcement has largely fallen to the FPOs, and it is likely that it enforcement of the designated campsites would continue to be done by the FPOs. In order to be effective, it would require more FPO enforcement on weekends, especially in the first few years.

Over time, as the public becomes familiar with the system, enforcement would be expected to decrease somewhat, but continue to remain higher than in areas where campsites are not designated. Some people would no doubt camp in other areas where such rules don't apply. How quickly the transition occurs would depend on the quality of the campsites we leave behind and the effectiveness of our education and enforcement efforts to explain why the changes were necessary. Long-term, designated dispersed sites will continue to require additional enforcement effort beyond current levels because there are no existing rules to enforce.

In some ways the designation of campsites would make enforcement easier – you are either in a designated site or you are not – it requires less interpretation. The designation of sites would provide some control over group size and density. The designation of sites gives law enforcement a potential avenue to break-up some large group gatherings early (e.g., keg parties). Problems that arise from campsites that are too close to one another (e.g., disputes about noise, dogs) would be expected to decrease.

Off-highway Vehicles

Overall, the designation of more routes open to OHVs is not expected to increase off-road travel. The analysis of off-road travel showed little relationship between roads open to all vehicles and off-road travel. Perhaps it should not come as a surprise that riders who have no regard for the rules regarding off-road travel also have no regard for the rules regarding the vehicles allowed on the road.

Currently, many of the contacts and warnings are for people riding OHVs on roads open to highway vehicles only – which make up the majority of the roads in the planning area. With the designation of more mixed use routes, the enforcement emphasis is expected to shift toward off-road travel, which causes more severe resource damage. It is more difficult to catch vehicles off-roads. In terms of time spent per warning or citation, law enforcement efficiency would decline as enforcement focuses on the harder-to-catch riders. In terms of effort proportionate to resource damage, law enforcement efficiency would increase as enforcement focuses on off-road travel.

With the resulting system of OHV routes, patrolling with OHVs would make more sense. OHV patrols would allow law enforcement personnel to better interact with users, and to better patrol off-road uses. The improved connectivity would allow the Forest to pursue grants for an OHV ranger. Overall, the use

³³ Sullivan Creek has designated campsites, but does not have a prohibition against camping at other locations. The adjacent Idaho Panhandle and Wenatchee National Forests have areas of designated dispersed campsites.

of OHVs would improve enforcement and compliance. A solid Trail Ambassador Program would improve the effectiveness of enforcement, and improve overall compliance.

Safety

This is summarized from the Transportation Report for the South End Motor Vehicle Management Project by Ginger Gilmore dated March 29, 2011, with additional information provided by Craig Newman. The full report is available in the analysis files, located at the Newport Ranger District office. This report will discuss the safety elements associated with the designation of motorized mixed use on NFS roads.

Existing Condition

Under the Forest Plan user safety will be the primary emphasis (Forest Plan page 4-55).

This area has a high level of recreation traffic, and also has traffic from logging and the Air Force Survival School. Most of the private land is owned by industrial forest land companies, and logging traffic is not uncommon most years.

Prior to 2005 non-licensed motor vehicles (including Off-Highway Vehicles) were not allowed on roads – including both NF and County. The Colville N.F. was one of the first forests in the Region to provide the opportunity to operate OHVs on system roads.

Safety is relative. Safety is compromised because of increased use, mixed use, changes in management activities and the human factor. One can improve the road, control the type and size of the vehicle, but the human factor makes it hard to engineer out the risk. The best we can do is to provide information that a driver can use to make decisions. Since Washington State doesn't put any age requirements on who can drive an OHV, inexperience is an important element of the risk factors. Older drivers tend to have fewer crashes (Presentation at the regional Motorized Mixed Use Analysis training and Road Safety Audit).

All users of the National Forest road system need to follow all state laws; the Travel Management Rule does not preempt any state laws. Washington State law requires that :

- All riders wear helmets (unless the OHV is equipped with seat belts and roll bars or an enclosed passenger compartment),
- Vehicle operators under 13 years of age may operate an OHV under the direct supervision of a person eighteen years of age or older and who possesses a valid driver's license.

All open roads have the potential for accidents. Fifty-seven percent of all traffic fatalities in the United States occur on Rural Roads. Of those accidents, 39% involve a single car running off the road, and 14% are head on collisions (Ross, et al., 1993; Michie, 1981).

Accident History

The following table displays the known vehicle accidents in this planning area since 2003³⁴. Some of these accidents were on roads that we are intending to designate and others are on roads that are currently open to Highway Legal Vehicles.

³⁴ All motor vehicle accidents are not reported to the Forest Service. Noninjury accidents and single vehicle accidents especially may not be reported. This data is from the Law Enforcement Management Attainment Reporting Database (LEIMARS).

Table 17. Reported Vehicle Accidents in the South End Planning Area 2003-2010

Road Number	Year	Accident Description
4342	2003	Cat plowing road rolled over, fatality
2600440	2004	Vehicle sliding into a parked vehicle. Damage to both vehicles
2600440	2005	Equipment with snow blower slid off road and pushed over a big fir tree
2600629	2008	OHV accident, single vehicle
3128067	2008	Two OHVs left the road on a corner, one injury (broken collar bone)
3540	2008	Dirt bike accident, single vehicle
9521015	2008	Single vehicle rollover, fatality
3520	2009	OHV drove off road
9521	2009	Collision of two vehicles, no injuries
9535	2009	Vehicle Rolled off Road, injuries
4300080	2010	Single vehicle rollover, no injuries

In 1992 Forest Service personnel prepared a Hazard Analysis on many of the roads in this planning area. Table 18 shows the accidents that were reported on those Hazard Analysis forms in 1992.

Table 18. 1992 Hazard Analysis - Reported Vehicle Accidents in the South End Planning Area

Road Number	Reason for Accident
9521	Four accidents recorded, all were on icy roads and blind corners
4347	One accident recorded, a logging truck drove off the icy road to avoid hitting a pickup
9517	Five accidents recorded, all were on icy roads and blind corners

Effects of the Alternatives

Analytic Methods – mixed use analysis

“Motorized mixed use” is defined as the designation of a National Forest System road for use by both highway-legal and non-highway-legal motor vehicles. Mixed Use Analysis is the method used to examine safety for designating these roads. Based on this assessment, measures may be developed to reduce the risk potentials.

Crash probability is defined as the likelihood of a crash on a road resulting from exposure to factors affecting traffic safety. Crash probability is determined by looking at the non-highway legal operator, the highway legal operator, and considering --

- Crash history;
- Traffic volume, speed and type; and
- Road conditions such as width, surface, alignment, sight distance, curves, and intersections.

Crash severity assesses the probable degree of property damage and personal injury resulting from a crash on the road. Crash severity is determined by roadside conditions (e.g., slope, vegetation), speed, and traffic types.

All roads that will be designated ‘Open for all Vehicle Use’ require a mixed use analysis.

Alternatives 1 – No Change

Of the 11 accidents reported between 2003 and 2010, 4 involved off-high vehicles and motorcycles. Three were single vehicle accidents and one was a collision-avoidance involving 2 OHVs. Half the accidents occurred on roads where OHVs are not permitted (FR 2600629 and FR 3520).

Regardless of our designations and legality, mixed-use has been occurring on these roads for many years. Since mixed use with bicyclists, equestrians, and pedestrians is common on Forest roads, most users drive and ride Forest roads in a manner as to be prepared to avoid such collisions. Under the no change alternative, there would likely be no appreciable change to safety.

Alternative 2 – No Action

About 40% of the reported accidents involved OHVs. Removing all OHVs from NFS roads would probably reduce the risk of collisions involving OHVs. However, regardless of our designations and legality, mixed-use has been occurring on these roads for many years. Although law enforcement efforts would focus on eliminating mixed use under the no action alternative, there would likely be minimal appreciable change to safety.

Alternative 3 – Proposed Action

All roads proposed for mixed use were evaluated. For most roads the Probability rating is moderate and the Severity rating is moderate.

Three roads (37 miles) were rated as High Probability and High Severity. These roads are the primary connector routes in the planning area.

- FR 3520 (9 miles),
- FR 4347 (8.4 miles)
- FR 9521 (22 miles)

The High Probability rating is based on the sharp curves that create blind corners and high traffic volume. The High Severity rating is based on the steep side-slopes and road-side obstructions such as encroaching vegetation.

In order to reduce the Probability risk to moderate, the Forest would need to:

- Install and maintain signs such as ‘Share the Road’ warning drivers to the presence of all vehicle types.
- Prioritize maintenance of these roads to make sure they are functioning properly.

The severity of a crash, if one happened, would stay at a High level, based on the topography and the obstructions on the cut and fill slopes.

Cumulative Effects

Given past and future efforts in travel management across the Forest and across other jurisdictions, this project may increase overall safety for Forest visitors. Providing off-highway vehicle enthusiasts legal and appropriate places to ride would reduce confusion and illegal OHV use. With the appropriate

mitigations (signs, notices, etc.) the public would be better advised of the mixed uses that occur on Forest roads.

Consistency with Laws, Regulations, Policy and the Forest Plan

All the alternatives analyzed are consistent with Federal, State, and local laws and regulations. The alternatives are consistent with Forest Service policy and the 1988 Colville National Forest Land and Resource Management Plan.

Transportation System

This is summarized from the Transportation Report for the South End Motor Vehicle Management Project by Ginger Gilmore dated March 29, 2011, with additional information provided by Larry Bates and Nancy Glines. The full report is available in the analysis files, located at the Newport District office.

Existing Condition

This planning area has a variety of roads and all of the area is accessed via county roads. The planning area has about 900 miles of NFS roads and 50 miles of NFS trails. About half the roads are closed to motor vehicles. Road Maintenance Levels define the level of service provided by, and maintenance required for, a specific road.

Table 19. Roads and Trails in the planning area

Roads by Road Maintenance Level	Miles	% of miles
A level 1 road has been placed in storage between intermittent uses. These roads are closed to all vehicle travel. These roads are not shown on the motor vehicle use maps (MVUM).	423	47%
A level 2 road is open for use by high clearance vehicles. Passenger car traffic, user comfort, and user convenience are not considerations. Warning signs and traffic control devices are not provided except by exception. Motorists should have no expectations of being alerted to potential hazards while driving these roads.	433	48%
A level 3 road is open and maintained for travel by a prudent driver in a standard passenger car. User comfort and convenience are not considered priorities. Warning signs and traffic control devices are provided to alert motorists of situations that may occur on the road. These types of roads are typically low speed with single lanes and turnouts.	42	5%
A level 4 road provides a moderate degree of user comfort and convenience at moderate travel speeds.	0	0%
A level 5 road provides a high degree of user comfort and convenience. These roads are normally paved facilities.	0	0%
	898	
OHV Trail	10	20%
Motorcycle Trail	41	80%
Total Motorized Trails	51	

Of all the miles of road in this planning area only 63 miles of road is designated open for use by all vehicles which includes Off Highway Vehicles. This is 7% of the total road miles.

Effects of the Alternatives

Alternatives 1 and 2 – No Change and No Action

These alternatives do not change the road or trail mileage or maintenance levels. The road system would remain as shown in Table 8.

Alternative 3 – Proposed Action

This alternative would cause minor changes in road maintenance levels through the designation of existing closed roads as coincidental routes. Under coincidental status, these roads would be designated as trails in the Infra database until there is a need for them to be used as a road. Then their status would be changed to a road in the Infra database, and would be reconstructed to meet the roads objectives. When the activity needing the road is complete, they would become a trail again.

Table 20. Alternative 3 Roads and Trails

Roads by Road Maintenance Level	Miles	% of miles
A level 1 road has been placed in storage between intermittent uses. These roads are closed to all vehicle travel. These roads are not shown on the motor vehicle use maps (MVUM).	413	46%
A level 2 road is open for use by high clearance vehicles. Passenger car traffic, user comfort, and user convenience are not considerations. Warning signs and traffic control devices are not provided except by exception. Motorists should have no expectations of being alerted to potential hazards while driving these roads.	433	49%
A level 3 road is open and maintained for travel by a prudent driver in a standard passenger car. User comfort and convenience are not considered priorities. Warning signs and traffic control devices are provided to alert motorists of situations that may occur on the road. These types of roads are typically low speed with single lanes and turnouts.	42	5%
A level 4 road provides a moderate degree of user comfort and convenience at moderate travel speeds.	0	0%
A level 5 road provides a high degree of user comfort and convenience. These roads are normally paved facilities.	0	0%
	888	
OHV Trail	20	33%
Motorcycle Trail	41	67%
Total Motorized Trails	61	

Upon implementation of this alternative, about 27% of the road system, and half of the open road system, would be designated for use by all vehicles including OHVs.

The following table displays the roads to be designated as coincident status.

Table 21. Roads changed to coincidental Status

Road Number	Miles Coincidental Status	Road Number	Miles Coincidental Status
4300121	0.3	9521255	1.1
4300311	0.5	9535090	1.6
4300470	1.1	9545360	0.4
4342650	0.2	9545901	0.7
9521017	2.1	Total	8.00

Cumulative Effects

Since the proposal neither constructs nor decommissions roads, total road density would remain the same. Open road density would also remain the same. Motorized trail density would increase from about 0.05 miles/square mile to 0.06 miles/square mile.

As required under the Travel Management Rule, the Colville National Forest is scheduled to conduct a Forestwide minimum roads analysis in 2015. The results of this analysis may result in the closure of roads that are currently open to highway vehicles and mixed motorized use.

Consistency with Laws, Regulations, Policy and the Forest Plan

All alternatives analyzed are consistent with Forest Service policy and the 1988 Colville National Forest Land and Resource Management Plan.

Costs

This is summarized from the cost data provided by Ginger Gilmore, Bjorn Fredrickson, Karen Honeycutt, Charline Deese, Larry Bates, and Eric McQuay. Additional information regarding costs is available in the analysis files, located at the Newport District office.

Existing Condition

Road Maintenance

Currently the planning area has about 42 miles of level 3 roads, costing about \$46,000 per year. Level 3 roads are bladed annually. The planning area has about 433 miles of level 2 roads, costing about \$108,000 per year. Brush cutting is done on a 3-year cycle.

About half the roads are under Cost-Share Agreements with adjacent industrial forestland owners. When cooperators use the road they also maintain them. The cost of this maintenance is shared between the Forest and the cooperator, reducing actual maintenance costs somewhat.

Trail Maintenance

Motorized trail maintenance costs about \$225/mile for annual log-out, tread work, work at corners and fixing ruts. Brush cutting and drainage structure maintenance is done on a 3-year cycle, and costs about \$100/mile. Total costs for motorized trails is about \$13,000 annually. Some work is done with youth

crews (e.g., Northwest Conservation Corps) and volunteer groups, reducing the amount of money spent. The amount done with these crews is variable, and is worth about \$2-4,000 per year. In times of budget shortfalls, motorized trail maintenance has been periodically deferred.

Dispersed Campsites

Dispersed campsites are maintained with recreation crews, most of whom are seasonal employees. Currently about 8-10 person-days per week are expended maintaining dispersed campsites in the planning area over about 16 weeks per year. The total spent maintaining dispersed campsites is about \$20-30,000 per year.

Closure and Restoration of Damaged Areas

The Forest has continued to address areas of resource damage. The damage is typically caused by off-road travel and/or dispersed camping. Closures are typically done with fences and/or large rocks. Currently this work is done with volunteers and with a small Forest-wide riparian restoration crew. We typically spend about \$2,000 per year in this area.

Law Enforcement

Law enforcement is done with Law Enforcement Officers (LEO) and Forest Protection Officers (FPO). The LEO organization is funded at a national level, and this project would not affect that funding level.

This analysis will focus on FPOs. These are regular National Forest employees who receive additional training, and can issue warnings and citations. We currently spend approximately \$15,000 a year which includes vehicle and mileage costs, 4 weekly visits by an FPO, and additional FPO support from permanent recreation staff. While FPOs are in the area, approximately 90% of their time is in support of dispersed site and OHV management, with the remainder towards timber management.

Effects of the Alternatives

Effects Common to All Alternatives

Regular maintenance of NFS roads, trails and campsites would continue. The amount available is dependent on Agency funding.

Funding for LEOs would remain the same, but the areas patrolled may vary by alternative. FPO workload is expected to increase regardless of alternative selected, and vary somewhat by alternative.

Alternative 1 – No Change

This alternative would result in no changes to the existing MVUM or to dispersed camping practices.

Closure and restoration of damaged areas would continue using the existing mix of volunteer and Riparian Response Team. The current system is responsive. Without a coherent plan, it would be difficult to obtain grant funding for these activities.

Under this alternative, off-road travel should be expected to continue at the current pace with perhaps slight increases associated with an increased population base and the popularity of OHV use. Of course, all of this depends on fuel prices, the cost of OHVs and the state of the economy. This is true for users that are adjacent to the forest. Those that travel from out of the area (Deer Park, Spokane, etc) will eventually move on to other locations where trail systems exist (Idaho for example) so they can enjoy their preferred method of transportation without being illegal.

Alternative 2 – No Action

This alternative would result in the nullification of the MVUM, which would drastically limit OHV opportunities and some changes to OHV access to dispersed campsites.

Closure and restoration of damaged areas would continue using the existing mix of volunteer and Riparian Response Team. The current system is responsive. Without a coherent plan, it would be difficult to obtain grant funding for these activities.

While this alternative does eliminate all OHV travel on NFS roads, OHV travel on County Roads would continue. Many of the areas of off-road travel are on county roads.

It is unclear how this change would impact off-road use and the associated costs of restoration. Since routes available to OHVs would decrease, off-road travel may be expected to increase even more – thereby increasing the costs of restoration. On the other hand, people with OHVs would be contacted by LEOs and FPOs on a regular basis and told they could not unload. Eventually they may stop bringing OHVs to the area, reducing off-road travel. This could drastically reduce the cost of restoration since the primary play and off-road travel areas seem to exist in close proximity to dispersed campsites.

Alternative 3 – Proposed Action

This alternative would designate many roads that are currently open to highway vehicles to all vehicle types, would construct some trail segments in order to create loops, would adopt some existing unauthorized OHV routes in order to create loops and alternative routes, and designate campsites in the highest use areas.

Law Enforcement

Initially, the time spent enforcing the campsite designations would be expected to increase. With public compliance, the cost would be expected to decrease over time. With the additional OHV opportunities³⁵, grants for an OHV ranger may be pursued. While this would be an increased cost, the cost would not be from appropriated dollars. A solid Trail Ambassador Program would reduce FPO costs.

Short-term Costs

These estimates assume that contractor’s would do all construction work. However, a number of local OHV organizations have expressed interest in assisting with construction as volunteers, which could substantially reduce construction costs. It is possible that partner organizations may be able to contribute materials such as aggregate or barrier rocks, which would further reduce implementation costs. It is also assumed that implementation of this project would occur in phases, as funding becomes available.

Table 22 Estimated implementation costs for the South End Motor Vehicle Project

Activity	Number	Cost
New signs for mixed use roads	180 roads	\$11,000
Work needed to make trails suitable for adoption	8 miles	\$5,000
New trail construction	1.5 miles	\$8,500
Trailhead construction	3 trailheads	\$130,500

³⁵ It would be difficult to fund or use an OHV ranger in this area because of the existing short and disconnected OHV routes.

Table 22 Estimated implementation costs for the South End Motor Vehicle Project

Activity	Number	Cost
Dispersed campsite designation (including access route)	130 campsites	\$356,500
Dispersed campsite closure and rehab	47	\$225,000
TOTAL		\$736,500

Long-term Costs

Long-term costs are maintenance and upkeep.

Table 23 Estimated implementation costs for the South End Motor Vehicle Project

Activity	Number	Cost
Increased maintenance of FR 3520, 4347 and 9521 to maintain the Moderate Severity rating (increased brushing for sight distance along 10 miles of road at \$420/mile)	39.6 miles	\$4,200
Trailhead maintenance (does not include the cost of vandalism)	3	\$750
Increased Trail maintenance (1.9 new trail miles, 4.5 miles of unauthorized trail conversion, 8 miles of Level I road for 14.4 miles of trail at \$225/mile)	14.4 miles	\$3,240
Maintenance and replacement of dispersed campsite improvements (e.g., barrier rocks replacement, fence repair, sign replacement, hazard evaluation and abatement)	130 campsites	\$6,500
TOTAL		\$14,690

Trail maintenance costs should be substantially less since user groups have expressed an interest in completing this work for us.

The cost of dispersed campsite site maintenance would be expected to start high (as people vandalize our improvements), then reduce down after people begin to accept the changes, then start to increase again as improvements reach their life expectancy (10-20 years out) and need to be replaced.

Closure and restoration of damaged areas would continue. With a coherent plan in hand, the Forest would be in a better position to obtain grants through water, wildlife, fish, and recreation sources.

Currently off-road travel is strongly correlated with campsites, especially in the areas where campsites would be designated. How the designation of campsites may affect off-road use is unclear. It is possible that by designating sites, providing additional signage, and having a stronger presence in these areas, off-road travel would decrease. On the other hand, it may make no difference.



Figure 23. Banner from Tread Lightly

Water and Fish

This is summarized from the Fisheries and Hydrology Report for the South End Motor Vehicle Management Project by Karen Honeycutt and Rob Lawler dated May 6, 2011. The full report is available in the analysis files, located at the Newport District office.

Introduction

The management of fish habitat, stream conditions and water quality are managed under the Forest Plan, as amended by the Inland Native Fish Strategy (INFISH), and the Clean Water Act (see chapter 1).

The Forest Plan defined areas along streams and wetlands that are to be managed for the benefit of fish as Riparian Habitat Conservation Areas (RHCA). The goal of the Forest Plan is to manage and restore aquatic conditions so that they fully support fish populations and are resilient when subjected to extreme events. These conditions are maintained by ensuring landscape and ecosystem structural elements that control water storage and release, and provide channel form and function. The Inland Native Fish Strategy (INFISH) outlines specific riparian management objectives (RMOs) to meet these goals – such as the number and size of pools/mile, maximum water temperature, amount and size of woody material, and others. The Inland Native Fish Strategy applies to all water bodies regardless of whether they have fish or not. With regard to recreation, the Forest Plan standards include:

- **RM-1:** Design, construct, and operate trails and dispersed sites, in a manner that does not retard or prevent attainment of the RMOs and avoids adverse effects on inland native fish. For existing recreation facilities inside RHCAs, assure that the facilities or use of the facilities will not prevent attainment of RMOs or adversely affect inland native fish. Relocate or close recreation facilities where RMOs cannot be met or adverse effects on inland native fish cannot be avoided.
- **RM-2:** Adjust dispersed recreation practices that retard or prevent attainment of RMOs or adversely affect inland native fish. Where adjustment measures such as education, use limitations, traffic control devices, increased maintenance, relocation of facilities, and/or specific site closures are not effective in meeting RMOs and avoiding adverse effects on inland native fish, eliminate the practice or occupancy.

Features that govern the **storage and release of water** include wetlands, vernal pools, floodplains and side channels. These are features that hold water during higher flows and release high quality water over time.

Features that govern **channel form and function** include riparian vegetation, large riparian trees, and large woody material. These features hold the stream banks together, protect the banks from erosion, provide food and shade, and create habitat diversity and pools.

Table 24. Inland Native Fish Strategy Riparian Management Objectives (RMO)

Habitat Feature	Interim Objective
Temperature	No measurable increase in maximum water temperature. Maximum water temperatures below 15°C within adult holding habitat and below 9°C within spawning and rearing habitats. The Forest uses the Washington State Standard of maximum 7 day average less than 16°C.
Large Woody Material (LWD)	More than 20 pieces per mile greater than 12 inches diameter and greater than 35 feet long.
Wetted Width to Depth Ratio or Bankfull Width to Depth Ratio	WWD = mean wetted width / mean wetted depth < 10 BFW = Bankfull Width / Bankfull Depth < 13

Table 24. Inland Native Fish Strategy Riparian Management Objectives (RMO)

Habitat Feature	Interim Objective
Pools per mile (PPM)	25 ppm

The principal law governing pollution in the nation's streams, lakes, and estuaries is the Federal Water Pollution Control Act (P.L. 92-500, enacted in 1972), commonly known as the Clean Water Act (as amended in 1977, 1981 and 1987). The Act's primary objective is to restore and maintain the integrity of the nation's waters. Through the Clean Water Act, the state is required to provide guidance, standards, and direction to protect and restore water bodies (40 § 131.12). The State of Washington has met this federal requirement through their state Best Management Practices (BMPs) and the standards are based, in part, on the identified beneficial uses. For this project area, the primary beneficial uses are fish, wildlife and secondary contact recreation. Below the Forest, some streams are also used for agricultural purposes. The Forest Service is required to meet and/or exceed State Best Management Practices to protect water quality (Forest Plan, p. 4-51).

Under section 303(d) of the Clean Water Act and EPA regulation (40 CFR 130.2(J), 130.7), states are given authority to list which waters do not meet water quality standards or have impaired beneficial uses (also known as “water quality impaired” WQI or 303(d) listed). For each water quality impaired stream, the State Dept. of Ecology develops a plan to improve water quality. This plan is called a Total Maximum Daily Load (TMDL), and is prepared for each pollutant of concern. Additional information on the Clean Water Act is available at: <http://www.epa.gov/oecaagct/lcwa.html> and at <http://www.ecy.wa.gov/biblio/wac173201a.html>.

In addition, all alternatives must meet the requirements of Executive Orders: 11988, Floodplain Management; and 11990, Protection of Wetlands.

Existing Conditions

Fish Populations

The planning area has 789 miles of streams, 9 lakes, and 2,489 acres of wetlands. The planning area has about 100 miles of fish-bearing streams. Eastern brook trout are the dominant fish species and are found in all of the fish bearing streams. Other species include:

- Chiselmouth (minnow),
- German brown trout,
- Rainbow trout,
- Redband trout,
- Sculpin,
- Westslope cutthroat trout,
- Hybridized redband trout,
- Hybridized cutthroat/rainbow trout.

Washington Department of Fish and Wildlife stocks Phillips Lake with Eastern brook trout and Bayley Lake with rainbow trout. Figure 1 shows the location of the fish-bearing streams.

Fisheries populations have been affected by the introduced species. Redband, westslope cutthroat, sculpin and chiselmouth are the only native species in the analysis area. Redband is found primarily on the Colville River side. Westslope cutthroat is found primarily on the Pend Oreille River side, though Cottonwood Creek has a small introduced population in Betts Meadow. Sculpin is found on both sides. Chiselmouth is found in Parker Lake.

No bull trout have been observed in this planning area.

On the Colville River side, bull trout passage is blocked by Meyers Falls near the town of Kettle Falls. The streams have been surveyed (USDA Forest Service, Colville National Forest) and no bull trout found. The Colville basin is not designated as critical habitat in the Rule for the Designation of Bull Trout Critical Habitat (USDI, 2010).

On the Pend Oreille River side, bull trout may access streams from the Pend Oreille River (Box Canyon Reservoir). No bull trout have been observed in these streams, but parts of the, Smalle and all of the Ruby and Tacoma Creek watersheds have been designated as critical habitat in the Rule for the Designation of Bull Trout Critical Habitat (USDI, 2010). Bull trout do not have access to Smalle Creek due to the Calispell Pumps, an impassable barrier located near the mouth of Calispell Creek.

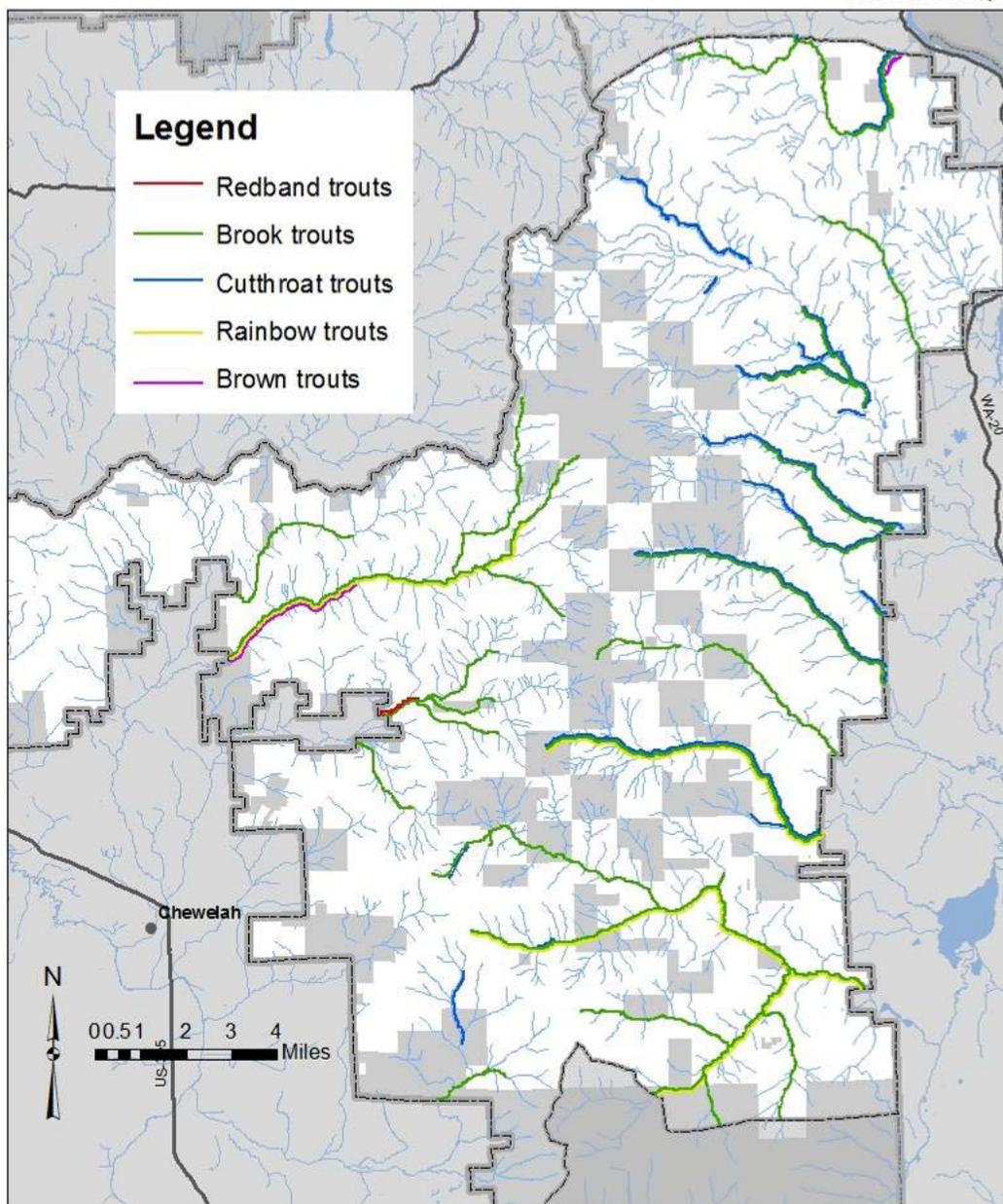


Figure 24. Map of fish-bearing streams

Landforms, Water and Fish

The underlying landforms play a major role in both where activities occur, and the inherent vulnerability of the streams to adverse effects. These landforms are described starting on page 36. The following discussion will emphasize the landforms where conflicts between fish/water and recreation are the most intense. Descriptions of all the landforms and their relationship to water and fish are in the complete report. In many areas, the existing condition is the result of a combination of livestock and recreation impacts.

Valley Bottoms, Outwash, and Lacustrine

These landforms have the most conflicts between fisheries/hydrology and multiple uses. These areas contain about 30% of the miles of fish bearing streams, and 30% of the water quality impaired (WQI) reaches.

Inherently, these landforms are very sensitive to disturbance. In all these landforms, the stream bed and banks are dominated by sand- and cobble-sized material. Because of the fine and unconsolidated material, the stream banks are especially susceptible to erosion. Healthy, robust, deep rooted riparian vegetation is vital for holding the banks together.

These landforms are gently sloping to nearly level. Located low in the watersheds, the streams are high-energy, low-gradient, and perennial. Channels often meander (at least somewhat), and are braided in some upper reaches.

The streams are characterized by a wide riparian wetland zone along the stream. These low floodplains also contain overflow channels and basins. The next riparian zone is dominated by hardwoods and brush species such as cottonwood, aspen, willow and alder. The outer riparian zone is characterized by conifers. The width of these various zones is highly dependent of slope. Where the valley is very flat (Middle Fork Calispell near Delaney Meadow) the wetland zone is 200-500 feet wide. Where the slopes are only slightly steeper (North Fork Chewelah Creek) the wetland zone is only 100-200 feet wide.

Ponds and wetlands also occur apart from the streams. These streams provide good beaver habitat, and beaver use is currently high.

These areas provide some of the best spawning habitat in the analysis area due to the large supply of gravels which trout need for laying their eggs.

Current Uses and Conditions

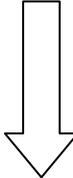
These areas were homesteaded from the early 1900s through the late 1930s. Many of the meadows and roads date from this era. During the homestead era, the riparian vegetation along many creeks was modified. The extent of this riparian modification varies across the planning area. Along the Middle Fork Calispell Creek, homesteaders removed virtually all the riparian brush and hardwoods, so they could farm right to the water's edge. In North Fork Chewelah, most homesteaders left a narrow band of riparian vegetation.

The primary access roads into the planning area cross these landforms. Some homestead era roads were adopted by the Counties or by the Forest Service, and became authorized roads. Some were adopted by the Forest Service, but are kept closed to minimize resource damage (like FR 9521188³⁶). Other roads were not adopted and are now considered unauthorized (these roads may be found up

Vulnerability to Bank Erosion

Vulnerability to stream bank erosion is related to the energy of the stream and the material that makes up the bank. The smaller the material in the bank, the easier it is eroded.

Among the landforms discussed, the lacustrine has the smallest material, and the glaciated mountain slopes has the coarsest.

- 
- Lacustrine
 - Valley Bottom/Outwash
 - Glacial Moraine
 - Glaciated Mountain Slopes

³⁶Several of the proposals that were not included in the proposed action involved these old roads built along streams.

Sixmile Creek for example). Many unauthorized homestead roads have grown-in and stabilized; but some have continued to be used which keeps them cleared.

These unauthorized homestead era riparian roads are often muddy and have soft spots; many cross and re-cross the adjacent stream; damaging stream banks and putting sediment into the stream. In addition, these roads often provide an easy route for cattle access to riparian areas; further damaging the riparian conditions. This unauthorized road network is a major contributor of sediment into the stream network³⁷. The Forest has made sporadic attempts to control unauthorized routes, with limited success. About 30% of the off-road use is in these landforms. This is the favored landform for “mudding”.

About half of the dispersed camping occurs in these landforms – and about 90% of those are located within the riparian zone of the perennial streams. Figure 3 is a schematic of how dispersed campsites in riparian areas damage water quality and fish habitat.

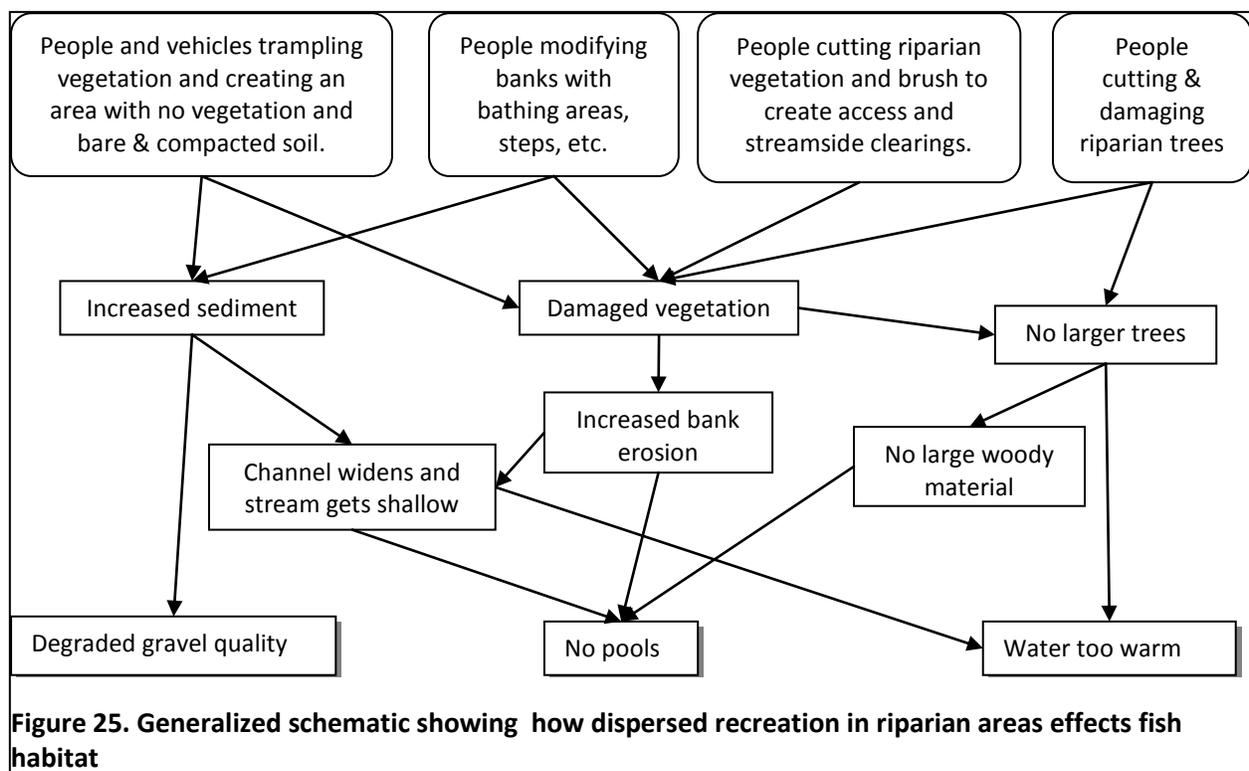


Figure 25. Generalized schematic showing how dispersed recreation in riparian areas effects fish habitat

Many of the campsites are located in homestead clearings. The largest campsites are located in these landforms, presumably because they are flat and relatively open.

Several campsites are located right on the water’s edge (Figure 26). Runoff and erosion from these campsites goes directly into the creeks. These campsites prevent the growth of robust riparian vegetation needed to protect the stream banks, especially in these landforms. In Figure 26 you can see the shoreline erosion at campsites.

Many more campsites are located about 20 to 50 feet from the water’s edge. Over time, these campsites tend to expand and creep toward the water. Campers develop paths to the creek – often several paths. Many campsites have OHV trails to the water’s edge. These paths and trails contribute

³⁷ Sediment decreases pool quality.



Figure 26. Examples of bank erosion at dispersed campsites

sediment and damage riparian vegetation. Many campers clear an area next to the creek, creating impacts like those described above.

Improper human and domestic animal waste disposal, using or disposing of soap into the stream, and disposing of food waste into the stream also contribute pollution and habitat degradation. In addition, campers have a propensity to modify the channel – move material, build bridges, build dams, etc. Individually, these activities may seem innocuous, but altogether, they modify channel conditions, increase bank erosion, and degrade fish habitat.

Roads to individual campsites may also contribute sediment to the streams. In these landforms, the access roads are often muddy until late spring. Figure 27 shows a typical access after Memorial Day weekend 2010.

The Forest Service has made improvements to areas where recreation use was damaging natural resources, but has never developed an overall plan to reduce the cumulative impacts from these sites in the analysis area like this proposal is doing.

- On the North Fork Chewelah Creek, the Forest installed a vault toilet in a large meadow at the intersection of the Sand Canyon Road and FR 9521100³⁸ (Phillips Lake Road). A fence was constructed to keep campers back from the stream, but the fence is less than 100 feet from the stream – well within the RHCA.



Figure 27. Muddy road in June

- In Calispell Basin (Drummond Creek) the Forest restored a campsite and installed some fencing to keep campers back from the creek.
- In Hartill Meadow the Forest installed fencing to prevent mudding.
- In Woodward Meadows, the Forest constructed a fence in 2010 to discourage illegal off-road OHV travel; and a road along Woodward Meadows was obliterated just past the campsite.
- In the Middle Fork Calispell Creek the Forest has installed fencing along the stream and around some wetlands.
- In the North Fork Calispell Creek the Forest installed some fencing to stop a hill climb, and installed more signs.
- In Cusick Creek, the Forest fenced Parker Meadow, created a parking spot at Parker Lake, and closed 1 campsite.

Since these landforms provide much of the fish habitat, impacts in these landforms are especially important. The North Fork Chewelah Creek is important German brown trout spawning habitat for the Colville River. In the Figure at right, the 2006 inventory crew sampled numerous large brown trout. The brown trout are an adfluvial population in the North Fork Chewelah Creek. They swim up from the Colville River to spawn in the North Fork Chewelah Creek.



Figure 28 Trout

Stream surveys have noted that streams within the valley bottom and lacustrine landforms often fail to meet the Riparian Management Objectives for large woody material, pools per mile, and temperature (Table 25). These streams are also more likely to be listed for fecal coliforms. While the surveys do not identify causes, the streams with the most campsites per mile have some of the worst fish habitat conditions (Middle Fork Calispell, North Fork Chewelah),

³⁸ This area is commonly called the North Fork Campground although it is not a developed campground. It is also called Bingville, though the true Bingville is another meadow about a mile farther up the road.

while streams with few campsites generally meet the Riparian Management Objectives (North Fork Ruby).

Table 25. Riparian Management Objectives for Streams in the Valley Bottom, Outwash and Lacustrine Landforms

Stream	Generally Meets the Following RMOs				WQI
	Large Woody Material	Width to Depth Ratio	Pools per mile	Temperature	Fecal Coliform
Cusick Creek	No	Yes	No	No	
Ruby Creek	No	Yes	Yes	No	No
NF Ruby Creek	Yes	Yes	Yes	Yes	
Little Ruby Creek	Yes	ISD	No	ISD	
NF Chewelah Creek	No	Yes	No	No	No
MF Calispell Creek	No	Yes	Yes	No	
Percent of the creeks that generally meet the RMO	43%	100%	57%	33%	

ISD = insufficient data

Based on observations, dispersed camping has a direct impact on the RMOs in these landforms. Many of the impacts are caused by damage and/or removal of riparian vegetation that provides the vital root strength holding these stream banks together. Recreation users remove vegetation that would otherwise shade the stream – increasing water temperature. Compacted campsites reduces the establishment and growth of replacement shade trees. Recreation users, by clearing areas, cutting down trees for firewood, damaging trees, and compacting the soil, reduce the amount of large woody material and reduce replacement trees. Recreation users, by clearing riparian vegetation and creating little dams, increase the width to depth ratio³⁹. Trails and paths crossing the stream also cause bank erosion which increases width to depth ratio.

Large fish require streams with complex pool riffle structures, deep pools, cool water, and clean gravel for feeding, spawning and overwintering. Working together, these various impacts fill pools, prevent the establishment of new pools and hiding structures, degrade gravel quality, and increase water temperatures – degrading fish habitat. The introduced trout species have a competitive advantage over native species in poorer habitats.

Glacial Moraines

At the landscape level, the glacial moraines typically occur upstream from the valley bottom landforms. This is the most abundant landform in the planning area. About 60% of the fish-bearing streams, and about 70% of the water quality impaired reaches are located in this landform.

³⁹ Stream width divided by stream depth. Deep streams provide better fish habitat.

In many ways the glacial moraines are similar to the valley bottom landform, but the slopes are more varied and overall steeper. The streams are typically well defined, high energy, low to moderate gradient perennial streams. Similar to the valleys, the stream bed and banks are dominated by sand- and cobble-sized material. With the higher gradient, the channels are generally straighter, and often moderately to deeply incised. Wetlands occur intermittently along the streams, some springs are found on the upper stream banks. Riparian obligate vegetation is generally found in a narrow band along the streams. Cottonwood is found intermittently along the streams, and in many areas conifers extend right to the shoreline. Floodplains vary in width from a few feet to about 100 feet. Wetlands, springs, seeps and ponds occur throughout this landform, both perennial and vernal. This landform provides good spawning habitat, and in some higher gradient sections, provides excellent complex trout habitat.

Current Uses and Conditions

Similar to the valley bottoms and lacustrine benches, these areas were homesteaded, and most meadows date from this era. The riparian vegetation was not modified as much as in the valleys, often a narrow band of conifers was left along the streams.

Again, the primary access roads cross this landform. Road conditions on this landform are variable. Because of the steeper slopes, road grades are often steeper as well. The combination of steeper grades with the existence of seeps and springs can create problem road segments. For example, FR3116 (Trimble Creek) has developed soft spots through the years, that require additional rocking. FR4300471, is both steep and wet, it appears to be a sediment source for Gletty Creek.

Unauthorized homestead era roads that continue to receive use by OHVs include Wilson and Drummond Creek. As described previously, these unauthorized homestead era riparian roads are often muddy, have soft spots and seeps; some cross and re-cross the stream; damaging stream banks and putting sediment into the stream. These roads also provide an easy route for cattle to access riparian areas, further damaging the riparian conditions. This unauthorized road network is a major contributor of sediment into the stream network⁴⁰. About 60% of off-road use occurs in this landform.

About ⅓ of the dispersed camping occur on this landform – of which, about 80% are located within the riparian zone of perennial streams. The schematic in Figure 25 accurately describes how dispersed campsites in riparian areas damage water quality and fish habitat. Most campsites are located on the floodplain. Some are homestead clearings, others appear to be entirely user-created. When compared to the valley/outwash/lacustrine landforms, campsites in this landform are more wooded, and the shoreline vegetation is not as dense and does not extend as far from the channel.

Several campsites are located right on the water's edge (Figure 4). Runoff and erosion from these campsites goes directly into the creeks. These campsites prevent the growth of robust riparian vegetation needed to protect the stream banks. Since the riparian vegetation zone is not as wide, these areas are easier to impact.

Many more campsites are located 20-50 feet from the water's edge. These campsites expand toward the streams, campers develop paths; these campsites often have OHV trails. These activities contribute sediment and damage riparian vegetation. The same impacts are occurring from improper human and domestic animal waste disposal, using or disposing of soap into the stream, disposing of food waste into the stream, and modifying the channel.

⁴⁰ Sediment decreases pool quality.

Roads to individual campsites may also contribute sediment to the streams. In these landforms, the access roads are often muddy through Memorial Day.

The Forest Service has made improvements to areas where recreation use was damaging natural resources.

- Phillips Lake, located in this landform, has become a popular area for unauthorized OHV use. In the summer of 2010, a mud rally took place in the wetland below the lake, breaking the fence around the meadow, and rutted the meadow and nearby stream. The Forest fixed the fence and flattened the ruts.
- Bisbee and Dahlstrom meadows have been fenced to limit access.

Since these landforms provide a lot of the fish habitat, impacts are also important. In general, stream surveys in the glacial moraines find the creeks meet Riparian Management Objectives more frequently. Streams within moraine landform fail to meet the Riparian Management Objectives for pools per mile about half the time – but generally meet the other RMOs (Table 3). Three streams are listed for fecal coliform (Healey, South Fork Chewelah, and Trimble Creeks). There appears to be little relationship between meeting RMOs and dispersed camping in this landform.

Table 26. Riparian Management Objectives for Streams in the Glacial Moraine Landform

Stream	Generally Meets the Following RMOs				WQI
	Large Woody Material	Width to Depth Ratio	Pools per mile	Temperature	Fecal Coliform
Tacoma	Yes	ISD	ISD	No	
SF Tacoma	Yes	Yes	No	Yes	
NF of the SF Tacoma	Yes	Yes	Yes	Yes	
Calispell Peak Creek	Yes	Yes	Yes	Yes	
Trimble Creek	Yes	Yes	No	ISD	No
Smalle	Yes	Yes	No	Yes	
Winchester	Yes	Yes	Yes	No	No
NF Calispell Creek	Yes	Yes	No	No	
SF MF Calispell Creek	Yes	Yes	Yes	Yes	
Gletty Creek	Yes	Yes	Yes	ISD	
Graham Creek	Yes	Yes	Yes	ISD	
Drummond Creek	Yes	No	No	Yes	
Butte Creek	Yes	Yes	No	Yes	
Krumm Creek	Yes	Yes	Yes	Yes	
Hartill Creek	No	Yes	Yes	Yes	
SF Chewelah Creek	No	Yes	Yes	Yes	No

Table 26. Riparian Management Objectives for Streams in the Glacial Moraine Landform

Stream	Generally Meets the Following RMOs				WQI
	Large Woody Material	Width to Depth Ratio	Pools per mile	Temperature	Fecal Coliform
Healey Creek	Yes	Yes	No	Yes	
Wilson Creek	No	Yes	Yes	Yes	No
Sixmile Creek	No	No	No	No	
Percent of the creeks that generally meet the RMOs	79%	89%	55%	75%	

Based on observations, dispersed camping has a direct impact to fish habitat in these landforms. In this landform, the primary damage mechanisms are damage/removal of riparian conifers, and compaction/erosion of campsites. Recreation users, by clearing areas, cutting down trees for firewood, damaging trees, and compacting the soil, reduce the amount of large woody material and reduce replacement trees.

Large fish require streams with complex pool riffle structures, deep pools, cool water, and clean gravel for feeding, spawning and overwintering. The introduced trout species have a competitive advantage over native species in poorer habitats.

Other Landforms

Typically, the streams in these landforms are too steep to provide extensive fish habitat.

The headwaters of several fish-bearing streams extend into the glaciated mountain landforms.

Sediment from these landforms may impact fish habitat lower in the watershed. Dispersed camping is far less common on these landforms. Some dispersed camping occurs in upland sites, but only two campsites are located adjacent to streams⁴¹.

⁴¹ One is an old homestead cabin on the North Fork Calispell Creek, the campsite is more than 100 feet from the stream. The other is on a tributary to Wilson Creek, and the campsite is about 50 feet from the stream.

Environmental Effects

Alternative 1 – no change

Dispersed Recreation Sites

The current MVUM allows for dispersed camping 300 feet from the road system. There are 169 sites in riparian areas. New sites may be created within 300 feet of the road systems. In the Glacial Moraines and Valley bottoms, Lacustrine, Outwash, and Meltwater Canyons, new sites near creeks would cause damage to the fisheries and hydrology like the damage occurring now. The compaction from these sites is impacting riparian vegetation and affecting large woody debris levels. The loss of vegetation also increases erosion by overland flow and bank destabilization (see Soils section). Bank destabilization is occurring from unauthorized crossings, lack of vegetation, soil productivity decline, and foot traffic. There are numerous modifications to the riparian areas that come with these sites. Structures are built. Riparian vegetation is harmed from trampling, direct damage such as chopping, carving, and shooting trees. Campers have been seen mowing the riparian areas. There are changes to the stream morphology from dam building to create pools to play in, cutting trees across the streams, damaging habitat restoration projects. These sites are also avenues for weeds that are widely dispersed via equipment (e.g. ATV, 4WD pick-up).

Dispersed Recreation Sites Driveways

The current MVUM allows vehicles to access campsites up to 300 feet from the road system. New access roads as long as 300 feet may be created within 300 feet of the road systems. In the Glacial Moraines and Valley bottoms, Outwash, and Meltwater Canyons, new access roads near creeks would cause damage to the fisheries like the damage occurring now. The compaction from these routes is impacting riparian vegetation and affecting large woody debris levels. The loss of vegetation also increases erosion by overland flow and bank destabilization. The vehicle compaction is deep.

Mixed Motorized Use Roads

The current MVUM has about 60 miles of mixed use roads. These roads were reviewed to identify the effects of motorized mixed use on water quality or fish habitat. For most roads, motorized mixed use does not appear to change the traffic level enough to change erosion and sediment production.

Motorized Trails

Some of the current motorized trails cause effects to fisheries. The trails go through wet areas, sandy soils, or unstable soils. They can become compacted, rutted, and erode into stream channels. Some of the trails cross the streams and these crossings can become avenues for sediment.

Unauthorized OHV Trails

User-created OHV trails are prevalent in portions of the planning area. This alternative would not change the current situation. The current level of damage to resources of the Forest from compaction and erosion would continue to increase. This problem is not being addressed in this document. The practice of travelling off of designated OHV routes on to NFS lands is a violation of Forest Service policy. This problem is being addressed through the use of law enforcement and public education.

Alternative 2 – no action

This alternative is expected to be more detrimental to fisheries and hydrology than the proposed action and similar to the no change alternative, therefore it is not a recommended approach for proper management of the watersheds in this project area.

Dispersed Recreation Sites and Driveways

The effects from this alternative would likely result in increased impacts and damage to fisheries and hydrology since dispersed camping would not be regulated. These additional impacts are expected to be slight since about 8% of the existing campsites are located at a distance greater than 300 feet from the road. Unmanaged travel system and dispersed camping is expected to result in a reduction in fish habitat quality and water quality as a result of additional user created trails and campsites within the RHCA.

Motorized Trails

Some of the current motorized trails cause effects to fisheries and hydrology. The trails go through wet areas, sandy soils, or unstable soils. They can become compacted, rutted, and erode into stream channels. Some of the trails cross the streams and these crossings can become avenues for sediment reducing fish habitat and increasing stream temperatures. This action would likely increase current impacts on the forest if the option to operate or possess OHVs on county roads within the forest boundary was not rescinded as well. Assuming OHV use on County roads is going to continue, the situation would be expected to be very similar to the no change alternative and likely result in increased detrimental impacts.

Unauthorized OHV Trails

User-created OHV trails are prevalent in portions of the planning area. This alternative would likely exacerbate the current situation. The current level of damage to resources of the Forest from compaction and erosion would continue to increase. The practice of travelling off of designated OHV routes on to NFS lands is a violation of Forest Service regulations. This problem is being addressed through the use of law enforcement and public education.

Alternative 3 – proposed action

Dispersed Recreation Sites

The proposed action restricts camping to designated locations along roads in the Glacial Moraines and Valley bottoms, Outwash, and Meltwater Canyons. Altogether, the planning area has about 180 campsites located within 300 feet of water; about 130 are located on the roads where dispersed camping would be controlled.

The following table displays the proposal with regard to those 130 campsites. All the site sites to be closed are within the RHCA. Some of the sites that would be developed are located within 300 feet of water, but are located in more appropriate areas. Some new sites would be created outside of riparian areas to draw use away from stream channels.

Table 27. Alternative 3 dispersed recreation sites within 300 feet of water

Size	Existing	Proposed to close	Proposed to be modified	Proposed new	No Change
Not rated	37	16	9	15	14
Large	53	15	24		14
Medium	25	5	15		5
Small	14	4	5		3
Total	129	40	53	15	36

The proposed action reduces the impact that dispersed recreation sites are having on fish and their habitats. Through site closures, site modifications, and the design elements, the most impacting sites have been addressed. The proposed action meets the intent of the INFISH standards and guidelines. The proposed action addresses these standards and guidelines. There would be no adverse effects on inland native fish and the Riparian Management Objectives.

Dispersed Recreation Site Driveways

The proposed action restricts off road access to designated locations along roads in the most sensitive landforms. There would be a reduction of routes in riparian areas. Some driveways would be closed and rehabilitated. Other driveways would be redesigned to limit the effects to riparian vegetation and stream banks. New driveways created within riparian areas would be designed with hydrology and fish habitat needs in mind.

The proposed action reduces the impact that dispersed recreation site driveways are having on fish and their habitats. Through closures, modifications, and the design elements, the most impacting driveways have been addressed. The proposed action meets the intent of the INFISH standards and guidelines. The proposed action addresses these standards and guidelines. There would be no adverse effects on inland native fish and the Riparian Management Objectives.

Mixed Motorized Use of Existing Open Roads

Each road was reviewed to determine whether opening the road to mixed motorized use would have an impact on water quality or fish habitat. For most roads, motorized mixed use is not expected to change the traffic level enough to change erosion and sediment production – the effects were determined to be “not measurable” or “none”⁴². The following roads and watersheds were identified as “potentially adverse effect”.

Gardner Creek

FR 3100001. Currently, this road is open to highway vehicles from April 1 through November 30. The proposal would open this road to all vehicles from April 1 through November 30. This road crosses Gardner Creek and 4 of its tributaries a total of 7 times. In addition, about 800 feet of the road is located in a riparian zone. Currently the road receives a moderate to light amount of traffic, and is well-known for being muddy in the spring. With the large number of crossings, increased use – even by lighter off-road vehicles – is likely to increase sediment somewhat. Gardiner Creek is not known as a fish-bearing stream.

⁴² Not measurable if the roads crossed streams; none if they do not.

Cusick Creek

FR 3128035. Currently, this road is open to highway vehicles from April 1 through November 30. The proposal would open this road to all vehicles from April 1 through November 30. This road crosses tributaries to Cusick Creek and Parker Lake 4 times. This was developed as an access road for the powerline, and grades are steeper than is common on NFS roads. Currently the road receives a relatively light amount of traffic. With number of crossings, increased use – even by lighter off-road vehicles – is likely to increase sediment somewhat. Cusick Creek has brook trout and Parker Lake has sculpin and chiselmouth.

East Fork Smalle Creek

FR 3116073, FR 3116120, FR 3116177. This cluster of roads extends from Conger Pond into the East Fork Smalle Creek drainage. Under the 2010 MVUM all of these roads are open to highway vehicles⁴³. The proposal would open these roads to all vehicles. FR 3116073 is the main access road, and crosses the East Fork Smalle and its tributaries 9 times. FR 3116120 crosses 6 tributaries, and FR 3116177 crosses 7 tributaries. These dead-end roads currently receive light traffic⁴⁴, with slightly heavier traffic during hunting season. With number of crossings, increased use – even by lighter off-road vehicles – is likely to increase sediment in the East Fork Smalle Creek somewhat. East Fork Smalle Creek has westslope cutthroat and brook trout.

Motorized Trails

None of the proposed new construction or adopted trails cross any streams or wetlands; nor are they within 300 feet of streams or wetlands.

Trail T-11-12 is located on an old roadbed. It has been actively managed as part of the Middle Fork OHV Trail System, though it has not been formally adopted. At one point, this trail is about 300 feet from a stream, but there is no evidence of sediment reaching the stream.

Trail T-3-5 is located on an old temporary road and skid trail. At one point it is about 300 feet from a wetland, but there is no evidence of sediment reaching the stream

Trail T-8-15 appears to be near a stream on the maps, but that is not the case.

Trail T-10-10 is not near a creek, but the construction has the potential to adversely affect Gletty Creek by increasing traffic on FR 4300471. The proposed action includes monitoring use prior to constructing this trail, and if monitoring shows that fewer OHVs are using the road then reconsider whether to construct the trail.

The proposed action reduces the impact that the motorized trails are having on fish and their habitats. Through closures, modifications, and the standard design and engineering practices, the most impacting motorized trails have been addressed. The proposed action meets the intent of the INFISH standards and guidelines. The proposed action addresses these standards and guidelines. There would be no adverse effects on inland native fish and the Riparian Management Objectives.

⁴³ FR 3116120 does not appear on the 2011 MVUM.

⁴⁴ Conger Timber Sale units are located along 073 and 177; while these units were being harvested traffic was heavy. Otherwise traffic is light.

Unauthorized OHV Trails

User-created OHV trails are prevalent in portions of the planning area. This alternative would not change the current situation. The current level of damage, from compaction and erosion, to resources of the Forest would continue to increase. The practice of travelling off of designated OHV routes on to NFS lands is a violation of Forest Service regulation. This problem is being addressed through the use of law enforcement, annual riparian monitoring/restoration efforts, and public education.

This proposal, by expanding OHV use on existing roads, may reduce off-road travel in two ways:

1. The increase in legal routes gives riders more legal options, and
2. It increases the potential to fund and effectively use OHV rangers in this area.

Cumulative Effects

A cumulative effect results from the incremental effect of the action, when added to the effects of other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes the other actions and regardless of land ownership on which the other actions occur. An individual action when considered alone may not have a significant effect, but when its effects are considered in sum with the effects of other past, present, and reasonably foreseeable future actions, the effects may be significant. They can occur when small, incremental amounts of habitat are lost (or gained) over time through a variety of management activities across a landscape (40 CFR 1508.7).

The areas considered for fisheries and hydrologic cumulative effects are Chewelah Creek down to its confluence with the Colville River, Smalle Creek with its confluence with Calispell Creek and Calispell, Tacoma and Ruby Creek drainages down to their confluences with the Pend Oreille River. The past, present, and reasonably foreseeable actions with potential effects overlapping with those activities in the proposed action, are considered in this cumulative effects analysis for fisheries and hydrology.

Proposed project activities could create sedimentation that could overlap in both space and time with ongoing National Forest System road, trail and facilities maintenance, and county road maintenance. This potential overlap would be short term, primarily during proposed project construction, and with conservation measures, would not result in measurable effects to fish, fish habitat, or hydrology. Long-term benefits of proposed activities in reducing future sediments may also overlap, but would not likely be measurable (or be inordinately difficult to quantify in terms of increasing fish population numbers, habitat quantity/quality), or water quality.



Figure 29 . Forest Road 4300471. Rutting and ‘high banking’ to get around a wet area.

Proposed activities could also affect routing of wood that could overlap with lingering effects from past ongoing road maintenance, and county road maintenance. However, the incremental benefits from improved routing of wood would not likely be measurable in terms of improvements to fish habitat quality or quantity, to fish populations, or to water quality.

Effects from activities in the proposed action would be measurable and therefore benefit fish and fish habitats. There would be a reduction in the cumulative impact the dispersed recreation sites have on the fish habitat in these cumulative effects areas especially in the North Fork Chewelah, North and Middle Forks Calispell, and Tacoma watersheds.

Temperature

Trout are very sensitive to temperature increases. The Riparian Management Objective is for no measurable increase in maximum water temperature. Maximum water temperatures should fall below 15°C within adult holding habitat and below 9°C within spawning and rearing habitats. The Forest uses the Washington State Standard of maximum 7 day average less than 16. Project activities that may increase stream temperatures include any activities that remove vegetative cover from the stream.

Large Woody Debris

Large Woody Debris is an important habitat and structural component for streams. The Riparian Management Objective is for more than 20 pieces per mile; greater than 12 inches diameter and greater than 35 feet long. Project activities that may reduce large woody debris include any activities that remove vegetative cover from the stream. Roads also decrease large woody debris by cutting off the RHCA and allowing access to wood cutters.

Width Depth Ratio

Width Depth Ratio is a measure of bank stability and a natural channel morphology. It is important in providing optimal habitat for inland native fish. The Riparian Management Objective is $WWD = \text{mean wetted width} / \text{mean wetted depth}$ less than 10. The Forest uses $BFWD = \text{Bankfull Width} / \text{Bankfull Depth}$ less than 13. Project activities may reduce bank cover leading to bank erosion including those that remove vegetative cover from the stream. Roads and the erosion from the roads may lead to excessive sedimentation causing over-widening. Undersized culverts can cause downstream erosion.

Pools Per Mile

Pools are an important component of fish habitat and are often the limiting factor in a trout stream. Pools are used for overwinter, cover, and rearing habitat. It is important in providing optimal habitat for inland native fish. The Riparian Management Objective is

- more than 56 pools per mile (ppm) for streams less than 20 feet wide or
- more than 26 ppm for streams 50 feet wide.

However this is rarely met on the Colville National Forest. Based on surveys, the stream average is 25 pools per mile. When the analysis was done different variables were considered such as channel type and were not found to be substantially different than using the overall average of 25. Project activities that may reduce pools per mile include the same activities that affect large woody debris and bankfull width to depth ratios. Large woody debris often creates pools. As a stream widens or down-cuts, pools are filled in or vanish completely.

Consistency with Laws, Regulations, Policy and the Forest Plan

All alternatives analyzed are consistent with the Clean Water Act, Forest Service policy and the 1988 Colville National Forest Land and Resource Management Plan, as amended by INFISH.

Soil

This is summarized from the Soil Report for the South End Motor Vehicle Management Project by Forest Soil Scientist Nancy Glines, and East Zone Soil Scientist Hillary Talbott-Williams dated July 2, 2010. The full report is available in the analysis files, located at the Newport District office.

Existing Condition

A common feature of many soils in the project area is volcanic ash. The volcanic ash has very low strength, and is easily moved, compacted, and rutted – especially when wet. When very dry, they become dusty. The ash-cap typically ranges from about 5-25 inches thick in this project area. Volcanic ash admix soils are stronger than ash-capped soils; they generally do not compact or rut as easily, and are not as dusty.

Soils and Landforms in the project area

Uplands

Upland landforms make up about half the project area. Soils in the uplands range from shallow on ridges and south facing slopes, to deep on glacial deposits on lower slope positions.

Most of the recreation is transitory. Dispersed camping is not a common use. Campsites are typically located on old roads or landings, because they are flat and clear of trees. All campsites receive light use; most appear to be used by hunters and for stargazing.

In these landforms, motorized recreation tends to be limited to existing roadbeds (including system roads, old unauthorized roads and ‘jeep trails’, old temporary roads, and old skid trails) because the side slopes are generally too steep. Areas of user-created OHV trails include Addy Mountain area and Power Peak. Pleasure driving, hunting and firewood gathering are other common uses.

Steep upland slopes are prone to erosion when the vegetation and litter is removed such as on a trail or in ruts.

Midlands

Midland landforms make up about forty-percent of the project area. The soil is deep, slopes are gentle, and wetlands are not uncommon. The ash-cap on these landforms is generally thick; these soils are easily rutted and compacted. These landforms were heavily homesteaded prior to the establishment of the National Forest. About half the homestead meadows within the project area are found on these landforms. Old homestead-era roads are found throughout these landforms.

The majority of motor vehicle recreation, including camping, occurs in the midland landforms. About 80% of the inventoried campsites are located on these landforms. These landforms are preferentially used because of the homestead meadows, gentle slopes and broken terrain, which makes creating a campsite easier; and provides nearby water features.

Moderate- to heavily-used campsites have become bare and compacted. It is not uncommon for some campsites and/or their access routes to be rutted and puddled from early camping. Once impacted, vegetation is slow to return and active restoration measures are generally needed to reduce compaction and restore porosity before healthy vegetation can be established.

User created trails are most common in the glacial moraine landform because of the gentle slopes. Lacustrine areas often are preferred for 'mud bogging' because of the clay. Observed 'play areas' in the Middle Fork Calispell Creek, Tacoma Creek, and Ruby Creek are found on these landforms.

Trails through these landforms commonly encounter both dry and wet conditions until mid-summer. Off-highway vehicle users often widen the trail or create by-passes at these wet spots, to avoid deep water and the unknown surface below. Some of these wet spots contribute sediment to streams, but most remains on site. Steep slopes are prone to erosion when the vegetation and litter is removed, such as on a trail or in ruts. These soils are prone to rutting, and erosion in ruts is accelerated. In very localized spots, poor infiltration and drainage further increases erosion on trails.

Lowlands and riparian areas

These landforms are similar to the midland landforms, but they are located in lower slope positions. While these landforms make up about 6% of the project area, they are the most heavily used and the most sensitive to recreation impacts. Soils on these landforms are deep. Wetlands and saturated soils are common. The ash-cap on these landforms is variable, but many of the valley bottoms have thick ashy deposits. These areas are easily rutted and compacted.

These landforms were heavily homesteaded prior to the establishment of the National Forest. Even though these landforms make about 6% of the project area, they contain about half the homestead meadows. Old homestead-era roads are also found throughout these landforms, especially along the major streams.

While making up about 6% of the planning area, 15% of the inventoried campsites are located here. These landforms are preferentially used because of the homestead meadows, gentle slopes and water features. Most of the camping is along the major creeks. In the wetter sites, the soil in all campsites has become compacted. Since these sites remain wet until late spring, ruts – sometimes deep ruts – are common. Because these areas have more moisture, they generally recover more quickly than the drier sites.

The drier campsites are similar to those in the lowland landforms. Moderate- to heavily-used campsites have become bare and compacted. Many campsites and/or their access routes are rutted and puddled from early camping. Once impacted, vegetation is slow to return and active restoration measures are generally needed to reduce compaction and restore porosity before healthy vegetation can be established.

'User created' trails are most common on the valley bottom landform. Wetlands are sometimes used for mudbogging. Many of the unauthorized and 'user created' trails may be old homestead roads; many are located along the creeks. These wet soils are easily rutted, and deep ruts can collect and channel water; changing the hydrology of the soil and sometimes effectively draining wetlands. These trails erode directly into the creek.

The drier parts of the meadows are less sensitive to rutting, but are easily compacted. Repeated traffic results in areas bare of vegetation and prone to erosion.

The soils on the outwash terraces are sandy, noncohesive, and very sensitive to erosion. Most of the illegal hill-climb play areas are located on outwash terraces. Off-highway vehicle hill-climbs on road cutbanks and steep slopes in this landform erode very quickly. Steep trails can become down-cut in just a few big rainfalls. Because of the coarse soil texture and low water holding capacity, these hill climb areas are difficult to vegetate and restore.

This landform is also where the heaviest grazing pressure occurs.



Figure 30. Aftermath: Mud bogging at Hartill Meadows Memorial weekend 2007. The area was fenced later that summer.

Effects of the Alternatives

Alternatives 1 and 2– No Change and No Action

The only difference between these two alternatives is the existing designated “Mixed Use” routes. OHV use on existing open roads appears to have no impact on soil productivity. The productive landbase is not affected.

Direct Effects

This alternative, by failing to control dispersed camping would continue to reduce soil productivity on about 50 acres. Over time, this acreage would increase, and most of the expected increase would occur on sensitive soils and landforms (meadows, wetlands, riparian areas).

Dispersed campsites can adversely impact soil productivity primarily through compaction, loss of forest floor and organic material, and through erosion. Detrimental soil conditions already occur in the existing dispersed campsites. A high percentage of the existing dispersed campsites are found on sensitive soils and landforms – meadows, along the edges of wetlands, and in riparian zones. With increasing populations and increasing demand, dispersed camping would continue to expand in sensitive areas.

Indirect Effects

The potential for off-road travel is about the same for both alternatives 1 and 2. An analysis of off-road travel in the South End planning area did not find off-road travel more common along the existing mixed use routes designated on the MVUM when compared with all other open roads.

Cumulative Effects

Both livestock and people love meadows – especially meadows with a stream meandering through it. Most of the meadows and riparian areas in this project area have been reviewed through the course of updating the livestock allotment plans (Cusick-Gardiner, Ruby, Chewelah Complex, and Calispell Allotments –Tacoma Creek has no grazing allotment).

While impacts in the wet areas look bad initially, wet meadows generally return to good condition within 1 year. Based on observations, the meadows at most risk of cumulative effects are the drier vegetation communities that are used for both dispersed camping and livestock grazing. Once impacted, the vegetation does not come back as quickly or as robust. Repeated use as dispersed campsites and livestock bedding areas⁴⁵ have created persistent bare areas and have provided a habitat for invasive weed species.

About 25 meadows are ‘at risk’ of cumulative effects – meadows contain well-used dispersed recreation sites and are known to be used by livestock. All are located along roads where dispersed camping would be designated. This alternative, by failing to control dispersed recreation would continue to experience cumulative effects from livestock and camping. Compaction would continue, soil productivity would continue to decline, and invasive weeds would continue to infest these meadows.

Alternative 3 – Proposed Action

Direct Effects

Roads, trails and trailheads are not part of the productive landbase. Activities within the road prism are not considered adverse impact to soil productivity.

Dispersed campsites can adversely impact soil productivity primarily through compaction, loss of forest floor and organic material, and through erosion. Detrimental soil conditions already occur in the existing dispersed campsites.

Impact to Productive Landbase

Regardless of soil type and site conditions, detrimental soil compaction and displacement always occurs on roads, trail and parking areas. The construction of these features is considered an ‘irreversible effect’ on soil productivity as described in 40 CFR 1502.16. Because of the long-term impact, these activities effectively remove land from the productive landbase.

Table 28. Impacts to the productive landbase

Activity	Amount	Acres
New OHV trails	1.9 miles	2
Trailheads	4 each	2
Parking pads at designated campsites	130	2
New campsites	2	1
Routes to designated campsites	700 ft	0.25
Improvements needed to adopt existing OHV trails	4.9	0.1
		7-8 acres

⁴⁵ Most of the livestock bedding areas observed have been dispersed campsites, reducing the cumulative impact.

Impacts to On-site Soil Productivity

Activities within the road prism are not considered adverse impact to soil productivity. Soil productivity would be improved on about 25 acres and reduced on about 1 acre.

Construction of Trails and Trailheads

Erosion and runoff from construction of new trails and trailheads would be contained in the short-term using construction erosion control practices like silt fences. In the long term, sediment would be contained through revegetation and bioswales. While construction of new trail and trailheads would affect the productive landbase, they would have no impact on site productivity.

Dispersed Camping

The roads along which camping would be restricted currently have resource damage stemming from overuse. These are mostly riparian meadows that are heavily used by both recreationists and livestock. Restricting camping to sites that are not too close to the creek and are out of sensitive wet areas would allow other parts of the meadows to recover. Within each designated campsite, soil compaction and bare soil can be expected to increase slightly with the focused recreation use.

This proposal would close and restore about 32 campsites, improving soil productivity on about 13 acres. Fifty-eight sites would be modified, and part of the existing campsites would be restored, improving soil productivity on about 12 acres.

The proposal would develop 16 new campsites. Fourteen of the campsites would be located in areas where soil quality is already degraded – the North Fork Chewelah Camping Area, old roads and landings. Two sites would be located on the edge of meadows in the Tacoma Creek drainage. The development of these two sites is expected to adversely impact soil productivity on about 1 acre.

Indirect Effects

The potential for adverse impacts from an increase in off-road travel

Based on the analysis of off-road travel, increasing the number of designated mixed use routes is not expected to increase the area impacted by off-road travel. Since the proposal emphasizes long loop routes and does not emphasize play areas or challenge trails, the increase in total OHV use is not expected to increase the areas impacted by off-road travel.

Play areas and hill climbs appear to be strongly associated with campsites and trailheads. By designating campsites in sensitive areas, the public may develop new campsites along the unconstrained roads. If the new campsites have the appropriate slope and landform conditions, new play areas and hill climbs may also be created. How many sites may be developed and where they would be located is speculative at this time.

Change in Erosion from a Change in Vehicle Traffic

The change in vehicle traffic from highway-legal vehicles to mixed use would not change erosion rates.

The proposal includes about 4.5 miles of existing unauthorized OHV routes. These trails are currently used. By adding these routes to the NFS trail system, use may increase – which could increase erosion. Conversely, as NFS trails they would be designed and maintained – improving water management and reducing erosion. In balance, erosion is not expected to change from the adoption of these trails.

About 8 miles of NFS roads that are currently closed to all vehicles would be opened to motorized vehicles. Currently, about 5 of the 8 miles receive light to moderate OHV traffic. The Water Erosion

Prediction Procedure model (WEPP) (USDA Forest Service, 2010) was used to estimate the difference in erosion from a change in traffic. The following table displays the range of erosion increase that would be expected with a change in traffic.

Table 29. Change in erosion and runoff from the change in vehicle use on existing closed roads

Grade	Distance Water Travels on the Roadway	Road Surface	No Traffic – Ave. Annual Loss in lbs	Percent Increase in road prism erosion	
				Low Traffic	High Traffic
4%	200 ft.	silt loam	41	325%	512%
4%	200 ft	sandy loam	15	200%	333%
4%	500 ft	silt loam	98	331%	668%

Vehicle traffic increases erosion from the roadbed by between 200 and 700%. Typically eroded material is redeposited below the roadway and does not adversely impact soil productivity. Sediment delivery is discussed in the Hydrology section of this chapter.

Benefits to be derived from improved education and enforcement

The primary impact from improved education and enforcement would be a reduction in off-road travel, and the potential to effectively restore play areas and hill climbs.

The education and enforcement plan includes education, enhanced enforcement, and physically blocking access to existing hill climbs and play areas. The effectiveness of this plan is unknown at this time. Based on this social analysis this plan would be more effective than the existing condition.

The Colville NF has a history of physically blocking hill climbs, with mixed results. The barriers installed in the Middle Fork Calispell project were repaired and replaced annually for the first 3-5 years. Damage to the wood fences has decreased with time, presumably as people got used to their presence and the memory of the hill climb faded. The fencing to stop the hill climb at Hartill Meadows has been successful. Most of the barriers placed along creeks in the Bartlett area have been successful.

If OHV play areas and hill climbs are stopped site productivity could be effectively addressed. Disturbed areas would be seeded, reducing erosion. Depending on slope, the disturbed area may be roughened, subsoiled, ripped or plowed prior to seeding, reducing compaction. With time, site productivity would improve.

Cumulative Effects

This project, by designating and limiting campsites, would reduce the impact of recreation on these meadows thereby reducing the overall cumulative effects.

Consistency with Laws, Regulations, Policy and the Forest Plan

All alternatives analyzed are consistent with Forest Service policy and the 1988 Colville National Forest Land and Resource Management Plan.

Wildlife Habitat

This is summarized from the Wildlife Report for the South End Motor Vehicle Management Project by Forest Wildlife Biologist Jim McGowan dated June 11, 2010. The full report is available in the analysis files, located at the Newport District office.

Existing Condition

Terrestrial wildlife habitat conditions on the Colville National Forest range in general from relatively open, dry forests on the west side to more moist, closed forests on the east side and in higher elevation areas. The Forest contains a mosaic of predominately coniferous timber types and age classes, ranging from early succession/stand initiation stages to old growth. Numerous openings (natural and man-made), wetlands, lakes and ponds, riparian areas, and small stands of deciduous trees and/or shrubs distributed across the Forest provide additional and important habitat diversity. Habitats within the South End project area are predominantly managed coniferous forests consisting of various age, size and density classes, interspersed with small openings, wetland and riparian areas, and openings as described above. The project area does not contain any designated Critical Habitat, nor is it part of any designated Recovery Area for any federally listed threatened or endangered species.

Management Indicator Species

Deer and Elk

The Forest Plan prescribes specific open road density standards for deer and elk winter range (Management Areas 6 and 8 – hereafter referred to as MA6/8). Disturbances in the winter months cause deer and elk to use stored nutrient reserves at a higher rate than normal. Road closures, both seasonal and permanent, are the primary techniques to limit vehicle access in MA6/8 during the winter. The Forest Plan standard for open road density in MA6/8 is no more than 1.5 miles of open road per square mile⁴⁶ between December 1 – March 30. The South End Planning Area has about 40,500 acres of MA6/8. The current open road density during the winter is 1.4 miles/square mile.

This project has the potential to change the winter open road density in MA6/8. People and vehicles are also a factor in the distribution and rate of spread of noxious weeds, which adversely impact big game winter range by displacing more desirable plant species and reducing overall forage availability. The effect of this project on weeds is described later in this chapter.

Barred Owls

Barred owls are the management indicator species representing other species that inhabit mature and/or old-growth forests. Forest Plan Management Area 1 (MA1) was developed to provide habitat for this species. Snags and down logs should be retained at their natural density. The South End planning area has 11 MA1 areas, totaling about 5,700 acres.

As with the pileated woodpecker, potential changes to public access for firewood gathering is the primary issue relative to this analysis because it can impact the Forest's ability to maintain desired habitat conditions within MA1 areas.

⁴⁶ Measured using GIS, averaging open roads over a 3 square mile area

Pileated Woodpeckers

Pileated woodpecker is a Management Indicator Species (MIS) representing species using mature and old-growth habitats within the Douglas-fir and cedar/hemlock timber types. Under the Forest Plan, “management requirement” (MR) areas to address the habitat needs of pileated woodpeckers would be established. The South End planning area has 6 pileated woodpecker management requirement areas, totaling 2,950 acres.

The issue relative to this analysis is the way each alternative impacts the Forest’s ability to maintain desired habitat conditions within the pileated woodpecker MR areas. It is primarily tied to potential changes in public access for firewood gathering.

Marten and Northern Three-toed Woodpeckers

Marten and Northern three-toed woodpeckers were selected as MIS to represent species using mature lodge pole pine and sub-alpine fir timber types. Under the Forest Plan, “management requirement” (MR) areas to address the habitat needs of these species would be established. Forty-four martin/3-toed woodpecker areas have been established within the South End planning area, totaling about 1,790 acres. Within these management requirement areas, the Forest Plan provides standards for larger snags (2 per acre), and down logs (6 per acre at least 12 inches diameter and 20 feet long).

Changes in public motorized access (firewood gathering) within the project area have bearing on the management of snags and downed logs in marten/three-toed woodpecker MR areas.

Beaver

Beaver were designated as an MIS representing species that use riparian areas dominated by aspen and willow. Beaver are widespread across the Colville National Forest, and play an important role in maintaining and enhancing riparian and aquatic ecosystems. Forest Plan standards and guidelines specify that beaver habitat will be maintained or enhanced.

Changes to motorized vehicle use adjacent to streams and ponds can potentially impact the Forest’s ability to manage beaver habitat.

Blue Grouse

Blue grouse were designated as a Management Indicator Species because winter habitat and brood habitat could be affected by vegetation management activities. Maintenance of brood habitat conditions around springs, ponds, seeps, streams, and other natural water sources is especially important for blue grouse. The Forest Plan standards require maintenance of hiding cover around at least 50% of the perimeter of springs or other water sources, with no breaks in cover exceeding 600 lineal feet along the water’s edge.

These conditions could be impacted by changes in off-road motorized vehicle use.

Franklin’s (Spruce) Grouse

This species was designated as a Management Indicator Species because of its reliance on young, dense lodgepole pine stands, with some mature spruce. The Forest Plan standards provide for retention of these young dense stands and provides direction that areas dominated by lodgepole pine stands be managed to maintain 20% in young age classes.

Changes to off-road vehicle use could potentially impact establishment of lodgepole pine stands following timber harvest and/or fire.

Other Woodpeckers

The remaining woodpecker species occurring on the Colville National Forest have been grouped as a single MIS representing cavity dependent species in all the diverse habitats of the Forest. Forest Plan standards require the maintenance of dead and defective trees in all habitat types, the retention of hardwood trees (aspen and cottonwood), retain at least 4 large snags per acre, retain at least a specific number⁴⁷ of down logs per acre (at least six feet long and > 12 inches diameter).

The maintenance of these habitat conditions for woodpeckers is strongly tied to the level of public access for firewood gathering.

Large Raptors and Great Blue Heron

The Forest Plan designated large raptors and great blue herons as MIS to monitor the effects of forest management activities on nest trees and nesting habitat. Riparian areas, especially those with hardwoods (i.e. cottonwood), are very important for some raptors and great blue herons. Forest Plan standards require nest sites, and the surrounding areas, to be managed to insure their continued usefulness to the respective species.

Changes to the amount of motorized public access within the project area has the potential to affect the Forest's ability to maintain suitable nest and roost trees and maintain minimal disturbance levels near nests.

Northern Bog Lemming

This MIS species occurs in high elevation bogs, meadows, and riparian areas (spruce-fir communities), and is known from only a few locations on the Colville National Forest. Because it occurs in very limited areas, changes in the amount of motorized access adjacent to suitable streams and other areas potentially impacts the Forest's ability to maintain habitat for this species.

Other Species

Waterfowl

The Forest Plan directs us to maintain or enhance waterfowl habitats. Small wetlands (i.e. wet meadows), beaver ponds, natural ponds and lakes, some stream reaches, and the uplands immediately adjacent to these areas may serve as locally important staging, breeding, and migratory sites for waterfowl.

Changes to the amount of motorized access adjacent to streams, ponds, and wetlands could potentially impact the Forest's ability to manage waterfowl habitat.

Migratory Landbirds

The Colville National Forest contains a variety of habitat types and conditions including upland and riparian forest habitats ranging from early succession to late succession forest stands; wetlands; open water; and nonforested areas. All of these diverse habitat types provide habitat for migratory birds.

Changes in the level of off-road motorized use has the potential to affect migratory bird habitat by removing suitable nesting and roosting vegetation and disturbing nesting birds during critical time periods.

⁴⁷ The number of down logs varies by vegetation type, ranging from 6 to 20.

Threatened, and Endangered Species

Grizzly bear

Important grizzly bear habitat, and most grizzly bear sightings, on the Colville National Forest fall within the Selkirk Recovery Zone as identified in the Grizzly Bear Recovery Plan. The South End planning area is located outside this Recovery Area. National Forest System lands outside of the designated Recovery Area are considered to fall under Management Situation 5 as described in the Interagency Grizzly Bear Guidelines. Most areas of the Forest (outside of the established recovery area) do not provide the level of solitude necessary to be considered good grizzly bear habitat. Confirmed grizzly bear sightings have occurred within the project area. Grizzly bears may potentially occupy or pass through any area of the Forest, but the probability is low. As mentioned above, grizzly bears are extremely sensitive to human disturbance.

Changes in off-road motorized vehicle use have the potential to disturb and/or displace grizzly bears.

Canada lynx

Current information suggests that lynx might not directly avoid or be displaced by most low-use forest roads; however changes in motorized access can still negatively affect lynx by allowing increased human disturbance in denning habitat and increased access for incidental or illegal hunting or trapping. The Lynx Conservation Assessment and Strategy guidelines recommend prioritizing roads for closure or seasonal restriction in areas within Lynx Analysis Units (LAUs) that have a road density of 2.0 miles/square mile or greater.

Unauthorized public motorized use affects the Forest's ability to maintain desirable road densities within lynx habitat.

Woodland caribou

Suitable caribou habitat, and almost all caribou sightings, on the Colville National Forest are limited to the Recovery Area. The South End planning area lies outside this Recovery Area. Activities occurring outside the Recovery Area boundary are considered to have a low potential to affect caribou.

Other Sensitive Species

The needs of other sensitive species were reviewed to identify species that may be affected by this project. The following species would not be affected by this project and therefore will not be described in detail.

- Meadow Fritillary
- Rosner's Hairstreak
- Great Basin Fritillary
- Fir Pinwheel
- Magnum Mantleslug
- Masked Dusksnail
- Northern Leopard Frog
- Harlequin Duck
- Eared Grebe
- Common Loon
- Sandhill Crane
- Bald Eagle
- Red-tailed Chipmunk
- Pygmy Shrew

White-headed Woodpecker

This species occupies older ponderosa pine habitats. The maintenance of habitat conditions for this woodpecker species is strongly tied to the level of public access for firewood gathering.

Peregrine Falcon

Essential habitat elements for peregrine falcons include nesting cliffs greater than 100 feet in height and large, open foraging areas with abundant bird populations. There are currently no active peregrine falcon nest sites on the Colville National Forest, but several areas have potential. Peregrine falcons are occasionally observed in the vicinity of the Colville National Forest during spring and/or fall migrations. Most of these sightings are along major river corridors, where the migrating peregrines are presumably hunting migrating waterfowl and other birds.

The primary focus of management regarding the peregrine falcon is on protection and enhancement of essential breeding habitat, primarily at and around known cliff nesting sites. Off-road motorized vehicle use in these areas could be disruptive to peregrine falcon nesting activities.

Great Gray Owl

The great gray owl is a bird of dense, northern boreal forests. Nest site and prey availability appear to be limiting factors for great gray owls. Nests occur most often in mature and older forests. Forest Service policy is to avoid or minimize impacts to species whose viability has been identified as a concern.

Off-road motorized use can potentially disrupt great gray owl nesting activities and/or displace these birds from suitable habitat.

Gray Wolf

The Forest Plan requires wolf monitoring, and protection of any resident wolves. Wolf sightings are occasionally reported from throughout the Colville National Forest. At present, there is only one verified wolf pack on the Colville National Forest; well outside the South End planning area.

For purposes of this analysis, it is assumed that single, transient wolves moving within large land areas could potentially use any portion of the Colville National Forest, including this area. Specific surveys to determine presence of wolves within the project area were not considered necessary for this analysis. Throughout the Colville National Forest, elk, moose, mule deer and white-tailed deer comprise the bulk of the available ungulate prey base, but other wildlife species may provide alternate prey. Many areas of the Forest provide adequate seclusion for wolves.

Motorized public access potentially affects the use and availability of habitats and the distribution of wolves and their prey within the Colville National Forest.

California Wolverine

Wolverines are solitary, highly mobile animals that utilize a variety of habitat types and conditions. Wolverine sightings on the Colville are infrequent. Wolverine sightings on the Colville are infrequent. Wolverine sightings on the Colville are infrequent. Wolverine sightings on the Colville are infrequent.

Activities that promote or maintain abundance and diversity in small mammal populations and healthy big game winter ranges will favor wolverine use. The retention of undisturbed habitat adjacent to managed timber stands and travel corridors will enhance wolverine movements through managed areas.

Fisher

Fishers are generalist predators that feed on a variety of small to medium-sized birds, mammals, and carrion. Fisher populations are extremely low in Washington and their current population status on the Colville National Forest is unknown but presumed at or near zero.

Firewood gathering has some potential to adversely impact fishers and their habitat.

Townsend's Big-eared Bat

Townsend's big-eared bats may occupy almost any type of habitat, from grasslands to mixed conifer forest. This bat roosts and hibernates in unoccupied buildings, caves or mine shafts. It may also summer roost in holes in snags. The Forest Plan requires special consideration or protection of unique habitats, such as caves, mine shafts and old buildings potentially used by big-eared bats.

Unauthorized motorized use near these habitat features has the potential to disturb and/or displace big-eared bats during critical time periods.

Effects of the Alternatives

The effects of motorized vehicle use on the wildlife species of interest fall into three basic categories:

- Disturbance and/or displacement of the species from suitable habitat(s) during critical time periods that could potentially affect the ability of individual animals to reproduce or survive. This would also include the loss of individual animals through illegal hunting or trapping.
- Damage to important habitats or habitat components that are essential for the species, could potentially eliminate the species from certain areas, affecting the overall distribution of the species on the Forest.
- Destruction or removal of important habitat components (snags and downed logs) in excess of those required to meet Forest Plan objectives and/or standards.

Alternative 1– No Change

Under alternative 1, the Colville National Forest would continue to manage motorized recreation within the project area under the current OHV designated system of roads and trails (as depicted on the 2010 Motor Vehicle Use Map), dispersed camping could continue within 300 feet of designated-open motor vehicle routes, and the rehabilitation of OHV or dispersed camping-associated resource impacts would not occur.

There would be essentially no improvement in existing habitat conditions for any species addressed in this analysis. Because rehabilitation of damaged riparian and meadow habitats associated with dispersed camping would not occur, there would be a continual decline in the overall habitat quality at these sites over time.

Table 15 shows wildlife species where the effects are the same for all alternatives. The following section (page 106) discusses the effects to species where the effects vary by alternative.

Alternative 2 – No Action

Under this alternative mixed use would not be allowed on NFS roads. The Batey-Bould Motorcycle and Middle Fork OHV trails would remain.

Under alternative 2, nonhighway legal OHV use would no longer occur in the project area. Dispersed camping would continue to be limited to 300 feet from designated-open motor vehicle routes, but

would occur only without association with nonhighway legal OHV use (because nonhighway legal OHV use would not occur). Rehabilitation of OHV or dispersed camping-associated resource impacts would not occur.

There would be essentially no improvement in existing habitat conditions for any species addressed in this analysis. Because rehabilitation of damaged riparian and meadow habitats associated with dispersed camping would not occur, there would be a continual decline in the overall habitat quality at these sites over time.

Alternative 3 – Proposed Action

Under alternative 3, there would be an increase in the number of open (year-round and/or seasonal) roads where mixed use would be allowed. There would be a 13-mile net increase in the total mileage of motorized routes. Additional measures would be put in place to control dispersed camping adjacent to creeks, riparian habitats, and other sensitive areas. Rehabilitation of damaged campsites and unauthorized OHV trails would occur in several locations.

There would be some improvement in existing habitat conditions for species associated with meadow and riparian habitats due to the rehabilitation of damaged sites associated with dispersed camping and unauthorized vehicle use.

Wildlife Species where the Effects are the Same for All Alternatives

Table 30 Wildlife species where the effects are the same for all alternatives

Species	Effects
Deer and Elk	None of the alternatives would result in a change in open road density in Management Areas 6 and 8. Seasonal closures would continue to be used to regulate vehicle use impacts to winter range areas. Forest Plan open road density standards would continue to be met for Management Areas 6 and 8. Noxious weeds would continue to be managed under existing programs. No adverse or cumulative effects to existing winter range habitat conditions are expected under all alternatives.
Large Raptors and Great Blue Heron	No changes to raptor or great blue heron habitat conditions are expected under this alternative. There would be no adverse or cumulative effects as a result of all alternatives.
Franklin’s (Spruce) Grouse	No changes to spruce grouse habitat conditions are expected under all alternatives. There would be no adverse or cumulative effects as a result of all alternatives.
Canada Lynx	There would be no changes to existing road densities or seasons of use within the project area under all alternatives. No negative or cumulative effects to existing lynx habitat conditions are anticipated.
Townsend’s Big-eared Bat	None of the alternatives would change the distribution or abundance of big-eared bat habitat within the project area, and would not create any adverse or cumulative effects to existing habitat conditions for this species within the project area.

Wildlife Species where the Effects Differ by Alternative

For the following species, effects differ by alternative. The primary causes of the different effects are:

- The potential for changes in firewood gathering
- Changes in overall access
- Changes in dispersed camping

Pileated Woodpeckers; Barred Owls; Marten and Northern Three-toed Woodpeckers, White-headed Woodpeckers, and other Woodpeckers

Effects of Alternatives 1 and 2

There would be no changes to the existing level of public access for firewood gathering . Although demand for firewood can vary over time, these alternatives would not create any additional adverse or cumulative effects to existing habitat conditions for these Management Indicator and Sensitive Species within the project area.

Effects of Alternative 3

Although there would be an increase in the total mileage of motorized routes under this alternative, the new routes would not be open to full sized vehicles. Therefore, the existing level of public access for firewood gathering is not expected to change. Although demand for firewood can vary over time, this alternative would not create any additional adverse or cumulative effects to existing habitat conditions for these Management Indicator and Sensitive Species within the project area.

Fisher

Effects of Alternatives 1 and 2

Potential disturbances adjacent to roads associated with motor vehicle use would continue to occur, but the total area impacted is not expected to increase. There would be no changes to the existing level of public access for firewood gathering . Although demand for firewood can vary over time, these alternatives would not create any additional adverse or cumulative effects to existing habitat conditions for fisher within the project area.

Effects of Alternative 3

Although there would be an increase in the total mileage of motorized routes under this alternative, the new routes would not be open to full sized vehicles. Therefore, the existing level of public access for firewood gathering is not expected to change. Although demand for firewood can vary over time, this alternative would not create any additional adverse or cumulative effects to existing habitat conditions for fisher within the project area.

Migratory Landbirds

Effects of Alternatives 1 and 2

Disturbances adjacent to roads associated with motor vehicle use would continue to occur, but the total area impacted is not expected to increase. There would be no changes to the existing level of public access for firewood gathering . Although demand for firewood can vary over time, these alternatives would not create any additional adverse or cumulative effects to existing habitat conditions for migratory landbirds requiring snags and/or downed logs within the project area.

Many migratory landbirds are associated with riparian and open habitats. Without closure and rehabilitation of some dispersed camping sites, the existing problems with soil compaction and other damage to these areas would continue. These alternatives have potential to have negative effects on migratory landbird habitat conditions within the project area. Over time, the cumulative effect would be a reduced capacity for the project area to support these species.

Effects of Alternative 3

Disturbances adjacent to roads associated with motor vehicle use would continue to occur, and total area impacted would increase slightly with the addition of new routes for OHV use. There would be no changes to the existing level of public access for **firewood gathering**. Although demand for firewood can vary over time, this alternative is not expected to create any additional adverse or cumulative effects to existing habitat conditions for migratory landbirds requiring snags and/or downed logs within the project area.

Many migratory landbirds (especially those currently undergoing the biggest population declines over their range) are associated with riparian and open habitats. With the closure and rehabilitation of some **dispersed camping** sites, the existing problems with soil compaction and other damage to these areas would be corrected. Overall, this alternative has potential to have positive effects on migratory landbird habitat conditions within the project area. Over time, the cumulative effect would be an increased capacity for the project area to support these species.

Beaver; Blue Grouse

Effects of Alternatives 1 and 2

Without closure and rehabilitation of some dispersed camping sites, the existing problems with soil compaction and other damage to riparian areas and stream banks would continue. These alternatives have potential to have negative effects on beaver habitat conditions within the project area. Over time, the cumulative effect would be a reduced capacity for the project area to support beaver and blue grouse.

Effects of Alternative 3

After the closure and rehabilitation of some **dispersed camping** sites, some existing problems with soil compaction and other damage to riparian areas and stream banks would be eliminated. This alternative has potential to have positive effects on beaver habitat conditions within the project area. Over time, the cumulative effect would be an increased capacity for the project area to support beaver and blue grouse.

Northern Bog Lemming

Effects of Alternatives 1 and 2

Although potential bog lemming habitat within the project area is limited, without closure and rehabilitation of some dispersed camping sites, any existing problems with soil compaction and other damage to riparian areas and stream banks within suitable habitat would continue. These alternatives have potential to have negative effects on bog lemming habitat conditions within the project area. Over time, the cumulative effect would be a reduced capacity for the project area to support bog lemmings

Effects of Alternative 3

Although potential bog lemming habitat within the project area is limited, the closure and rehabilitation of some **dispersed camping** sites would eliminate some existing problems with soil compaction and other damage along riparian areas and stream banks within suitable habitat. This alternative has potential to have positive effects on bog lemming habitat conditions within the project area. Over time, the cumulative effect would be an increased capacity for the project area to support bog lemmings

Waterfowl

Effects of Alternatives 1 and 2

Although potential waterfowl nesting habitat within the project area is limited, without closure and/or rehabilitation of some dispersed camping sites (such as Phillips Lake), any existing problems with soil compaction and other damage to riparian areas and adjacent uplands within suitable habitat would continue. These alternatives have potential to have negative effects on waterfowl nesting habitat conditions within the project area. Over time, the cumulative effect would be a reduced capacity for the project area to support nesting waterfowl.

Effects of Alternative 3

Although potential waterfowl nesting habitat within the project area is limited, the closure and rehabilitation of some **dispersed camping** sites, (such as Phillips Lake), has potential to have positive effects on waterfowl habitat conditions within the project area. Over time, the cumulative effect would be an increased capacity for the project area to support waterfowl.

Great Gray Owl

Effects of Alternatives 1 and 2

Without closure and rehabilitation of some dispersed camping sites, the existing problems with soil compaction and other damage to meadows and riparian areas within suitable great gray owl habitat would continue. These alternatives have potential to have negative effects on great gray owl habitat conditions within the project area. Over time, the cumulative effect would be a reduced capacity for the project area to support great gray owls.

Effects of Alternative 3

After the closure and rehabilitation of some **dispersed camping** sites, some existing problems with soil compaction and other damage to meadows and riparian areas would be eliminated. This alternative has potential to have positive effects on great gray owl habitat conditions within the project area. Over time, the cumulative effect would be an increased capacity for the project area to support great gray owls.

Grizzly Bear

Effects of Alternatives 1 and 2

The potential to disturb or displace any grizzly bears within the project area would continue at existing levels, however because the project area is not managed to provide grizzly bear habitat security, the implementation of these alternatives would not have any negative or cumulative effects on grizzly bear recovery efforts.

Effects of Alternative 3

The potential to disturb or displace any grizzly bears within the project area would continue at slightly increased levels with the **addition of new OHV routes**. However the project area is not managed to provide grizzly bear habitat security, therefore, the implementation of this alternative would not have any negative or cumulative effects on grizzly bear recovery efforts.

Gray Wolves

Effects of Alternatives 1 and 2

Currently, wolves are not known to occur within the project area, and no pack activity has been reported in the project area. These alternatives are not expected to preclude any future occupancy by wolves. The availability and distribution of primary prey species (ungulates) is expected to remain relatively unchanged, however, habitat conditions for alternate prey species, such as beaver, may decline slightly over time as impacts to some riparian habitats continue. This is unlikely to adversely impact wolves because these areas are also associated with higher levels of human use, and are likely avoided by wolves. Potential disturbances adjacent to roads associated with motor vehicle use would also continue to occur, but the total area impacted is not expected to increase. There should be no change in the level of seclusion opportunities. These alternatives are not expected to have any adverse or cumulative effects to wolves.

Effects of Alternative 3

Currently, wolves are not known to occur within the project area, and no pack activity has been reported in the project area. This alternative is not expected to preclude any future occupancy by wolves. The availability and distribution of primary prey species (ungulates) is expected to remain relatively unchanged. Although habitat conditions for alternate prey species, such as beaver, may improve slightly over time as impacts to some riparian habitats are repaired, this is unlikely to affect or improve conditions for wolves because these areas are also associated with **higher levels of human use**, and are likely avoided by wolves. Potential disturbances adjacent to roads associated with motor vehicle use would also increase slightly, but not to the extent that wolves are displaced for large areas of suitable habitat. There would be little change in the overall level of seclusion opportunities. This alternative is not expected to have any adverse or cumulative effects to wolves.

California Wolverine

Effects of Alternatives 1 and 2

Potential disturbances adjacent to roads associated with motor vehicle use would continue to occur, but the total area impacted is not expected to increase. There should be no change in the level of seclusion opportunities. The distribution and abundance of prey (big game, small mammals, carrion) is expected to remain similar to current conditions. These alternatives are not expected to have any adverse or cumulative effects to wolverines

Effects of Alternative 3

Potential disturbances adjacent to roads associated with motor vehicle use would increase slightly, but the total area of suitable or potential wolverine habitat being impacted is not expected to increase. There should be little change in the level of seclusion opportunities. The distribution and abundance of prey (big game, small mammals, carrion) is expected to remain similar to current conditions. This alternative is not expected to have any adverse or cumulative effects to wolverines

Consistency with Laws, Regulations, Policy and the Forest Plan

All alternatives analyzed are consistent with Forest Service policy and the 1988 Colville National Forest Land and Resource Management Plan.

All of the alternatives meet the Forest Plan standards for management indicator wildlife species. Open road density in Management Areas 6 and 8 would remain the same. None of the alternatives impact

large raptors, great blue heron, or Franklin's grouse. The primary impact to barred owl, marten, some migratory landbirds, and woodpeckers is from firewood gathering. The proposed action would not increase access for firewood gathering, therefore would have no impact on these species. By addressing dispersed camping in riparian areas, the proposed action would improve habitat for beaver, blue grouse, some migratory landbirds, bog lemming and waterfowl.

All alternatives meet the recovery plans for species listed under the Endangered Species Act. None of the alternatives change road density or season of use in the lynx management areas. Though the proposal would slightly increase the potential to displace or disturb grizzly bears, all alternatives would continue to meet the grizzly bear recovery plan.

Sensitive Plants

This is summarized from the Sensitive Plants Report for the South End Motor Vehicle Management Project by Kathy Ahlenslager dated July 19, 2010. The full report is available in the analysis files, located at the Newport District office.

Existing Condition

No federally listed threatened or endangered plants or plants proposed for federal listing are known to occur in the South End planning area (USDI Fish and Wildlife Service).

Forty-five plant species listed on the Regional Forester's Sensitive Species List (2008) are documented or suspected for the Colville National Forest. Eleven are known from the project area: Nuttall's pussy-toes (*Antennaria parvifolia*), crenulate moonwort (*Botrychium crenulatum*), western moonwort (*Botrychium hesperium*), two-spiked moonwort (*B. paradoxum*), bulb-bearing water hemlock, (*Cicuta bulbifera*), crested shield fern (*Dryopteris cristata*), water avens (*Geum rivale*), treelike clubmoss (*Lycopodium dendroideum*), black snake-root (*Sanicula marilandica*), blue-eyed grass (*Sisyrinchium septentrionale*), and kidney-leaved violet (*Viola renifolia*). Potential habitat exists in the planning area for 39 suspected sensitive plant species.

During the pre-field review, species that normally occur well below the elevation range of the project area, or those where typical habitat is not present are omitted from further analysis. Field reconnaissance is limited to areas within, adjacent or near the project area where proposed ground disturbing activities may affect sensitive plant species. Intuitive-controlled sensitive plant surveys were conducted in 2010 on April 22nd and May 11th.

The intuitive-controlled method first involves walking through the project area and the perimeter of the potential habitat. Next, the surveyor conducts a complete examination of specific areas of the project or walks more than once through the area. No new sensitive plant sites were found through project surveys.

Effects of the Alternatives

Alternatives 1 and 2 – No Action and No Change

There would be no new management related changes to the existing management activities. On-going activities would continue. No new activities would be initiated to accomplish proposed project goals. The effects of these alternatives may impact individual sensitive plants, but are not likely to result in a trend to federal listing or loss of viability of any sensitive plant species.

Alternative 3 – Proposed Action

Camping would only be allowed at designated sites. Motorized vehicles, including off-highway vehicles, would be limited to the roadway. Routes to campsites and parking for campsites would be designated on the ground. This alternative would designate 130 campsites along the restricted roads. About half would be designated, 'as is,' and about half would require restoration before designation. About 20 new sites would be developed and designated. About 40 campsites would be closed to further use. The public would continue to be able to travel 300 feet from the centerline of the open roads for the purposes of dispersed camping. No sensitive plant sites are known to occur at any of the areas proposed for ground disturbing activities.

Noxious weeds would be treated prior to disturbances from any proposed activities. If the design criteria and mitigation measures proposed for noxious weed control for this project area are implemented, then the proposed treatments and other activities should not vastly increase noxious weed distribution, and so not affect sensitive plant populations. The effects of the proposed action may impact individual sensitive plants, but are not likely to result in a trend to federal listing or loss of viability of any sensitive plant (vascular or nonvascular) species.

Cumulative Effects

The combined effects of OHV use, timber harvest, prescribed fires, cattle grazing, noxious weeds, and hazardous tree removal could negatively affect sensitive plant species over their ranges. As designed, no negative cumulative effects are anticipated from this project.

As designed, the South End project may have an impact on individuals, but is not likely to cause a trend to federal listing or loss of viability. Adherence to Forest Plan standards and guidelines will prevent adverse effects to sensitive plants. There are no irreversible or irretrievable effects associated with the South End project.

Consistency with Laws, Regulations, Policy and the Forest Plan

All alternatives analyzed are consistent with Forest Service policy and the 1988 Colville National Forest Land and Resource Management Plan.

Noxious Weeds

This is summarized from the Weeds and Range Report for the South End Motor Vehicle Management Project by Chase Bolyard dated July 19, 2010. The full reports are available in the analysis files, located at the Newport District office.

Existing Condition

Weed populations are common and well established within the project area. Weed species that are prevalent throughout the project area include: diffuse knapweed, spotted knapweed, orange and yellow hawkweeds, Dalmatian toadflax, hounds tongue, St. John's wort, oxeye daisy, sulfur cinquefoil, and others. Weed populations are treated regularly on National Forest lands using an Integrated Pest Management (IPM) approach. Treatment methods can include herbicide application, hand pulling, seeding of native species, introduction of natural predators, and others. Treatments of weed species in the project area have been focused on travel routes and open areas to try and prevent further spread of

invasive weeds. Populations of invasive weeds will continue to be treated in the future to further prevent the spread and establishment of invasive weeds.

There are a variety of vegetation communities within the project area that include but are not limited to: dry communities characterized by Douglas-fir and ponderosa pine with an understory of ninebark, snowberry and ceanothus and a variety of grasses and forbs; moist communities characterized by mixed conifer stands containing fir, larch, western hemlock, western redcedar, whitebark pine with shrub dominated understories; homestead meadows containing a variety of grasses and forbs; and riparian communities containing sedges, forbs, sphagnum mosses and shrubs. Invasive weed populations occur mostly in more open communities or those that have been subjected to recent disturbance, but can also occur in more moist or high elevation communities as well.

Effects of the Alternatives

Alternatives 1 and 2 – No Change and No Action

Under alternatives 1 and 2 the potential for ground disturbing activities would be much less, decreasing the likelihood of new populations of weeds establishing. Those populations and species present within the project area still have the potential to expand or spread to new locations. By adhering to management practices under management objectives 1 (education), 3 (minimize transportation of weed seed), and 8 (monitor) of the Colville National Forest Weed Prevention Guidelines, noxious weed populations are not likely to spread substantially and could likely decrease.

Continued use of motor vehicles of all types has potential to spread noxious weed seeds within the project area. Unauthorized motor vehicle use behind closure devices can allow new populations to establish in areas that are more difficult and expensive to treat.

Alternative 3 – Proposed Action

New road construction, road reconstruction and road decommissioning produce areas that have the greatest risk for noxious weed establishment. These activities create substantial and often continuous areas of disturbance where nearly all native vegetation is removed and mineral soil is left exposed without desirable vegetation to colonize the area. Disturbed areas create a seedbed readily susceptible to noxious weed invasion. Within the project area, there is an anticipated 7.5 miles of new construction or reconstruction proposed under the Power Lake project which has the potential to become infested with noxious weeds.

By adhering to management practices under management objectives 3 (minimize transportation of weed seed), 5 (pre-activity inventory and analysis), 6 (minimize ground disturbance and the exposure of mineral soil during project activities), and 7 (revegetate disturbed areas) of the Colville National Forest Weed Prevention Guidelines, noxious weed populations are not likely to spread substantially and could likely decrease. A decrease in the total number of acres infested with noxious weeds could be realized due to control efforts and mitigating measures within the project area.

Cumulative Effects

Legal OHV activities would have little cumulative effect on noxious weed spread or management. Since noxious weeds are often spread by motorized vehicles, effective road closures and/or decommissioning are very important in limiting the extent of noxious weed infestations. Temporary roads and those scheduled to be decommissioned and/or closed would need to have effective closure methods employed to ensure that vehicle traffic cannot access these areas. If roads do not have effective

closures in place that effectively limit motorized access, these types of roads and the areas they service have the potential to become infested with noxious weeds. This is especially true when off-road vehicles are able to breach barriers and transport noxious weed seed to the areas behind closure devices, thereby establishing noxious weed populations. Areas such as this are often very difficult and expensive to treat because truck mounted boom-type sprayers cannot go beyond earthen berm closures.

Consistency with Laws, Regulations, Policy and the Forest Plan

All alternatives analyzed are consistent with Forest Service policy and the 1988 Colville National Forest Land and Resource Management Plan.

Range Management

This is summarized from the Weeds and Range Report for the South End Motor Vehicle Management Project by Chase Bolyard dated July 19, 2010. The full reports are available in the analysis files, located at the Newport District office.

Existing Condition

The 7 grazing allotments within the South End OHV project area are all active allotments and managed by 8 permittees. All of the allotments are cattle grazing allotments with varying management strategies and seasons of use. The grazing season starts on June 1 for all the allotments, and ends on September 30 for Cliff Ridge, South Fork Chewelah Creek, Calispell Creek, Cusick-Gardiner, and Ruby Creek with an October 15 end date for North Fork Chewelah Creek and Twelvemile Creek. Cattle are moved or allowed to drift throughout the allotments during the grazing season as directed by management objectives set in the Annual Operating Instructions (AOIs) and as desired utilization levels are met.

The South End OHV project area boundary overlaps entirely with the allotment boundaries of the following allotments: Calispell Creek, Cliff Ridge, Cusick-Gardiner, North Fork Chewelah Creek, South Fork Chewelah Creek, and Twelvemile Creek. The project boundary also overlaps with the southernmost portion of the Ruby Creek allotment.

Effects of the Alternatives

The Travel Management Rule allows permit holders to use all-terrain vehicles off roads and trails, and on otherwise closed roads, if allowed under the permit. If a permittee believes they need to use an all-terrain vehicle to access dead or injured livestock, or to access range improvements (e.g., to carry pipe to replace a spring development), access may be granted by the District Ranger under the existing grazing permits.

Alternatives 1 and 2 – No Change and No Action

The effects of alternatives 1 and 2 on grazing allotments and cattle management would be minimal. Since both cattle grazing and OHV use are currently occurring within the project area, under alternative 1 these activities would continue to occur as they have in the past. If new unauthorized routes were created that cross allotment or pasture boundaries undesired cattle drift may occur.

Alternative 3 – Proposed Action

Of the 15 projects proposed under the proposed action, three have the potential to affect cattle grazing and allotment administration. The majority of the projects included under the proposed action would have little to no effect on cattle allotment administration and grazing activities.

Forest Road 9521017

Included in the proposals under this project is a change in road use designation on Forest Road 9521017 from closed road to OHV use only. The northwest end of this road in T. 33 N., R. 41 E. Sec. 6 SWSW terminates at the allotment boundary for the North Fork Chewelah Creek allotment. Opening this road to OHV use may allow for cattle to drift off the allotment and onto private lands.

Connector FR 9521139 and 9545901

One proposal under this project includes converting an unauthorized route to an OHV trail between roads 9521139 and 9545901 in T. 34 N., R. 41 E. Sec.35 S1/2. This route crosses a proposed drift fence in the Pal Moore Pasture of the North Fork Chewelah Creek grazing allotment that is going to be constructed under the Chewelah Grazing Complex EA (USDA Forest Service, 2009).

Another proposal under this project is a change in road use on road 9545900 in T. 34 N., R. 41 E. Sec.36 SESE from highway legal vehicles only to mixed use. This route is currently gated near the intersection with the 9545 road. The gate is part of a pasture boundary fence between the Pal Moore and Calispell pastures of the North Fork Chewelah Creek grazing allotment.

Connector FR 4300470 and 4300471

This project proposes to open a closed portion of the 4300470 road in T. 34 N., R. 42 E. Sec. 1 N ½ and construct a new OHV trail to tie into the 4300471 road in T. 34 N., R. 42 E. Sec.2 NENE. The allotment boundary of the Calispell Creek Allotment follows the ridgeline immediately adjacent to the end of the 4300470 road.

Cumulative Effects

No adverse cumulative effects are anticipated.

Consistency with Laws, Regulations, Policy and the Forest Plan

All alternatives analyzed are consistent with Forest Service policy and the 1988 Colville National Forest Land and Resource Management Plan.

Heritage Resources

This is summarized from the Heritage Resources Report for the South End Motor Vehicle Management Project by Forest Archeologist Steve Kramer dated October 21, 2010. The full report is available in the analysis files, located at the Newport District office.

Existing Condition

American Indian Influence

Ethnographic investigation has permitted certain generalities about the region. During the past 6,000 years, the region has been utilized by diverse groups of people for a variety of activities. The project area lies within the traditional use area of the Kalispel Tribe. The Kalispel is a sub-group of the Salishan speaking groups which include the following cultural traditions: Wenatchee, Columbia, Chelan, Methow, Okanogan, Nespelem, Sanpoil, Spokane, Coeur D'Alene, Colville, Lakes and Kalispel. Ethnographic accounts indicate that the Pend Oreille River Valley, specifically, the eastern edge of Colville National Forest may have also been utilized by the Kootenai, Spokane and Colville tribes (Kennedy, et al., 1998), (Lahren, 1998). Native people of the region ranged freely over the hills and valleys hunting and gathering. Compared with many other areas of the Pacific Northwest, the numbers of native peoples living in Pend Oreille County were relatively small. Ethnographic accounts indicate that the Kalispel practiced wintertime deer drives and maintained resident fisheries along the Pend Oreille River. In addition to hunting deer and fishing, the Kalispel harvested camas (*Camassia* sp) (Lahren 1998).

Euro-American

The project area was largely unoccupied by Nonnative Americans until the middle of the Nineteenth century. The mid-1800s began a period of settlement and development of lumber, mining and agriculture industries.

Beginning in 1821, the Hudson Bay Trading Company had great influence in the Colville and Pend Oreille Valley regions; this influence lasted through to the late 1800s. The Hudson Bay Trading Company was the largest trade outpost in the region serving parts of Washington, Idaho, Montana, and Canada. The company also maintained a cadre of trappers, and purchased furs from Native Americans and free-lance trappers. Under the influence/guidance of the Hudson Bay Trading Company, many trails were created to facilitate trade within the region. The presence of the Hudson Bay Trading Company induced cultural changes in both Euro-American and First Nation Communities alike (Chance, 1973). In 1809, David Thompson of the North West Company was the first trader to make contact with the Kalispel (Thoms, 1987). Thompson traded ironworks (knives, awls, guns, etc.) for beaver pelts.

By the late 19th century, homesteading and extractive industries (mining, logging) became more prevalent in the project area. Settlers in the late 1880s introduced the timber industry into the area. With the timber industry and the passage of the Forest Homestead Act in 1906, homesteaders moved into the project area (Bamonte, et al., 1996). The Forest Homestead Act allowed for 160-acre homesteads on reserved forest lands. Under the Act the land parcels were supposed to have agricultural potential, but much of the land was rocky and unsuitable for farming. Settlers in the area found that timber harvest was much more profitable than farming (*ibid*).

Historic Properties

There are four hundred two (402) identified historic properties within the proposed project area. Two hundred forty-five (245) properties have the potential to be affected by the project.

Past management practices have not evaluated these properties for eligibility to the National Register of Historic Places (NRHP). Historic properties that are unevaluated are managed as if eligible, and mitigations for these properties would follow management prescriptions as specified in the mitigations section. Currently the Heritage Program management attempts to relocate sites, monitor the sites for damage/deterioration, evaluate the sites for NRHP eligibility, and preserve/protect the sites.

Effects of the Alternatives

Alternatives 1 and 2 – No Change and No Action

Historic properties within the planning area would continue to degrade due to natural processes. Unlawful access to historic properties under these alternatives would continue, with the potential for looting, defacement, and/or destruction of these properties.

Alternative 3 – Proposed Action

Under the proposed action, historic properties within the planning area would be afforded better protection through managed recreation. The proposed 300 foot from road centerline limit for dispersed camping would not impact any known historic properties within the planning area. The inclusion of 5.7 miles of user created/unauthorized trails and the creation of 1.7 miles of new trail would not affect any known historic properties within the planning area.

Cumulative Effects

Past management practices within the planning areas include timber harvest, road construction, recreation management, fisheries and wildlife improvement, fire suppression, and range management. Foreseeable future management practices would likely include the same types of actions.

Cumulative effects of past management practices likely have some effect on historic properties, mostly due to aggressive fire suppression, historic fire patterns, and the continued buildup of fuels. This buildup of fuels has the potential to affect historic properties through stand-replacing wildland fire. None of the proposed actions for this undertaking would mitigate for past management practices.

Cumulative effects of foreseeable future management practices would likely be beneficial to the protection of historic properties in that the cultural resource program would be involved in providing input to line officers regarding future practices that should allow for added protection. None of the proposed actions for this undertaking would consist of negative cumulative effects to historic properties.

The cumulative effects of this proposed action are most likely to be beneficial to historic properties through enhanced protection of these properties.

Consistency with Laws, Regulations, Policy and the Forest Plan

All alternatives analyzed are consistent with Federal, State, and local laws and regulations. The alternatives are consistent with Forest Service policy and the 1988 Colville National Forest Land and Resource Management Plan.

Fire

This is summarized from the Fire, Fuels and Air Quality Report for the South End Motor Vehicle Management Project by Shane Robson and Brian Hicks dated March 25, 2011. The full report is available in the analysis files, located at the Newport District office.

Existing Condition

Fire Risk

High departure from historic disturbance patterns increases the risk of uncharacteristic wildfires, especially in the low-severity and mixed-severity fire regimes.

Fire regime refers to the natural disturbance pattern integrating fire frequency, severity and other factors (Havlina, et al., 2010). This planning area has 3 fire regimes.

- Frequent (0-35 years), low severity fires -- 45% of the planning area.
- Medium frequency (35-100 years), medium and mixed severity – 40% of the planning area.
- Infrequent (100-200+ years), high severity – 15% of the planning area.

The relationship of current conditions to Fire Regime historic patterns is called the Fire Regime Condition Class (FRCC). It is important to note that FRCC is a measure of ecological trends and not a fire hazard metric. Inferences about current fire hazard can sometimes be made after examining FRCC outcomes (Fire and land management planning and implementation across multiple scales, 2001). Fuel conditions characterized by heavy concentrations of surface and ground fuels, dense undergrowth, and broad patches of forest with interlocking tree canopies increases the risk of uncharacteristic wildfire events; primarily in the low- and mixed-severity fire regimes.

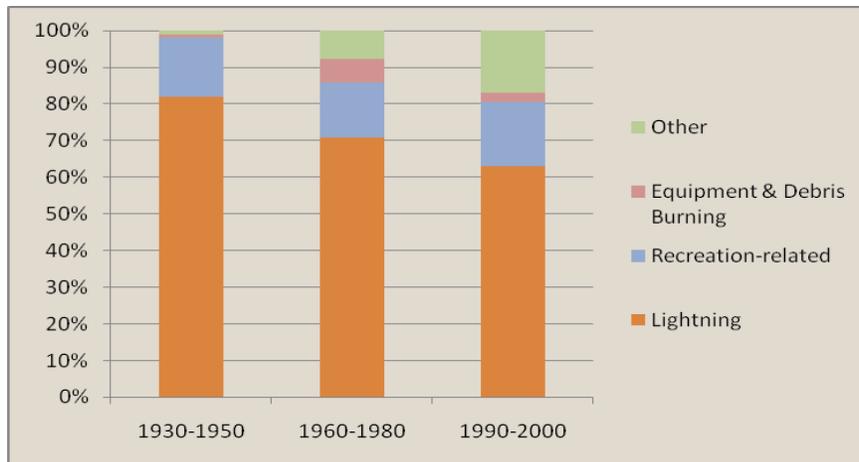
Table 31 Fire Regime Condition Class

Fire Regime Condition Class	Percent of Planning Area
1 – Low: Fire regimes are within the natural (historical) range, and the risk of losing key ecosystem components is low. Vegetation attributes (species composition, structure, and pattern) are intact and functioning within the natural (historical) range.	10%
2 – Moderate: Fire regimes have been moderately altered from their natural (historical) range. Risk of losing key ecosystem components is moderate. Fire frequencies have departed from natural frequencies by one or more return intervals (either increased or decreased). This results in moderate changes to one or more of the following: fire size, intensity and severity, and landscape patterns.	60%
3 – High: Fire regimes have been substantially altered from their natural (historical) range. The risk of losing key ecosystem components is high. Fire frequencies have departed from natural frequencies by multiple return intervals. Dramatic changes occur to one or more of the following: fire size, intensity, severity, and landscape patterns.	30%

Fire History

Between 1938 and 2008 the planning area had 458 fires. The majority were lightning caused (60%). Other main causes are campfires (8%), smoking (7%), and debris burning (3%). The vast majority of these fires remained less than an acre in size (81%). Less than one percent of the fires were five to ten acres in size, and only three grew larger than 100 acres.

Recreation-related fires (wildfires started by campfires, children, smoking and fireworks) have remained stable, making up about 15% of all fire-starts in the planning area. Lightning remains the primary fire cause.



Effects of the Alternatives

Under all alternatives, recreation use is expected to increase as the population increases. Studies have shown a general increase in human-caused fires as human activities and human access increases (Yang, He, Shifley, & Gustafson, 2007). However, fire-start data from the Colville National Forest

Figure 31. Wildfire causes in the South End Planning Area

did not identify an increase in recreation-caused fires over time. There are no known fire starts from OHVs on the forest.

Alternatives 1 and 2 – No Change and No Action

These alternatives provide the same general level of human access. These alternatives are expected to have no change in the risk of human-caused fires. Lightning would remain the primary fire-cause in this area.

Alternative 3 – Proposed Action

The overall human access remains similar to alternatives 1 and 2.

Some short segments of OHV trail would be developed. On this Forest, OHV and motorcycle trails have not been a source of human-caused fires; the slight increase in trails is expected to have no impact.

By designating campsites in the most heavily used areas this alternative is expected to decrease the overall risk of human-caused fires. Designated campsites would be better defined with no encroaching vegetation, and, as funding permits, fire rings would be installed.

Cumulative Effects

No cumulative effects, beyond those described above, were identified.

Consistency with Laws, Regulations, Policy and the Forest Plan

All the alternatives analyzed are consistent Forest Service policy and the 1988 Colville National Forest Land and Resource Management Plan.

Air Quality

This is summarized from the Fire, Fuels and Air Quality Report for the South End Motor Vehicle Management Project by Shane Robson and Brian Hicks dated March 25, 2011. The full report is available in the analysis files, located at the Newport District office.

Existing Condition

The primary focus of this analysis is how an increase in OHV activity may impact air quality in the local area. The analysis area is the Colville and Pend Oreille Valley airsheds.

The planning area is located in the mountains between the Pend Oreille and the Colville River Valleys. The typical air-flow pattern in the region is from the southwest – tending to push pollutants toward the Pend Oreille River Valley and into Idaho and Canada. Air quality in the area is generally good to excellent.

The 1963 Clean Air Act (as amended) is the primary legal authority governing air resource management. Under the Clean Air Act, the Organization for Air Quality Protection Standards(OAQPS) is responsible for the national ambient air quality standards (NAAQS) for pollutants which are considered harmful to people and the environment (ozone, carbon monoxide, particulate matter, sulfur dioxide, lead, and nitrogen oxides). This analysis will focus on carbon monoxide (CO).

Local sources of air pollution include industrial sources, agriculture and forestry activities, emissions from woodstoves, and emissions from vehicles on local highways. Emissions from most agricultural, forestry and industries are strictly governed through a state permitting process. Emissions from individuals and traffic are not. Major highways are the largest sources of CO emissions in the vicinity. In Colville, Washington US 395 averages approximately 8,000 vehicles per day and SR 20 averages approximately 4,000 vehicles per day (City of Colville, 2010). The following table shows the primary sources of CO for both counties.

Carbon monoxide (CO) is a colorless, odorless, and poisonous gas. Vehicle exhaust contributes roughly 60% of all CO emissions nationwide and up to 95% in cities. Other sources include agricultural burning, industrial processes, prescribed fires and wildfires. Carbon monoxide concentrations typically are highest during cold weather because cold temperatures make combustion less complete and cause inversions that trap pollutants low to the ground.

Table 32. Carbon Monoxide Emission Sources for Stevens and Pend Oreille Counties

Source	County	Tons/Year	Percent of Total Emissions
01-Fuel Comb. Elec. Util.	Stevens	638	2%
02-Fuel Comb. Industrial	Pend Oreille	3	3%
	Stevens	1,256	
03-Fuel Comb. Other	Pend Oreille	555	6%
	Stevens	1,822	
11-Highway Vehicles	Pend Oreille	5,951	56%
	Stevens	15,769	
12-Non Road Equipment ⁴⁸	Pend Oreille	2,039	14%
	Stevens	3,621	
14-Miscellaneous	Pend Oreille	4,663	24%
	Stevens	4,519	
		40,836	

Source: EPA emissions by category tier, Stevens and Pend Oreille Counties;
<http://www.epa.gov/air/data>

Stevens and Pend Oreille Counties have relatively low levels of CO. When adverse air quality occurs, the culprits are generally-

- Particulates and CO from woodstoves in the winter. Winter inversions are often responsible for holding woodstove emissions in the valleys.
- Particulates from burning in the spring and fall (agricultural, forestry). These smoke emissions are managed through the state, and generally dissipate quickly.

Nonattainment Areas

Areas that do not meet NAAQS may be designated as a nonattainment area. The closest nonattainment area is Sandpoint, ID, (45 miles southeast) listed for particulates (pm_{10}) (U.S. Environmental Protection Agency, 2011).

Class I Airsheds

National Parks, Wilderness Areas, Wildlife Refuges and tribal lands may be designated as Class I airsheds. The nearest Class I airsheds are the Spokane Indian Reservation (75 miles southwest), the Cabinet Wilderness (90 miles east), and the Pasayten Wilderness (220 miles west).

Effects of the Alternatives

The potential for recreation activities in this area to increase air pollution in a nonattainment area or Class I airshed would be negligible due to distance and the prevailing southwest winds. Air pollutants

⁴⁸ Nonroad equipment includes heavy equipment, logging equipment, farm equipment and off-road recreation vehicles.

originating from the planning area would normally be carried to the northeast, away from the Class I airsheds and nonattainment areas.

Motor vehicles are a primary source of CO nationally and locally. Highway vehicles account for more than 56% of the CO in Stevens and Pend Oreille Counties combined (U.S. Environmental Protection Agency, 2002).

Off-highway vehicles (including dirt bikes) typically emit more pollutants per mile than highway vehicles. The following table compares off-road and highway emission rates.

Table 33. Emission Rates by Vehicle Type and Engine Category

Vehicle and Engine Category	Emission Rates (gram/mile)			
	Hydrocarbons	CO	NOx	PM
Off-road Vehicle^A				
Older 2-stroke	53.9	54.1	0.2	2.1
Older 4-stroke	2.4	48.5	0.4	0.1
2006 EPA standards	1.6	42.9	0.3	0.1
Highway Vehicle^B				
Standard passenger car	0.25	3.4	0.4	0.08
Standard truck/SUV	0.32	4.4	0.7	0.08
Heavy truck	0.39	5.0	1.1	0.12
Diesel truck	1.2	15.5	4.0	0.10

Source A: (U.S. Environmental Protection Agency, 2002)

Source B: City of Albuquerque vehicle emissions calculator (City of Albuquerque, 2011)

Manufacturers have sold both 2- and 4-stroke engines since the beginning. In the early 1990s, the sale of 4-stroke engines eclipsed the sale of 2-stroke engines (Casper, 2007). Today about 70% of all OHVs and off-road motorcycles have 4-stroke engines. Because of their lighter weight, 2-stroke engines remain popular for dirt bikes – 67% are currently 2-stroke. Historically 2-stroke engines polluted more than 4-stroke engines (see table above). By the mid-2000s cleaner 2-stroke engines were developed. Starting in 2006, all OHVs sold⁴⁹ must meet more stringent emissions standards.

Alternatives 1 and 2 – No Change and No Action

The total miles of road open to motorized vehicles would be the same for these alternatives – about 460 miles. Alternative 1 would have 114 miles open to off-highway motorcycles and all-terrain vehicles: Alternative 2 would have 51 miles open to off-highway motorcycles and all-terrain vehicles. This represents a difference of about 10% of the total motorized routes available – the roads currently open to mixed use. The following table estimates the amount of CO produced by the mixed-use roads. The CO emissions used are 48.5 grams/mile.

⁴⁹ EPA exempted racing dirt bikes.

Table 34. Alternative 2 Estimate CO Emissions from OHV use

Assumptions	Kg of CO	Percent Increase over Current ⁵⁰
High-use summer weekend: 500 OHVs driving 63 miles	1,528	0.004%
High-use summer weekend: 300 OHVs driving 63 miles	916	0.002%
Medium-use summer weekend: 100 OHVs driving 63 miles	305	0.001%
Mid-week summer: 50 OHVs driving 63 miles	152	0.0004%

With time, the emissions would decline slightly as more riders get newer vehicles that meet the 2006 EPA standards. CO emissions from OHVs play a negligible role in overall CO emissions.

Alternative 3 – Proposed Action

While the total mileage open to vehicle use would only increase by 13 miles, alternative 3 increases the miles available to OHV riders by about 240 miles – an increase of about 66%. The following table estimates the amount of CO produced by the additional OHV routes.

Table 35. Alternative 3 Estimate CO Emissions from OHV use

Assumptions	Kg of CO	Percent Increase over Current
High-use summer weekend: 500 OHVs driving 190 miles	4,607	0.012%
High-use summer weekend: 300 OHVs driving 190 miles	2,764	0.007%
Medium-use summer weekend: 100 OHVs driving 190 miles	921	0.002%
Mid-week summer: 50 OHVs driving 190 miles	460	0.001%

This proposal would have to increase OHV travel by about 780,000 miles in order to increase CO emissions by 0.1%. Even with an increase in miles available to OHV riders, the increase in CO emissions from OHVs would continue to play a negligible role in overall CO emissions.

Cumulative Effects

The tables above estimate the CO that may be produced by this project, and compare that to the on-going and reasonably foreseeable CO production in the airshed. While the project would increase CO production, the increase is slight and the resulting levels are still well within acceptable levels.

Consistency with Laws, Regulations, Policy and the Forest Plan

All alternatives analyzed are consistent with Federal, State, and local laws and regulations. The alternatives are consistent with Forest Service policy and the 1988 Colville National Forest Land and Resource Management Plan.

50 (U.S. Environmental Protection Agency, 2002)

United States Air Force Survival School

This is summarized from the Minerals and Special Uses Report for the South End Motor Vehicle Management Project by Kim Di Rienz dated October 25, 2010, and an email from Karen Soenke (USFS-USAF Liaison) dated October 26, 2009. These documents are available in the analysis files, located at the Newport District office.

Existing Condition

The United States Air Force operates their Survival School on the Colville National Forest. The Survival, Evasion, Resistance and Escape (SERE) training program is designed for approximately 4,000 Air Force personnel annually.

This training has occurred since 1965. The Air Force holds a Special Use Permit issued by the Colville National Forest (336th Training Group, Air Education Training Command (Survival School) located at Fairchild Air Force Base).

Survival School training activities occur in the three areas of the South End planning area; Chewelah, Calispell and Tacoma. Activities that would affect the Survival School training operations are likely to interfere with that training.

The USAF Survival School conducts extensive training in survival skills and recovery techniques within the South End planning area. The Special Use Permit identifies locations, practices, and methods of training which are consistent with the Standards and Guidelines of the Colville National Forest Land and Resource Management Plan (LRMP).

Effects of the Alternatives

Designating routes on existing roads would not interfere with training operations. There is potential for more vehicle encounters due to more users on the Forest roads. The encounters are not much different than the vehicle use that is allowed and authorized on the main county roads within the project area. The roads accessing the two Command Posts (Tacoma and Ruby), are not planned for route designations under this project. The potential new trail construction would not affect training activities. The Survival School would potentially benefit from some of the new trail segments. Trail and road access benefit the Survival School training activities. Vehicle access is important for emergency needs. Instructor camp areas may be affected by OHV use, but these camp areas are not within the potential designated routes identified by the project area. Allowing administrative use of the Phillips Lake area would allow the Survival School training access following the terms and conditions of their Special Use Permit.

None of the alternatives would adversely affect Survival School training operations.

Consistency with the Forest Plan and the Air Force Special Use Permit

All alternatives analyzed are consistent with Forest Service policy and the 1988 Colville National Forest Land and Resource Management Plan. None are inconsistent with the Special Use Permit.

Other Special Use Permits and Authorizations

This is summarized from the Minerals and Special Uses Report for the South End Motor Vehicle Management Project by Kim Di Rienz dated October 25, 2010. This document is available in the analysis files, located at the Newport District office.

Existing Condition

There are 11 other special use permits for improvements and/or activities and 56 permits or easements for roads that are located within the South End planning area. The following is a summary of the permits and easements.

Pend Oreille Public Utilities District holds permits for powerlines, and a gauging station on Tacoma Creek. Bonneville Power Administration holds a permit for powerlines. Century Telephone and Pend Oreille Telephone Company have permits for phone/data lines, and Pend Oreille Telephone Company has a passive reflector on Ruby Mountain under permit.

The planning area has numerous road permits and easements held by Stimson Lumber Comp. (Burlington Northern and Plum Creek Timber Company), Arden Tree Farms, Gallatin NE WA Land and Timber LLC, Diamond International Corp., Boise Cascade Corp., Avista Corp., Bonneville Power Administration, Pend Oreille County, Stevens, County, the Washington Department of Natural Resources, and several individuals.

Natural Resources Conservation Service Weather (NRCS) has a snow course under permit. The Chewelah #2 Snow Course is located on a segment of closed road near the Cottonwood Divide Road (Forest Road 4342000).

Chewelah Basin Ski Corporation holds a permit for 49 Degrees North Mountain Resort. Riverview Bible Camp has a short segment of water line under permit. SBA Structures Inc. has a permit for a communication tower on Chewelah Peak.

Effects of the Alternatives

There are no measurable impacts (direct, indirect, or cumulative) anticipated with regard to improvements authorized under special use permits or easements if the recommended mitigation measure is implemented. Roads for which permits or easements have been issued/granted would remain available for motorized use by the holder of the authorization(s).

Due to the limited amount of parking and the lack of a large level area for camping the NRCS Snow Course has not experienced problems with dispersed camping. Under the existing conditions (alternatives 1 and 2), dispersed camping could adversely impact the NRCS Snow Course⁵¹. Under the proposed action the snow course would be monitored, and if dispersed camping damages the snow course the MVUM may be modified to prohibit camping in this area.

Consistency with the Forest Plan and Special Use Permits

All alternatives analyzed are consistent with Forest Service policy and the 1988 Colville National Forest Land and Resource Management Plan. None are inconsistent with the Special Use Permits in this area.

⁵¹ Activities that cut or remove vegetation immediately adjacent to the snow course would make the snow measurements unreliable.

Minerals Management

This is summarized from the Minerals and Special Uses Report for the South End Motor Vehicle Management Project by Kim Di Rienz dated October 25, 2010; available in the analysis files, located at the Newport District office.

Existing Condition

A query of the Bureau of Land Management Legacy 2000 database resulted in one claim shown as active within the planning area. That claim is identified as MJ21, a lode claim located in the NE ¼, Section 26, T. 34 N., R. 40 E., W.M. It is unknown whether the claim falls on National Forest System lands as the database does not include claim maps and there is no Plan of Operation on file with the Forest.

Effects of the Alternatives

There are no measurable adverse impacts (direct, indirect, or cumulative) anticipated with regard to the minerals resource if any of the alternatives (Alternative 1 – No change from existing MVUM; Alternative 2 – No Action; and Alternative 3 - Proposed Action) are implemented.

Implementation of alternatives 1 and 2 are not expected to result in a change in level of access to the mining claim by recreationists. Although alternative 3 proposes to change authorized use of Forest Road 9522150 from highway vehicles to mixed vehicles, the resulting increase in travel through Section 26 by Off-Highway Vehicle (OHV) riders is not expected to impact mining claims in the area. Under all alternatives, OHV use of Forest Road 9521550 would be prohibited, resulting in no change in motorized access via that road.

Consistency with the Forest Plan and Special Use Permits

All alternatives analyzed are consistent with Forest Service policy and the 1988 Colville National Forest Land and Resource Management Plan.

Effects on American Indians

The Kalispel Tribe of Indians, Confederated Tribes of the Colville Reservation, and the Spokane Tribe of Indians were consulted, and no impacts to American Indian social, economic, or substance rights were identified nor anticipated. No impacts are anticipated related to the American Indian Religious Freedom Act. Kalispel and Spokane Tribal members use the National Forest for recreation, religious purposes, and to gather forest products such as firewood and huckleberries. Tribal members' use of this area of the National Forest would not be disproportionately affected when compared to other people for any of the alternatives considered with this project.

Effects on Consumers, Minority Groups, Women, Civil Rights and Environmental Justice

The Civil Rights Policy for the USDA Forest Service⁵² states that the following are among the civil rights strategic goals; (1) managers, supervisors, and other employees are held accountable for ensuring that USDA customers are treated fairly and equitably, with dignity and respect; and (2) equal access is assured and equal treatment is provided in the delivery of USDA programs and services for all customers. This is the standard for service to all customers regardless of race, sex, national origin, age, or disabilities.

Disparate impact, a theory of discrimination, has been applied to the travel management planning process in order to reveal any such negative effects that may unfairly and inequitably impact beneficiaries regarding program development, administration, and delivery.⁵³ The objectives of this review and analysis are to prevent disparate treatment and minimize discrimination against minorities, women and persons with disabilities and to ensure compliance with all civil rights statutes, Federal regulations, and USDA policies and procedures.

In the 2000 Census survey, people were defined as having a disability if one or more of the following conditions were true:

They were aged 5 or older and responded “yes” to a sensory, physical, mental, or self-care disability.

They were aged 16 years or older and responded “yes” to a disability affecting going outside the home.

They were between the ages of 16 and 64 and responded “yes” to an employment disability.

Persons with Disabilities

Some comments received during the travel management planning process expressed concern that changes to motorized access would prevent future access to National Forest system lands for those with disabilities. In response to these comments, note that a review of the project alternatives has been conducted to ensure that they apply equally to all groups. Therefore, the travel management plan is not discriminatory towards persons with disabilities, because it applies equally to all groups.

Under section 504 of the Rehabilitation Act of 1973, no person with a disability can be denied participation in a Federal program that is available to all other people solely because of his or her disability. There is no legal requirement to allow people with disabilities use of motor vehicles on roads, trails, or other areas that are closed to motor vehicles. Restrictions on motor vehicle use that are applied consistently to everyone are not discriminatory.

Study Area Demographics

The following table displays data regarding the disabled population in Pend Oreille, Stevens and Spokane Counties, and for Washington State. In Stevens and Spokane Counties, the percentage of disabled is slightly higher than the State. In Pend Oreille County, the percentage is 1½ times greater than the State.

⁵² Departmental Regulation 4300-4 dated May 30, 2003

⁵³ For more information on disparate impact theory, see *The Evolution of Disparate Impact Theory of Discrimination*, *Harvard Journal of Legislation*, vol. 44 2007 (http://www.law.harvard.edu/students/orgs/jol/vol44_2/gordon.pdf)

Table 36. Disability Population for Nearby Counties and Washington State

County	Total disabilities*	Total population:	% with disabilities
Washington State	1,774,141	5,894,121	30%
Pend Oreille	5,593	11,732	48%
Spokane	136,962	417,939	33%
Stevens	14,050	40,066	35%

It is the responsibility of the Deputy Chiefs for National Forest Systems to ensure that decision-makers are aware of this Civil Rights Impacts Analysis requirements. This project-level NEPA will be completed with adequate public involvement that will consider access and concerns from minorities, women, persons with disabilities, and low income populations. The decision-maker will continue to conduct travel management planning and public involvement that considers the concerns from minorities, women, persons with disabilities, and low income populations.

Public Involvement Process

The public involvement process is described in Chapter 1 and will be summarized here.

The proposal was listed in the Schedule of Proposed Actions beginning in the Winter 2009 issue, and continues to the present. In March 2009, letters and emails were sent to over 400 individuals and groups that had expressed interest in this type of project. Articles appeared in the Newport Miner, Colville Statesman-Examiner and Spokane Spokesman-Review.

A preliminary proposed action was distributed to everyone who had expressed interest in the project, and was posted on the Colville National Forest internet site in March 2010. Forest officials met with Pend Oreille and Stevens County Commissioners, off-road vehicle use groups, environmental interest groups, and concerned individuals.

Over 100 individual comments were received between March 2009 and July 2010. Sixteen people submitted a form letter regarding nonmotorized recreation and Forest Plan allocations. Groups representing OHV enthusiasts, conservation organizations, county government, and local businesses also commented.

The interdisciplinary team analyzed all comments using an established process known as ‘content analysis’. People self-select to participate and are not required to provide any information concerning individual demographic information.

Public Meetings

Starting in 2003, the Colville National Forest began a collaborative process to develop a motorized recreation management strategy. A collaborative process was developed and 6 public meetings were held in surrounding communities – including Colville, Chewelah, Newport, and Spokane. In response to the 2005 Travel Management Rule, the Colville National Forest held more public meetings regarding travel management (2006-2007).

For this project, 3 public meetings were held at the Chewelah Learning Center in March, April and May, 2009. The total number of people that attended meetings was about 50. OHV routes proposed by the public during all the previous meetings were brought forward for consideration. The public was invited to comment on those proposals, and to propose other possible routes.

Determination

All alternatives would designate routes for motorized vehicles to all people regardless of race, sex, national origin, age, or disabilities. Based on public comment, there were no issues raised that would suggest, or from which one may infer, that implementation of the travel management plan would affect groups or classes of persons, negatively, because of one or more prohibited bases.

When made, this travel management decision applies equally to all members of the public, and therefore is not discriminatory to any person or group.

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CHAPTER 5 CONSULTATION WITH OTHERS

The opportunity for public participation in the analysis of this project was initiated through a scoping letter sent to the public, including adjacent landowners, Federal, State, and local agencies, Tribes, and other non-Forest Service persons and interested parties on February 24, 2010; at three public meetings held at the Chewelah Peak Learning Center in Chewelah, WA (March 19, 2009, March 28, 2009, and May 9, 2010); and listing in the Colville National Forest’s Schedule of Proposed Actions (from winter 2009 through the present).

The Forest Service consulted with Federal, State, and local agencies, Tribes and non-Forest Service persons, including adjacent landowners, throughout the planning process.

Prior to the 30-day comment period, the following individuals commented on the project:

Don and Genoa Anderson
Richard Artley
Hugh Bartleson
Wade Bogart
Norris Boyd
Alan Drago
Paul Edgren
Mike and Bev Edwards
Douglas Fase
Larry Guenther
Lyle Holcomb
Dennis Hughes
Howard Justice

Keith Martin
Rick McCollum
John More
Sally and Eric Ostby
Curtis Ott
Merrill Ott
Warren Russell
Jack Sherry
Don Tryon
Dave Urban
Larry and Janet White
Paul Yelk
Ed Zupich

The following individuals submitted a form letter regarding non-motorized recreation and Forest Plan allocations—

Eric Allison,
Nate Anderson,
Kim, Mike and Yvette Goot,
Gabiella Hennington,
Liza Mattana,
Beth Morth, Peggy Neal,
Bridgette and Jerry Jo Olsen,

Mike Sanborn,
Kevin Smith,
John Speare,
Mark Steward,
Ben Stuckart,
Stephenie Zomora.

The following groups, organizations and businesses commented on the project:

49 Degrees North Mountain Resort, Eric Bakken
Capital Trail Vehicle Association,
Conservation Northwest, David Heflick,
Eastern Washington OHV Association, Gary Prewitt,
Panhandle Trail Riders Association, Larry White,
Selkirk Trailblazers,
Tri-county Motorized Recreation Association,
The Lands Council, Jeff Juel
Trout Unlimited, Brad Powell.

The following governments and agencies commented on the project:

Kalispel Tribe of Indians
Pend Oreille County Commissioners,
Spokane Tribe of Indians, Randy Abrahamson
Stevens County Commissioners,
U.S. Environmental Protection Agency, Eric Peterson
U.S. Fish and Wildlife Service, Little Pend Oreille National Wildlife Refuge, Jerry Cline.

Letters, meeting notes, and documentation of phone conversations are in the public involvement section of the analysis file for this project. Letters containing specific comments from the 30-day comment period, along with the Forest Service responses, are in appendix D of the Environmental Assessment.

Forest Service Personnel Contributing to this Analysis

Supervisor's Office Personnel

Kathy Ahlenslager Forest Botanist
Larry Bates Civil Engineering Technician
Jann Bodie Forest Landscape Architect (retired)
Charline Deese Civil Engineering Technician
Ginger Gilmore Forest Transportation Manager (retired)
Vaughn Hintze Forest Landscape Architect
Steve Kramer Forest Archaeologist
Jim McGowan Forest Wildlife Biologist
Martha Micinski GIS Services
Craig Newman Recreation, Engineering, Lands, and Minerals Staff Officer
Jim Parker Forest Environmental Coordinator/ID Team Leader (retired)
Katy Phillips Writer-editor services
Tom Shuhda Forest Fisheries Program Manager

Newport-Sullivan Lake Ranger District Personnel

Nan Berger Recreation Specialist
Chase Bolyard Rangeland Management Specialist
John Buehler former District Ranger
Sam Cook Wilderness and Trails Coordinator
Travis Fletcher Acting District Ranger
Nancy Glines Forest Soils Scientist/ID Team Leader

Rob Lawler Hydrologist
Marcy Rumelhart Writer-editor
Karen Soenke Air Force Liaison
Debbie Wilkins former Recreation Staff

Three Rivers Ranger District Personnel

Jennifer Hickenbottom Forest Hydrologist
Karen Honeycutt Fisheries Biologist
Eric McQuay Recreation Program Manager
Carmen Nielsen Outdoor Recreation Planner
Rodney Smoldon District Ranger, former Deputy Forest Supervisor
Hillary Talbott-Williams Soil Scientist
Fred Way former District Ranger

Law Enforcement Personnel

Mike Mumford Law Enforcement Officer
Matt Valenta Law Enforcement Officer