# Chapter 3.
# Affected Environment
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# CHAPTER 3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

## 3.1 INTRODUCTION

This chapter provides information about the affected environment of the SCNF Travel Planning and OHV Route Designation project, and potential consequences to that environment. It also presents the scientific and analytical basis for the comparison of alternatives presented in Chapter 2. Each resource potentially affected by any of the alternatives is described by its current condition and uses.

Following each resource description is a discussion of the potential effects (environmental consequences) to the resource associated with the implementation of each alternative. All significant or potentially significant direct or indirect effects are disclosed. Effects are quantified where possible, and qualitative discussions are also included. The means by which potential adverse affects would be reduced or mitigated are described in Chapter 2. Additionally, each resource discussion concludes with an introduction to, or summary of, cumulative effects considerations relevant to that particular resource or affected component of the human environment. A comprehensive treatment and summary of cumulative impacts to all resources or environment components, focusing especially on effects that are potentially significant, is given in Appendix F.

The discussions of resources and potential effects take advantage of existing information included in the Salmon and Challis National Forest Land and Resource Management Plans, project-specific specialists' reports and related information, and other sources as indicated. Where applicable, such information is briefly summarized and referenced to minimize duplication. The Project Record for the SCNF Travel Planning and OHV Route Designation project includes all project-specific information, including specialists' reports, map validations, and information resulting from public involvement efforts. The Project Record is located at the Forest Supervisor's Office in Salmon, Idaho and is available for review during regular business hours. Information from the record is available upon request.

## 3.2 RECREATION

### 3.2.1 CHANGES BETWEEN THE DRAFT EIS AND THE FINAL EIS

- Analysis of effects to Inventoried Roadless Areas and Recommended Wilderness Areas are NOT included in this section, but are analyzed separately in Section 3.3 of this FEIS.
- This report DOES include analysis of impacts of motorized routes on Eligible Wild and Scenic Rivers and their potential outstandingly remarkable values and classification level.
- This report will include assessment of the impacts that motorized recreation has on non-motorized recreation by using the concept of motorized influence zones to show areas where a non-motorized visitor can likely see or hear a motorized vehicle. Comparisons between the alternatives will show the amount of acres within ½ mile of motorized routes as an indicator of acres available to non-motorized activities.

### 3.2.2 ISSUES AND INDICATORS

**Recreation Issue 1:** The designation of specific motorized routes (and the prohibition of cross-country travel off the designated system) will affect motorized and non-motorized recreation experiences.

***Indicator:***

- Miles of motorized routes (roads and trails) by use type and seasonal open periods
- Acres of area within Motorized Influence Zone (1/2 mile from motorized routes)
- Miles of Motorized Routes within Primitive and Semi-Primitive Non-Motorized Recreation Opportunity Spectrum (ROS)
- Percent inconsistency ROS classification by ranger district

**Recreation Issue 2:** Designating motorized access to specific dispersed campsites (based on mileage) along the Salmon River Road would be difficult for the public to understand and implement, difficult for the agency to enforce, and will adversely affect anglers and campers by restricting their choices during high-use seasons (spring and fall steelhead fishing seasons, and summer floating season).

***Indicator:***

- Acres of motorized access to dispersed camping along the Salmon River Road

**Recreation Issue 3:** Allowing motorized access to dispersed camping for 300 feet on either side of designated routes (except the Salmon River Road) would defeat the purpose of the Travel Management Rule and lead to adverse impacts to wildlife habitat, fish habitat, soil and water quality.

***Indicator:***

- Acres of motorized access to dispersed camping

### 3.2.3 METHODOLOGY FOR ANALYSIS

Traditionally, the Recreation Opportunity Spectrum (ROS) is used to characterize the kind of recreation available across the landscape. ROS is used to characterize the recreation settings, opportunities, and is the basic framework for inventorying, planning, and managing the recreation resource in accordance with the Forest and Rangeland Renewable Resources Planning Act of 1974 (RPA), as amended by the National Forest Management Act of 1976 (NFMA).

This formal classification system assesses such components of the recreation opportunity as access, naturalness, presence of other people, and management controls. Each class is described in terms of specific combinations of activities, facilities, and experience opportunities and is primarily affected by the area's size, distance from road, and the likelihood of encounters with other visitors.

The analysis compares changes in motorized recreation use within the ROS zoning classifications to determine if the desired recreation experience is maintained by motorized route designation. Differences between the alternatives are displayed to show inconsistencies where miles of motorized routes occur within the more primitive ROS classification zones.

A motorized influence zone analysis was conducted to show areas where a non-motorized visitor can escape motorized vehicles. Each motorized route was "buffered" by ½ mile on either side in order to quantify the potential area of motorized influence. These acres were compared to the amount of non-motorized acres further than ½ mile away from motorized routes to show the balance between motorized and non-motorized opportunities on each ranger district.

The difference between alternatives was displayed relative to the amount of routes converted from unauthorized routes (U-routes) to varying types of designated motorized routes.

With each alternative, there were assumptions made about the availability of motorized access to dispersed camping. Acres along motorized routes were considered available if there was less than 30% slope and the area was located within the travel corridor as described for each alternative.

### 3.2.4 COMPLIANCE WITH THE FOREST PLAN AND OTHER REGULATORY DIRECTION

**Challis National Forest LRMP, Dispersed Recreation (p. IV-34):** The demand for dispersed use will not exceed capacity Forest-wide. However, some localized sites will be over-used. As timber roading increases, minor shifts in ROS class from non-motor vehicle use to motor vehicle use will occur. The anticipated budget will be adequate to provide facilities to reduce conflicts between user groups. Users will be directed away from over-used areas. Trails will be upgraded and maintained at levels sufficient to meet safety needs and provide quality recreation experiences. Trails will generally be maintained at Level I. The Forest will provide for diversified uses of trails and at the same time, stabilize trail maintenance program through a more even funding level each year. The Challis, Yankee Fork, Lost River, and Middle Fork Ranger Districts were part of the Challis National Forest during LRMP development. Some district boundaries have been reorganized since the Forest Plan was written.

**Salmon National Forest LRMP, Dispersed Recreation (p. IV- IV-87a to 88):** There will be increased emphasis on management of dispersed recreation. There will be approximately 338,300 acres in management areas featuring semi-primitive recreation opportunities. These areas will be managed to standard. The quality of experience in dispersed areas will remain generally high. The capacity for dispersed recreation will exceed demand in both the Roaded Natural (RN) and semi-primitive settings throughout the planning period. The approximate mix of recreation opportunities will be 60 percent roaded and 40 percent unroaded by the end of the planning period. Priority for trail maintenance will be in management areas featuring semi-primitive recreation opportunities, designated wilderness, and nationally designated trails (e.g. Historic, Scenic, and Recreation). Most system trails will be maintained in a usable condition. Management of ORV use will continue to reflect the needs of the wildlife, soil, and water resources. ORV use will be permitted wherever feasible unless specifically prohibited for resource protection. The Leadore, North Fork, Salmon, and Cobalt Ranger Districts were part of the Salmon National Forest during LRMP development. Some district boundaries have been reorganized since the Forest Plan was written.

During Forest Planning for the two forests, ROS was mapped and used as a zoning tool for guiding planning activities. Forest goals and objectives for the recreation resource indicate that the zoning ratios should remain the same through time, and the forests emphasize recreation opportunities toward the less developed end of the spectrum overall. In the table below, Primitive does NOT include the Frank Church-River of No Return Wilderness acres, since it is not part of the project area.

Table 3-1. ROS Classification by District.

| Recreation Opportunity Spectrum | | | | | | |
|---|---|---|---|---|---|---|
| DISTRICT | Rural | Roaded Natural (RN) | Semi-Primitive Motorized (SPM) | Semi-Primitive Non-Motorized (SPNM) | Primitive | Total |
| Challis-Yankee Fork | 5,171 | 122,187 | 336,891 | 305,399 | 34,494 | 804,142 |
| Leadore | 7,054 | 113,841 | 88,762 | 119,787 | 0 | 329,443 |
| Lost River | 0 | 130,850 | 192,137 | 472,107 | 19,410 | 814,505 |
| Middle Fork | 0 | 37,871 | 48,984 | 23,803 | 6 | 110,663 |
| North Fork | 8,356 | 205,632 | 95,960 | 108,630 | 0 | 418,578 |
| Salmon-Cobalt | 20 | 383,089 | 142,874 | 112,434 | 0 | 638,418 |
| Total | 20,600 | 993,469 | 905,609 | 1,142,161 | 53,910 | 3,115,749 |

When assigning a particular ROS class to an area, the variables include components of remoteness, evidence of humans, size of the area, use density, managerial regimentation (the amount of laws and regulations governing areas or sites), and motor vehicle use. The land base of the Forest was inventoried and mapped by ROS class to identify areas providing various kinds of recreation opportunities. An analysis of the physical, social, and managerial setting components for each area lead to the identification of five ROS classes based on the 1986 ROS protocol (USDA FS 1986). Appendix B contains definitions for these classifications.

ROS classification in the era of the current Forests' LRMPs allowed for some levels of inconsistency in regard to "presence of motorized routes." Each ranger district has some level of slight inconsistency with the literal definition of Semi-Primitive Non-Motorized (SPNM) classification in that some routes appear in SPNM classification areas in some of the alternatives. This will be quantified and explained in the environmental consequences section of this report.

The following table shows where, across the ROS continuum, differing levels of inconsistency are allowed for different trail maintenance levels.

Table 3-2. Trail development level and ROS Inconsistencies.

| | Trail Development Level | | | | |
|---|---|---|---|---|---|
| ROS Classification | 1 | 2 | 3 | 4 | 5 |
| Primitive (P) | Normal | Inconsistent | Unacceptable | Unacceptable | Unacceptable |
| Semi-Primitive Non-Motorized (SPNM) | Acceptable | Normal | Inconsistent | Unacceptable | Unacceptable |
| Semi-Primitive Motorized (SPM) | Acceptable | Acceptable | Normal | Inconsistent | Unacceptable |
| Roaded Natural (RN) | Acceptable | Acceptable | Acceptable | Normal | Normal |
| Rural (R) | Acceptable | Acceptable | Acceptable | Acceptable | Normal |
| 1 – Cross-country to difficult trails; 2 – Trails, easy to most difficult; 3 – Low standard primitive roads (Traffic Service Level D); 4 – controlled Access Traffic Service Level and B and C roads; 5 – Full-access TSl, A, B, and C roads<br>Normal: the normal conditions to be found in the physical setting<br>Acceptable: conditions which are acceptable, but more restrictive than normal<br>Inconsistent: conditions which are not generally compatible with the norm, but may be necessary under certain conditions to meet the management objective.<br>Unacceptable: Unacceptable conditions under any circumstances | | | | | |

As these ROS classes are applied to zoning within the Forest Plans, they become the primary recreation framework for providing guidelines for project planning and for trade-off analysis of available recreation opportunities as some of the environmental characteristics might be changed by proposed management actions. This framework also provides outdoor recreation management emphasis in response to such social factors as assessing supply and demand. Displaying inconsistent ROS does not mean that the ROS zoning would change; rather, based on Table 3-2 (above) the route inconsistency is allowed within the framework of using the ROS for Forest Planning.

**Wild and Scenic Rivers:** Congress enacted the Wild and Scenic Rivers Act (Act) in 1968 to preserve select river's free-flowing condition, water quality, and outstandingly remarkable values. The Act also directs that each river in the National Wild and Scenic Rivers System (National System) be administered in a manner to protect and enhance a river's outstanding natural and cultural values. It allows existing uses of a river to continue and future uses to be considered, so long as existing or proposed use does not conflict with protecting river values.

Beyond the immediate protection afforded in the enabling legislation, the Act established a process for building a legacy of protected rivers. Sections 5(a) and 5(d)(1) studies require determinations to be made regarding a river's eligibility, classification, and suitability. Eligibility and classification represent an inventory of existing conditions. Eligibility is an evaluation of whether a river is free-flowing and

possesses one or more outstandingly remarkable values. If found eligible, a river is analyzed as to its current level of development (water resources projects, shoreline development, and accessibility) and a recommendation is made that it be placed into one or more of three classes -- wild, scenic, or recreational.

After the current Forest Plans were completed, the Forests conducted a comprehensive review inventory process to determine whether streams beyond those already designated (Middle Fork Salmon and main stem Salmon Rivers) were eligible for further study as a potential addition to the Wild and Scenic River System.

Segments of the streams listed in Table 3-3 were determined to be eligible based upon their free-flowing nature and the presence of one or more outstandingly remarkable values:

Table 3-3. Streams eligible for Wild and Scenic River Designation

| CYFRD | LRD | LRRD | MFRD | NFRD | SCRD |
|---|---|---|---|---|---|
| East Fork Pahsimeroi River | Bear Valley Creek | East Fork Big Lost River | Loon Creek | Panther Creek | Panther Creek |
| Mill Creek | Hayden Creek | Fall Creek | Marsh Creek | A portion of the Salmon River | Camas Creek |
| Pahsimeroi River | | Kane Creek | Warm Spring Creek | | |
| West Fork Yankee Fork | | Lake Creek | | | |
| Yankee Fork | | Lower Cedar Creek | | | |
| | | Muldoon Creek | | | |
| | | Star Hope Creek | | | |
| | | Star Hope Creek (West Fork Big Lost) | | | |
| | | Summit Creek | | | |
| | | Wildhorse Creek | | | |

Part of the criteria for classification of streams is the amount and kind of access. A “wild” stream is generally inaccessible except by trail, and has no roads, railroads or other provision for vehicular travel within the river area. A few existing roads leading to the boundary of the area are acceptable. A “scenic” stream is accessible in places by road. Roads may occasionally reach or bridge the river. The existence of short stretches of conspicuous or longer stretches of inconspicuous roads or railroads is acceptable. A “recreational” stream is readily accessible by road or railroad. The existence of parallel roads or railroads on one or both banks as well as bridge crossings and other river access points is acceptable.

### 3.2.5 EXISTING CONDITION COMMON TO ALL RANGER DISTRICTS

The current Travel Plans include 980,423 acres available to cross-country travel. Whether by design or not, there are 220,149 acres across the SCNF where the ROS classification for an area is P or SPNM and the Travel Plan allows cross-country travel. This situation in these more primitive ROS classified areas has lead to routes being developed by users for motor vehicle use that may not be suited for the recreation use, or may be in fact, contributing to some level of resource damage.

Throughout this travel planning project, letters and comments reflect a great deal of polarization around the types and amount of use (motorized or non-motorized) that the forest environment can sustain from a social perspective. A common thread exists in most of the comments; that is, non-motorized

recreationists feel that their recreation experience is negatively affected by motorized recreation, and in general, motorized recreationists do not perceive any user conflict. Other conflicts noted in comments identified conflicts between mountain bikers and hikers/stock users, and concerns over the number of dogs on trails. Comments by hunters who access their hunting areas by foot or by horse noted conflict with hunters accessing the same areas by motor vehicle trail vehicles. The hunters who arrive via foot or horse feel the presence of motorized vehicles affects the quality of their hunt and possibly scares game away.

### 3.2.6 DIRECT AND INDIRECT EFFECTS COMMON TO THE ACTION ALTERNATIVES

The greatest change (effect) to recreationists is the change in concept necessitated by the rule itself; large acres formerly open to cross-county travel replaced by varying miles of specifically designated routes for travel.

The following elements are common to the alternatives in this analysis:

- Non-motor vehicle use would continue across the entire project area.
- The area available for motorized dispersed camping would be reduced. In direct acres, this reduction is large, but most existing dispersed camping occurs within the motorized camping corridors. While the exact impact is not possible to predict, there would be some displacement of campers from areas they have traditionally used.
- Under the action alternatives, the current levels of environmental effects from motorized recreation use would be expected to decrease resulting from the elimination of use on non-system routes that remain undesignated and from initiating regular maintenance on newly designated routes, and from the prohibition of motorized cross-country use off the designated system.
- With the change from open areas to designated routes, the direct and indirect effects are polarized between the various types of recreation users for every alternative: non-motor vehicle users in the formerly open areas may feel more of a sense of solitude as they pursue their chosen activities. Motorized visitors may feel more constrained, and either change locations, or travel as they have always done, in hopes of not being caught.
- The impacts of the district maintaining designated routes would be to include them in the rotation of maintaining high-use trails and high priority safety issues, and additional funds would be needed with the increased trail miles.
- Partnerships, grants, and volunteer opportunities with local and regional groups and with State agencies such as Idaho Parks and Recreation may increase the capacity to maintain more miles of routes as they are designated and designed to suit the type and season of travel by motor vehicles.
- Conflicts between motor vehicle use and existing or proposed non-motorized recreation uses of forest lands and neighboring federal lands would be minimal or would decrease. The alternatives increase the amount of maintained motorized system routes available for ATV and motorcycle users without decreasing the amount of land being managed to provide for non-motorized recreation uses of the forest. Non-motor vehicle users would be able to plan cross-country activities away from designated motorized routes and have a high degree of certainty that they would not encounter motor vehicle users. Within ROS classified areas of R, RN, and SPM, the sounds of motor vehicle use may still be apparent to non-motorized recreationists.

- Conflicts among different classes of motor vehicle users are reduced and user safety would be enhanced through clear definition of the existing and newly designated travel routes. Conflicts tend to decrease when visitors know what type of vehicle is allowed.
- The alternatives have minimal effects on populated areas. The designated routes and areas are not adjacent to any communities, and no changes are proposed in this route designation project that would increase sound, emissions, or safety concerns.
- Seasonal closures of routes to help achieve wildlife conservation goals occur with this plan.

Assumptions include information about use levels for the forest:

- Use levels would continue to increase across the Forest at a rate comparable to that of the last few years, with ATV use increasing more rapidly than other uses.
- The most popular activities would grow at a low to moderate rate and include viewing natural features, viewing wildlife, hiking and walking, relaxing, driving for pleasure, and fishing.
- Other popular activities would remain at about current levels and include hunting, developed camping, backpacking, picnicking, visiting historic sites, and primitive camping.

### 3.2.7 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

#### *Challis-Yankee Fork Ranger District*

The Challis-Yankee Fork Ranger District has about 804,142 acres in the project area, most of which are split between SPM and SPNM ROS classes. The district has a strong component of RN recreation class, with miles of developed forest roads providing recreation opportunities for visitors. The district has rural components in the parts of the district near current and former mining operations and settlements and primitive classification in the areas where recommended wilderness occurs. The western edge of this ranger district is within 120 miles of the rapidly growing Boise, Idaho metropolitan area. There are about 106 miles of non-motor vehicle trails on the district. Based on the current Travel Plan, there are about 73,118 acres of area open to cross-country travel.

The Challis-Yankee Fork Ranger District has 29 miles of unauthorized routes in "open areas" of the current Travel Plans, and 292 miles of unauthorized routes in "restricted areas" under the current Travel Plans. Table 2-14 compares the alternatives for the Challis-Yankee Fork Ranger District.

**Direct and Indirect effects of the Alternatives**

*Miles of motorized routes (roads and trails) by use type and seasonal open periods*: Alternative 4 provides the most motorized routes at 952 miles. Alternative 3 offers the fewest miles of motorized routes and provides the maximum opportunity for non-motorized recreationists to experience non-motor vehicle travel on the district. Alternative 5 provides 308 miles of motor vehicle trails and 539 miles of road.

Unauthorized routes (U-routes) converted to designated routes on this district vary considerably between the alternatives. Alternative 0 would convert 29 miles to roads. In Alternative 3, about three miles of U-routes would convert to road, six miles would convert to OHV trails, and 1.5 miles would convert to ATV and two-wheeled routes. Alternative 4 would convert nine miles to road and 17 miles into OHV trails. Alternative 5 would convert eight miles to road and nine miles to OHV trail. None of the alternatives for this district would convert U-routes into motorcycle trails.

*Acres of area within Motorized Influence Zone (1/2 mile from motorized routes):* The motorized influence zone is described for this analysis as the area within ½ mile surrounding all motorized routes.

For this district, comparing the motorized influence zone with the remaining non-motorized area available on the district, there is little change between alternatives. Alternative 3 has the lowest percentage of motorized influence at 39% while the alternative with the highest amount of motorized influence is Alternative 0. In Alternative 5, about 46% of the district is within the motorized influence zone. This measurement is an indicator of the balance between motorized and non-motorized acres available for recreationists to choose from across the district.

*Impacts to ROS character*: Areas classified as "open" to cross-country travel in the current Travel Plans often contain an ROS classification of SPNM or P. This anomaly allows for motorized routes in SPNM and in P classifications. On a case-by-case basis and depending on the condition and amount of use the route receives, it may appear inconsistent with these ROS classes. The settings most likely to create inconsistency with the ROS zoning occur when roads and motor vehicle trails occur within P and SPNM areas. Alternatives 0 and 1 have the highest inconsistency at 13%, Alternative 4 has 12%, Alternative 3 has the least at 7%, and Alternative 5 is 10% inconsistent with the established ROS classifications for the district.

*Acres of motorized access to dispersed camping:* Alternative 0 includes the areas open for cross-country travel, so it has the most acreage. Alternative 3 provides for minimal motorized access to dispersed camping (16,380 acres), and of the action alternatives, Alternative 4 provides the most (34,481) acres. Alternative 5 has 30,619 acres available. With each of these alternatives, there is the perception that access would be reduced over the No Action Alternative, since there are no longer areas open to cross-country travel.

*Wild and Scenic Rivers*: Mill Creek and Yankee Fork are eligible for designation as "recreational" rivers; and East Fork Pahsimeroi, Pahsimeroi, and West Fork Yankee Fork are eligible as "scenic" rivers under the Wild and Scenic Rivers Act (16 U.S.C. 28 §§ 1271–1287, 2002). For this determination, the "corridor" is ¼ mile either side of a stream's ordinary high water level. None of the alternatives introduce motorized routes along a "wild" segment, and the differences between the alternatives is slight, since both classifications of "recreation" and "scenic" are allowed a certain level of motorized road and trail access within the river corridor. The varying route mileage is mostly in the "recreation" classification of the Yankee Fork of the Salmon River.

## ***Leadore Ranger District***

The Leadore Ranger District has about 329,443 acres in the project area, most of which are split between RN and SPNM ROS classes. The district has a strong component of SPM recreation class, with about 121,416 acres of area open for cross-country travel. On the east side of the district, portions of the Continental Divide National Scenic Trail and historic Bannock Pass are in the Beaverhead mountain range. The Lemhi Mountains lie to the west, with high alpine lakes and forest trails. Specially designated trails include the Continental Divide National Scenic Trail, the Lewis and Clark National Historic Trail, and the Nez Perce National Historic Trail. The high country of the Leadore Ranger District is within 120 miles of the Idaho Falls/Pocatello urban area.

Recreation opportunities on the district also include 61 miles of non-motor vehicle trails, 214 miles of open roads, 106 miles of motor vehicle trail, for a total of 320 miles of motorized routes across the district. About 296 miles of unauthorized routes are in "open areas," while about 188 miles of unauthorized routes occur in "restricted areas" under the current Travel Plan. Table 2-15 compares the alternatives for the Leadore Ranger District.

**Direct and Indirect effects of the Alternatives**

*Miles of motorized routes (roads and trails) by use type and seasonal open periods*: Alternative 4 provides the most motorized routes at 352 miles. Alternative 3 offers the fewest miles of motorized routes and provides the maximum opportunity for non-motorized recreationists to experience non-motor vehicle travel on the district. Alternative 5 provides 133 miles of motor vehicle trails and 219 miles of road.

Unauthorized routes (U-routes) converted to designated routes on this district vary considerably between the alternatives. Alternative 0 would convert 296 miles to roads. Less than one mile would be converted to roads in Alternative 1. In Alternative 3, about four miles of U-routes would convert to road, four miles would convert to OHV trails, six miles would convert to ATV and two-wheeled routes, and less than one mile of motorcycle routes would be designated from U-routes. Alternative 4 would convert 40 miles to road, 95 miles into OHV trails, 15 miles to ATV and two-wheeled routes, and one mile to a motorcycle route. Alternative 5 would convert 13 miles to road, 33 miles to OHV trail, and 16 miles to ATV and two-wheeled trails. The alternatives for this district would convert very few miles of U-routes into "motorcycle only" trails.

*Acres of area within Motorized Influence Zone (½ mile from motorized routes):* The motorized influence zone is described for this analysis as the area within ½ mile surrounding all motorized routes. For this district, comparing the motorized influence zone with the remaining non-motorized area available on the district is changes quite a bit between alternatives. Alternative 3 has the lowest percentage of area within the motorized influence zone at 34%, while the alternative with the highest amount of motorized influence is Alternative 0. In Alternative 5 about 48% of the district is within the motorized influence zone, Alternative 4 has 60%, and Alternative 1 has 43% of the district within the motorized influence zone of the motorized routes. This measurement is an indicator of the balance between motorized and non-motorized acres available for recreationists to choose from across the district.

*Impacts to ROS character*: Areas classified as "open" to cross-country travel in the current Travel Plan often contain an ROS classification of SPNM or P. This anomaly allows for motorized routes in SPNM and in P classifications. On a case-by-case basis and depending on the condition and amount of use the route receives, it may appear inconsistent with these ROS classes. The settings most likely to create inconsistency with the ROS zoning occur when roads and motor vehicle trails occur within P and SPNM areas. Alternative 0 has the highest inconsistency at 8.5%, Alternative 4 has 7.6%, Alternative 3 has the least at <1%, and Alternative 5 is 5% inconsistent with the established ROS classifications for the district.

*Acres of motorized access to dispersed camping:* Alternative 0 includes the areas open for cross-country travel, so it has the most acreage. Alternative 3 provides for minimal motorized access to dispersed camping (5,739 acres), and of the action alternatives, Alternative 4 provides the most (19,829) acres. Alternative 5 has 11,556 acres available. With each of these alternatives, the perception of the access would be reduced over the No Action Alternative, since there are no longer areas open to cross-country travel.

*Wild and Scenic Rivers*: Bear Valley Creek and Hayden Creek are eligible for designation as "recreational" rivers; and also have segments potentially classified as "scenic" rivers under the Wild and Scenic Rivers Act (16 U.S.C. 28 §§ 1271–1287, 2002). For this determination, the "corridor" is ¼ mile either side of a stream's ordinary high water level. None of the alternatives introduce motorized routes along a "wild" segment. Alternative 0 includes 29 miles of roads and OHV trails. Both classifications of "recreation" and "scenic" allow a certain level of motorized road and trail access within the river corridor. Among the action alternatives, the mileage of roads changes little, and the amount of OHV trails drops to zero. Alternative 3 has only open roads within the stream corridors. Alternative 1 has 8.5

miles of motorcycle trails within the stream corridors, and 5.5 miles of ATV/motorcycle trails within the stream corridors. Alternative 4 has 13 miles ATV/motorcycle trails and 3.4 motorcycle only trails within the stream corridors. Alternative 5 has 14.5 miles of ATV/motorcycle trail within the stream corridor. The varying route mileage is mostly in the "recreation" classification segments of both Bear Creek and Hayden Creek.

## ***Lost River Ranger District***

The Lost River Ranger District has about 814,505 acres in the project area, most of which are split between SPM and RN. A large component of SPNM class exists as well. The southern end of this district is within 120 miles of the Idaho Falls/Pocatello urban area, which is growing steadily. The Lost River Ranger District has Mt. Borah, the highest peak in Idaho, and also provides a unique hang-gliding site at King Mountain, as well as more traditional rustic recreation opportunities in the Copper Basin area. Major scenic attractions include "Little Switzerland" in the upper reaches of the Pahsimeroi, the Big and Little Lost River drainages and the White Knob Mountain Range. The southern extension of the Pahsimeroi Mountains, including rugged slopes and high mountains that provide a scenic backdrop to the valley ranches in the communities of Mackay and Challis. The current Travel Plan provides 175 miles of non-motor vehicle trails and 119,444 acres of area open to cross-country travel; also included are 138 miles of unauthorized routes in "open areas" and 404 miles of unauthorized routes in "restricted areas." Table 2-17 compares the alternatives for the Lost River Ranger District.

**Direct and Indirect effects of the Alternatives**

*Miles of motorized routes (roads and trails) by use type and seasonal open periods*: Alternative 4 provides the most motorized routes at 729 miles. Alternative 3 offers the fewest miles of motorized routes and provides the maximum opportunity for non-motorized recreationists to have experience non-motor vehicle travel on the district. Alternative 5 provides 172 miles of motor vehicle trails and 489 miles of road.

Unauthorized routes (U-routes) converted to designated routes on this district vary considerably between the alternatives. Alternative 0 would convert 137 miles to roads and OHV trails. In Alternative 3, about 24 miles of U-routes would convert to road, 2 miles would convert to OHV trails, and 1.6 miles would convert to ATV& two-wheeled routes. Alternative 4 would convert 64 miles to road, 46 miles into OHV trails, and 11 miles to ATV/motorcycle routes. Alternative 5 would also convert 64 miles to road, 15 miles to OHV trail, and 23 miles to ATV/motorcycle trails. None of the alternatives for this district would convert U-routes into trails designated only for motorcycles.

*Acres of area within Motorized Influence Zone (½ mile from motorized routes):* The motorized influence zone is described for this analysis as the area within ½ mile surrounding all motorized routes. For this district, comparing the motorized influence zone with the remaining non-motorized area available on the district there is little changed between alternatives. Alternative 3 has the lowest percentage of motorized influence area at 31% while the alternative with the highest amount of motorized influence is Alternative 0. In Alternative 5, about 37% of the district is within the motorized influence zone. This measurement is an indicator of the balance between motorized and non-motorized acres available for recreationists to choose from across the district.

*Impacts to ROS character*: Areas classified as "open" to cross-country travel in the current Travel Plan often contain an ROS classification of SPNM or P. This anomaly allows for motorized routes in SPNM and in P classifications. On a case-by-case basis and depending on the condition and amount of use the route receives, it may appear inconsistent with these ROS classes. The settings most likely to create inconsistency with the ROS zoning occur when roads and motor vehicle trails occur within P and SPNM

areas. Alternative 0 has the highest inconsistency at 13%, Alternative 4 has 11%, Alternative 3 has the least at 7%, and Alternative 5 is 9% inconsistent with the established ROS classifications for the district.

*Acres of motorized access to dispersed camping:* Alternative 0 includes the areas open for cross-country travel, so it has the most acreage. Alternative 3 provides for minimal motorized access to dispersed camping (13,249 acres), and of the action alternatives, Alternative 4 provides the most (31,126) acres. Alternative 5 has 22,693 acres available. With each of these alternatives, there is the perception that access would be reduced over the existing condition, since there are no longer areas open to cross-country travel.

*Wild and Scenic Rivers*: East Fork Big Lost River, Lake Creek, Pass Creek, Star Hope Creek (West Fork Big Lost), Summit Creek, and Wildhorse Creek are eligible for designation as "recreational" rivers; Kane Creek, Muldoon Creek, Star Hope Creek, and Wildhorse Creek are eligible as "scenic" rivers, and segments of Fall Creek, Lower Cedar Creek, and Summit Creek are eligible as "wild" rivers under the Wild and Scenic Rivers Act (16 U.S.C. 28 §§ 1271–1287, 2002). For this determination, the "corridor" is ¼ mile either side of a stream's ordinary high water level.

Each of the alternatives includes motorized routes along a "wild" classification segment. Alternatives 4 and 5 each have about the same total mileage within the wild segments (3.4 miles) and Summit Creek stays the same in each alternative with 0.2 miles of road within the corridor. Lower Cedar Creek is the same between action alternatives at about one mile of open road in each action alternative. Fall Creek changes, but not dramatically, in that about one mile in Alternatives 1 and 3, two miles of open road in Alternative 4, and 2.1 miles of open road in Alternative 5 are eligible as "wild." About one mile each of open roads along Fall Creek and Lower Cedar are eligible in Alternatives 1 and 3; open roads for Lower Cedar Creek remain the same for Alternative 5 at 1.1 miles. The other differences between the alternatives is slight, since both classifications of "recreation" and "scenic" are allowed a certain level of motorized road and trail access within the river corridor. The varying route mileage is mostly in the "recreation" classification of the East Fork of the Big Lost River.

## ***Middle Fork Ranger District***

Although this district is mainly comprised of the FC-RONRW, the 110,663 acres outside of the wilderness area are within the project area. This district provides portal access to the wilderness, road corridors through the wilderness, and is within 120 miles of the rapidly growing Boise, Idaho metro area. Near the town of Stanley, the Cape Horn area, Marsh Creek and Basin Creek provide hunting, fishing, camping, cross-country skiing and snowmobiling. Road corridors provide recreational access to the wilderness or access into existing mines, and are also used by motoring recreationists to access and view highly scenic areas of the Forest. Special areas also include the "Seafoam" mining district, long expansive views into the FC-RONRW, miles of access routes and corridors, and the Knapp Creek/Loon Creek National Historic Trail. Boundary Creek Road accesses the Middle Fork Wild and Scenic River; current travel management provides 20 miles of non-motor vehicle trails, 68,167 acres of area open to cross-country travel on the district. Also included are 29 miles of unauthorized routes in "open areas" and 11 miles of unauthorized routes in "restricted areas." Table 2-17 compares the alternatives for the Middle Fork Ranger District.

**Direct and Indirect effects of the Alternatives**

*Miles of motorized routes (roads and trails) by use type and seasonal open periods*: Alternative 4 provides the most motorized routes at 277 miles. Alternative 3 offers the fewest miles of motorized routes and provides the maximum opportunity for non-motorized recreationists to have experience non-motor vehicle travel on the district. Alternative 5 provides 35 miles of motor vehicle trails and 232 miles of road.

Unauthorized routes (U-routes) converted to designated routes on this district vary considerably between the alternatives. Alternative 0 would convert 29 miles to roads. In Alternative 3, about two miles of U-routes would convert to road, and no other U-routes would be converted to motorized routes. Alternatives 4 and 5 would each convert six miles to road and one mile into OHV trails. None of the alternatives for this district would convert U-routes into motorcycle trails.

*Acres of area within Motorized Influence Zone (½ mile from motorized routes):* The motorized influence zone is described for this analysis as the area within ½ mile surrounding all motorized routes. For this district, the motorized influence zone compared with the remaining non-motorized area available on the district changes little between alternatives. Alternative 3 has the lowest percentage of motorized influence at 56% while the alternative with the highest amount of motorized influence is Alternative 0. In Alternative 5 about 64% of the district is within the motorized influence zone. This measurement is an indicator of the balance between motorized and non-motorized acres available for recreationists to choose from across the district outside of the designated wilderness area.

*Impacts to ROS character*: Areas classified as "open" to cross-country travel in the current Travel Plan often contain an ROS classification of SPNM or P. This anomaly allows for motorized routes in SPNM and in P classifications. On a case-by-case basis and depending on the condition and amount of use the route receives, it may appear inconsistent with these ROS classes. The settings most likely to create inconsistency with the ROS zoning occur when roads and motor vehicle trails occur within P and SPNM areas. Alternatives 4 and 5 have the highest inconsistency at 7.9% and 6.2% respectively. Alternative 0 has 5.7%, Alternative 1 has the least at 2.9%, and Alternative 3 is 3.5% inconsistent with the established ROS classifications for the district.

*Acres of motorized access to dispersed camping:* Alternative 0 includes the areas open for cross-country travel, so it has the most acreage available for motorized access to dispersed camping. Alternative 3 provides for minimal motorized access to dispersed camping (5,677 acres), and of the action alternatives, Alternative 4 provides the most (10,852) acres. Alternative 5 has 9,274 acres available. With each of these alternatives, there is the perception that access would be reduced over the No Action Alternative, since there are no longer areas open to cross-country travel.

*Wild and Scenic Rivers*: Loon Creek and Marsh Creek are eligible for designation as "recreational" rivers; segments of Warm Spring Creek, Loon Creek and Marsh Creek are eligible as "wild" streams; and West Fork of Yankee Fork is eligible for designation as "scenic" rivers under the Wild and Scenic Rivers Act (16 U.S.C. 28 §§ 1271–1287, 2002). For this determination, the "corridor" is ¼ mile either side of a stream's ordinary high water level.

Each alternative contains about a mile or less of motorized routes along a "wild" segment, and the difference between the action alternatives is slight, since the classification of "recreation" allows a certain level of motorized road and trail access within the river corridor. Alternative 5 introduces less than one mile of motorcycle trail within the scenic corridor of the West Fork of the Yankee Fork of the Salmon River.

## ***North Fork Ranger District***

The North Fork Ranger District is located on the north end of the SCNF, and portions of this 418,578-acre district are within 120 miles of the rapidly growing Missoula, Montana urban area. The Recreation Section of the Main Salmon Wild and Scenic River provides the heaviest recreation use area on the Forest. Other important components of the district's recreation program include portions of the Continental Divide National Scenic Trail, the Nez Perce National Historic Trail, the Lewis and Clark National Historic Trail, portals into the FC-RONRW, and popular hunting and fishing opportunities. The Continental Divide National Scenic Trail and the Divide National Recreation Trail each have motorized

and non-motorized segments in this area. Major drainages include Panther Creek and Hughes Creek, and mining towns and historic settlements are found throughout the district. Seventy-five miles of non-motor vehicle trails and 219,007 acres of area open to cross-country travel also include 235 miles of unauthorized routes in "open areas" and 379 miles of unauthorized routes in "restricted areas." Table 2-18 compares the alternatives for the North Fork Ranger District.

**Direct and Indirect effects of the Alternatives**

*Miles of motorized routes (roads and trails) by use type and seasonal open periods*: Alternative 4 has the most motorized routes at 723 miles. Alternative 3 offers the fewest miles of motorized routes and provides the maximum opportunity for non-motorized recreationists to experience non-motor vehicle travel on the district. Alternative 5 has 95 miles of motor vehicle trails and 441 miles of road.

Unauthorized routes (U-routes) converted to designated routes on this district vary considerably between the alternatives. Alternative 0 would convert 235 miles to roads. In Alternative 3, about three miles of U-routes would convert to road. Alternative 4 would convert 24 miles to road, 13 miles into OHV trails, one mile to ATV/motorcycle trails, and four miles to motorcycle-only designated routes. Alternative 5 would convert seven miles to road, one mile to OHV trail, and one mile to motorcycle designated routes.

*Acres of area within Motorized Influence Zone (½ mile from motorized routes):* The motorized influence zone is described for this analysis as the area within ½ mile surrounding all motorized routes. On this district, comparing the motorized influence zone to the remaining non-motorized area available, there is quite a bit of change between Alternative 0 and the action alternatives. Alternative 3 has the lowest percentage of motorized influence at 44%, while the alternative with the highest amount of motorized influence (74%) is in Alternative 0. In Alternative 5, about 50% of the district is within the motorized influence zone. This measurement is an indicator of the balance between motorized and non-motorized acres available for recreationists to choose from across the district.

*Impacts to ROS character*: Areas classified as "open" to cross-country travel in the current Travel Plan often contain an ROS classification of SPNM or P. This anomaly allows for motorized routes in SPNM and P classifications. On a case-by-case basis and depending on the condition and amount of use the route receives, it may appear inconsistent with these ROS classes. The settings most likely to create inconsistency with the ROS zoning occur when roads and motor vehicle trails occur within P and SPNM areas. Alternatives 0 and 4 have the highest inconsistency at 3.2% and 4% respectively. Alternative 5 has 1.2%, Alternatives 1 and 3 have a negligible 1% or less inconsistent with the established ROS classifications for the district.

*Acres of motorized access to dispersed camping:* Alternative 0 includes the areas open for cross-country travel, so it has the most acreage. Alternative 3 provides for minimal motorized access to dispersed camping (6,994 acres), and of the action alternatives, Alternative 4 provides the most (15,202) acres. Alternative 5 has 11,889 acres available. With each of these alternatives, there is the perception that access would be reduced over the No Action Alternative, since there are no longer areas open to cross-country travel.

*Acres of motorized access to dispersed camping along the Salmon River Road*: In Alternative 3, camping with the use of a motor vehicle (e.g. car, motor-home, truck and camp trailer, camper, off-highway vehicle, or motorcycle) would be allowed in designated dispersed camping areas and designated pull-outs along the Salmon River Road (FR #60030). This alternative identifies 52 pull-outs and areas available for dispersed camping only. About 18.2 acres would be available for designated dispersed camping in this river corridor. Alternatives 4 and 5 propose to designate six access routes along the Salmon River Road as well as 300-foot corridors along the Salmon River Road where motorized access to

dispersed campsites would be allowed. No motorized access for dispersed camping would be available from milepost 28.7 to milepost 32.9 (bottom end of the Clam Hole). Another 300-foot corridor on either side of the Salmon River Road would be designated for motorized access to dispersed camping from milepost 32.9 to Corn Creek (at the campground entrance). Acres available are included in the total for the district in the two alternatives where the designation is the same. These alternatives would require minimal signing, and could be mapped very clearly for ease of understanding, and would not substantially reduce the acres available for motorized access to dispersed camping during the highly busy fall and spring hunting/fishing seasons.

*Wild and Scenic Rivers*: Panther Creek and a segment of the Salmon River are eligible for designation as "recreational" rivers under the Wild and Scenic Rivers Act (16 U.S.C. 28 §§ 1271–1287, 2002). For this determination, the "corridor" is ¼ mile either side of a stream's ordinary high water level. None of the alternatives introduce motorized routes along a "wild" segment, and the differences between the alternatives is slight, since the classifications of "recreation" are allowed a certain level of motorized road and trail access within the river corridor. The varying route mileage is mostly in the "recreation" classification of the Salmon River, while Panther creek shows no difference among motorized access in any of the alternatives.

## ***Salmon-Cobalt Ranger District***

The 638,418-acre Salmon-Cobalt Ranger District includes the backyard of Salmon, Idaho. Local and regional visitors explore the history-rich front country and use the wilderness portals to access the FC-RONRW through the Bighorn Crags, Yellowjacket, and Camas Creek areas. Day-use picnicking at local lakes and streams and driving for pleasure on major forest roads are complemented by the seasonal hunting influx. This district has many former administrative sites used as cabin rentals, and many miles of wilderness and non-wilderness trails cross the area. One Hundred thirty-seven miles of non-motor vehicle trails and 379,203 acres of area open to cross-country travel occur in the current Travel Plan; resulting in 383 miles of unauthorized routes in "open areas" and 322 miles of unauthorized routes in "restricted areas." Table 2-19 compares the alternatives for the Salmon-Cobalt Ranger District.

**Direct and Indirect effects of the Alternatives**

*Miles of motorized routes (roads and trails) by use type and seasonal open periods*: Alternative 4 provides the most motorized routes at 1152 miles. Alternative 3 offers the fewest miles of motorized routes and provides the maximum opportunity for non-motorized recreationists to have experience non-motor vehicle travel on the district. Alternative 5 provides 120 miles of motor vehicle trails and 750 miles of road.

Unauthorized routes (U-routes) converted to designated routes on this district vary considerably between the alternatives. Alternative 0 would convert 267 miles to roads and 115 miles to OHV trails. In Alternative 3, about two miles of U-routes would convert to road, and 11 miles would convert to OHV trails. Alternative 4 would convert 52 miles to road, 66 miles into OHV trails, two miles to ATV/motorcycle trails, and one mile to motorcycle-only routes. Alternative 5 would convert 12 miles to road and 22 miles to OHV trail.

*Acres of area within Motorized Influence Zone (½ mile from motorized routes):* The motorized influence zone is described for this analysis as the area within ½ mile surrounding all motorized routes. For this district, comparing the motorized influence zone to the remaining non-motorized area available, there are distinct changes between alternatives. Alternative 3 has the lowest percentage of motorized influence at 48%, while the alternative with the highest amount of motorized influence is Alternative 0. In Alternative 5, about 53% of the district is within the motorized influence zone. This measurement is

an indicator of the balance between motorized and non-motorized acres available for recreationists to choose from across the district.

*Impacts to ROS character*: Areas classified as "open" to cross-country travel in the current Travel Plan often contain an ROS classification of SPNM or P. This anomaly allows for motorized routes in SPNM and P classifications. On a case-by-case basis and depending on the condition and amount of use the route receives, it may appear inconsistent with these ROS classes. The settings most likely to create inconsistency with the ROS zoning occur when roads and motor vehicle trails occur within P and SPNM areas. Alternative 0 has the highest inconsistency at 25%, none of the other alternatives are more than 1% inconsistent with the established ROS classifications for the district.

*Acres of motorized access to dispersed camping:* Alternative 0 includes the areas open for cross-country travel, so it has the most acreage. Alternative 3 provides for minimal motorized access to dispersed camping (19,842 acres), and of the action alternatives, Alternative 4 provides the most (39,022) acres. Alternative 5 has 30,717 acres available. With each of these alternatives, there is the perception that access would be reduced over the No Action Alternative, since there are no longer areas open to cross-country travel.

*Wild and Scenic Rivers*: Panther Creek and a segment of Camas Creek are eligible for designation as "recreational" rivers, and a segment of Camas Creek is eligible as a "wild" river under the Wild and Scenic Rivers Act (16 U.S.C. 28 §§ 1271–1287, 2002). For this determination, the "corridor" is ¼ mile either side of a stream's ordinary high water level. Alternatives 0 and 1 would designate motorized routes along the "wild" segment of Camas Creek. The remainder of the motorized differences between the alternatives is slight, since the classification of "recreation" allows a certain level of motorized road and trail access within the river corridor. The varying route mileage is mostly in the "recreation" classification of Camas Creek.

### 3.2.8 CUMULATIVE EFFECTS

The following actions were considered in the cumulative effects analysis for the recreation resource.

**Past Road Construction and Management**: The road system designated would continue to offer multiple recreation opportunities. The prohibition of motor vehicle travel off the designated system may increase use of the remaining designated open road system.

Travel management decisions resulting from this project could contribute to cumulative effects of other decisions and actions on recreation opportunities in the SCNF and surrounding area. Various ongoing and reasonably foreseeable actions on the SCNF and adjacent federal, state, and private lands that are pertinent to the cumulative effects analysis for this project are identified in Appendix F.

The Travel Management Plan decision made with this project, along with other travel management decisions made on the Boise, Sawtooth, Bitterroot, Caribou-Targhee, and Beaverhead-Deerlodge National Forests and other federal and state lands would have potential cumulative effects on recreation, particularly motorized recreation activities.

Over the next couple of years as all National Forests across the nation begin to implement new travel regulations in accordance with the Travel Management Rule, acres that were previously open to off-route motor vehicle use would be lost as a recreation opportunity and experience. Users desiring this experience would need to find designated open areas, or restrict their use to designated roads and trails, private land opportunities, or seek opportunities on other public agency lands. Loss of previously open cross-country motorized areas in the summer months would concentrate motor vehicle users onto a smaller trail network, potentially causing crowding on some motor vehicle trails.

The north, south, and west sides of the SCNF are located proximate to large population areas, including the cities of Missoula, Montana, and Boise, Idaho Falls, and Pocatello. Many inhabitants of these urban areas visit the SCNF to recreate and demand for recreation opportunities is expected to increase. Increases in demand for all recreation opportunities - both motorized and non-motorized - could increase the need for and cost of regular road and trail maintenance.

Future vegetation treatment projects may have temporary to short-term effects on recreation by restricting access during operations (logging, prescribed burning, road construction). These projects could open up forest canopy and may improve scenery and increase recreational access.

Changing area and trail designations from motorized to non-motorized or vice versa is not considered irreversible or irretrievable because the trails and roads would remain on the landscape and the SCNF could always change the designation in the future.

## 3.3 ROADLESS AND RECOMMENDED WILDERNESS

### 3.3.1 CHANGES BETWEEN DRAFT EIS AND FINAL EIS

Although the impact of the alternatives on IRAs and Recommended Wilderness Areas were analyzed in the DEIS, the effects were not analyzed in detail. The FEIS presents a more detailed analysis of the effects of the alternatives on the roadless and recommended wilderness resources by presenting a route-by-route view of the changes to IRAs and Recommended Wilderness Areas, and by subsequently analyzing the impact of those changes on roadless and recommended wilderness values.

### 3.3.2 ISSUES

A variety of concerns about the impact of changes in motorized access on IRAs and Recommended Wilderness Areas were raised by interested members of the public. The following is a sampling of the primary concerns that were raised.

**Roadless Issue 1:** Motor vehicle use on designated roads and motor vehicle trails in Inventoried Roadless Areas (IRA) detracts from the roadless character of the land.

***Indicators:***

- Miles of new motorized routes designated in IRAs by ranger district
- Effects to roadless characteristics

**Wilderness Issue 1:** Motor vehicle use in the Borah Peak, Boulder/White Clouds, and Pioneer Mountain Recommended Wilderness Areas adversely affects wilderness attributes.

***Indicators:***

- Miles of new motorized routes proposed for designation within Recommended Wilderness Areas
- Effects to wilderness attributes

### 3.3.3 METHODOLOGY FOR ANALYSIS

To analyze the effects of the travel management alternatives on the Salmon-Challis National Forest's Inventoried Roadless Areas and Recommended Wilderness Areas, the miles of new motorized routes designated in IRAs and Recommended Wilderness Areas by each alternative were calculated and compared. The analysis identified routes that were new motorized roads or trails, or were proposed by an alternative to change from motorized to nonmotorized. In this way, the effects of the alternatives

were isolated from the existing, authorized routes that did not change across alternatives. Each identified route was then analyzed by Forest resource specialists to determine its impact on roadless values in IRAs or wilderness values in Recommended Wilderness Areas.

Additional analysis was then performed on the IRAs to determine the effects of the alternatives on the potential wilderness value of the roadless areas. To determine this, new roads and trails over a half mile long in IRAs were examined in relation to five wilderness values: untrammeled, natural, undeveloped, solitude/ primitive recreation, and special features. All new roads and trails longer than a half-mile in length were examined, in three categories: roads, trails open to all (OHV trails) and all other trails (including ATV and motorcycle trails).

Only routes longer than a half-mile were selected for analysis, because intrusions into roadless areas of zero to less than a half-mile were considered to be minimally intrusive and not likely to affect wilderness values. The size of the roadless area was also taken into account in this indicator, as a new half-mile long motorized trail would be more likely to impact the wilderness value of a smaller area than it would a larger area.

Thus, a measurement index was created to analyze the effects of the actions on the wilderness value of IRAs -- miles of new road/ trail per 1000 acres. One thousand acres was chosen as an appropriate size for evaluation of impacts on potential wilderness, as roadless areas are considered for wilderness eligibility if they are over 5000 acres in size.[1] Evaluating impacts on a thousand-acre scale is therefore a conservative methodology that will ensure all potential effects are evaluated.

This measurement index serves as an effective indicator by taking into account the type of trail and length of trail relative to the size of the IRA. The level of this index below which effects are considered negligible is 0.2. That level was selected because index levels of zero to 0.1 were considered to be minimal route densities. Above this level, one might expect that the motorized trails in that IRA might begin to have an impact on that area's future eligibility as a wilderness area, as the length and number of motorized roads and trails in the area may diminish its wilderness potential, or force consideration of an alternative size or shape. Finally, the geographic nature of the impacts on wilderness potential were also examined, by looking at where the relevant trails were located in the IRA. Routes that cut across IRAs are more likely to impact wilderness eligibility than would routes around the edges of an IRA.

### 3.3.4 COMPLIANCE WITH THE FOREST PLAN AND OTHER REGULATORY DIRECTION

The analysis has determined that the alternatives are compliant with the Forest Plan, with the exception of Alternative 4. Some additions to Recommended Wilderness Areas in Alternative 4 are not in compliance with Challis Forest Plan Amendment 9. For more details, see the effects analysis discussions for Alternative 4.

### 3.3.5 EXISTING CONDITION

Roadless and recommended wilderness resources on the SCNF are vulnerable to impacts due to the allowance of unmanaged motor vehicle travel. Such values as solitude or the undeveloped nature of the land can be at risk when motorized recreation activities are permitted off designated roads and trails that were designed for motor vehicle uses. Likewise, roadless resource values such as soil, water, and air can be impacted by unmanaged recreation due to the effects of cross-country motor vehicle travel on soil erosion, for example.

[1] Exceptions can be made for areas smaller than 5000 acres if they are contiguous with an existing wilderness area.

### 3.3.6 AFFECTED ENVIRONMENT

The affected environment for this analysis is IRAs and Recommended Wilderness Areas in the travel management analysis area. There are 2,265,571 acres of Inventoried Roadless areas on the Forest. 199,980 acres of this are Recommended Wilderness Areas.

An IRA is an area that:

- is larger than 5,000 acres or, if smaller, contiguous to a designated wilderness or primitive area;
- contains no improved roads maintained for travel by standard passenger-type vehicles;
- is characterized by a substantially undeveloped characteristics; and
- has been inventoried by the Forest Service for possible inclusion in the Wilderness Preservation System.

These areas include those identified in a set of IRA maps or any update, correction, or revision of those maps are contained in the Forest Service Roadless Area Conservation Final EIS, Volume 2 (November 2000), and held at the national headquarters of the Forest Service. A complete listing of IRAs, their location, and acreage can be found in Table C-1 in Appendix C of the Salmon National Forest LRMP FEIS and in Table C-1 in Appendix C of the Challis National Forest LRMP FEIS.

### 3.3.7 ENVIRONMENTAL CONSEQUENCES

A description and side-by-side comparisons of the alternatives are found in Chapter 2. As described below in the direct and indirect effects by alternative analysis, the alternatives vary in terms of the miles of new motorized routes added to IRAs. Table 3-4 compares the miles of new motorized routes added in IRAs in each ranger district for each alternative.

Table 3-4. Summary of Miles of New Motorized Routes Added in IRAs across Alternatives by District

| | Miles of Motorized Routes added to Inventoried Roadless Areas across Alternatives | | | | |
|---|---|---|---|---|---|
| District | Alternative 0 | Alternative 1 | Alternative 3 | Alternative 4 | Alternative 5 |
| Challis-Yankee Fork | 0 | 0 | 0 | 47.3 | 3.9 |
| Leadore | 0 | 0 | 0 | 122.3 | 43.3 |
| Lost River | 0 | 0 | 6.9 | 56.9 | 25.2 |
| Middle Fork | 0 | 0 | 0 | 16.2 | 8.3 |
| North Fork | 0 | 0 | 0 | 69.5 | 13.4 |
| Salmon-Cobalt | 0 | 0 | 2.6 | 83.5 | 15.1 |
| Forest-wide | 0 | 0 | 9.5 | 395.7 | 109.2 |

#### *Alternative 0 – No Action*

**Direct and Indirect Effects**

Implementation of Alternative 0 would maintain the existing level of motorized opportunities on the SCNF. There would be no direct or indirect effects under this alternative, as there are no proposed actions.

#### *Alternative 1 – Designated System Routes*

**Direct and Indirect Effects**

Implementation of Alternative 1 would designate the motorized roads and trails in IRAs that are currently displayed on Travel Plan maps, as well as routes designated through previous NEPA decisions.

This alternative would decrease the level of total motorized miles available in IRAs from the No Action Alternative, due primarily to the exclusion of unauthorized motorized miles in open areas.

## *Alternative 3 – Recommended Wilderness/Roadless Values Emphasis*

**Direct and Indirect Effects**

This alternative is more restrictive than other alternatives in that it offers fewer yearlong opportunities on roads, and is more restrictive of vehicle types on motor vehicle trails.

Under this alternative, no motorized access would occur within Recommended Wilderness Areas and no new roads or motorized trails open to full-sized vehicles would be designated in IRAs.[2] Of the 2,095 miles of motorized routes in this alternative, 9.5 miles are new motorized routes proposed in IRAs. These new motorized trails in IRAs, however, are primarily trails open to vehicles 50" or less in width, in accordance with the intention of this alternative, as stated above.

Appendix C lists the individual routes that make up these miles, in Table 1. Routes in this table are listed by district and IRA. A summary of the miles proposed to be added by Alternative 3 in each ranger district is described below.

Alternative 3 would not have an impact on Recommended Wilderness Areas, as it does not propose any new motor vehicle access within these areas.

### *Challis-Yankee Fork Ranger District*

Alternative 3 proposes no new motorized routes in IRAs in the Challis-Yankee Fork Ranger District. Therefore, there would be no direct or indirect effects to IRAs in the Challis-Yankee Fork Ranger District under Alternative 3.

### *Leadore Ranger District*

Alternative 3 proposes no new motorized routes in IRAs in the Leadore Ranger District. Therefore, there would be no direct or indirect effects to IRAs in the Leadore Ranger District under Alternative 3.

### *Lost River Ranger District*

Alternative 3 proposes 6.9 miles of new motorized routes in IRAs in the Lost River Ranger District.

The addition/designation of motorized routes in roadless areas would have an effect on roadless characteristics for soil, water, and air. All designations of unauthorized routes and reclassifications of non-motor vehicle trails to motorized routes would have an effect. Motorized routes modify natural drainage networks and accelerate erosion processes. Motorized routes have three primary effects on water, which are described in Section 3.4.6 (Water Resources). Motor vehicle access in roadless areas also increases the opportunity for pollutants to enter the soil and water. Motorized vehicles can contribute to water pollution by depositing unburned fuel and other contaminants into the soil and water.

### *Middle Fork Ranger District*

Alternative 3 proposes no new motorized routes in IRAs in the Middle Fork Ranger District. Therefore, there would be no direct or indirect effects to IRAs in this district under Alternative 3.

[2] The exception to this statement is Trail 4069. .08 miles of this route are motorized in an IRA, due to a mapping discrepancy.

### *North Fork Ranger District*

Alternative 3 proposes no new motorized routes in IRAs in the North Fork Ranger District. Therefore, there would be no direct or indirect effects to IRAs in the North Fork Ranger District under Alternative 3.

### *Salmon-Cobalt Ranger District*

Alternative 3 proposes 2.6 miles of new motorized routes in IRAs in the Salmon-Cobalt Ranger District.

The addition/designation of motorized routes in roadless areas would have an effect on roadless characteristics for soil, water, and air. All designations of unauthorized routes and reclassifications of non-motor vehicle trails to motorized routes would have an effect. Motorized routes modify natural drainage networks and accelerate erosion processes. Motorized routes have three primary effects on water, which are described in Section 3.4.6 (Water Resources). Motorized access in roadless areas also increases the opportunity for pollutants to enter the soil and water. Motorized vehicles can contribute to water pollution by depositing unburned fuel and other contaminants into the soil and water.

**Summary of Effects**

Of the action alternatives, Alternative 3 would have the least amount of impact on roadless and wilderness values. Alternative 3 would add only 9.5 miles of new motor vehicle trails to the system, which is less than either Alternative 4 or Alternative 5. Additionally, the examination of route-by-route impacts on specific roadless and wilderness values (see Appendices C and D) indicates the impacts of Alternative 3 would be the least significant of the alternatives as well.

## ***Alternative 4 – Maximum Motorized Emphasis***

**Direct and Indirect Effects**

Forest-wide, this alternative would designate 3,021 miles of roads and 1,330 miles of motorized trails, for a total of 4,351 miles of motorized routes. This is the least restrictive alternative in terms of motorized access to the Forest.

Of those 4,351 miles, 395.7 miles are new motorized routes proposed in IRAs. Appendix C (Table 2) lists the individual routes that make up these miles. Routes in this table are listed by district and IRA. A summary of the miles proposed to be designated by Alternative 4 in each ranger district is described below.

**Effects Common to all Districts**

The addition or designation of motorized routes in roadless areas would have an effect on roadless characteristics for soil, water, and air. All designations of unauthorized routes and reclassifications of non-motor vehicle trails to motorized routes would have an effect. Motorized routes modify natural drainage networks and accelerate erosion processes. Motorized routes have three primary effects on water, which are described in Section 3.4.6 (Water Resources). Motorized access in roadless areas also increases the opportunity for pollutants to enter the soil and water. Motorized vehicles can contribute to water pollution by depositing unburned fuel and other contaminants into the soil and water.

**Effects of Alternative 4 on the Wilderness Attributes of roadless areas**

Alternative 4 would only add .53 miles of roads (greater than a half-mile in length) to IRAs. This addition is in the Boulder-White Clouds IRA, which is 144,198 acres in size. This addition was analyzed, and was found to not impact the IRA's wilderness attributes.

The addition of new trails (over a half-mile long) that are open to all vehicles would have an effect on the wilderness attributes of some IRAs. The complete analysis of the effects of Alternative 4, including

the wilderness attribute index results for all relevant routes, are located in Appendix C, Table 1. Additional analysis is located in Appendix B of the Roadless and Recommended Wilderness Specialist Report, which displays all roads and trails more than a half mile long that Alternative 5 would designate in IRAs, in addition to the roadless theme for those routes. The wilderness attribute index has determined that the Copper Basin, Goat Mountain, Italian Peak, Agency, Duck Peak, Napias, and Phelan IRAs had an index value at or above the significance level.

Alternative 4 would add 2.44 miles of half-mile-plus trails open to all vehicles to the Copper Basin IRA, in the Lost River Ranger District. The Copper Basin IRA is 10,944 acres and is in the Backcountry Restoration roadless theme, which does allow limited road-building and timber cutting activities, such as for the protection of at-risk communities. The new routes in Copper Basin are located on the west side of the IRA, between the IRA boundary and a popular camping area, the Star Hope Creek. This area has been a source of multiple unauthorized routes, from users accessing the creek. The new motorized routes designated here are intended to concentrate access to a few routes and discourage future user-created routes. These new routes may lessen Copper Basin's undeveloped and primitive recreation wilderness attributes.

Alternative 4 would also add 28.42 miles of half-mile-plus trails open to all vehicles in the Goat Mountain IRA, in the Leadore District. The Goat Mountain IRA is in the Backcountry Restoration roadless theme. Unlike the Alternative 4 additions to the Copper Basin IRA, some of the proposed additions to Goat Mountain cut across the IRA in two areas. These additions would impact the IRA's undeveloped and primitive recreation wilderness attributes, as well as potentially impact a future wilderness area's manageability. Although Goat Mountain is a large IRA (35,691 acres), the proposed motorized trails (seasonal) would effectively break up the area into three separate IRAs, which may affect the goal of managing large, intact, undeveloped wilderness areas.

Finally, Alternative 4 would add 15.63 miles of half-mile-plus trails open to all vehicles to the Italian Peak IRA, in the Leadore District. The Italian Peak IRA is in the Backcountry Restoration roadless theme. The proposed additions to Italian Peak are primarily two motorized trails in the west end of the 50,074-acre IRA. These additions would impact the IRA's undeveloped and primitive recreation wilderness attributes, as the trails themselves would be visible across the landscape and could be a detriment to the visitor seeking a visually primitive, undeveloped recreation experience in the area. The proposed trails are located, however, near a non-IRA inholding in the area, which would likely be a major detriment to wilderness eligibility in that section of the IRA; thus the new routes may not detract much further from the eligibility in that section of the roadless area.

Alternative 4 would also potentially affect the wilderness attributes of 4 other IRAs: Agency, Duck Peak, Napias, and Phelan. Alternative 4 would add 1.86 miles in 1 seasonal trail to the Agency IRA. The IRA is 6,389 acres in size, resulting in an index significance level of 0.3 In the Duck Peak IRA, Alternative 4 would add 3.72 miles in 14 trails to an IRA 7,149 acres in size. Due to the amount of mileage in a relatively small area, the index significance level is 0.5. In the Napias IRA, Alternative 4 would add 3.07 miles in 3 trails to an IRA 9,292 acre in size. The index significance level for this action is 0.3. Virtually all of the additions to these 4 roadless areas, however, are on the edges of the IRA, and do not bisect them, which minimizes their impact on wilderness attributes.

The effect of other new trails in Alternative 4 on wilderness attributes was also analyzed. Miles of trails open only to ATVs and/or motorcycles were totaled, and an index was created for these types of routes. None of the index variables rose to a level of significance; consequently, new ATV and motorcycle trails are not expected to impact IRAs' wilderness attributes in Alternative 4.

### *Challis-Yankee Fork Ranger District*

Alternative 4 proposes 47.3 miles of new motorized routes in IRAs in the Challis-Yankee Fork Ranger District.

In addition to the effects to soil, water, and air resources listed above, this alternative would potentially impact drinking water resources in part of the Challis-Yankee Fork Ranger District. The Squaw Creek Roadless Area contains the Garden Creek municipal watershed which supplies water for the town of Challis, where surface water is collected and treated for the community. The motor vehicle trail additions in this IRA may impact the municipal water supply. See Appendix C, Table 2 for route details.

Additions to the motor vehicle trail system in the Challis-Yankee Fork Ranger District under Alternative 4 may also potentially impact Threatened and Endangered Species (TES). Routes such as 4072, which were not designed for motor vehicle use, may impact TES species if motor vehicle use were permitted. See Appendix C, Table 2 for route details and the wildlife section for details.

Additions to the motor vehicle trail system in the Challis-Yankee Fork Ranger District under Alternative 4 may have minimal impact on the wilderness attributes of the district's Recommended Wilderness Areas. Alternative 4 would add approximately 2.34 miles of motor vehicle trail to the Borah Peak Recommended Wilderness Area. While this would minimally impact the undeveloped characteristics of this area, it would not have a significant impact on this or other wilderness attributes.

The majority of these additions to the motor vehicle trail system in the Challis-Yankee Fork Ranger District under Alternative 4 are not in compliance with the Challis Forest Plan, Amendment #9 (July 1993). Forest Plan Amendment #9 amended the LRMP for the Challis National Forest following the implementation of the Forest Travel Plan in 1993. Under this amendment, only certain specified routes are permitted for ORV travel in Recommended Wilderness Areas. None of the proposed additions to the motor vehicle trail network in the Challis-Yankee Fork Ranger District that extend into the Borah Peak Recommended Wilderness Area are authorized under the Forest Plan.

### *Leadore Ranger District*

Alternative 4 proposes 122.3 miles of new motorized routes in IRAs in the Leadore Ranger District.

Additions to the motor vehicle trail system in the Leadore District under Alternative 4 may potentially impact recreation opportunities and the diversity of plant and animal communities in the area. Certain motor vehicle trail proposals in the area impact non-motorized hunting opportunities in the region.

There are no Recommended Wilderness Areas in the Leadore Ranger District.

### *Lost River Ranger District*

Alternative 4 proposes 56.9 miles of new motorized routes in IRAs in the Lost River Ranger District.

Additions to the motor vehicle trail system in the Lost River District under Alternative 4 may potentially impact TES habitat, as well as recreation opportunities and the diversity of plant and animal communities in the area. Trail 6201, for example, may impact the RHCA for bull trout and anadromous fisheries habitat. Currently unauthorized trail U072331A runs through and is adjacent to populations of Welsh's buckwheat. In addition, trail 6255 may impact non-motorized hunting opportunities in the region by proposing motor vehicle uses.

Additions to the motor vehicle trail system in the Challis-Yankee Fork Ranger District under Alternative 4 may have minimal impact on the wilderness attributes of the district's Recommended Wilderness Areas. Alternative 4 would add approximately 2.34 miles of motor vehicle trail to the Borah Peak

Recommended Wilderness Area. While this would minimally impact the undeveloped characteristics of this area, it would not have a significant impact on this or other wilderness attributes.

The majority of these additions to the motor vehicle trail system in the Lost River Ranger District under Alternative 4 are not in compliance with the Challis Forest Plan, Amendment #9 (July 1993). Amendment #9 amended the LRMP for the Challis National Forest following the implementation of the Forest Travel Plan in 1993. Under this amendment, only certain specified routes are permitted for ORV travel in Recommended Wilderness Areas. None of the proposed additions to the motor vehicle trail network in the Lost River Ranger District that extend into the Borah Peak and Pioneer Mountains Recommended Wilderness Areas are authorized under the Forest Plan.

***Middle Fork Ranger District***

Alternative 4 proposes 16.2 miles of new motorized routes in IRAs in the Middle Fork Ranger District. This change in motorized mileage in IRAs is not expected to have any additional particular impact on resources beyond what is listed above.

There are no Recommended Wilderness Areas in the Middle Fork Ranger District.

***North Fork Ranger District***

Alternative 4 proposes 69.5 miles of new motorized routes in IRAs in the North Fork Ranger District. This change in motorized mileage in IRAs is not expected to have any additional impact on resources beyond what is listed above.

There are no Recommended Wilderness Areas in the North Fork Ranger District.

***Salmon-Cobalt Ranger District***

Alternative 4 proposes 83.5 miles of new motorized routes in IRAs in the Salmon-Cobalt Ranger District.

In addition to the effects to soil, water, and air resources listed above, this alternative would potentially impact drinking water resources in part of the Salmon-Cobalt Ranger District. The Jesse Creek Roadless Area contains the municipal watershed for the town of Salmon, where surface water is collected and treated for the community. The motor vehicle trail additions in this IRA may impact the municipal water supply. See Appendix C, Table 2 for route details.

There are no Recommended Wilderness Areas in the Salmon-Cobalt Ranger District.

**Summary of Effects**

Of the action alternatives, Alternative 4 would have the greatest amount of impact on roadless and wilderness values. Alternative 4 would add 395 miles of new motor vehicle trails to the system, which is significantly greater than either Alternative 4 or Alternative 3. Additionally, the examination of route-by-route impacts on specific roadless and wilderness values (see Appendix C) indicates the impacts of Alternative 4 would be the most significant of the alternatives as well.

## ***Alternative 5 – Preferred Alternative***

**Direct and Indirect Effects**

Forest-wide, the Preferred Alternative would designate 2,670 miles of roads and 864 miles of motor vehicle trails, for a total of 3,534 miles of motorized routes.

Of those 3,534 miles, 109.4 miles are new motorized routes proposed in IRAs. Appendix C, Table 3 lists the individual routes that comprise these miles. Routes in this table are listed by district and IRA. A summary of the miles proposed to be added by Alternative 5 in each ranger district is described below.

### Effects Common to all Districts

The addition or designation of motorized routes in roadless areas would have an effect on roadless characteristics for soil, water, and air. All designations of unauthorized routes and reclassifications of non-motor vehicle trails to motorized routes would have an effect. Motorized routes modify natural drainage networks and accelerate erosion processes. Motorized routes have three primary effects on water, which are described in Section 3.4.6 (Water Resources). Motor vehicle access in roadless areas also increases the opportunity for pollutants to enter the soil and water. Motorized vehicles can contribute to water pollution by depositing unburned fuel or other contaminants into the soil and water.

### Effects of Alternative 5 on the Wilderness Attributes of roadless areas

Alternative 5 would only add .53 miles of roads over a half-mile in length to any IRA. This is in the Boulder-White Clouds IRA, which is 144,198 acres in size. Analysis indicates this addition would not impact the IRA's wilderness attributes.

The addition of new trails that are open to all vehicles (over a half-mile long) would have an effect on the wilderness attributes of some IRAs. The complete analysis of the effects of Alternative 5, including the wilderness attribute index results for all relevant routes are located in Appendix D, Table 3. The wilderness attribute index has determined that the Copper Basin, Goat Mountain, and Italian Peak IRAs had an index value at or above the significance level (.2, .4, and .2, respectively).

Alternative 5 would add 2.44 miles of half-mile-plus trails open to all vehicles to the Copper Basin IRA, in the Lost River Ranger District. The Copper Basin IRA is in the Backcountry Restoration roadless theme, which does allow limited road-building and timber cutting activities, although for limited purposes, such as the protection of at-risk communities. The new routes in Copper Basin are located on the west side of the IRA, between the IRA boundary and a popular camping area, the Star Hope Creek. This area has been a source of multiple unauthorized routes, from users accessing the creek. The new motorized routes designated here are intended to concentrate access to a few routes and discourage future user-created routes. Therefore, while the new routes will lessen Copper Basin's undeveloped and primitive recreation wilderness attributes, the benefits of the new routes will likely outweigh the costs. The future wilderness value of the remainder of the IRA, which is 10,944 acres, should remain intact by restricting the motor vehicle activity to a confined area.

Alternative 5 would also add 14.85 miles of half-mile-plus trails open to all vehicles to the Goat Mountain IRA, in the Leadore District. The Goat Mountain IRA is in the Backcountry Restoration roadless theme. Unlike the Alternative 5 additions to the Copper Basin IRA, the proposed additions to Goat Mountain cut across the IRA in two areas. These additions would impact the IRA's undeveloped and primitive recreation wilderness attributes, as well as potentially impact a future wilderness area's manageability. Although Goat Mountain is a large IRA (35,691 acres), the proposed motorized trails (seasonal) would effectively break up the area into three separate IRAs, which may affect the goal of managing large, intact, undeveloped wilderness areas.

Finally, Alternative 5 would add 9.38 miles of half-mile-plus trails open to all vehicles to the Italian Peak IRA, in the Leadore District. The Italian Peak IRA is in the Backcountry Restoration roadless theme. The proposed additions to Italian Peak are primarily two motorized trails in the west end of the 50,074-acre IRA. These additions would impact the IRA's undeveloped and primitive recreation wilderness attributes, as the trails themselves would be visible across the landscape and could be a detriment to the visitor seeking a visually primitive, undeveloped recreation experience in the area. The proposed trails are located, however, near a non-IRA inholding in the area, which would likely be a major detriment to wilderness eligibility in that section of the IRA; thus the new routes may not detract much further from the eligibility in that section of the roadless area.

The effect of other new trails in Alternative 5 on wilderness attributes was also analyzed. Miles of trails open only to ATVs and/or motorcycles were totaled, and an index was created for these types of routes. None of the index variables rose to a level of significance; consequently, new ATV and motorcycle trails are not expected to impact IRAs' wilderness attributes in Alternative 5.

***Challis-Yankee Fork Ranger District***

Alternative 5 proposes 3.9 miles of new motorized routes in IRAs in the Challis-Yankee Fork Ranger District.

In addition to the effects to soil, water, and air resources listed above, this alternative would potentially impact drinking water resources in part of the Challis-Yankee Fork Ranger District. The Squaw Creek Roadless Area contains the Garden Creek municipal watershed which supplies water for the town of Challis, where surface water is collected and treated for the community. The motor vehicle trail additions in this IRA may impact the municipal water supply. See Appendix C, Table 3 for route details.

Alternative 5 would add no new motorized routes to Recommended Wilderness Areas in the Challis-Yankee Fork Ranger District that are not already permitted in Amendment 9.

***Leadore Ranger District***

Alternative 5 proposes 43.3 miles of new motorized routes in IRAs in the Leadore Ranger District.

Additions to the motor vehicle trail system in the Leadore District under Alternative 5 may potentially impact recreation opportunities and the diversity of plant and animal communities in the area. Certain motorized trail proposals in the area impact non-motorized hunting opportunities in the region.

There are no Recommended Wilderness Areas in the Leadore Ranger District.

***Lost River Ranger District***

Alternative 5 proposes 25.2 miles of new motorized routes in IRAs in the Lost River Ranger District.

Additions to the motorized trail system in the Lost River District under Alternative 5 may potentially impact TES habitat. Currently unauthorized trail U072331A runs through and is adjacent to Welsh's buckwheat populations. This trail proposal may impact this TES habitat.

Alternative 5 would add no new motorized routes to Recommended Wilderness Areas in the Lost River Ranger District that are not already permitted in Amendment 9.

***Middle Fork Ranger District***

Alternative 5 proposes 8.3 miles of new motorized routes in IRAs in the Middle Fork Ranger District. This change in motorized mileage in IRAs is not expected to have any additional particular impact on resources beyond what is listed above.

There are no Recommended Wilderness Areas in the Middle Fork Ranger District.

***North Fork Ranger District***

Alternative 5 proposes 13.4 miles of new motorized routes in IRAs in the North Fork Ranger District. This change in motorized mileage in IRAs is not expected to have any additional particular impact on resources beyond what is listed above.

There are no Recommended Wilderness Areas in the North Fork Ranger District.

***Salmon-Cobalt Ranger District***

Alternative 5 proposes 15.1 miles of new motorized routes in IRAs in the Salmon-Cobalt Ranger District.

This change in motorized mileage in IRAs is not expected to have any additional particular impact on resources beyond what is listed above.

There are no Recommended Wilderness Areas in the Salmon-Cobalt Ranger District.

**Summary of Effects**

Of the action alternatives, Alternative 5 would have less of an impact on roadless and wilderness values than Alternative 4, but more of an impact than Alternative 3. Alternative 5 would add 109 miles of new motorized trails to the system, which is less than Alternative 4, but more than Alternative 3. Additionally, the examination of route-by-route impacts on specific roadless and wilderness values (see Appendices C and D) indicates a middle range of impact as well.

### 3.3.8 CUMULATIVE EFFECTS

**Alternatives 0, 1, 3 and 5**

No cumulative effects would occur under these alternatives.

**Alternative 4**

Alternative 4 would increase the motorized trail mileage in the Middle Fork Ranger District. Although this increased mileage is not expected to impact roadless values by itself, there may be short-term impacts on some roadless values while ongoing actions take place in the area. There could be short-term impacts on primitive and semi-primitive recreation values due to the combination of fuels reduction activity and potentially increased motor vehicle trail activity.

## 3.4 WATER RESOURCES

### 3.4.1 CHANGES BETWEEN THE DRAFT EIS AND THE FINAL EIS

- 2008 303(d) list was approved by EPA. Alternatives in the FEIS were analyzed using this new list (IDEQ 2008).
- Discussion of Total Maximum Daily Loads (TMDLs) was added for each ranger district.
- Analysis of indicator values is displayed as total numbers rather than change compared to the No Action.
- Format Change: Affected Environment, Environmental Consequences and Cumulative Effects are grouped by district in this FEIS.

### 3.4.2 ISSUES AND INDICATORS

**Water Resources Issue 1:** The type, extent, and location of roads, trails, and dispersed camping may accelerate erosion, deliver sediment to streams, and degrade water quality.

***Indicators:***

- Motorized Route density within HUC 5 watersheds (HUC 5 Forest land only)
- Miles of designated routes in subwatersheds with a high watershed vulnerability rating within HUC 5 watersheds (HUC 5 Forest land only)
- Miles of designated routes within 300 feet of 303(d) streams within HUC 5 watersheds (HUC 5 Forest land only)
- Number of inventoried perennial stream crossings open to motor vehicle use

An explanation of each water resource indicator, how it relates to water resources and how it can be used to compare between proposed alternatives can be found in the Water Resources Specialist Report (Project Record).

### 3.4.3 METHODOLOGY FOR ANALYSIS

The techniques and methodologies used in this analysis consider the best information and data available. The analysis includes a summary of credible scientific evidence which is relevant to evaluating reasonably foreseeable impacts. The analysis also identifies methods used and references the scientific sources relied on. The conclusions are based on a scientific analysis that shows a through review of relevant scientific information. For this analysis there was not any incomplete or unavailable information that would be necessary for this determination.

The relevant science considered for this analysis consists of several key elements. For water resources the elements of science used are:

- **On site data and history:** Forest road information was collected by three two person crews from 1998 through 2005. Field crews collected information using Trimble TDC2 Asset Surveyor GPS units on all identifiable routes on Forest, main routes outside the Forest, and any relevant arterials connecting to the Forest. Written logs were kept for each recorded road for comparative purposes.

  Crews adhered to a predesigned data dictionary and captured road suitability for vehicle type, road condition, signing, and engineering additions such as culverts, waterbars, gates, turnouts, etc. The Forest was divided into manageable quadrants and each assigned area was completed before moving to the next area. For efficiency lower elevation areas received focus early and late in season, while higher regions reserved for mid-summer.

  Field crews captured data and at regular intervals using the Pathfinder GPS program to download information, execute differential correction to establish correct configuration and layout on the ground. All routes were reviewed for accuracy. When use of vehicles, ATV's and walking routes no longer became economically feasible the remainder of routes on Forest (estimated 15%) was digitized in house using digital orthophotos.

  Long-term sampling addressing sediment trends over time has been conducted on 191 sites on SCNF streams. Data has been collected from 1993 to present and includes; depth fines sampling using a McNeil core sampler and sieve analysis, surface fines using the Wolman pebble count technique, bank stability and composition measurements, photo monitoring and an aquatic zone analysis rating.

- **Scientific literature:** Roads and motor vehicle use effects analysis papers (Belt et al. 1992, Elliot et al. 1999, Foltz 2006, Furniss et al. 1991, Gucinski et al. 2001, Haskins and Mayhood 1997, Luce and Black 2001a and 2001b, Luce and Wemple 2001, Lugo and Gucinski 1999, Meyer 2002, Saturlund and Adams 1992, Wilson and Seney 1994, Quigley et al. 1996) includes a summary of impacts on water resources and hydrology. Relevant literature for the basic understanding of effects on these resources relating to motor vehicle use of forest roads and trails is also included. The use of design criteria and maintenance standards and techniques to ensure water quality is protected is addressed in the road and trail standards as defined by the Forest Service Handbook FSH section 7700 for roads, of the Forest Service Standard Specifications for Construction of Trails (EM-7720-102), *Soil and Water Conservation Practices Handbook* (FSH 2509.22), the Clean Water Act, and is also supported by the Environmental Protection Agency (EPA).

- **Methods:** The methods used to develop data for quantitative analysis was accomplished using software developed by Environmental Systems Research Institute (ESRI). Three types of operations were used - attribute queries, spatial queries and generation of new datasets from the original Forest Service GIS corporate data. The degree of spatial analysis range from simple queries about the spatial events to more complicated combinations of attribute queries, spatial queries and alterations of corporate data to create new layers for the purpose of this analysis. ArcMap 9.2 was used to accomplish all spatial analysis and cartographic display.
- **Experience:** The collective knowledge of the project by ID Team members through integration of science with local conditions. Experience gained from implementation of the Forest-wide Roads Analysis, and project level roads analysis such as the Roads Analysis Reports for the Gibbonsville Fuels Reduction Project, Northeast Stanley Interface Project, Salmon Interface and Moose Creek Fuels Reduction Project, and the Garden Creek Fuels Reduction Project has been incorporated into the analysis.
- **Comparative Analysis:** Comparative analysis considering other local similar projects and past monitoring data. The effects to water resource in other similar projects in the area have been considered in the analysis. The following effects analysis indicates that design criteria and maintenance standards and techniques are effective in protecting water quality.

The determinations reached in the specialist's report are based upon ground reconnaissance of the proposed project area, previous monitoring of similar types of activities on NFS lands, and a review of literature that is cited in the specialist report. Finally, the potential effect of motor vehicle use of roads and trails on water resources is predictable and well documented. In my professional opinion, there are no significant scientific uncertainties or risks associated with this proposal.

### ***Cumulative Effects Analysis Methodology***

Cumulative effects are caused by the aggregate of past, present, and reasonably foreseeable future actions combined with the effects of the proposed action and alternatives. This section describes a methodology to assess the cumulative impacts of the action alternatives on water resources including the present and future effects added to the effects that have taken place in the past.

The geographic scope for the cumulative effects assessment for water resources includes the entire SCNF (NF). For organizational reasons, the SCNF is divided into six ranger districts. Ranger districts are organized around a combination of watershed and administrative boundaries. The analysis is temporally bounded by the current Travel Plan implemented in 1988 and the current schedule of proposed actions.

A cumulative effects risk rating was developed for each watershed by using a matrix that combined watershed vulnerability rating and motorized route density (Figure 3-1). Road densities and their locations within watersheds are typically correlated with areas of higher watershed sensitivity to erosion and sediment transport to streams (USDA FS 1996). Areas with high road densities are typically areas that have been heavily managed and have been greatly influenced by human activity. Motorized route density ratings (Table 3-5) were combined with watershed vulnerability ratings (Table 3-6) in a matrix (Figure 3-1) to determine the cumulative effects risk rating for each watershed. The combination of the physical nature of the watershed combined with road density as a measure of past management provides a comprehensive rating tool that can be used as a basis for analyzing the additive effects of present and future activities in combination with past management.

In addition to management effects captured by route density (i.e. timber harvest, livestock grazing, mining, prescribed fire, recreation, permitted uses), other impacts such as wild fires and large mining operations were analyzed by elevating the cumulative effects risk rating for watersheds that included

these impacts. Foreseeable future activities included on the schedule of proposed activities and known activities by other landowners were also considered in the determination of likely adverse effects to water resources.

Table 3-5. Motorized Route Density Ratings Used to Determine Watershed Cumulative Effects Ratings

| Motorized Route Density<br>General Technical Report (PNW-GTR-386) | |
|---|---|
| 0.1 – 0.7 mi/mi$^2$ | Low |
| 0.7 – 1.7 mi/mi$^2$ | Moderate |
| 1.7 – 4.7 mi/mi$^2$ | High |

Table 3-6. Watershed Vulnerability Ratings Used to Determine Watershed Cumulative Effects Ratings

| Watershed Vulnerability | |
|---|---|
| Less than 20% in sensitive lands | Low |
| 20 – 50% in sensitive lands | Moderate |
| More than 50% in sensitive lands | High |
| Sensitive lands are areas where disturbances pose a high probability of degrading watershed soil- hydrologic functions or segments. Sensitive lands include: Areas with highly dissected slopes, Highly-erodible soils or landslide deposits and potential landslides (Inland West Watershed Reconnaissance). | |

| Cumulative Effects Risk Rating | | Motorized Route Density | | |
|---|---|---|---|---|
| | | Low | Mod | High |
| Watershed Vulnerability Rating | Low | Low | Low | Mod |
| | Mod | Low | Mod | High |
| | High | Mod | High | High |

Figure 3-1. Watershed Cumulative Effects Risk Matrix

Differences in action alternatives were evaluated and adverse effects were used in combination with the cumulative effects risk ratings to determine the overall intensity of likely adverse effects to water resources (Table **3-7**). The impacts determination for each watershed was rated as either.

1. Potentially Significant (S)
2. Non-Significant with recommended mitigation (NS)
3. Non-Significant/Beneficial as proposed (B)

Table 3-7. Cumulative Effects Impact Ratings

| Cumulative Effects Impact Ratings | |
|---|---|
| Potentially Significant (S) | If out of compliance with law or significant cumulative effect. |
| Non-Significant with recommended mitigation (NS) | If miles would be added in highly vulnerable subwatersheds or within 300 ft of 303(d) streams in watershed with a cumulative effects risk rating of high, moderate or low.<br>If road density would be increased alone in high cumulative effects risk watersheds. |
| Non-Significant/ Beneficial as proposed (B) | If changes would be beneficial or no change. |

### 3.4.4 COMPLIANCE WITH THE FOREST PLAN AND OTHER REGULATORY DIRECTION

The Forest Plans (USDA FS 1987, 1988) provide general direction for all Forest resources and the foundation for more specific direction at the Management Area level. Water Quality and compliance with state water quality standards is the main theme associated with Salmon and Challis Forest Plan goals, objective, standards and guidelines for water resources related to Travel Planning. Specific direction related to water resources from the Challis and Salmon Forest Plans is summarized in the Water Resources Specialist Report (Project Record). Other laws including the Clean Water Act and E.O. 11644, discussed in Chapter 1, provide direction for the management of water resources.

### 3.4.5 EXISTING CONDITION COMMON TO ALL RANGER DISTRICTS

**Motor vehicle trails**: Sediment delivery is greatest where the motorized routes are located in subwatersheds with high watershed vulnerability, within RHCAs, and intersect stream crossings.

**Unauthorized roads:** Unauthorized routes receive no maintenance, so many have drainage and erosion problems. Drainage structures such as ditches, cross-drains, waterbars, or dips may have never been constructed or are no longer functioning. Failures at stream crossings often result in erosion and sediment delivery.

**Closed NFS (Level 1 maintenance) roads**: Some of these roads have been physically closed, waterbars have been installed, and roadbeds and cut and fill slopes have been scarified and seeded. Stream crossings may have been stabilized by removing culverts, removal of fill within the channel, and restoration and stabilization of streambanks. However, the majority of these roads still need to be physically closed and stabilized to keep them from contributing sediment to adjacent streams.

**Unauthorized motor vehicle use**: Unauthorized motor vehicle use continues to adversely affect soil productivity and water quality. The major problems occur on unauthorized roads, Level 1 roads posted but not physically closed, and in meadows adjacent to roads and motor vehicle trails.

Table 3-8 summarizes the current condition of water resources in each ranger district by providing ratings for Subwatershed Vulnerability, Geomorphic Integrity, and Water Quality Integrity. Subwatershed Vulnerability is an assessment of a subwatershed's sensitivity to disturbance and its resiliency or natural ability for restoration. Geomorphic Integrity is an assessment and comparison of existing soil-hydrologic conditions with historical conditions existing prior to Euro-American settlement. Water Quality Integrity is an assessment and comparison of existing water quality conditions with historical conditions that existed before Euro-American settlement.

Table 3-8. The Number of Subwatersheds by Vulnerability and Integrity Ratings in each Ranger District

| Subwatershed Ratings | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Ranger District | Subwatershed Vulnerability | | | Geomorphic Integrity | | | Water Quality Integrity | | |
| | Low | Mod | High | Low | Mod | High | Low | Mod | High |
| Challis-Yankee Fork | 29 | 20 | 9 | 19 | 30 | 9 | 19 | 30 | 9 |
| Leadore | 1 | 25 | 6 | 14 | 15 | 3 | 12 | 18 | 2 |
| Lost River | 11 | 24 | 14 | 18 | 21 | 9 | 25 | 14 | 9 |
| Middle Fork | 65 | 0 | 0 | 0 | 3 | 62 | 1 | 14 | 50 |
| North Fork | 39 | 11 | 1 | 4 | 10 | 37 | 3 | 14 | 34 |
| Salmon-Cobalt | 21 | 28 | 6 | 10 | 20 | 25 | 3 | 30 | 22 |

## 3.4.6 DIRECT AND INDIRECT EFFECTS COMMON TO ALL ALTERNATIVES

### *Introduction*

The type, extent, and location of roads, trails, and dispersed camping may accelerate erosion, deliver sediment to streams and degrade water quality. Water quality is affected by accelerated erosion and sediment delivered to streams.

### *Hydrologic Effects*

Motorized routes have three primary effects on water:

1. They intercept rainfall directly on the travel surface and cutbanks and intercept subsurface water moving down the hillslope, changing the amount of time required for water to enter a stream channel, and altering the timing of peak flows and hydrographic shape (USDA FS 2001);
2. They concentrate flow, either on the surface or in an adjacent ditch or channel; and
3. They divert or reroute water from flow paths that it would take were the route not present.

Concentration and diversion of flow into headwater area can cause incision of previously unchanneled portions of the landscape and initiate slides and colluvial hollows (USDA FS 2001). Diversion of streamflow at route-stream crossings is key factor contributing to road failure and erosional consequences during large floods (USDA FS 2001).

Motorized route drainage problems and water and debris passage problems - especially during floods - are primary reasons for failure, often with major hydrological consequences. At a broader scale, motorized routes can influence the size and timing of streamflows from watersheds, with possible consequences for downstream channels and aquatic ecosystems.

Motorized routes modify natural drainage networks and accelerate erosion processes. These changes can alter physical process in streams, leading to changes in streamflow regimes, sediment transport and storage, channel bank and bed configurations, substrate composition, and stability of slopes adjacent to streams (Furniss et al. 1991).

Motorized routes can affect streams directly by accelerating erosion and sediment loadings, by altering channel morphology, and by changing the runoff characteristics of watersheds. These processes interact to cause secondary changes in channel morphology.

### *Water Quality*

Motorized access and the activities which accompany this use can magnify negative effects on aquatic systems beyond the routes themselves. Subwatersheds with route densities higher than 1.7 mi/mi$^2$ are considered more likely to impact aquatic resources (Quigley and Arbelbide 1997).

Unauthorized routes often have greater impacts to aquatic resources than properly designated and constructed system routes. Unauthorized routes are also more likely to impact slope hydrology because they parallel slope contours, thus connecting slope areas and channels that otherwise function independently. They may occur in poor locations such as areas with poor drainage, multiple stream crossings, and on highly erodible or unstable soils. Unauthorized routes are not maintained, and therefore have a higher potential to directly and indirectly affect streams (Belt et al. 1992). Routes that receive regular maintenance generally have sufficient drainage, so water and sediment is diverted off the route, filtered through forest vegetation, and not routed to streams (Furniss et al. 1991). Unauthorized routes have a higher propensity for stream fords. Routes with multiple stream crossings increase sediment from surface erosion and users crossing the stream. As motorized route densities increase, soil compaction and loss of ground cover adjacent to existing non-system routes and from the establishment of new routes increases. This may reduce geomorphic integrity by reducing a subwatershed's ability to absorb and restore precipitation.

Motorized routes provide access to and increase the opportunity for applying a variety of chemicals on the SCNF. Some applications target the roads, such as with road surface treatments; other chemicals are intended for adjacent ecosystems to control weeds. Materials are also added to roads by traffic, such as asbestos from brake linings, oil leakage, and accidental spills. Some portions of applied and spilled chemicals eventually reach streams by drift, runoff, leaching, or adsorption on soil particles. Motorized routes also increase the nutrient delivery to streams by removing vegetation, rerouting water flow paths, and increasing sediment delivery. And motorized routes increase the likelihood of toxic spills associated with accidents along streamside corridors.

Riparian roads and motor vehicle trails provide access to and concentrated use within riparian areas and streams by humans. Travel routes within riparian corridors can alter or remove riparian vegetative communities, with direct and indirect impacts on riparian and stream ecosystems (Furniss et al. 1991). OHV use in wetlands, meadows, and bogs create ruts which alter hydrologic patterns as they change surface flow and groundwater patterns.

All action alternatives would not allow cross-country travel. Risks associated with surface erosion, channel and riparian impacts from route encroachments, fish barriers from new stream fords, and impacts to slope hydrology should all be reduced. The net result would be a beneficial effect for soil productivity, riparian areas, wetlands, aquatic organisms, fish habitat, and water quality.

## 3.4.7 ENVIRONMENTAL CONSEQUENCES

### *Challis-Yankee Fork Ranger District*

#### Affected Environment

There are approximately 676 miles of motorized routes within subwatersheds with high Watershed Vulnerability and 96 miles of motorized routes within 300 feet of 303(d) streams. Subwatershed Vulnerability ratings range from low to high with 14 percent of the subwatersheds categorized as high (Water Resources Specialist Report). Highly vulnerable subwatersheds are described as including more than 50 percent of the area as sensitive lands where disturbances pose a high probability of degrading

watershed soil-hydrologic functions. Geomorphic Integrity ratings for the subwatersheds vary from low to high with 16 percent of the subwatersheds categorized as high (Water Resources Specialist Report). Geomorphic integrity reflects soil-hydrologic function as a sponge-and-filter system to absorb and store water, and physical soil-stream resilience. Water Quality integrity ratings for the subwatersheds vary from low to high with 16 percent of the subwatersheds categorized as high (Water Resources Specialist Report). Water quality has been affected by localized impacts, including sediment loading and thermal changes due to water diversions, roads, timber harvesting, livestock grazing, and recreation.

*Pahsimeroi River Subbasin Assessment and Total Maximum Daily Loads*

Idaho Department of Environmental Quality (DEQ) has developed recommendations for the reduction of streambank erosion and water temperature within the Pahsimeroi River that would ultimately result in beneficial use support through improving streambank stability and subsequently increasing riparian vegetation.

Patterson and Morse Creeks are listed for flow alteration. The U.S. Environmental Protection Agency (EPA) does not believe that flow alteration is a pollutant as defined by the Clean Water Act. Since TMDLs are not required for water bodies impaired by pollution but not pollutants, TMDLs were not developed for flow alteration.

*Upper Salmon River Subbasin Assessment and Total Maximum Daily Load*

DEQ has identified Challis Creek as not fully supporting the beneficial uses of salmonid spawning and cold water biota. A TMDL for sediment has been prepared for this water body to restore full support of these beneficial uses. The Challis Creek TMDL should also assist in endangered species recovery.

Streams that already have BMPs in place that should result in attainment of water quality standards and beneficial use support in the near future do not require TMDLs. Streams that fall into this category are Thompson Creek and Kinnikinic Creek.

The two listed reaches of the Salmon River also do not require TMDLs because they fully support beneficial uses. A TMDL was also not prepared for Squaw Creek (listed for temperature), as it was found that the warm temperature in the creek is natural, from geothermal sources.

Streams that have flows less than 1 cubic foot per second are not held to narrative water quality standards. Lost Creek in the upper Stanley Basin is such a stream. It was listed in error and will not have a TMDL developed for it.

Challis Creek, Thompson Creek, and Yankee Fork are listed for flow and/or habitat alteration. It was also found that Garden, Warm Springs, and Road Creeks are impaired by flow alteration. However, the U.S. Environmental Protection Agency does not believe that flow and habitat alteration are pollutants as defined by the Clean Water Act. Since TMDLs are not required for water bodies impaired by pollution but not pollutants, TMDLs were not developed for flow or habitat alteration.

## Environmental Consequences

Motorized route densities on the Challis-Yankee Fork Ranger District would be reduced in all subwatersheds from the No Action over the range of action alternatives (Table 3-9). The No Action used as a baseline was compared to the action alternatives and is summarized in Table 3-9. Alternative 3 has the most relative reduction from the No Action and would provide the most protection for water resources. By reducing the number of roads available for public use, Alternative 3 would reduce erosion rates and sediment loadings. Streamflow regimes, sediment transport and storage, channel bank and bed configurations, substrate composition and stability of slopes adjacent to streams would re-equilibrate to a more natural state.

Miles of designated routes in vulnerable subwatersheds on the Challis-Yankee Fork Ranger District would be reduced in all subwatersheds from the No Action Alternative for all action alternatives (Table 3-9). Comparisons of miles of road in watersheds with greater than 50% sensitive lands were made against the No Action Alternative and are summarized in Table 3-9. A total of 89 miles of motorized routes would be reduced from the No Action in Alternative 3. By reducing the miles of roads on sensitive soils the risk of road failure and slope failures and accelerated erosion associated with concentrated flow in road drainage systems would be reduced.

Motorized routes within close proximity to sensitive streams were quantified for each alternative and are displayed in Table 3-9. Compared to the No Action Alternative, Alternative 3 would designate 20 fewer miles within 300 feet of streams listed as impaired by the State of Idaho and would afford the most protection for these streams. Reducing road miles within 300 feet of 303(d) streams is a step towards full attainment of beneficial uses and supports TMDL goals.

The number of inventoried perennial stream crossings available for motor vehicle use were tallied for each alternative and compared to the No Action (Table 3-9). Alternative 3, if selected, would have 166 fewer motorized perennial stream crossings than the No Action Alternative. Crossings provide for direct contact between vehicles and streams as well as providing a pathway for contaminants on the road surface to enter waterways. Alternative 3 has fewer crossings and therefore minimizes the risk of pollutants entering streams through this pathway.

Motorized access to dispersed camping has the potential to negatively affect water resources in riparian areas by damaging sensitive wetland soils, altering floodplain geometry and damaging riparian vegetation. On the Challis-Yankee Fork Ranger District, square miles available for motorized access to dispersed camping in riparian areas by alternative are as follows: No Action, 25 $mi^2$; Alternative 1, 19 $mi^2$; Alternative 3, 0 $mi^2$; Alternative 4, 20 $mi^2$; and Alternative 5, 18 $mi^2$. Alternative 3 does not allow motorized access to dispersed camping in riparian areas eliminating potential damage from this activity.

There would be no irreversible or irretrievable impacts to water resources resulting from any of the proposed alternatives on the Challis-Yankee Fork Ranger District.

Table 3-9. Water Resource Indicators by Alternative for the Challis-Yankee Fork Ranger District

| HUC 5 Watersheds completely or partially contained within the Challis-Yankee Fork Ranger District | Motorized Route Density ($mi/mi^2$) | | | | | Miles of Designated Routes Within 300 feet of 303(d) Streams. | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Miles of Designated Routes in Subwatersheds with a High Watershed Vulnerability Rating | | | | | Number of Inventoried Stream Crossings Open to Motor vehicle use | | | | |
| | No- Action | Designated System of Routes | Recommended Wilderness/ Roadless Area Emphasis | Maximum Motorized Emphasis | Preferred | No- Action | Designated System of Routes | Recommended Wilderness/ Roadless Area Emphasis | Maximum Motorized Emphasis | Preferred |
| Basin Ck-S.R. 71.5 $mi^2$ | 1.6 / 81 | 1.6 / 81 | 1.1 / 61 | 1.5 / 76 | 1.4 / 72 | 2 / 102 | 2 / 102 | 2 / 86 | 2 / 95 | 2 / 94 |
| Bayhorse Ck-S.R. 21.7 $mi^2$ | 1.6 / 36 | 1.1 / 23 | 1.2 / 27 | 1.4 / 30 | 1.3 / 29 | 0 / 16 | 0 / 13 | 0 / 13 | 0 / 13 | 0 / 13 |

| HUC 5 Watersheds completely or partially contained within the Challis-Yankee Fork Ranger District | Motorized Route Density (mi/mi²) Miles of Designated Routes in Subwatersheds with a High Watershed Vulnerability Rating | | | | | Miles of Designated Routes Within 300 feet of 303(d) Streams. Number of Inventoried Stream Crossings Open to Motor vehicle use | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | No- Action | Designated System of Routes | Recommended Wilderness/ Roadless Area Emphasis | Maximum Motorized Emphasis | Preferred | No- Action | Designated System of Routes | Recommended Wilderness/ Roadless Area Emphasis | Maximum Motorized Emphasis | Preferred |
| Challis Ck 117.6 mi² | 0.9 / 6 | 0.9 / 6 | 0.8 / 2 | 0.9 / 6 | 0.9 / 6 | 0 / 57 | 0 / 57 | 0 / 39 | 0 / 57 | 0 / 57 |
| Garden Ck-S.R. 44.7 mi² | 1.1 / 10 | 1.1 / 10 | 1.0 / 10 | 1.2 / 10 | 1.0 / 10 | 2 / 11 | 2 / 11 | 2 / 10 | 2 / 11 | 2 / 10 |
| Hat Ck-S.R. 30.2 mi² | 0.9 / 0 | 0.9 / 0 | 3.0 / 0 | 0.9 / 0 | 0.8 / 0 | 6 / 18 | 6 / 18 | 6 / 18 | 6 / 18 | 6 / 18 |
| Herd Ck 84.8 mi² | 0.4 / 12 | 0.4 / 12 | 0.0 / 0 | 0.3 / 5 | 0.1 / 4 | 0 / 19 | 0 / 19 | 0 / 0 | 0 / 10 | 0 / 4 |
| L. East Fk S.R. 1.7 mi² | 2.4 / 4 | 2.4 / 4 | 0.5 / 1 | 2.1 / 3 | 1.7 / 3 | 0 / 0 | 0 / 0 | 0 / 0 | 0 / 0 | 0 / 0 |
| L. Pahsimeroi R. 174.1 mi² | 0.4 / 0 | 0.4 / 0 | 0.4 / 0 | 0.5 / 0 | 0.4 / 0 | 14 / 34 | 14 / 34 | 12 / 21 | 13 / 35 | 13 / 27 |
| M. East Fk S.R. 26.1 mi² | 0.9 / 1 | 0.9 / 1 | 0.1 / 1 | 0.9 / 1 | 0.4 / 1 | 4 / 25 | 4 / 25 | 0 / 0 | 4 / 25 | 1 / 8 |
| M. Pahsimeroi R. 157.7 mi² | 0.5 / 0 | 0.5 / 0 | 0.4 / 0 | 0.6 / 0 | 0.5 / 0 | 3 / 12 | 3 / 11 | 3 / 1 | 3 / 26 | 3 / 11 |
| Morgan Ck 80.1 mi² | 0.9 / 75 | 0.9 / 74 | 0.8 / 65 | 1.0 / 77 | 0.9 / 74 | 0 / 30 | 0 / 28 | 0 / 25 | 0 / 29 | 0 / 28 |
| Slate Creek-S.R. 56.6 mi² | 1.1 / 62 | 0.9 / 53 | 0.9 / 50 | 0.9 / 52 | 0.9 / 52 | 0 / 50 | 0 / 44 | 0 / 44 | 0 / 44 | 0 / 44 |
| Squaw Ck 63.8 mi² | 1.2 / 8 | 0.8 / 1 | 0.5 / 1 | 1.0 / 1 | 0.9 / 1 | 22 / 38 | 20 / 34 | 9 / 22 | 23 / 36 | 21 / 35 |
| U. East Fk S.R. 17.5 mi² | 0.6 / 10 | 0.3 / 6 | 0.0 / 0 | 0.0 / 0 | 0.0 / 0 | 0 / 6 | 0 / 2 | 0 / 0 | 0 / 0 | 0 / 0 |
| U. Pahsimeroi R. 54.6 mi² | 0.3 / 0 | 0.2 / 0 | 0.2 / 0 | 0.3 / 0 | 0.2 / 0 | 1 / 5 | 0 / 2 | 1 / 2 | 1 / 2 | 1 / 2 |
| Valley Ck 24.0 mi² | 1.1 / 0 | 1.0 / 0 | 0.7 / 0 | 1.0 / 0 | 1.0 / 0 | 0 / 12 | 0 / 12 | 0 / 9 | 0 / 14 | 0 / 12 |
| Warm Spring Ck 39.8 mi² | 0.6 / 24 | 0.6 / 24 | 0.6 / 24 | 0.6 / 25 | 0.6 / 25 | 4 / 5 | 4 / 5 | 4 / 5 | 5 / 5 | 5 / 5 |
| Yankee Fk 190.0 mi² | 0.7 / 50 | 0.7 / 50 | 0.6 / 48 | 0.8 / 49 | 0.7 / 48 | 6 / 117 | 5 / 123 | 5 / 96 | 5 / 131 | 5 / 114 |

## ***Leadore Ranger District***

### Affected Environment

There are approximately 108 miles of motorized routes within subwatersheds with high Watershed Vulnerability and 14 miles of motorized routes within 300 feet of 303(d) streams. Subwatershed

Vulnerability ratings range from low to high with 19 percent of the subwatersheds categorized as high (Water Resources Specialist Report). Highly vulnerable subwatersheds are described as including more than 50 percent of the area as sensitive lands where disturbances pose a high probability of degrading watershed soil-hydrologic functions. Geomorphic Integrity ratings for the subwatersheds vary from low to high with 9 percent of the subwatersheds categorized as high (Water Resources Specialist Report). Geomorphic integrity reflects soil-hydrologic function as a sponge-and-filter system to absorb and store water, and physical soil-stream resilience. Water Quality integrity ratings for the subwatersheds vary from low to high with 6 percent of the subwatersheds categorized as high (Water Resources Specialist Report). Water quality has been affected by localized impacts, including sediment loading and thermal changes due to water diversions, roads, timber harvesting, livestock grazing, and recreation.

*Lemhi River Watershed Assessment and Total Maximum Daily Loads*

TMDLs have been developed to address sediment in Bohannon Creek, Eighteenmile Creek, Geertson Creek, Kirtley Creek, Sandy Creek, McDevitt Creek, and Wimpey Creek, and to address fecal coliform bacteria in the Lemhi River. Though Bohannon, Eighteenmile, Geertson, Hawley, Mill Sandy and Wimpey Creeks are listed for nutrients as well, no conditions within the streams have been observed that necessitate the writing of TMDLs for nutrients based in narrative state water quality standards. The primary anthropogenic source of sediment having a deleterious effect on beneficial use support status within the seven streams listed for sediment was identified as sediment from streambank erosion.

**Environmental Consequences**

Motorized route densities on the Leadore Ranger District would be reduced in all subwatersheds from the No Action over the range of action alternatives (Table 3-10). The No Action Alternative used as a baseline was compared to the action alternatives and is summarized in Table 3-10. Alternative 3 has the most relative reduction from the No Action Alternative and would provide the most protection for water resources. By reducing the number of roads available for public use, Alternative 3 would reduce erosion rates and sediment loadings. Streamflow regimes, sediment transport and storage, channel bank and bed configurations, substrate composition and stability of slopes adjacent to streams would re-equilibrate to a more natural state.

Miles of designated routes in vulnerable subwatersheds on the Leadore Ranger District would be reduced in all subwatersheds from the No Action Alternative for all action alternatives (Table 3-10). Comparisons of miles of road in watersheds with greater than 50% sensitive lands were made against the No Action Alternative and are summarized in Table 3-10. A total of 83 miles of motorized routes would be reduced from the No Action Alternative in Alternative 3. By reducing the miles of roads on sensitive soils the risk of road failure and slope failures and accelerated erosion associated with concentrated flow in road drainage systems would be reduced.

Motorized routes within close proximity to sensitive streams were quantified for each alternative and are displayed in Table 3-10. Compared to the No Action Alternative, Alternative 3 would designate 24 fewer miles within 300 feet of streams listed as impaired by the State of Idaho and would afford the most protection for these streams. Reducing road miles within 300 feet of 303(d) streams is a step towards full attainment of beneficial uses and supports TMDL goals.

The number of inventoried perennial and intermittent stream crossings available for motor vehicle use were tallied for each alternative and compared to the No Action Alternative (Table 3-10). Alternative 3, if selected, would have 139 fewer motorized perennial stream crossings than the No Action Alternative. Crossings provide for direct contact between vehicles and streams as well as providing a pathway for contaminants on the road surface to enter waterways. Alternative 3 has fewer crossings and therefore minimizes the risk of pollutants entering streams through this pathway.

Motorized access to dispersed camping has the potential to negatively affect water resources in riparian areas by damaging sensitive wetland soils, altering floodplain geometry and damaging riparian vegetation. On the Leadore Ranger District, square miles available for motorized access to dispersed camping in riparian areas by alternative are as follows: No Action, 15 $mi^2$; Alternative 1, 7 $mi^2$; Alternative 3, 0 $mi^2$; Alternative 4, 3 $mi^2$; Alternative 5, 6 $mi^2$. Alternative 3 does not allow motorized access to dispersed camping in riparian areas eliminating potential damage from this activity.

There would be no irreversible or irretrievable impacts to water resources resulting from any of the proposed alternatives on the Leadore Ranger District.

Table 3-10**.** Water Resource Indicators by Alternative for the Leadore Ranger District

| HUC 5 Watersheds completely or partially contained within the Leadore Ranger District | Motorized Route Density ($mi/mi^2$) / Miles of Designated Routes in Subwatersheds with a High Watershed Vulnerability Rating | | | | | Miles of Designated Routes within300 feet of 303(d) Streams. / Number of Inventoried Stream Crossings Open to Motor vehicle use | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | No- Action | Designated System of Routes | Recommended Wilderness/ Roadless Area Emphasis | Maximum Motorized Emphasis | Preferred | No- Action | Designated System of Routes | Recommended Wilderness/ Roadless Area Emphasis | Maximum Motorized Emphasis | Preferred |
| Eighteenmile Ck 15.0 $mi^2$ | 0.0 / 0 | 0.0 / 0 | 0.0 / 0 | 0.0 / 0 | 0.0 / 0 | 0 / 0 | 0 / 0 | 0 / 0 | 0 / 0 | 0 / 0 |
| Hawley Ck 49.2 $mi^2$ | 0.8 / 0 | 0.5 / 0 | 0.4 / 0 | 0.8 / 0 | 0.5 / 0 | 0 / 14 | 0 / 14 | 0 / 11 | 0 / 15 | 0 / 12 |
| Hayden Ck 94.6 $mi^2$ | 0.9 / 7 | 0.5 / 2 | 0.3 / 0 | 0.9 / 10 | 0.6 / 8 | 0 / 48 | 0 / 36 | 0 / 15 | 0 / 45 | 0 / 26 |
| L. Lemhi R. 47.4 $mi^2$ | 1.8 / 0 | 1.1 / 0 | 1.7 / 0 | 1.2 / 0 | 0.9 / 0 | 3 / 44 | 3 / 29 | 0 / 19 | 4 / 30 | 2 / 28 |
| M. Lemhi R. 41.5 $mi^2$ | 1.3 / 0 | 1.1 / 0 | 1.0 / 0 | 1.8 / 0 | 1.1 / 0 | 1 / 14 | 1 / 11 | 1 / 11 | 2 / 18 | 1 / 11 |
| Texas Ck 38.7 $mi^2$ | 1.6 / 0 | 0.5 / 0 | 0.5 / 0 | 1.0 / 0 | 0.7 / 0 | 0 / 19 | 0 / 6 | 0 / 7 | 0 / 11 | 0 / 8 |
| Timber Ck 68.3 $mi^2$ | 0.9 / 0 | 0.5 / 0 | 0.5 / 0 | 0.7 / 0 | 0.6 / 0 | 0 / 24 | 0 / 22 | 0 / 25 | 0 / 39 | 0 / 25 |
| U. Lemhi R. 152.7 $mi^2$ | 1.7 / 86 | 0.5 / 13 | 0.4 / 10 | 1.1 / 47 | 0.7 / 32 | 22 / 88 | 7 / 27 | 4 / 24 | 13 / 55 | 7 / 39 |

## ***Lost River Ranger District***

## Affected Environment

There are approximately 362 miles of motorized routes within subwatersheds with high Watershed Vulnerability and 135 miles of motorized routes within 300 feet of 303(d) streams. Subwatershed Vulnerability ratings range from low to high with 29 percent of the subwatersheds categorized as high (Water Resources Specialist Report). Highly vulnerable subwatersheds are described as including more than 50 percent of the area as sensitive lands where disturbances pose a high probability of degrading watershed soil-hydrologic functions. Geomorphic Integrity ratings for the subwatersheds vary from low

to high with 18 percent of the subwatersheds categorized as high (Water Resources Specialist Report). Geomorphic integrity reflects soil-hydrologic function as a sponge-and-filter system to absorb and store water, and physical soil-stream resilience. Water Quality integrity ratings for the subwatersheds vary from low to high with 18 percent of the subwatersheds categorized as high (Water Resources Specialist Report, Project Record). Water quality has been affected by localized impacts, including sediment loading and thermal changes due to water diversions, roads, timber harvesting, livestock grazing, and recreation.

*Big Lost River Watershed Subbasin Assessment and total Maximum Daily Loads*

Twelve TMDLs were developed to address issues of temperature exceedance of water quality standards on eleven streams (two segments on Antelope Creek). Sediment TMDLs were prepared for the streams with temperature exceedance with the exception of Warm Springs Creek and the main Big Lost River from its origin at the confluence of the North and East Forks of the Big Lost River to Chilly Buttes. Sediment TMDLs were prepared for two additional streams that did not have sufficient temperature data to determine TMDLs for thermal loading: Twin Bridges Creek and Thousand Springs Creek.

*Little Lost River Subbasin Assessment and Total Maximum Daily Loads*

DEQ has developed recommendations for the reduction of streambank erosion that would ultimately result in beneficial use support through improving streambank stability and subsequently riparian vegetation to reduce temperature. Sediment load reductions are quantified through streambank erosion inventories that estimate streambank erosion based on streambank conditions documented along several reaches of each stream. Instream sediment targets have been identified form literature values that are supportive of salmonid spawning and cold water biota. These target values will be used to track the progress of streambank recovery and determine the need for additional management practices to improve water quality. Monitoring would be conducted by land management agencies to determine the adequacy of reductions in management practices.

## Environmental Consequences

Motorized route densities on the Lost River Ranger District would be reduced in all subwatersheds from the No Action Alternative over the range of action alternatives (Table 3-11). The No Action Alternative used as a baseline was compared to the action alternatives and is summarized in Table 3-11. Alternative 3 has the most relative reduction from the No Action Alternative and would provide the most protection for water resources. By reducing the number of roads available for public use, Alternative 3 would reduce erosion rates and sediment loadings. Streamflow regimes, sediment transport and storage, channel bank and bed configurations, substrate composition and stability of slopes adjacent to streams would re-equilibrate to a more natural state.

Miles of designated routes in vulnerable subwatersheds on the Lost River Ranger District would be reduced in all subwatersheds from the No Action Alternative for all action alternatives (Table 3-11). Comparisons of miles of road in watersheds with greater than 50% sensitive lands were made against the No Action Alternative and are summarized in Table 3-11. A total of 109 miles of motorized routes would be reduced from the No Action Alternative in Alternative 3. By reducing the miles of roads on sensitive soils the risk of road failure and slope failures and accelerated erosion associated with concentrated flow in road drainage systems would be reduced.

Motorized routes within close proximity to sensitive streams were quantified for each alternative and are displayed in Table 3-11. Compared to the No Action Alternative, Alternative 3 would designate 30 fewer miles within 300 feet of streams listed as impaired by the State of Idaho and would afford the

most protection for these streams. Reducing road miles within 300 feet of 303(d) streams is a step towards full attainment of beneficial uses and supports TMDL goals.

The number of inventoried perennial and intermittent stream crossings available for motor vehicle use were tallied for each alternative and compared to the No Action Alternative (Table 3-11). Alternative 3, if selected, would have 172 fewer motorized perennial stream crossings than the No Action Alternative. Crossings provide for direct contact between vehicles and streams as well as providing a pathway for contaminants on the road surface to enter waterways. Alternative 3 has fewer crossings and therefore minimizes the risk of pollutants entering streams through this pathway.

Motorized access to dispersed camping has the potential to negatively affect water resources in riparian areas by damaging sensitive wetland soils, altering floodplain geometry and damaging riparian vegetation. On the Lost River Ranger District, square miles available for motorized access to dispersed camping in riparian areas by alternative are as follows: No Action, 23 $mi^2$; Alternative 1, 16 $mi^2$; Alternative 3, 0 $mi^2$; Alternative 4, 18 $mi^2$; Alternative 5, 13 $mi^2$. Alternative 3 does not allow motorized access to dispersed camping in riparian areas eliminating potential damage from this activity.

There would be no irreversible or irretrievable impacts to water resources resulting from any of the proposed alternatives on the Lost River Ranger District.

Table 3-11. Water Resource Indicators by Alternative for the Lost River Ranger District

| HUC 5 Watersheds completely or partially contained within the Lost River Ranger District | Motorized Route Density ($mi/mi^2$) / Miles of Designated Routes in Subwatersheds with a High Watershed Vulnerability Rating | | | | | Miles of Designated Routes within300 feet of 303(d) Streams. / Number of Inventoried Stream Crossings Open to Motor vehicle use | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | No- Action | Designated System of Routes | Recommended Wilderness/ Roadless Area Emphasis | Maximum Motorized Emphasis | Preferred | No- Action | Designated System of Routes | Recommended Wilderness/ Roadless Area Emphasis | Maximum Motorized Emphasis | Preferred |
| Antelope Ck 142.5 $mi^2$ | 0.7 / 38 | 0.4 / 14 | 0.4 / 14 | 0.6 / 24 | 0.4 / 17 | 7 / 88 | 5 / 50 | 4 / 33 | 5 / 63 | 4 / 37 |
| Dry Ck 36.2 $mi^2$ | 0.3 / 12 | 0.3 / 11 | 0.0 / 0 | 0.2 / 9 | 0.2 / 9 | 7 / 7 | 5 / 4 | 0 / 0 | 3 / 2 | 4 / 2 |
| E. Fk. Big Lost R 197.6 $mi^2$ | 0.5 / 0 | 0.5 / 0 | 0.4 / 0 | 0.5 / 0 | 0.4 / 0 | 27 / 46 | 27 / 39 | 22 / 27 | 26 / 33 | 25 / 31 |
| H.W. Big Lost R 50.3 $mi^2$ | 0.2 / 0 | 0.1 / 0 | 0.0 / 0 | 0.1 / 0 | 0.1 / 0 | 2 / 3 | 2 / 1 | 2 / 0 | 2 / 0 | 2 / 0 |
| L. Big Lost R. 26.7 $mi^2$ | 1.1 / 26 | 0.9 / 21 | 0.9 / 20 | 1.0 / 22 | 0.9 / 20 | 0 / 8 | 0 / 8 | 0 / 8 | 0 / 8 | 0 / 8 |
| L. Little Lost R. 101.1 $mi^2$ | 0.7 / 43 | 0.5 / 24 | 0.5 / 25 | 0.5 / 30 | 0.5 / 29 | 0 / 19 | 0 / 14 | 0 / 13 | 0 / 14 | 0 / 14 |
| M. Big Lost R. 138.2 $mi^2$ | 0.8 / 0 | 0.5 / 0 | 0.4 / 0 | 0.6 / 0 | 0.6 / 0 | 10 / 54 | 10 / 42 | 7 / 40 | 13 / 47 | 13 / 49 |
| M. Little Lost R. 41.5 $mi^2$ | 0.6 / 0 | 0.6 / 0 | 0.4 / 0 | 0.7 / 0 | 0.7 / 0 | 3 / 35 | 3 / 35 | 2 / 25 | 9 / 26 | 9 / 25 |

| HUC 5 Watersheds completely or partially contained within the Lost River Ranger District | Motorized Route Density (mi/mi²) / Miles of Designated Routes in Subwatersheds with a High Watershed Vulnerability Rating | | | | | Miles of Designated Routes within300 feet of 303(d) Streams. / Number of Inventoried Stream Crossings Open to Motor vehicle use | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | No- Action | Designated System of Routes | Recommended Wilderness/ Roadless Area Emphasis | Maximum Motorized Emphasis | Preferred | No- Action | Designated System of Routes | Recommended Wilderness/ Roadless Area Emphasis | Maximum Motorized Emphasis | Preferred |
| North Fk Big Lost R. 113.8 mi² | 0.6 / 30 | 0.6 / 30 | 0.5 / 28 | 0.7 / 33 | 0.6 / 33 | 14 / 42 | 14 / 42 | 12 / 31 | 15 / 47 | 16 / 42 |
| Sawmill Ck 100.1 mi² | 0.9 / 58 | 0.9 / 57 | 0.6 / 31 | 0.9 / 60 | 0.8 / 48 | 16 / 54 | 16 / 53 | 10 / 37 | 14 / 58 | 13 / 52 |
| Star Hope Ck 75.7 mi² | 0.6 / 0 | 0.5 / 0 | 0.5 / 0 | 0.7 / 0 | 0.6 / 0 | 2 / 31 | 2 / 27 | 3 / 29 | 4 / 33 | 4 / 30 |
| Summit Ck 11.1 mi² | 0.4 / 0 | 0.4 / 0 | 0.2 / 0 | 0.5 / 0 | 0.5 / 0 | 0 / 1 | 0 / 1 | 0 / 1 | 0 / 1 | 0 / 1 |
| U. Big Lost R. 101.2 mi² | 0.7 / 19 | 0.4 / 6 | 0.4 / 5 | 0.6 / 13 | 0.5 / 13 | 6 / 21 | 5 / 13 | 4 / 8 | 4 / 11 | 4 / 11 |
| U. Little Lost R. 54.2 mi² | 0.4 / 5 | 0.4 / 5 | 0.4 / 6 | 0.5 / 7 | 0.4 / 7 | 5 / 13 | 5 / 12 | 6 / 7 | 8 / 23 | 8 / 23 |
| Wet Ck 46.9 mi² | 0.3 / 16 | 0.3 / 16 | 0.2 / 9 | 0.4 / 17 | 0.3 / 16 | 6 / 10 | 6 / 10 | 3 / 1 | 6 / 1 | 6 / 1 |

## ***Middle Fork Ranger District***

### Affected Environment

There are approximately 331 miles of motorized routes within subwatersheds with high Watershed Vulnerability and 17 miles of motorized routes within 300 feet of 303(d) streams. All subwatersheds were rated as low. There are no subwatersheds categorized as high (Water Resources Specialist Report, Project Record). Geomorphic Integrity ratings for the subwatersheds vary from low to high with 95 percent of the subwatersheds categorized as high (Water Resources Specialist Report). Geomorphic integrity reflects soil-hydrologic function as a sponge-and-filter system to absorb and store water, and physical soil-stream resilience. Water Quality integrity ratings for the subwatersheds vary from low to high with 77 percent of the subwatersheds categorized as high (Water Resources Specialist Report). Water quality has been affected by localized impacts, including sediment loading and thermal changes due to water diversions, roads, timber harvesting, livestock grazing, and recreation.

*Middle Fork Salmon River Subbasin Assessment and total Maximum Daily Loads*

The primary pollutant of concern in the subbasin is thermal loading related to exposed streambanks. Temperature TMDLs were developed for Marsh, Knapp, Beaver, Winnemucca, Camas, Castle, Silver, Duck, and Yellowjacket Creeks. Beaver Creek, and Winemucca Creek show the greatest lack of shade, with both streams needing more than 50% reduction in solar loads.

## Environmental Consequences

Motorized route densities on the Middle Fork Ranger District would be reduced in all subwatersheds from the No Action Alternative over the range of action alternatives (Table 3-12). The No Action Alternative used as a baseline was compared to the action alternatives and is summarized in Table 3-12. Alternative 3 has the most relative reduction from the No Action Alternative and would provide the most protection for water resources. By reducing the number of roads available for public use, Alternative 3 would reduce erosion rates and sediment loadings. Streamflow regimes, sediment transport and storage, channel bank and bed configurations, substrate composition and stability of slopes adjacent to streams would re-equilibrate to a more natural state.

Miles of designated routes in vulnerable subwatersheds on the Middle Fork Ranger District would be reduced in all subwatersheds from the No Action Alternative for all action alternatives (Table 3-12). Comparisons of miles of road in watersheds with greater than 50% sensitive lands were made against the No Action Alternative and are summarized in Table 3-12. A total of 61.2 miles of motorized routes would be reduced from the No Action Alternative in Alternative 3. By reducing the miles of roads on sensitive soils the risk of road failure and slope failures and accelerated erosion associated with concentrated flow in road drainage systems would be reduced.

Motorized routes within close proximity to sensitive streams were quantified for each alternative and are displayed in Table 3-12. The No Action Alternative would designate fewer miles within 300 feet of streams listed as impaired by the State of Idaho and would afford the most protection for these streams. Reducing road miles within 300 feet of 303(d) streams is a step towards full attainment of beneficial uses and supports TMDL goals.

The number of inventoried perennial and intermittent stream crossings available for motor vehicle use were tallied for each alternative and compared to the No Action Alternative (Table 3-12). Alternative 3, if selected, would have 54 fewer motorized stream crossings than the No Action Alternative. Crossings provide for direct contact between vehicles and streams as well as providing a pathway for contaminants on the road surface to enter waterways. Alternative 3 has fewer crossings, and therefore minimizes the risk of pollutants entering streams through this pathway.

Motorized access to dispersed camping has the potential to negatively affect water resources in riparian areas by damaging sensitive wetland soils, altering floodplain geometry and damaging riparian vegetation. On the Middle Fork Ranger District, square miles available for motorized access to dispersed camping in riparian areas by alternative are as follows: No Action, 19 $mi^2$; Alternative 1, 6 $mi^2$; Alternative 3, 0 $mi^2$; Alternative 4, 7 $mi^2$; Alternative 5, 6 $mi^2$. Alternative 3 does not allow motorized access to dispersed camping in riparian areas eliminating potential damage from this activity.

There would be no irreversible or irretrievable impacts to water resources resulting from any of the proposed alternatives on the Middle Fork Ranger District.

Table 3-12. Water Resource Indicators by Alternative for the Middle Fork Ranger District

| HUC 5 Watersheds completely or partially contained within the Middle Fork Ranger District | Motorized Route Density (mi/mi²) / Miles of Designated Routes in Subwatersheds with a High Watershed Vulnerability Rating | | | | | Miles of Designated Routes within300 feet of 303(d) Streams. / Number of Inventoried Stream Crossings Open to Motor vehicle use | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | No- Action | Designated System of Routes | Recommended Wilderness/ Roadless Area Emphasis | Maximum Motorized Emphasis | Preferred | No- Action | Designated System of Routes | Recommended Wilderness/ Roadless Area Emphasis | Maximum Motorized Emphasis | Preferred |
| Bear Valley Ck 16.8 mi² | 0.2 / 0 | 0.2 / 0 | 0.2 / 0 | 0.2 / 0 | 0.2 / 0 | 0 / 1 | 0 / 1 | 0 / 1 | 0 / 1 | 0 / 1 |
| Elk Ck 42.1 mi² | 0.0 / 0 | 0.0 / 0 | 0.0 / 0 | 0.0 / 0 | 0.0 / 0 | 0 / 0 | 0 / 0 | 0 / 0 | 0 / 0 | 0 / 0 |
| Elkhorn Ck-MFSR. 195.5 mi² | 0.1 / 22 | 0.1 / 22 | 0.1 / 21 | 0.1 / 21 | 0.1 / 21 | 0 / 8 | 0 / 8 | 0 / 8 | 0 / 8 | 0 / 8 |
| Indian Ck 83.1 mi² | 0.0 / 0 | 0.0 / 0 | 0.0 / 0 | 0.0 / 0 | 0.0 / 0 | 0 / 0 | 0 / 0 | 0 / 0 | 0 / 0 | 0 / 0 |
| Ltl. Loon Ck-MFSR 152.3 mi² | 0.0 / 0 | 0.0 / 0 | 0.0 / 0 | 0.0 / 0 | 0.0 / 0 | 0 / 0 | 0 / 0 | 0 / 0 | 0 / 0 | 0 / 0 |
| Lower Camas Ck 69.0 mi² | 0.0 / 0 | 0.0 / 0 | 0.0 / 0 | 0.0 / 0 | 0.0 / 0 | 0 / 0 | 0 / 0 | 0 / 0 | 0 / 0 | 0 / 0 |
| Lower Loon Ck 94.1 mi² | 0.1 / 0 | 0.1 / 0 | 0.1 / 0 | 0.1 / 0 | 0.1 / 0 | 0 / 0 | 0 / 0 | 0 / 0 | 0 / 0 | 0 / 0 |
| Marble Ck 130.2 mi² | 0.0 / 0 | 0.0 / 0 | 0.0 / 0 | 0.0 / 0 | 0.0 / 0 | 0 / 0 | 0 / 0 | 0 / 0 | 0 / 0 | 0 / 0 |
| Marsh Ck 146.8 mi² | 1.1 / 156 | 0.8 / 111 | 0.7 / 97 | 0.9 / 129 | 0.8 / 120 | 10 / 117 | 10 / 117 | 7 / 79 | 7 / 67 | 8 / 102 |
| Pistol Ck 113.7 mi² | 0.1 / 9 | 0.1 / 9 | 0.1 / 7 | 0.1 / 7 | 0.1 / 7 | 0 / 0 | 0 / 0 | 0 / 0 | 0 / 0 | 0 / 0 |
| Rapid River 122.2 mi² | 0.3 / 37 | 0.3 / 37 | 0.3 / 40 | 0.4 / 44 | 0.3 / 41 | 0 / 26 | 0 / 22 | 0 / 21 | 0 / 24 | 0 / 28 |
| U. Camas Ck 81.9 mi² | 0.1 / 10 | 0.1 / 10 | 0.1 / 9.8 | 0.1 / 10 | 0.1 / 10 | 0 / 0 | 0 / 0 | 0 / 0 | 0 / 0 | 0 / 0 |
| U. Loon Ck 165.0 mi² | 0.2 / 39 | 0.2 / 38 | 0.2 / 38 | 0.2 / 40 | 0.2 / 38 | 0 / 32 | 0 / 26 | 0 / 25 | 0 / 25 | 0 / 25 |
| Warm Spring Ck 96.2 mi² | 0.2 / 16 | 0.2 / 15 | 0.2 / 15 | 0.2 / 15 | 0.2 / 15 | 0 / 7 | 0 / 7 | 0 / 3 | 0 / 3 | 0 / 3 |
| Wilson Ck-MFSR. 155.4 mi² | 0.0 / 0 | 0.0 / 0 | 0.0 / 0 | 0.0 / 0 | 0.0 / 0 | 0 / 0 | 0 / 0 | 0 / 0 | 0 / 0 | 0 / 0 |

## *North Fork Ranger District*

### Affected Environment

There are approximately 943 miles of motorized routes within subwatersheds with high Watershed Vulnerability and 5 miles of motorized routes within 300 feet of 303(d) streams. Subwatershed Vulnerability ratings range from low to high with 2 percent of the subwatersheds categorized as high (Water Resources Specialist Report). Highly vulnerable subwatersheds are described as including more than 50 percent of the area as sensitive lands where disturbances pose a high probability of degrading watershed soil-hydrologic functions. Geomorphic Integrity ratings for the subwatersheds vary from low to high with 65 percent of the subwatersheds categorized as high (Water Resources Specialist Report). Geomorphic integrity reflects soil-hydrologic function as a sponge-and-filter system to absorb and store water, and physical soil-stream resilience. Water Quality integrity ratings for the subwatersheds vary from low to high with 60 percent of the subwatersheds categorized as high (Water Resources Specialist Report). Water quality has been affected by localized impacts, including sediment loading and thermal changes due to water diversions, roads, timber harvesting, livestock grazing, and recreation.

### Environmental Consequences

Motorized route densities on the North Fork Ranger District would be reduced in all subwatersheds from the No Action Alternative over the range of action alternatives (Table 3-13). The No Action Alternative used as a baseline was compared to the action alternatives and is summarized in Table 3-13. Alternative 3 has the most relative reduction from the No Action Alternative and would provide the most protection for water resources. By reducing the number of roads available for public use, Alternative 3 would reduce erosion rates and sediment loadings. Streamflow regimes, sediment transport and storage, channel bank and bed configurations, substrate composition and stability of slopes adjacent to streams would re-equilibrate to a more natural state.

Miles of designated routes in vulnerable subwatersheds on the North Fork Ranger District would be reduced in all subwatersheds from the No Action Alternative for all action alternatives (Table 3-13). Comparisons of miles of road in watersheds with greater than 50% sensitive lands were made against the No Action Alternative and are summarized in Table 3-13. A total of 307 miles of motorized routes would be reduced from the No Action Alternative in Alternative 3. By reducing the miles of roads on sensitive soils the risk of road failure and slope failures and accelerated erosion associated with concentrated flow in road drainage systems would be reduced.

Motorized routes within close proximity to sensitive streams were quantified for each alternative and are displayed in Table 3-13. There are no roads within 300 feet of 303(d) streams proposed for motor vehicle use in any of the alternatives on the North Fork Ranger District. Reducing road miles within 300 feet of 303(d) streams is a step towards full attainment of beneficial uses and supports TMDL goals.

The number of inventoried perennial and intermittent stream crossings available for motor vehicle use were tallied for each alternative and compared to the No Action Alternative (Table 3-13). Alternative 3, if selected, would have 303 fewer motorized stream crossings than the No Action Alternative. Crossings provide for direct contact between vehicles and streams as well as providing a pathway for contaminants on the road surface to enter waterways. Alternative 3 has fewer crossings and therefore minimizes the risk of pollutants entering streams through this pathway.

Motorized access to dispersed camping has the potential to negatively affect water resources in riparian areas by damaging sensitive wetland soils, altering floodplain geometry and damaging riparian vegetation. On the North Fork Ranger District, square miles available for motorized access to dispersed

camping in riparian areas by alternative are as follows: No Action, 16 $mi^2$; Alternative 1, 6 $mi^2$; Alternative 3, 0 $mi^2$; Alternative 4, 7 $mi^2$; Alternative 5, 6 $mi^2$. Alternative 3 does not allow motorized access to dispersed camping in riparian areas eliminating potential damage from this activity.

There would be no irreversible or irretrievable impacts to water resources resulting from any of the proposed alternatives on the North Fork Ranger District.

Table 3-13. Water Resource Indicators by Alternative for the North Fork Ranger District

| HUC 5 Watersheds completely or partially contained within the North Fork Ranger District | Motorized Route Density ($mi/mi^2$) / Miles of Designated Routes in Subwatersheds with a High Watershed Vulnerability Rating | | | | | Miles of Designated Routes within300 feet of 303(d) Streams. / Number of Inventoried Stream Crossings Open to Motor vehicle use | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | No- Action | Designated System of Routes | Recommended Wilderness/ Roadless Area Emphasis | Maximum Motorized Emphasis | Preferred | No- Action | Designated System of Routes | Recommended Wilderness/ Roadless Area Emphasis | Maximum Motorized Emphasis | Preferred |
| Carmen Ck-S.R. 81.8 $mi^2$ | 0.6 / 33 | 0.3 / 20 | 0.3 / 20 | 0.6 / 25 | 0.3 / 20 | 0 / 31 | 0 / 25 | 0 / 9 | 0 / 9 | 0 / 17 |
| Cottonwood Ck-S.R. 85.4 $mi^2$ | 0.3 / 23 | 0.2 / 13 | 0.2 / 13 | 0.2 / 13 | 0.2 / 13 | 0 / 9 | 0 / 7 | 0 / 4 | 0 / 4 | 0 / 4 |
| Horse Ck 141.8 $mi^2$ | 0.3 / 46 | 0.2 / 31 | 0.2 / 31 | 0.2 / 33 | 0.2 / 13 | 0 / 35 | 0 / 24 | 0 / 14 | 0 / 12 | 0 / 14 |
| Indian Creek-S. R. 114.7 $mi^2$ | 1.5 / 38 | 0.9 / 23 | 0.8 / 23 | 1.0 / 23 | 1.0 / 32 | 0 / 80 | 0 / 44 | 0 / 30 | 0 / 30 | 0 / 30 |
| L. Panther Ck 65.4 $mi^2$ | 0.0 / 0 | 0.0 / 0 | 0.0 / 0 | 0.0 / 0 | 0.0 / 0 | 0 / 2 | 0 / 2 | 0 / 1 | 0 / 1 | 0 / 1 |
| North Fork S. R. 211.4 $mi^2$ | 2.0 / 240 | 1.1 / 138 | 0.8 / 102 | 1.5 / 183 | 1.1 / 131 | 0 / 204 | 0 / 148 | 0 / 90 | 0 / 64 | 0 / 118 |
| Owl Creek-S. R. 101.8 $mi^2$ | 0.5 / 54 | 0.5 / 52 | 0.5 / 52 | 0.9 / 0 | 0.5 / 53 | 0 / 35 | 0 / 18 | 0 / 17 | 0 / 17 | 0 / 51 |
| Papoose Ck-MFSR. 126.8 $mi^2$ | 0.0 / 0 | 0.0 / 0 | 0.0 / 0 | 0.0 / 0 | 0.0 / 0 | 0 / 0 | 0 / 0 | 0 / 0 | 0 / 0 | 0 / 0 |
| Pine Ck-S. R. 101.9 $mi^2$ | 1.81175 | 0.6 / 64 | 0.7 / 69 | 1.1 / 112 | 0.7 / 72 | 0 / 108 | 0 / 101 | 0 / 27 | 0 / 28 | 0 / 48 |
| Wilson Ck-MFSR. 92.0 $mi^2$ | 0.0 / 0 | 0.0 / 0 | 0.0 / 0 | 0.0 / 0 | 0.0 / 0 | 0 / 0 | 0 / 0 | 0 / 0 | 0 / 0 | 0 / 0 |
| Yellowjacket Ck 55.9 $mi^2$ | 0.0 / 8 | 0.0 / 0 | 0.0 / 0 | 0.0 / 0 | 0.0 / 0 | 0 / 0 | 0 / 0 | 0 / 0 | 0 / 0 | 0 / 0 |

## ***Salmon-Cobalt Ranger District***

### Affected Environment

There are approximately 904 miles of motorized routes within subwatersheds with high Watershed Vulnerability and 69 miles of motorized routes within 300 feet of 303(d) streams. Subwatershed Vulnerability ratings range from low to high with 11 percent of the subwatersheds categorized as high

(Water Resources Specialist Report). Highly vulnerable subwatersheds are described as including more than 50 percent of the area as sensitive lands where disturbances pose a high probability of degrading watershed soil-hydrologic functions. Geomorphic Integrity ratings for the subwatersheds vary from low to high with 45 percent of the subwatersheds categorized as high (Water Resources Specialist Report). Geomorphic integrity reflects soil-hydrologic function as a sponge-and-filter system to absorb and store water, and physical soil-stream resilience. Water Quality integrity ratings for the subwatersheds vary from low to high with 40 percent of the subwatersheds categorized as high (Water Resources Specialist Report). Water quality has been affected by localized impacts, including sediment loading and thermal changes due to water diversions, roads, timber harvesting, livestock grazing, and recreation.

*Middle Salmon River-Panther Creek Subbasin Assessment and Total Maximum Daily Load*

Eight water bodies were listed on the 1998 303(d) list. A TMDL was not developed for Diamond Creek because it has an intermittent flow of less than 1 cubic foot per second in the listed segment. Numeric water quality criteria do not apply to streams with less than 1 cubic foot per second flow. Diamond Creek would be monitored further to determine its support status at lower elevations where it is not intermittent. If necessary, a TMDL for Diamond Creek would be developed at a later time. Metals and pH contamination in four streams associated with Blackbird Mine are well documented, and clean-up activities are underway to restore the water quality and beneficial uses of Panther Creek and Big Deer Creek. It is likely that these activities would also reduce metals contamination in Bucktail and Blackbird Creeks. Since restoration activities have already been planned and implemented for the mine, developing TMDLs for these waters would be a duplication of effort, so TMDLs were not developed for these four creeks. Since BMPs have already been fully implemented, a TMDL was not developed for Dump Creek. The Salmon River was identified as an impaired water body on the 1998 303(d) list, but no pollutants were identified. Information regarding pollution in the Salmon River is very sparse and no water quality problems were identified in this assessment; therefore, a TMDL was not completed for the Salmon River. A TMDL was developed for Williams Lake for phosphorous. Most of the phosphorous is from non-point sources in the lake, and from a campground on Williams Lake.

## Environmental Consequences

Motorized route densities on the Salmon-Cobalt Ranger District would be reduced in all subwatersheds from the No Action Alternative over the range of action alternatives (Table 3-14). The No Action Alternative used as a baseline was compared to the action alternatives and is summarized in Table 3-14. Alternative 3 has the most relative reduction from the No Action Alternative and would provide the most protection for water resources. By reducing the number of roads available for public use, Alternative 3 would reduce erosion rates and sediment loadings. Streamflow regimes, sediment transport and storage, channel bank and bed configurations, substrate composition and stability of slopes adjacent to streams would re-equilibrate to a more natural state.

Miles of designated routes in vulnerable subwatersheds on the Salmon-Cobalt Ranger District would be reduced in all subwatersheds from the No Action for all action alternatives (Table 3-14). Comparisons of miles of road in watersheds with greater than 50% sensitive lands were made against the No Action Alternative and are summarized in Table 3-14. A total of 379 miles of motorized routes would be reduced from the No Action Alternative in Alternative 3. By reducing the miles of roads on sensitive soils the risk of road failure and slope failures and accelerated erosion associated with concentrated flow in road drainage systems would be reduced.

Motorized routes within close proximity to sensitive streams were quantified for each alternative and are displayed in Table 3-14. Compared to the No Action Alternative, Alternative 3 would designate 14 fewer miles within 300 feet of streams listed as impaired by the State of Idaho and would afford the

most protection for these streams. Reducing road miles within 300 feet of 303(d) streams is a step towards full attainment of beneficial uses and supports TMDL goals.

The number of inventoried perennial and intermittent stream crossings available for motor vehicle use were tallied for each alternative and compared to the No Action Alternative (Table 3-14). Alternative 3, if selected, would have 385 fewer motorized stream crossings than the No Action Alternative. Crossings provide for direct contact between vehicles and streams as well as providing a pathway for contaminants on the road surface to enter waterways. Alternative 3 has fewer crossings and therefore minimizes the risk of pollutants entering streams through this pathway.

Motorized access to dispersed camping has the potential to negatively affect water resources in riparian areas by damaging sensitive wetland soils, altering floodplain geometry and damaging riparian vegetation. On the Salmon-Cobalt Ranger District, square miles available for motorized access to dispersed camping in riparian areas by alternative are as follows: No Action, 26 $mi^2$; Alternative 1, 10 $mi^2$; Alternative 3, 0 $mi^2$; Alternative 4, 12 $mi^2$; Alternative 5, 10 $mi^2$. Alternative 3 does not allow motorized access to dispersed camping in riparian areas eliminating potential damage from this activity.

There would be no irreversible or irretrievable impacts to water resources resulting from any of the proposed alternatives on the Salmon-Cobalt Fork Ranger District.

Table 3-14. Water Resource Indicators by Alternative for the Salmon-Cobalt Ranger District

| HUC 5 Watersheds completely or partially contained within the Salmon-Cobalt Ranger District | Motorized Route Density ($mi/mi^2$) / Miles of Designated Routes in Subwatersheds with a High Watershed Vulnerability Rating | | | | | Miles of Designated Routes within300 feet of 303(d) Streams. / Number of Inventoried Stream Crossings Open to Motor vehicle use | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | No- Action | Designated System of Routes | Recommended Wilderness/ Roadless Area Emphasis | Maximum Motorized Emphasis | Preferred | No- Action | Designated System of Routes | Recommended Wilderness/ Roadless Area Emphasis | Maximum Motorized Emphasis | Preferred |
| Carmen Ck-S.R. 32.8 $mi^2$ | 1.9 / 55 | 1.5 / 43 | 1.2 / 33 | 1.8 / 47 | 1.6 / 43 | 3 / 7 | 2 / 3 | 1 / 3 | 2 / 6 | 2 / 3 |
| Hat Ck-S.R. 47.4$mi^2$ | 0.9 / 90 | 0.9 / 70 | 0.8 / 49 | 0.9 / 73 | 0.9 / 64 | 0 / 39 | 0 / 27 | 0 / 13 | 0 / 25 | 0 / 14 |
| Indian Ck-S.R. 54.9 $mi^2$ | 3.2 / 130 | 1.7 / 72 | 1.2 / 44 | 2.3 / 90 | 1.9 / 78 | 0 / 125 | 0 / 69 | 0 / 44 | 0 / 107 | 0 / 87 |
| Iron Ck-S.R. 78.2 $mi^2$ | 1.6 / 3 | 0.9 / 3 | 0.9 / 1 | 1.1 / 4 | 0.9 / 2 | 0 / 73 | 0 / 57 | 0 / 57 | 0 / 59 | 0 / 57 |
| L. Camas Ck. 77.4 $mi^2$ | 1.4 / 109 | 0.4 / 30 | 0.3 / 23 | 0.6 / 43 | 0.3 / 23 | 0 / 67 | 0 / 19 | 0 / 11 | 0 / 18 | 0 / 11 |
| L. Panther Ck. 65.6 $mi^2$ | 0.8 / 32 | 0.5 / 15 | 0.4 / 11 | 0.7 / 15 | 0.4 / 11 | 5 / 40 | 5 / 22 | 1 / 6 | 5 / 22 | 1 / 6 |
| M. Panther Ck. 183.8 $mi^2$ | 1.3 / 42 | 0.6 / 22 | 0.7 / 20 | 0.9 / 20 | 0.7 / 20 | 15 / 82 | 11 / 25 | 11 / 24 | 14 / 45 | 11 / 24 |
| Napias Ck. | 2.0 | 0.7 | 0.9 | 1.5 | 1.1 | 0 | 0 | 0 | 0 | 0 |

| HUC 5 Watersheds completely or partially contained within the Salmon-Cobalt Ranger District | Motorized Route Density (mi/mi²) / Miles of Designated Routes in Subwatersheds with a High Watershed Vulnerability Rating | | | | | Miles of Designated Routes within300 feet of 303(d) Streams. / Number of Inventoried Stream Crossings Open to Motor vehicle use | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | No- Action | Designated System of Routes | Recommended Wilderness/ Roadless Area Emphasis | Maximum Motorized Emphasis | Preferred | No- Action | Designated System of Routes | Recommended Wilderness/ Roadless Area Emphasis | Maximum Motorized Emphasis | Preferred |
| 88.3 mi² | ~~94~~ | ~~30~~ | ~~35~~ | ~~65~~ | ~~49~~ | ~~51~~ | ~~17~~ | ~~25~~ | ~~35~~ | ~~28~~ |
| Twelvemile Ck.-S.R. 80.9 mi² | 0.8 / 14 | 0.6 / 14 | 0.6 / 14 | 1.0 / 20 | 0.7 / 14 | 4 / 35 | 4 / 22 | 4 / 22 | 6 / 35 | 4 / 30 |
| U. Camas Ck. 51.5 mi² | 0.7 / 0 | 0.5 / 0 | 0.4 / 6 | 0.5 / 0 | 0.5 / 0 | 0 / 31 | 0 / 26 | 0 / 23 | 0 / 25 | 0 / 25 |
| U Panther Ck. 129.5 mi² | 0.7 / 7 | 0.5 / 6 | 0.6 / 6 | 0.9 / 18 | 0.6 / 10 | 0 / 48 | 0 / 38 | 0 / 38 | 0 / 50 | 0 / 42 |
| Williams Ck-S.R. 78.7 mi² | 2.3 / 0 | 1.2 / 0 | 1.0 / 0 | 1.6 / 0 | 1.1 / 0 | 12 / 54 | 8 / 37 | 8 / 34 | 9 / 39 | 8 / 35 |
| Yellowjacket Ck. 52.5 mi² | 2.0 / 79 | 1.0 / 34 | 1.0 / 34 | 1.3 / 49 | 1.0 / 34 | 0 / 97 | 0 / 65 | 0 / 64 | 0 / 61 | 0 / 58 |

### 3.4.8 CUMULATIVE EFFECTS

The cumulative effects analysis area for each ranger district includes Forest acres in the HUC 5 watersheds listed in Table 3-9 through Table **3-14**. The analysis is temporally bounded by the current Travel Plan implemented in 1988 and the current schedule of proposed actions.

#### ***Challis-Yankee Fork Ranger District***

Past and reasonably foreseeable actions that contribute to increased cumulative effects to water resources include permitted uses such as livestock grazing and fuelwood gathering, road resurfacing of the Yankee Fork road and the Custer Motorway, small scale placer mining operations, fuels reduction near the Custer town site, timber salvage, timber stand improvement, Yankee Fork tailings restoration and ongoing clean-up at the Grouse Creek Mine, and noxious weed control. Since the implementation of the current Travel Plan there have been 321 miles of unauthorized motorized routes established on the Challis-Yankee Fork Ranger District.

#### ***Leadore Ranger District***

Past and reasonably foreseeable actions that contribute to increased cumulative effects to water resources include permitted uses such as livestock grazing and fuelwood gathering, timber harvest, a spring enclosure project, and noxious weed control. Since the implementation of the current Travel Plan there have been 484 miles of unauthorized motorized routes established on the Leadore Ranger District.

### *Lost River Ranger District*

Past and reasonably foreseeable actions that contribute to increased cumulative effects to water resources include permitted uses such as livestock grazing and fuelwood gathering, allotment improvements, an aspen treatment project and fuels reduction near Mackay, and noxious weed control. Since the implementation of the current Travel Plan there have been 540 miles of unauthorized motorized routes established on the Lost River Ranger District.

### *Middle Fork Ranger District*

Past and reasonably foreseeable actions that contribute to increased cumulative effects to water resources include permitted uses such as livestock grazing and fuelwood gathering, fuels reduction projects, small mining operations, and noxious weed control. Since the implementation of the current Travel Plan 40 miles of unauthorized motorized routes have been established on this district.

### *North Fork Ranger District*

Past and reasonably foreseeable actions that contribute to increased cumulative effects to water resources include permitted uses such as livestock grazing and fuelwood gathering, fuels reduction in the Hughes Creek drainage, harvesting on private land, bridge replacements on Indian Creek, small mining operations, flood damage repair work on the Salmon River Road, and noxious weed control. Since the implementation of the current Travel Plan there have been 614 miles of unauthorized motorized routes established on the North Fork River Ranger District.

### *Salmon-Cobalt Ranger District*

Past and reasonably foreseeable actions that contribute to increased cumulative effects to water resources include permitted uses such as livestock grazing and fuelwood gathering, fuels reduction projects, a proposed cobalt mine operation, salvage timber sales, a channel restoration project and a fish passage culvert replacement project on Deep Creek, and noxious weed control. Since the implementation of the current Travel Plan there have been 704 miles of unauthorized motorized routes established on the Salmon-Cobalt Ranger District.

All action alternatives would reduce the miles available for motor vehicle use and eliminate cross-country travel. The alternatives vary in the number of watersheds that are expected to have beneficial, non-significant, or significant impacts (Water Resources Specialist Report) relative to their cumulative effects risk rating, reasonably foreseeable actions, and change in water resource indicators. At a watershed scale all alternatives would have a beneficial cumulative effect on water resources.

## 3.5 SOIL RESOURCES

### 3.5.1 CHANGES BETWEEN THE DRAFT EIS AND THE FINAL EIS

- Affected Environment, Environmental Consequences, and Cumulative Effects are displayed by ranger district in the FEIS.
- Miles and acres have been updated for each ranger district to reflect changes in alternatives based on public comments received on the DEIS.

### 3.5.2 ISSUES AND INDICATORS

**Soil Resources Issue:** The type, extent, level of use and location of motorized roads, trails, and dispersed camping may degrade soil productivity, accelerate erosion, deliver sediment to streams, and degrade water quality.

***Indicators:***

- Miles of motorized routes > 50 inches and > 50 inches on high surface erosion potential lands
- Miles of motorized routes < 50 inches and < 50 inches on high surface erosion potential lands
- Miles of motorized two-wheel routes and two-wheel routes on high surface erosion potential lands
- Acres available for access to off-road dispersed camping

An explanation of each soil indicator, how it relates to the soil resource, and how it can be used to compare between alternatives is included in the Soil Resource Specialist Report (Project Record).

### 3.5.3 METHODOLOGY FOR ANALYSIS

**Analysis Area**

The geographic scope for the assessment of the soil resource condition and potential effects includes the entire SCNF outside of the FC-RONRW. For organizational reasons, the SCNF is divided into six ranger districts. The analysis area for Existing Condition and Environmental Consequences is the HUC 5 watershed within each ranger district. Analysis areas for the FEIS will be condensed and displayed by individual ranger district. The Cumulative Effects analysis area is the HUC 5 watershed within each ranger district. The analysis is temporally bounded by the current Travel Plan implemented in 1988 and the current schedule of proposed actions (April-June, 2009).

**Methodology**

The existing condition of the soil resource within the project area was obtained, in part, from the various Land Systems Inventories on the SCNF.

The methods used to develop data for quantitative analysis were accomplished using ArcMap 9.2. Three types of operations were used: attribute queries, spatial queries and generation of new datasets from the original Forest Service GIS corporate data. Results are designed to be reviewed using a "big picture" approach, rather than at an individual route level. Tables are given showing the numerical results of interpretations. The analysis for the soil resource addresses changes in the type, extent, and location of designated roads, designated motor vehicle trails, and dispersed camping areas for each of the six ranger districts.

Designated transportation facilities such as roads and trails are considered "dedicated use" for lands that comprise the road and trail prism. In this context, impacts to soil productivity resulting directly from the presence of system roads and trails are not evaluated for compliance with Forest Plan standards and guidelines because the affected land is managed for transportation and is not managed for site productivity. Effects to soil productivity from the addition of new routes to the transportation system, decommissioning of travel roads and trails, and trails re-routed to reduce resource impacts will be evaluated as miles/acres that may be added to or removed from the productive land base.

The techniques and methodologies used in this analysis consider the best information and data available. The analysis includes a summary of credible scientific evidence which is relevant to evaluating reasonably foreseeable impacts. The analysis also identifies methods used and references the scientific sources relied on. The conclusions are based on a scientific analysis that shows a thorough review of relevant scientific information. For this analysis there was not any incomplete or unavailable information that would be necessary for this determination.

### 3.5.4 COMPLIANCE WITH THE FOREST PLAN AND OTHER REGULATORY DIRECTION

All action alternatives are in compliance with the Forest Plan and other regulatory direction. In all alternatives roads and trails are considered a Total Soil Resource Commitment (TSRC) and an existing irretrievable commitment to soil productivity. TSRC in all watersheds falls below the 5% Forest Plan guideline.

### 3.5.5 EXISTING CONDITION COMMON TO ALL RANGER DISTRICTS

**Motor vehicle trails:** Maintenance is conducted on approximately 10 percent of the Forest trails annually. However, erosion continues on all trails. Sediment delivery is greatest where the trails are located in subwatersheds with high watershed vulnerability, with high surface erosion potential, and intersect stream crossing.

**Unauthorized Roads:** Unauthorized roads may or may not be open or drivable. Access may be physically blocked by down or live trees. These roads receive no maintenance so many have drainage and erosion problems. Drainage structures such as ditches, cross-drains, waterbars, or dips may have never been constructed or are no longer functioning. Failures at stream crossing are common, resulting in erosion and sediment delivery.

**Unauthorized Motor Vehicle Use:** Unauthorized motor vehicle use would continue to be a problem that adversely affects soil productivity and water quality. The major problems occur on unauthorized roads, roads posted as closed but not physically closed, and in meadows adjacent to roads and motor vehicle trails.

### 3.5.6 DIRECT AND INDIRECT EFFECTS COMMON TO ALL ALTERNATIVES

Most of the negative impacts to the soil resource occurs with the creation of the road or trail itself. The presence of a road commits a soil resource and where roads occupy formerly productive land, they affect site productivity (Gucinski et al. 2001). Losses of productivity associated with road-caused accelerated erosion are site-specific and highly variable in extent (Gucinski et. al. 2001). Once the road is established, impacts continue through processes such as mass wasting, surface erosion, sedimentation, and creation of pioneered routes across the landscape. Geomorphic effects of roads range from chronic and long-term contributions of fine sediment into streams to catastrophic mass failures of road cuts and fills during large storms (Gucinski et. al. 2001).

#### *Travel Routes and Mass Wasting*

Roads and trails are subject to failure through mass wasting processes especially when located on sensitive soils that have high potential for mass wasting. The mechanisms behind road-related mass wasting failures include removing slope support in road and trail cuts, increasing the weight on fill slopes, groundwater saturation of the road/trail prism, intercepting subsurface flow, hill slope drainage rerouting, and initiating debris flows at failed stream crossings. If the failure extends to a stream channel, the initial failure and subsequent surface erosion of the slide will deliver sediment directly to the stream.

The magnitude of road-related mass erosion differs with climate, geology, road age, construction practices, and storm history. Typical causes include improper placement and construction of road fills and stream crossings, inadequate culvert sizes for water, sediment, and wood during floods, modification of surface or subsurface drainage by the road surface or prism, and diversion of water into unstable parts of the landscapes (Gucinski et. al. 2001).

### *Travel Routes and Surface Erosion and Surface Failure*

Erosion and sediment occur in all watersheds as a natural geologic phenomenon. Management activities associated with roads, trails, and cross-country motor vehicle use can accelerate erosion and sediment beyond the historic range of variation and geological rate (Satterlund and Adams 1992). When routes are located on sensitive soils that have a high potential for erosion, the negative impacts can occur with far less disturbance. Surface erosion occurs when wind or water displaces exposed trail surfaces. This usually occurs on steep terrain or on sandy soils that are susceptible to wind erosion. Surface failure occurs when trail surfaces degrade into muddy tracks with deep muck holes. This usually occurs on flat areas with organic or finely textured soils. Either pathway can lead to environmental impacts that are extremely difficult to stabilize or reverse (Meyer 2002).

Road maintenance practices can affect surface erosion and sedimentation. Small changes in road and trail drainage can result in large changes in erosion and the routing of eroded sediments. The potential for increases in sediment delivered to streams tends to be greatest in silty and non-cohesive soils. Many roads, trails, and foot paths have been created in the bottoms of ephemeral and intermittent drainages. These travel routes cannot be properly drained because they are the drainage path.

Accelerated erosion and sediment delivery from trails follow the same processes that occur from roads. The primary source of erosion and sediment is from the existence of a trail itself with accelerated erosion occurring once vegetation cover is lost. The extent of erosion is primarily determined by trail location and complex interaction between topographic, soil, and geomorphic features (Wilson and Seney 1994).

### *Travel and Sediment*

Low-volume roads are recognized as one of the primary sources of sediment in many watersheds (Elliot et al. 1999). One of the main impacts of motorized and non-motor vehicle travel over unconsolidated surfaces is to dislodge and loosen soil material, making it susceptible to being carried or washed into the drainage network to become sediment. The amount of soil dislodged depends on the mode of travel, type of surface on which the travel occurs, and level of use. Generally speaking, foot travel has the least potential for displacing soil material. As the weight, size, and torque of the travel-mode increases, so does the potential to loosen soils. Concentration of use also increases the potential to displace soil. Routes composed of un-surfaced native material have greater potential to produce sediment than do routes surfaced with gravel and even less occurs from paved surfaces. As a rule, an un-surfaced primitive road would be more likely to produce sediment than a single-track trail. Roads and trails can act as channels that multiply sediment loads to the streams during runoff events. Sediment from roads is often greater than sediment from all other land management activities combined, including skidding and yarding in logging operations (Furniss et al. 1991).

Native surfaces and some types of graveled surfaces, such as those covered with road-base material only, are more at risk to shearing and displacement of surface materials if they are traveled on when wet. Level-of-use is important because each pass a vehicle makes can dislodge materials from the surface. More vehicles can translate to more material being dislodged and transported.

#### Effects from User-Created Routes

Motorized vehicle use off of roads and trails degrades soil productivity. Disturbance can result from off-road motorized activities that produce unacceptable levels of soil degradation by compacting, removing, eroding, or puddling the soil. Motorized vehicles can damage soils directly by impact from surface traffic and indirectly by hydrologic modifications, soil transport, and deposition. Direct mechanical impacts have several components: abrasion, compaction, shearing, and displacement (Meyer 2002). Abrasion

strips surface vegetation and roots. Compaction reduces soil voids and causes surface subsidence. Shearing is the destructive transfer of force through the soil. Displacement results in the mechanical movement of surface water flow, reductions in infiltration and percolation, surface ponding, and the loss of water holding capacity. Indirect impacts include hydraulic modifications such as the disruption of surface water flow, reduction in infiltration, surface ponding, and the loss of water-holding capacity (Meyer 2002). Water quality can be degraded by erosion through sediment delivery to lakes and streams, which in turn affects aquatic habitat.

The first consequences of pioneering a trail across a landscape are the stripping of surface vegetation, the abrasion of roots, and the compaction of surface soil layers. These impacts destroy soil structure, reduce water infiltration, and break bonds between soil particles. Soil particles are more vulnerable to displacement and loss from wind or water erosion. Soil compaction also leads to surface subsidence - the lowering of the trail relative to the adjacent ground surface. Trails become entrenched. This lower surface intercepts and drains water from adjacent surfaces and channels that flow along the trail. This dramatically increases the risk of water erosion on sloped areas and the pooling of water in low-lying sections. As trail surfaces degrade due to rutting, users widen the trail until the area is scarred with a number of routes in various stages of use and abandonment (Meyer 2002).

Properly designed and maintained system roads and trails have cross-drainage features such as rolling dips and water bars to minimize erosion or sediment transport. User-created roads and trails do not have these features and over time erosion increases. Generally, user-created routes have the most potential to impact the watershed processes, water quality, and riparian health.

**Access to Dispersed Camping**

Impacts related to the use or creation of routes to access dispersed campsites are similar to the effects from user-created routes. Motorized vehicle use off of roads and trails degrades soil productivity. Disturbance can result from off-road motorized activities that produce unacceptable levels of soil degradation by compacting, removing, eroding, or puddling the soil. Motorized vehicles can damage soils directly through impact from surface traffic and indirectly by hydrologic modifications, soil transport, and deposition. Without proper buffers riparian vegetation, which helps stabilize soil and streambanks is damaged and erosion and sedimentation increases.

### 3.5.7 ENVIRONMENTAL CONSEQUENCES

#### *Challis-Yankee Fork Ranger District*

**Existing Condition**

Acreages and mileages are calculated for subwatersheds all or partially within the ranger district; therefore these numbers will not match the acreages and mileages presented in Chapter 2 and some other resource analyses exactly. There are an estimated 804,293 acres within this district.

Approximately 73,118 (9%) of the district is open to cross-country motor vehicle use. There are a total of 52,894 acres available for off-road dispersed camping, meaning that potential soil disturbance and loss of long-term soil productivity could occur on 52,894 acres of land. There are 1,256 miles of system and unauthorized routes. Of these miles, 389 miles are on soils rated high for erosion potential. There are 320 miles of non-system routes within subwatersheds all or partially within the district. These routes are typically not part of a management decision to remove area from the productive land base. These routes often are created in areas not suitable for motor vehicle trails, such as wet meadows, erosive soils, riparian areas, and steep slopes and have the potential to cause detrimental soil disturbance and a reduction or loss of long-term soil productivity (Table 3-15).

Table 3-15. Existing Condition of the Soil Resource – Challis-Yankee Fork Ranger District

| | Existing Condition |
|---|---|
| Acres (and percent) of the district open to cross-country motor vehicle use. | 73,118<br>9% |
| Miles of non-system routes. | 320 |
| Miles of motorized routes >50 inches. / Miles of routes on erosive soil. | 1,167 / 364 |
| Miles of motorized routes <50 inches. / Miles of routes on erosive soil. | 54 / 16 |
| Miles of two-wheeled motorized routes. / Miles of routes on erosive soil. | 35 / 9 |
| Acres available for off-road dispersed camping. | 52,894 |

**Direct and Indirect Effects**

In Alternative 0 (No Action Alternative), which is the baseline for comparison of alternatives, there are approximately 965 miles of designated motorized roads and trails comprising the Forest transportation system within the subwatersheds associated with the Challis-Yankee Fork Ranger District (Table 3-16). Three hundred thirteen miles are located on soils rated high for soil erosion potential. Twenty-nine miles of routes are non-system routes. There are also 73,118 acres open to cross-country motor vehicle use and 52,894 acres available for off-road dispersed camping.

Table 3-16. Comparison of alternatives calculated for watersheds all or partially within the Challis-Yankee Fork Ranger District

| | Routes > 50 Inches | | Routes < 50 Inches | | 2-Wheel Routes | | Dispersed Camping Acres |
|---|---|---|---|---|---|---|---|
| | Total | Erosive | Total | Erosive | Total | Erosive | |
| Existing condition | 1,167 | 364 | 54 | 16 | 35 | 9 | 52,894 |
| Alternative 0 | 877 | 288 | 54 | 16 | 34 | 9 | 52,894 |
| Alternative 1 | 562 | 177 | 63 | 22 | 283 | 94 | 32,516 |
| Alternative 3 | 514 | 155 | 41 | 13 | 156 | 66 | 16,347 |
| Alternative 4 | 605 | 183 | 123 | 31 | 225 | 85 | 34,458 |
| Alternative 5 | 554 | 169 | 65 | 19 | 228 | 89 | 30,592 |

Note: Miles of routes and acres available are condensed from the HUC 5 watershed activity areas found in the Soil's Specialist Report. It is displayed by ranger district for the FEIS report. This note applies to all ranger districts.

Most important for the soil resource is that cross-country motor vehicle use off the designated system would not be allowed in any of the action alternatives. For the Challis-Yankee Fork Ranger District, soil productivity would potentially be returned to 73,118 acres (effects discussed in Section 3.4.6 - user-created routes). This number, of course, is larger than the actual acres due to (for example) areas not accessible for motorized access, designating routes within the area, and routes remaining on the landscape for non-motor vehicle use.

In all action alternatives, the total miles of routes designated for motor vehicle use decreases compared to Alternative 0. Miles of routes located on sensitive soil decreases also. By reducing the miles of roads on sensitive soils the risk of road failure, slope failures, and accelerated erosion associated with concentrated flow in road drainage systems would be reduced. Non-system routes have been added to the designated system of routes in all alternatives. Generally, for existing non-system routes, direct effects have already occurred. The direct effects were: physical displacement of soil caused by motor vehicle traffic, loss of soil productivity from displacement, loss of soil depth, loss of soil cover, and loss of soil hydraulic function. Indirect effects of these routes include increased erosion, potential increased sedimentation, and potential increased impacts to aquatics. By adding these routes to the designated system of routes, a management decision has been made to remove additional area from the productive

land base. Non-system routes not designated would remain available for non-motor vehicle use so the effects would continue until a route is abandoned.

Miles of routes <50 inches increase compared to Alternative 0 in all alternatives for both stable and sensitive soils except Alternative 3. Miles of 2-wheel routes located on both stable and sensitive soils increase in all alternatives compared to Alternative 0. This increase is, in part, a change in vehicle class from >50 inches. A classification change from >50 inches to less than 50 inches will keep the existing road width the same or will eventually narrow if used by a smaller vehicle class size. For the soil resource it means there would be no increase of soil or land area needed for the route.

There are approximately 52,894 acres available for access to dispersed camping in Alternative 0. Motorized access to dispersed camping can have negative impacts to the soil resource by damaging wetland soils, riparian vegetation, and causing soil disturbance. All action alternatives decrease the total acres available for access to dispersed camping compared to Alternative 0. Alternative 3 would not allow motorized access to dispersed camping in riparian areas, eliminating potential damage from this activity.

## ***Leadore Ranger District***

### Existing Condition

Acreages and mileages are calculated for subwatersheds all or partially within the ranger district; therefore these numbers will not match the acreages and mileages presented in Chapter 2 and some other resource analyses exactly.

There are an estimated 329,361 acres within the Leadore Ranger District. Approximately 121,416 (37%) of the district is open to cross-country motor vehicle use. There are a total of 55,271 acres available for off-road dispersed camping, meaning that potential soil disturbance and loss of long-term soil productivity could occur on 55,271 acres of land. There are 814 miles of routes which have a management decision for dedicated use. Of these, 189 miles are on soils rated high for erosion potential. There are also 469 miles of non-system routes within the district. These routes are typically not part of a management decision to remove area from the productive land base. These routes often are created in areas not suitable for motor vehicle trails, such as wet meadows, erosive soils, riparian areas, and steep slopes and have the potential to cause detrimental soil disturbance and a reduction or loss of long-term soil productivity (Table 3-17).

Table 3-17. Existing Condition of the Soil Resource – Leadore Ranger District

| | Existing Condition |
|---|---|
| Acres (and percent) of the district open to cross-country motor vehicle use. | 121,416<br>37% |
| Miles of non-system routes. | 469 |
| Miles of motorized routes >50 inches. / Miles of routes on erosive soil. | 797 / 183 |
| Miles of motorized routes <50 inches. / Miles of routes on erosive soil. | 1 / 1 |
| Miles of two-wheeled motorized routes. / Miles of routes on erosive soil. | 16 / 5 |
| Acres available for off-road dispersed camping. | 55,271 |

### Direct and Indirect Effects

In Alternative 0 (No Action Alternative), which is the baseline for comparison of alternatives, there are approximately 629 miles of designated motorized roads and trails comprising the Forest transportation system within the subwatersheds associated with the Leadore Ranger District (Table 3-18). One hundred fifty-six miles are located on soils rated high for soil erosion potential. Two hundred eighty-

eight miles of routes are non-system routes. There are also 121,416 acres open to cross-country motor vehicle use and 55,271 acres available for off-road dispersed camping.

Table 3-18. Comparison of alternatives calculated for watersheds all or partially within the Leadore Ranger District

| | Routes > 50 Inches | | Routes < 50 Inches | | 2-Wheel Routes | | Dispersed Camping Acres |
|---|---|---|---|---|---|---|---|
| | Total | Erosive | Total | Erosive | Total | Erosive | |
| Existing condition | 797 | 183 | 1 | 1 | 16 | 5 | 55,271 |
| Alternative 0 | 612 | 150 | 1 | 1 | 16 | 5 | 55,271 |
| Alternative 1 | 221 | 51 | 23 | 5 | 60 | 21 | 11,345 |
| Alternative 3 | 196 | 44 | 8 | 6 | 29 | 12 | 5,552 |
| Alternative 4 | 375 | 88 | 45 | 9 | 88 | 25 | 19,494 |
| Alternative 5 | 256 | 55 | 32 | 12 | 57 | 16 | 11,323 |

Most important for the soil resource is that cross-country motor vehicle use off the designated system would not be allowed in any of the action alternatives (effects discussed in Section 3.4.6 - user-created routes). For the Leadore Ranger District, soil productivity would potentially be returned to 121,416 acres. This number is, of course, larger than the actually acres due to, for example, areas not accessible for motorized access, designating routes within the area, and routes remaining on the landscape for non-motor vehicle use.

In all action alternatives the total miles of routes designated for motor vehicle use decreases compared to Alternative 0. Miles of routes located on sensitive soil also decrease. By reducing the miles of roads on sensitive soils the risk of road failure, slope failures, and accelerated erosion associated with concentrated flow in road drainage systems would be reduced. Non-system routes have been added to the designated system of routes in all alternatives. Generally, for existing unauthorized routes, direct effects have already occurred. The direct effects were: physical displacement of soil caused by motor vehicle traffic, loss of soil productivity from displacement, loss of soil depth, loss of soil cover, and loss of soil hydraulic function. Indirect effects of these routes include increased erosion, potential increased sedimentation, and potential increased impacts to aquatics. By adding these routes to the designated system of routes a management decision has been made to remove additional area from the productive land base. Non-system routes not designated would remain available for non-motor vehicle use so the effects would continue until a route is abandoned.

Miles of routes <50 inches increase compared to Alternative 0 for both stable and sensitive soil in all alternatives. Miles of 2-wheel routes increase in all alternatives for both stable and sensitive soil. This is due, in part, a change in vehicle class from >50 inches. A classification from >50 inches to less than 50 inches will keep the existing road width the same or eventually narrower if used by a smaller vehicle class size. For the soil resource, there would be no increase of soil or land area needed for the route.

There are approximately 55,271 acres available for access to dispersed camping in Alternative 0. Motorized access to dispersed camping can have negative impacts to the soil resource by damaging wetland soils, riparian vegetation, and causing soil disturbance. All action alternatives decrease the total acres available for access to dispersed camping compared to Alternative 0. Alternative 3 would not allow motorized access to dispersed camping in riparian areas eliminating potential damage from this activity.

## ***Lost River Ranger District***

### Existing Condition

Acreages and mileages are calculated for subwatersheds all or partially within the ranger district; therefore these numbers will not match the acreages and mileages presented in Chapter 2 and some other resource analyses exactly.

There are an estimated 814,495 acres within the Lost River Ranger District. Approximately 119,444 (44%) of the district is open to cross-country motor vehicle use. There are a total of 61,358 acres available for off-road dispersed camping, meaning that potential soil disturbance and loss of long-term soil productivity could occur on 61,358 acres of land. There are 1,193 miles of system and unauthorized routes. Of these, 494 miles are on soils rated high for erosion potential. There are also 540 miles of non-system routes within the district. These routes are typically not part of a management decision to remove area from the productive land base. These routes often are created in areas not suitable for motor vehicle trails, such as wet meadows, erosive soils, riparian areas, and steep slopes and have the potential to cause detrimental soil disturbance and a reduction or loss of long-term soil productivity (Table 3-19).

Table 3-19. Existing Condition of the Soil Resource – Lost River Ranger District

| Existing Condition | |
|---|---|
| Acres (and percent) of the district open to cross-country motor vehicle use. | 119,444<br>44% |
| Miles of non-system routes. | 540 |
| Miles of motorized routes >50 inches. / Miles of routes on erosive soil. | 1,068 / 420 |
| Miles of motorized routes <50 inches. / Miles of routes on erosive soil. | 97 / 54 |
| Miles of two-wheeled motorized routes. / Miles of routes on erosive soil. | 28 / 20 |
| Acres available for off-road dispersed camping. | 61,358 |

### Direct and Indirect Effects

In Alternative 0 (No Action Alternative), which is the baseline for comparison of alternatives, there are approximately 790 miles of designated motorized roads and trails comprising the Forest transportation system within the subwatersheds associated with the Lost River Ranger District (Table **3-20**). Three hundred thirty-four miles are located on soils rated high for soil erosion potential. One hundred thirty-six miles of routes are non-system routes. There are also 119,444 acres open to cross-country motor vehicle use and 61,358 acres available for off-road dispersed camping.

Most important for the soil resource is that cross-country motor vehicle use would not be allowed in any of the action alternatives (effects discussed in Section 3.4.6 - user-created routes). For the Lost River Ranger District, soil productivity would potentially be returned to 119,444 acres. This number of course is larger than the actually acres due to, for example, areas not accessible for motorized access, designating routes within the area, and routes remaining on the landscape for non-motor vehicle use.

Table 3-20. Comparison of alternatives calculated for watersheds all or partially within the Lost River Ranger District

| | Routes > 50 Inches | | Routes < 50 Inches | | 2-Wheel Routes | | Dispersed Camping Acres |
|---|---|---|---|---|---|---|---|
| | Total | Erosive | Total | Erosive | Total | Erosive | |
| Existing condition | 1,068 | 420 | 97 | 54 | 28 | 20 | 61,358 |
| Alternative 0 | 665 | 260 | 97 | 54 | 28 | 20 | 61,358 |
| Alternative 1 | 473 | 210 | 94 | 60 | 62 | 35 | 27,091 |

| | Routes > 50 Inches | | Routes < 50 Inches | | 2-Wheel Routes | | Dispersed Camping Acres |
|---|---|---|---|---|---|---|---|
| | Total | Erosive | Total | Erosive | Total | Erosive | |
| Alternative 3 | 412 | 181 | 85 | 48 | 8 | 8 | 13,250 |
| Alternative 4 | 556 | 240 | 131 | 79 | 39 | 19 | 31,100 |
| Alternative 5 | 504 | 220 | 122 | 67 | 34 | 30 | 22,689 |

In all action alternatives the total miles of routes designated for motor vehicle use decreases compared to Alternative 0. Miles of routes located on sensitive soil also decrease, except in Alternative 4. By reducing the miles of roads on sensitive soils the risk of road failure, slope failures, and accelerated erosion associated with concentrated flow in road drainage systems would be reduced. Non-system routes have been added to the designated system of routes in all alternatives. Generally, for existing unauthorized routes, direct effects have already occurred. The direct effects were: physical displacement of soil caused by motor vehicle traffic, loss of soil productivity from displacement, loss of soil depth, loss of soil cover, and loss of soil hydraulic function. Indirect effects of these routes include increased erosion, potential increased sedimentation, and potential increased impacts to aquatics. By adding these routes to the designated system of routes a management decision has been made to remove additional area from the productive land base. Non-system routes not designated would remain available for non-motor vehicle use so the effects would continue until a route is abandoned.

Miles of routes <50 inches increase compared to Alternative 0 in Alternatives 4 and 5. Miles of 2-wheel routes increase in all alternatives over Alternative 0 except for Alternative 3. This is, in part, a change in vehicle class from >50 inches. A classification change from >50 inches to less than 50 inches will keep the existing road width the same or will eventually narrow if used by a smaller vehicle class size. For the soil resource it means there would be no increase of soil or land area needed for the route. However, there are increases in miles of routes on sensitive soil. Alternative 3 is the only alternative that decreases miles of routes <50 inches. Two-wheel routes increase in Alternatives 1 and 5.

There are approximately 61,358 acres available for access to dispersed camping in Alternative 0. Motorized access to dispersed camping can have negative impacts to the soil resource by damaging wetland soils, riparian vegetation, and causing soil disturbance. All action alternatives decrease the total acres available for access to dispersed camping compared to Alternative 0. Alternative 3 would not allow motorized access to dispersed camping in riparian areas, eliminating potential damage.

## ***Middle Fork Ranger District***

**Existing Condition**

Acreages and mileages are calculated for subwatersheds all or partially within the ranger district; therefore these numbers will not match the acreages and mileages presented in Chapter 2 and some other resource analyses exactly.

There are an estimated 1,035,950 acres within the Middle Fork Ranger District. Approximately 68,201 (7%) of the district is open to cross-country motor vehicle use. There are a total of 41,053 acres available for off-road dispersed camping, meaning that potential soil disturbance and loss of long-term soil productivity could occur on 41,053 acres of land. There are 313 miles of system and unauthorized routes. Of these, 62 miles are on soils rated high for erosion potential. There are 40 miles of non-system routes within the district. These routes are typically not part of a management decision to remove area from the productive land base. These routes often are created in areas not suitable for motor vehicle trails, such as wet meadows, erosive soils, riparian areas, and steep slopes and have the potential to cause detrimental soil disturbance and a reduction or loss of long-term soil productivity (Table 3-21).

Table 3-21. Existing Condition of the Soil Resource – Middle Fork Ranger District

| | Existing Condition |
|---|---|
| Acres (and percent) of the district open to cross-country motor vehicle use. | 68,201 ( 7% ) |
| Miles of non-system routes. | 40 |
| Miles of motorized routes >50 inches. / Miles of routes on erosive soil. | 307 / 60 |
| Miles of motorized routes <50 inches. / Miles of routes on erosive soil. | 6 / 2 |
| Miles of two-wheeled motorized routes. / Miles of routes on erosive soil. | 0 / 0 |
| Acres available for off-road dispersed camping. | 41,053 |

**Direct and Indirect Effects**

In Alternative 0 (No Action Alternative), which is the baseline for comparison of alternatives, there are approximately 302 miles of designated motorized roads and trails comprising the Forest transportation system within the subwatersheds associated with the Middle Fork Ranger District (Table 3-22). Fifty-nine miles are located on soils rated high for soil erosion potential. Twenty-nine miles of routes are non-system routes. There are also 68,201 acres open to cross-country motor vehicle use and 41,053 acres available for off-road dispersed camping.

Table 3-22. Comparison of alternatives calculated for watersheds all or partially within the Middle Fork Ranger District

| | Routes > 50 Inches | | Routes < 50 Inches | | 2-Wheel Routes | | Dispersed Camping Acres |
|---|---|---|---|---|---|---|---|
| | Total | Erosive | Total | Erosive | Total | Erosive | |
| Existing condition | 307 | 60 | 6 | 2 | 0 | 0 | 41,053 |
| Alternative 0 | 296 | 57 | 6 | 2 | 0 | 0 | 41,053 |
| Alternative 1 | 230 | 49 | 6 | 2 | 17 | 2 | 9,662 |
| Alternative 3 | 225 | 46 | 0 | 0 | 15 | 3 | 5,582 |
| Alternative 4 | 233 | 47 | 37 | 9 | 6 | 2 | 10,757 |
| Alternative 5 | 232 | 47 | 7 | 2 | 25 | 3 | 9,180 |

Most important for the soil resource is that cross-country motor vehicle use off the designated system would not be allowed in any of the action alternatives (effects discussed in Section 3.4.6 - user-created routes). For the Middle Fork Ranger District, soil productivity would potentially be returned to 68,201 acres. This number of course is larger than the actually acres due to, for example, areas not accessible for motorized access, designating routes within the area, and routes remaining on the landscape for non-motor vehicle use.

In all action alternatives the total miles of routes designated for motor vehicle use decreases compared to Alternative 0. Miles on sensitive soil also decrease. By reducing the miles of roads on sensitive soils the risk of road failure, slope failures, and accelerated erosion associated with concentrated flow in road drainage systems would be reduced. Non-system routes have been added to the designated system of routes in all alternatives. Generally, for existing unauthorized routes, direct effects have already occurred. The direct effects were: physical displacement of soil caused by motor vehicle traffic, loss of soil productivity from displacement, loss of soil depth, loss of soil cover, and loss of soil hydraulic function. Indirect effects of these routes include increased erosion, potential increased sedimentation, and potential increased impacts to aquatics. By adding these routes to the designated system of routes a management decision has been made to remove additional area from the productive land base. Non-

system routes not designated would remain available for non-motor vehicle use so the effects would continue until a route is abandoned.

Miles of routes <50 inches increase or remain the same compared to Alternative 0 in all alternatives except Alternative 3. Miles of 2-wheel routes increase in all alternatives compared to Alternative 0. This is, in part, a change in vehicle class from >50 inches. A classification change from >50 inches to less than 50 inches will keep the existing road width the same or will eventually narrow if used by a smaller vehicle class size. For the soil resource it means there would be no increase of soil or land area needed for the route. However, there are increases in miles of routes on sensitive soil. All action alternatives, except for Alternative 3, increase in miles of routes <50 inches. Two-wheel routes increase in all alternatives.

There are approximately 41,053 acres available for access to dispersed camping in Alternative 0. Motorized access to dispersed camping can have negative impacts to the soil resource by damaging wetland soils, riparian vegetation, and causing soil disturbance. All action alternatives decrease the total acres available for access to dispersed camping compared to Alternative 0. Alternative 3 would not allow motorized access to dispersed camping in riparian areas eliminating potential damage from this activity.

## ***North Fork Ranger District***

### Existing Condition

Acreages and mileages are calculated for subwatersheds all or partially within the ranger district; therefore these numbers will not match the acreages and mileages presented in Chapter 2 and some other resource analyses exactly.

There are an estimated 771,198 acres within the North Fork Ranger District. Approximately 219,007 (28%) of the district is open to cross-country motor vehicle use. There are a total of 41,452 acres available for off-road dispersed camping, meaning that potential soil disturbance and loss of long-term soil productivity could occur on 41,452 acres of land. There are 1,318 miles of system and unauthorized routes. Of these, 497 miles are on soils rated high for erosion potential. There are also 614 miles of non-system routes within the district. These routes are typically not part of a management decision to remove area from the productive land base. These routes often are created in areas not suitable for motor vehicle trails, such as wet meadows, erosive soils, riparian areas, and steep slopes and have the potential to cause detrimental soil disturbance and a reduction or loss of long-term soil productivity (Table 3-23).

Table 3-23. Existing Condition of the Soil Resource – North Fork Ranger District

| | Existing Condition |
|---|---|
| Acres (and percent) of the district open to cross-country motor vehicle use. | 219,007 ( 28% ) |
| Miles of non-system routes | 614 |
| Miles of motorized routes >50 inches / Miles of routes on erosive soil | 1,307 / 496 |
| Miles of motorized routes <50 inches / Miles of routes on erosive soil | 0 / 0 |
| Miles of two-wheeled motorized routes / Miles of routes on erosive soil | 11 / 1 |
| Acres available for off-road dispersed camping | 41,452 |

### Direct and Indirect Effects

In Alternative 0 (No Action Alternative), which is the baseline for comparison of alternatives, there are approximately 939 miles of designated motorized roads and trails comprising the Forest transportation

system within the subwatersheds associated with the North Fork Ranger District (Table 3-24). Three hundred seventy-seven miles are located on soils rated high for soil erosion potential. Two hundred thirty-five miles of routes are non-system routes. There are also 219,007 acres open to cross-country motor vehicle use and 41,452 acres available for off-road dispersed camping.

Table 3-24. Comparison of alternatives calculated for watersheds all or partially within the North Fork Ranger District

| | Routes > 50 Inches | | Routes < 50 Inches | | 2-Wheel Routes | | Dispersed Camping Acres |
|---|---|---|---|---|---|---|---|
| | Total | Erosive | Total | Erosive | Total | Erosive | |
| Existing condition | 1,307 | 496 | 0 | 0 | 11 | 1 | 41,452 |
| Alternative 0 | 928 | 376 | 0 | 0 | 11 | 1 | 41,452 |
| Alternative 1 | 421 | 159 | 0 | 0 | 105 | 21 | 11,739 |
| Alternative 3 | 401 | 166 | 0 | 0 | 57 | 16 | 7,016 |
| Alternative 4 | 571 | 236 | 6 | 0 | 152 | 58 | 15,348 |
| Alternative 5 | 446 | 174 | 2 | 0 | 91 | 22 | 11,919 |

Most important for the soil resource is that cross-country motor vehicle use off the designated system would not be allowed in any of the action alternatives (effects discussed in Section 3.4.6 -user-created routes). For the North Fork Ranger District, soil productivity would potentially be returned to 219,007 acres. This number of course is larger than the actually acres due to, for example, areas not accessible for motorized access, designating routes within the area, and routes remaining on the landscape for non-motor vehicle use.

In all action alternatives the total miles of routes designated for motor vehicle use decreases compared to Alternative 0. Miles of routes located on sensitive soil also decrease. By reducing the miles of roads on sensitive soils the risk of road failure, slope failures, and accelerated erosion associated with concentrated flow in road drainage systems would be reduced. Non-system routes have been added to the designated system of routes in all alternatives. Generally, for existing unauthorized routes, direct effects have already occurred. The direct effects were: physical displacement of soil caused by motor vehicle traffic, loss of soil productivity from displacement, loss of soil depth, loss of soil cover, and loss of soil hydraulic function. Indirect effects of these routes include increased erosion, potential increased sedimentation, and potential increased impacts to aquatics. By adding these routes to the designated system of routes a management decision has been made to remove additional area from the productive land base. Non-system routes not designated would remain available for non-motor vehicle use so the effects would continue until a route is abandoned.

Miles of routes <50 inches increase compared to Alternative 0 in alternatives 4 and 5. Miles of 2-wheel routes located on both stable and sensitive soil increase in all alternatives compared to Alternative 0. This increase is, in part, a change in vehicle class from >50 inches. A classification change from >50 inches to less than 50 inches will keep the existing road width the same or will eventually narrow if used by a smaller vehicle class size. For the soil resource it means there would be no increase of soil or land area needed for the route.

There are approximately 41,452 acres available for access to dispersed camping in Alternative 0. Motorized access to dispersed camping can have negative impacts to the soil resource by damaging wetland soils, riparian vegetation, and causing soil disturbance. All action alternatives decrease the total acres available for access to dispersed camping compared to Alternative 0. Alternative 3 would not allow motorized access to dispersed camping in riparian areas eliminating potential damage.

## *Salmon-Cobalt Ranger District*

### Existing Condition

Acreages and mileages are calculated for subwatersheds all or partially within the ranger district; therefore these numbers will not match the acreages and mileages presented in Chapter 2 and some other resource analyses exactly.

There are an estimated 642,647 acres within the Salmon-Cobalt Ranger District. Approximately 379,204 (59%) of the district is open to cross-country motor vehicle use. There are a total of 148,208 acres available for off-road dispersed camping, meaning that potential soil disturbance and loss of long-term soil productivity could occur on 148,208 acres of land. There are 1,827 miles of system and unauthorized routes. Of these, 728 miles are on soils rated high for erosion potential. There are 705 miles of non-system routes within the district. These routes are typically not part of a management decision to remove area from the productive land base. These routes often are created in areas not suitable for motor vehicle trails, such as wet meadows, erosive soils, riparian areas, and steep slopes and have the potential to cause detrimental soil disturbance and a reduction or loss of long-term soil productivity (Table 3-25).

Table 3-25. Existing Condition of the Soil Resource – Salmon-Cobalt Ranger District

| | Existing Condition |
|---|---|
| Acres (and percent) of the district open to cross-country motor vehicle use. | 379,204 ( 59% ) |
| Miles of non-system routes. | 705 |
| Miles of motorized routes >50 inches. / Miles of routes on erosive soil. | 1,811 / 721 |
| Miles of motorized routes <50 inches. / Miles of routes on erosive soil. | 9 / 5 |
| Miles of two-wheeled motorized routes. / Miles of routes on erosive soil. | 7 / 2 |
| Acres available for off-road dispersed camping. | 148,208 |

### Direct and Indirect Effects

In Alternative 0 (No Action Alternative), which is the baseline for comparison of alternatives, there are approximately 1,505 miles of designated motorized roads and trails comprising the Forest transportation system within the subwatersheds associated with the Salmon-Cobalt Ranger District (Table 3-26). Six hundred twenty-four miles are located on soils rated high for soil erosion potential. Three hundred eighty-three miles of routes are non-system routes. There are also 379,204 acres open to cross-country motor vehicle use and 148,208 acres available for off-road dispersed camping.

Table 3-26. Comparison of alternatives calculated for watersheds all or partially within the Salmon-Cobalt Ranger District

| | Routes > 50 Inches | | Routes < 50 Inches | | 2-Wheel Routes | | Dispersed Camping Acres |
|---|---|---|---|---|---|---|---|
| | Total | Erosive | Total | Erosive | Total | Erosive | |
| Existing condition | 1,811 | 721 | 9 | 5 | 7 | 2 | 148,208 |
| Alternative 0 | 1,489 | 617 | 9 | 5 | 7 | 2 | 148,208 |
| Alternative 1 | 704 | 312 | 29 | 8 | 63 | 27 | 27,657 |
| Alternative 3 | 710 | 305 | 12 | 7 | 27 | 11 | 19,891 |
| Alternative 4 | 1,003 | 409 | 45 | 18 | 100 | 49 | 38,948 |
| Alternative 5 | 781 | 325 | 35 | 12 | 53 | 22 | 30,758 |

Most important for the soil resource is that cross-country motor vehicle use off the designated system would not be allowed in any of the action alternatives (effects discussed in Section 3.4.6 -user-created

routes). For the Salmon-Cobalt Ranger District, soil productivity would potentially be returned to 379,204 acres. This number of course is larger than the actually acres due to, for example, areas not accessible for motorized access, designating routes within the area, and routes remaining on the landscape for non-motor vehicle use.

In all action alternatives the total miles of routes designated for motor vehicle use decreases compared to Alternative 0. Miles of routes located on sensitive soil also decrease. By reducing the miles of roads on sensitive soils the risk of road failure, slope failures, and accelerated erosion associated with concentrated flow in road drainage systems would be reduced. Non-system routes have been added to the designated system of routes in all alternatives. Generally, for existing unauthorized routes, direct effects have already occurred. The direct effects were: physical displacement of soil caused by motor vehicle traffic, loss of soil productivity from displacement, loss of soil depth, loss of soil cover, and loss of soil hydraulic function. Indirect effects of these routes include increased erosion, potential increased sedimentation, and potential increased impacts to aquatics. By adding these routes to the designated system of routes a management decision has been made to remove additional area from the productive land base. Non-system routes not designated would remain available for non-motor vehicle use so the effects would continue until a route is abandoned.

Miles of routes <50 inches increase compared to Alternative 0 in all action alternatives. Miles of 2-wheel routes also increase in all alternatives. This increase is assumed to be a change in vehicle class from >50 inches. A classification change from >50 inches to less than 50 inches will keep the existing road width the same or will eventually narrow if used by a smaller vehicle class size. For the soil resource it means there would be no increase of soil or land area needed for the route. However, there are increases in miles of routes on sensitive soil in all action alternatives for both routes <50 inches and two-wheel routes.

There are approximately 148,208 acres available for access to dispersed camping in Alternative 0. Motorized access to dispersed camping can have negative impacts to the soil resource by damaging wetland soils, riparian vegetation, and causing soil disturbance. All action alternatives decrease the total acres available for access to dispersed camping compared to Alternative 0. Alternative 3 would not allow motorized access to dispersed camping in riparian areas eliminating potential damage from this activity.

### 3.5.8 CUMULATIVE EFFECTS

Cumulative effects consider the combined impacts of past, present, and reasonably foreseeable activities, along with any proposed management actions. In this particular assessment, most of the past and present impacts were actually associated with the initial development and related maintenance of the transportation surfaces. Road construction affects wildland soil by removing and displacing topsoil layers from the road prism along with compaction of both the road surface and its adjacent shoulder areas. Both road and trail surfaces disrupt the site hydrologic processes that occur within a soil profile by restricting infiltration which subsequently limits the percolation of water downward into the ground. If sufficient water accumulates at the soil surface, accelerated erosion rates would occur and cause soil material to be detached and subsequently transported as sediment into nearby streams. Impacts from roads and trails persist until the sites are totally reclaimed, subsurface drainage patterns restored and organic litter accumulates at the ground surface once again. Routes that are not designated for motor vehicle use would still be available for other uses (hiking, horseback riding). Unless these routes are not used, they would remain on the landscape and would continue to cause some level of impact to the soil resource.

Foreseeable future management actions include open roads and trails, closed system roads which have the potential to be opened for future activities (fuelwood gathering, wildfire, and timber), developed recreation areas, special use areas, and mining that will continue to remove soil from the productive base for all alternatives. Noxious weed invasion, livestock grazing, timber harvest, road construction, dispersed recreation, and prescribed fires would remove protective vegetation and litter and may reduce site productivity. Natural disturbances including wildfires, windthrow, severe storm events, landslides, and extended drought cycles have and would continue to cause similar impacts to soil productivity for all alternatives. Since the present Travel Plan became effective in 1988 there has been an increase in routes on the landscape.

Reasonably foreseeable actions that contribute to increased cumulative effects to the soil resource on the Challis-Yankee Fork Ranger District include permitted uses such as livestock grazing and fuelwood gathering, road resurfacing of the Yankee Fork Road and the Custer Motorway, small scale placer mining operations, fuels reduction near the Custer town-site, timber salvage, timber stand improvement, Yankee Fork tailings restoration, and ongoing clean-up at the Grouse Creek Mine.

Reasonably foreseeable actions that contribute to increased cumulative effects to the soil resource on the Leadore Ranger District include permitted uses such as livestock grazing and fuelwood gathering, timber harvest, and a spring enclosure project.

Reasonably foreseeable actions that contribute to increased cumulative effects to the soil resource on the Lost River Ranger District include permitted uses such as livestock grazing and fuelwood gathering, allotment improvements, fuels reduction, and aspen treatment near Mackay.

Reasonably foreseeable actions that contribute to increased cumulative effects to the soil resource on the Middle Fork Ranger District include permitted uses such as livestock grazing and fuelwood gathering, fuels reduction projects, and small mining operations.

Reasonably foreseeable actions that contribute to increased cumulative effects to the soil resource on the North Fork Ranger District include permitted uses such as livestock grazing and fuelwood gathering, fuels reduction in the Hughes Creek drainage, harvesting on private land, bridge replacements on Indian Creek, small mining operations, and flood damage repair work on the Salmon River Road.

Reasonably foreseeable actions that contribute to increased cumulative effects to the soil resource on the Salmon-Cobalt Ranger District include permitted uses such as livestock grazing and fuelwood gathering, fuels reduction projects, a proposed cobalt mine operation, and salvage timber sales.

All action alternatives would reduce the miles available for motor vehicle use and eliminate cross-country travel off the designated system, which is beneficial to the soil resource as soil health would be enhanced. The alternatives vary in the number of watersheds that are expected to have beneficial impacts (Soil Resources Specialist Report) relative to their cumulative effects risk rating, reasonably foreseeable actions, and change in soil resource indicators. At a watershed scale, all alternatives would have a beneficial cumulative effect on the soil resource.

## ***Irreversible / Irretrievable Commitments***

Even with the appropriate use of watershed conservation practices, adoption of additional travel routes represents a commitment to accept continuing disturbance on the ground. These are activities with irretrievable effects. With the appropriate use of watershed conservation practices, no irreversible impacts are anticipated. Roads and trails can be obliterated and hydrologically restored.

# 3.6 FISHERIES

## 3.6.1 CHANGES BETWEEN THE DRAFT EIS AND THE FINAL EIS

- The DEIS utilized a coarse filter strategy to determine differences between alternatives, in which results were standardized through the use of percentage comparisons, for determining differences between each alternative and baseline conditions of the No Action Alternative. The Final EIS modified this strategy by providing quantified differences to display the amounts of stream habitat affected per mile, and the RHCA acres affected. These quantified amounts are displayed in the Fisheries Specialist Report tables.
- Acres of RHCA open to and potentially affected by dispersed motorized travel to access dispersed campsites were also analyzed and portrayed in greater detail for a variety of parameters as a subset of the Fisheries Indicator for motorized route miles within RHCA areas. The Fisheries analysis for the Final EIS changed this approach to use a simplified strategy for illustrating which watersheds would have more, the same, or fewer changes in fisheries indicators. This information was summarized for each ranger district, listed fish species and by the amounts of stream or riparian habitat affected. These differences and their cumulative effects are illustrated for HUC5 watershed changes that would be expected to occur in each category, relative to baseline conditions of Alternative 0.
- The Final EIS utilizes a progressive analysis of all route changes for fisheries indicators by comparing route designations within each alternative, between ranger districts, as well as by HUC4 and HUC5 watersheds.
- In addition to analyses within the Final EIS, more detailed species specific analyses of effects have been performed within the Fisheries Biological Assessment, for Endangered Species Act Section-7 consultation with the National Marine Fisheries Service and the U.S. Fish and Wildlife Service. Subsequent Monitoring program strategies are a product of the ESA consultation process, which could be further refined, depending upon the Terms and Conditions contained within Biological Opinions from both agencies for their respective species of concern.
- A more specific analysis has also been included for the fisheries Management Indicator species, bull trout.
- Summarized data from the Fisheries Specialist Report and ESA Section -7 Biological Assessment are contained within the Final EIS.

## 3.6.2 METHODOLOGY FOR ANALYSIS

Development of a methodology for analyzing the effects on fisheries habitats from two kinds of routes (roads and trails), for eight seasonal open periods, between five alternatives, for 22 PACFish/INFish criteria, on two types of streams (perennial and intermittent), plus Standards and Guidelines from two Forest Plans, across seventy-two HUC5 watersheds, for six ranger districts, and the project area as a whole would require between 250,000 and 3,000,000 permutations. In addition, comparison of these criteria for hundreds of individual route designations exceeded technical capabilities for making specific determinations of significance between the numerous alternatives for route locations and their options for use.

Therefore, combinations of potential effects within Riparian Habitat Conservation Areas (RHCAs) are analyzed by comparison of proposed motorized route miles and acres within 300 feet and 100 feet of perennial and intermittent streams, respectively. These buffer zone widths are the widest identified for

PACFish/INFish criteria and would therefore meet or exceed individual variations in criteria necessary for consideration. As an example, the RHCA buffer width requirement for unoccupied perennial streams (of which there are very few) is only 150 feet. Or, site-specific RHCA width criteria within certain forested stream-side zones would be equal to the average height of adjacent trees which, in most areas on the SCNF, would be 100 feet or less. Other criteria utilizing natural 100-year floodplain widths would be even narrower in most on-forest first, second, and third order streams. Therefore, the evaluation of 300 and 100 foot buffer zones provides an encompassing measurement for consideration of potential direct and indirect effects resulting from the designation of motorized routes and their uses. As was previously determined by the environmental analyses for PACFish and INFish amendments, direct and indirect effects related to erosion and surface run-off from areas beyond these distances would not likely measurably affect most stream or riparian habitats.

Analysis of stream crossings provides a second all-encompassing measurement for evaluating direct and indirect effects to fisheries migration within local watersheds and populations, as well as their distribution between watersheds and interactions with other local populations. While the direct effects of stream crossings only affect a minor amount of physical habitat, variations in their distribution and frequency of occurrence provides a measurement for comparing their more extensive indirect effects of creating fisheries migration barriers, causing habitat and species fragmentation, providing point source contributions of sediment and restricting the ability of fish species to fully occupy and utilize all streams throughout their watersheds.

The most complete and up-to-date science for purposes of designating motorized travel routes and managing their effects on fisheries and riparian habitats was originally built into the resource management decisions, goals, objectives, standards and guidelines of current Forest Plans and their PACFish/INFish amendments. However, more recent assessments also provide additional resources for avoiding direct and indirect effects of various motorized uses on streams and riparian habitats, as well as numerous techniques for mitigating these impacts and thereby take into account the best knowledge and practices presently available. This more recent information is illustrated in a number of comprehensive sources including Angermeir et al. (2004), Levick et al. (2007), Welsh (2008), Gucinski et al. (2001), Ouren et al. (2007), Samson (n.d.), Anon (2004), Beke et al. (2003), Faush et al. (2006), USDA-SDTDC (2005, 2008), Clarkin et al. (2006), Heller et al. (2000), Switalski et al. (2004), and Vander Pluym et al. (2008).

Therefore, the focus of this fisheries analysis has been to perform an empirical comparison of existing vs. proposed amounts and kinds of motorized uses associated with the alternatives proposed. At this point in time, the manner in which management actions affect the landscape has already been extensively analyzed. The present overriding need is to take into account and implement this science for improved management actions and to evaluate the degree to which fisheries habitat conditions will be attained.

### 3.6.3 ISSUES AND INDICATORS

**Fisheries Issue 1:** Motorized use of new and existing roads and trails may impact habitat for fish species (bull trout, westslope cutthroat, sockeye salmon, spring/summer Chinook salmon, and steelhead) by causing disturbances within Riparian Habitat Conservation Areas (RHCAs), damaging stream-banks and directly effecting fish species at stream crossings.

***Indicators:***

- Miles and acres of designated roads and trails within 300’ of perennial streams
- Miles and acres of designated roads and trails within 100’ of intermittent streams

- Number of stream crossings by designated roads and trails on perennial streams
- Number of stream crossings by designated roads and trails on intermittent streams
- Percentage comparisons for the degree of change in direct measurements (miles, acres) of habitat features

### 3.6.4 COMPLIANCE WITH FOREST PLAN AND OTHER REGULATORY DIRECTION

Appendices 1a, 1b and 1c of the Fisheries Specialist Report summarize Forest Plan management direction for aquatic habitats, including PACFish and INFish amendments. For purposes of implementation monitoring, bull trout have been designated as the aquatic Management Indicator Specie (MIS) for forest stream habitats since 2004; except within the Big Lost River watershed where they are believed to no longer exist. Lacking anadromous fish species, management direction for both the Big and Little Lost River watersheds is provided by criteria within the Challis Forest Plan and its INFish amendments.

Analysis for potential effects to stream and riparian habitats resulting from designations of motorized routes considers trends for the potential attainment of Riparian Management Objectives (RMOs) outlined within both the Challis and Salmon Forest Plans, including their PACFish and INFish amendments. These resource management plans and their Endangered Species Act Section – 7 consultations and Biological Opinions provide direction for the maintenance and recovery of natural fish populations, healthy watersheds, stable streams, ponds, and wetlands as well as for the establishment of Riparian Habitat Conservation Areas (RHCAs) in order to meet management goals for the following habitat elements.

- Water quality (including spawning gravels and maximum levels of sedimentation)
- Stream channel integrity (including width/depth ratios, stream-bank stability, and overhanging vegetative cover)
- In-stream flows (for maintenance of all fish life history stages and their habitats)
- Natural timing and variability of water tables and elevations within the floodplain
- The natural diversity and productivity of all types of riparian vegetation
- The quantity and condition of riparian vegetation needed for all stream functions
- Stable and productive aquatic habitats that support all native species of fishes, plants, vertebrates and invertebrates that naturally comprised local biotic communities

By direction, these PACFish and/or INFish Goals and Objectives apply to all watersheds occupied by native fish species and establish quantified objectives for attainment of aquatic habitat elements, including the following:

- Pool frequencies (in relation to ratios of stream channel width)
- Water temperatures (as needed for respective seasons of use and life history stages)
- Large woody debris (for maintenance of in-stream cover, floodplain structure, and diversity)
- Stream-bank stability (dependent upon bank vegetation and condition)
- Lower bank angles (maintenance of diverse cover and rearing habitat for all sizes of fish)

- Channel width/depth ratios (for maintaining proper functioning conditions with a diversity of stream channels and bottoms, including clean spawning and rearing gravels)

These goals and objectives are to be achieved within clearly defined RHCAs through implementation of improved land management practices by all forest programs. If on-going management actions are not attaining these goals and objectives, they must be modified, mitigated, or ultimately eliminated if an effective solution cannot be developed. By direction, RHCAs are to be delineated in every watershed on National Forest System lands within the geographic range of the project. In addition, RHCAs are defined as "…those portions of watersheds where riparian dependent resources receive primary emphasis and management by all forest activities, subject to their specific standards and guidelines." RHCAs are directed to include traditional riparian corridors, wetlands, intermittent streams, and other areas that help maintain the integrity of aquatic ecosystems. As part of this direction, PACFish/INFish criteria for delineating more detailed stream-specific RHCAs include consideration of numerous specific habitat criteria that vary from stream to stream, depending upon local conditions. However, when unique stream-specific RHCAs have not been established through performance of a watershed analysis, forests are directed to use default criteria for delineating their RHCAs. These default standards call for designation of various RHCA buffer zone widths (300', 150', or 100') depending upon the following criteria:

The presence of fish-bearing streams, including both perennial and intermittent streams that provide habitat for any species of fish

- The presence of permanently flowing, non-fish-bearing streams
- Criteria for establishment of RHCAs around ponds, lakes, reservoirs, and wetlands
- Seasonally flowing and intermittent streams, wetlands and ponds less than 1 acre in size, plus landslides and any landslide-prone areas
- Non-forested, rangeland aquatic ecosystems dominated by herbaceous/shrub vegetation
- Variable RHCA width requirements, based upon habitat class, riparian community size and the type of affected area (e.g. In the case of landslide-prone locations)
- Watersheds that have been designated as either priority fisheries recovery areas as a result of PACFish and INFish direction, legal requirements, interagency recovery plans and/or ongoing resource management programs
- Potential tree heights in relation to RHCA widths, providing for recruitment of large woody debris for maintenance of natural stream gradients within channels and floodplains
- 100-year floodplains (Floodplain widths vary along the course of a stream, depending upon watershed morphology, valley bottom types, changes in valley bottom and stream channel gradients, degree of channel down-cutting, the type of riparian vegetation and the presence or absence of historic beaver activity.)

While actions proposed by each alternative differ by types of motorized use, seasonal open period, and specific route locations, all alternatives propose improvements over conditions existing under the No Action Alternative, in efforts to meet direction found in both the Salmon and Challis Forest Plans, as well as meeting regulatory direction for resource protection and recovery in legislation like the Endangered Species and Clean Water Acts. However, for the many different types of motorized uses occurring within specific streamside buffer zones, the degree of compliance with management decisions will be validated through ongoing enforcement, route inventories and monitoring. Once new route

designations are made, ongoing monitoring will ensure compliance and identify mitigation measures that may be needed in the future (e.g., hardening of low water fords, removal of fish migration barriers, installation of bridges, identification of RHCA areas that are not acceptable for motorized access and dispersed camping, etc.).

This analysis screens for quantitative differences between alternatives; however, most differences in route miles, RHCA acres affected by motorized use and the number of associated stream crossings are relatively minor; typically only a few percent, throughout the entire project area.

As an example, while GIS analyses may indicate differences in the miles of routes within stream-side buffer zones, without on-the-ground route specific surveys, it is not possible to determine if a route is actually affecting a stream and may need to be relocated or mitigated; or whether a route is within the 100-year floodplain and can even be relocated due to adjacent landforms; or whether a route within the RHCA buffer zone, may actually be located outside of the 100-year floodplain and is not creating an impact. In a similar manner, while comparisons of GIS data can identify the numbers of stream crossings, they cannot assess the degree to which specific site conditions at each of the almost 5,000 crossings throughout the project area are affecting stream habitat and fish migration. With approximately half this number being crossings with known culvert installations that affect fish passage in some degree, there would still be about 2,500 crossings in need of site-specific evaluation to determine their specific risks for fisheries.

Therefore, compliance with Forest Plans and potential requirements within the terms and conditions of Biological Opinions will be assured through ongoing monitoring of routes for the attainment of Forest Plan decisions and Best Management Practices. Once existing motorized uses across large areas of the landscape are restricted to designated routes, the level of use on some routes may increase over time, especially in popular locations where motorized uses become concentrated on routes that follow stream-courses.

### 3.6.5 EXISTING CONDITION

As illustrated in the Fisheries Specialist Report (Table 1) over 11,000 combined miles of perennial (4,442 mi.) and intermittent (6,948 mi.) stream habitat exist within the 11 HUC 4 sub-basins and 72 HUC 5 watersheds that exist within six ranger districts of the project area. (SR Table 5c) In addition, there are approximately 323,054 acres within perennial stream RHCAs and approximately 168,436 acres within intermittent stream RHCAs throughout the project area. (SR Table 4c) While the majority of these aquatic habitats exist within anadromous and resident fisheries HUC 5 watersheds of the upper Salmon River sub-basin, some non-anadromous watersheds within the Birch Creek, Big and Little Lost, and Little Wood River sub-basins are included within the project area as well. Recent sub-basin assessments by NMFS and DEQ have indicated that major anthropomorphic factors affecting streams in these areas include increased surface run-off, increased erosion and stream sedimentation, reduced stream flows, losses of fish due to agricultural diversions, stream de-watering, fragmentation of fish migration within and between watersheds, isolation of local fish populations, plus the loss of floodplain functions and their associated riparian habitats due to various types of valley bottom developments (NMFS 2008; DEQ 2000, 2004).

A fisheries field review was performed during 2008 to assess existing conditions associated with motorized routes in several HUC 5 watersheds from representative areas around the forest. Examples of the situations observed, including examples submitted during the public comment period, are found within a photographic field report, found within Appendix 2 of the Fisheries Specialist Report (FSR).

Generally speaking, most historic system routes occurring within RHCAs were found to be in a stable condition due to the extensive lengths of time that they have been in place. However, most stream

crossings were found to be causing adverse effects due to fisheries migration barriers created by a majority of culvert crossings, as well as the point sources they created for sediment contributions from surface runoff. Locations were also identified where unauthorized uses have created non-system routes from which adverse impacts to riparian, wetland and stream habitats are also occurring.

Currently, a total of 6,742 miles of system and unauthorized motorized routes are known to exist within the project area, of which more than 40% are known to be unauthorized routes (FSR Table 2). Within system routes alone, GIS data indicate that a total of 8,114 stream crossings exist on both perennial (2,966) and intermittent (5,148) streams combined. The number of stream crossings associated with unauthorized routes is unknown at this time (FSR Table 3).

### 3.6.6 AFFECTED ENVIRONMENT

Project Area watersheds contain a variety of aquatic organisms, of which all salmonid fish species and in-stream macroinvertebrates were initially designated as management indicators for monitoring of aquatic habitats, following completion of the Salmon and Challis Forest Plans in 1988. Subsequently, bull trout was designated as the single aquatic Management Indicator Species, through a Forest Plan amendment in 2004. While all species of salmonids were historically abundant throughout the project area, their distribution and numbers have become drastically reduced over the past 100 years, due to the combined effects of both local and regional anthropomorphic activities. As a result of these declines, all native species of salmonids are now listed as "Threatened," "Endangered," or "Sensitive" under the Endangered Species Act and by the Forest Service - Intermountain Region, respectively. (With the exception of whitefish; of which the Big Lost River sub-species is currently undergoing a court ordered "status review" for a potential listing under the ESA). These listings underscore the pressing need for implementation of proactive fisheries habitat conservation actions within ongoing resource management programs. Presently listed fish species include the following:

**Federally Listed Threatened, Endangered, and Sensitive Species:**

1. Sockeye salmon (*Oncorhynchus nerka*)

Endangered – December 20, 1991; 56 FR 58619; June 28, 2005; 70 FR 37160

Critical Habitat – December 28, 1993; 58 FR 68543

Protective Regulations – ESA Section 9 Applies

2. Snake River Spring/Summer Chinook salmon (*Oncorhynchus tshawytscha*)

Threatened – April 22, 1992; 57 FR 14653; modified June 28, 2005; 70 FR 37160)

Critical Habitat – December 28, 1993; 58 FR 68543; rev. October 25, 1999; 64 FR 57399

Protective Regulations – June 28, 2005; 70 FR 37160

3. Snake River Summer steelhead (*Oncorhynchus mykiss*)

Threatened – August 18, 1998; 62 FR 43937; modified January 5, 2006; 71 FR 834

Critical Habitat – September 2, 2005; 70 FR 52360

Protective Regulations – June 28, 2005; 70 FR 37160

4. Columbia River bull trout (*Salvelinus confluentus*)

Threatened – June 10, 1998; 63 FR 31647

Critical Habitat – September 26, 2005; 70 FR 56212

Protective Regulations – (Salmon-Challis National Forest - Aquatic Management Indicator Species)

5. Westslope cutthroat trout (*Oncorhynchus clarki lewisi*)

Sensitive – USDA-Forest Service Region 4

Based upon recent GIS data analyses, of the 2,920 miles of designated system roads and 1,119 miles of system trails open to public access within the project area (Alternative 0) 890 and 464 miles currently exist within perennial stream RHCAs, respectively. (SR Table 2a.) In contrast, intermittent streams have 209 miles of motorized public roads and 119 miles of motorized trails located within their RHCAs. Of the 401,589 acres currently designated as open for motorized access and dispersed camping, 67,034 acres and 18,278 acres exist within RHCAs of perennial and intermittent streams, respectively (FSR Table 2.)

In comparison to the RHCA route miles and acres, of the total 8,114 existing stream crossings (SR Table 3.) 2,542 are presently designated on perennial streams and 4,042 are designated on intermittent streams throughout the project area. (Alternative 0 - SR Table 3)

## ***Fisheries Management Indicator and Sensitive Species***

As inland (fluvial) migratory species, both bull trout (MIS) and westslope cutthroat trout (sensitive) share similar life histories, habitat characteristics, population trends and concerns. While both species were initially petitioned and reviewed for ESA listing, only bull trout have been federally listed as "threatened" under the Endangered Species Act. While not warranting being listed under the ESA, westslope cutthroat have received a Forest Service "sensitive" designation throughout the Intermountain Region due to their rare status. Similar to anadromous species, strongholds of local population of these species occur within watersheds of the FC-RoNRW. Throughout Wilderness areas and within the upper Salmon River sub-basin, both species have received special consideration providing for yearlong (bull trout) or seasonal (cutthroat) catch-and-release fishing regulations in order to protect local populations. Both species appear to be maintaining their present status, with bull trout slowly increasing in numbers in some areas; especially in regards to the larger, fluvial and more fecund individuals (>16" and up to 5 lbs.) that have been increasingly caught in the Salmon River in recent years. Both of these species are affected by fragmentation of their historic habitats, with access to many headwater spawning areas being limited by migration barriers (both off and on the National Forest) due to numerous culvert crossings by motorized routes. While no signed recovery plans or strategies are currently in effect for bull trout, a draft Recovery Plan was developed by U.S. Fish and Wildlife Service for bull trout in the early 2002. However, no critical habitat has been designated within the state of Idaho. Recent analyses of statewide stream survey data have indicated that within the 262 local populations within seven recovery units designated by the U.S. Fish and Wildlife Service, long term (>20 years) intrinsic rates of change were negative for 10 of 16 bull trout populations up to 1994 (prior to implementation of catch-and-release regulations). However, it appeared that after 1994 long term intrinsic rtes of change were positive for 14 of 17 populations studied concluding, "Our results suggest that despite declines from historical levels, bull trout in Idaho are presently widely distributed, relatively abundant, and apparently stable" (High et al. 2008).

Bull trout population trends at on-forest Management Indicator Species (MIS) monitoring locations have been found to be either flat or declining at 50% of North Zone and 86% of South Zone stations, and increasing at 50% of North Zone and 14% of South Zone stations (Garcia 2009; Gamett, 2007). South Zone bull trout length frequency data indicate a predominance of smaller (less than six inches) resident individuals, with fish sizes typically in the two inch to nine inch range. Therefore, this data would indicate that many of these on-forest streams appear to have isolated, non-fluvial, local populations, as illustrated by USFWS's draft Recovery Plan. Given the existence of current catch-release regulations, the

predominance of stable or declining trends after this much time may be due to a number of factors, some of which are listed below:

- Most on-forest headwater streams are typically colder, small, limited in physical habitat (size/space), basic nutrients/productivity and prey base abundance, resulting in the size and numbers of "resident" predatory fish like bull trout existing within the carrying capacity limits of their local habitat.
- While providing strongholds for local sub-populations, many headwater streams are also fragmented due to migration barriers on motorized routes (culvert crossings) and are therefore typically isolated from outside genetic influences of larger, more fecund, fluvial individuals. Therefore, while these small streams can contain mature bull trout (> five to seven years old) or mature westslope cutthroat trout (> three to four years old) they may only be four to eight inches long. Sexually mature fish that are this small only produce several dozen eggs and even fewer fry each year, resulting in very limited recruitment of new individuals, and eventually, long-term in-breeding.
- Combined with the previous size related recruitment limiting factors, recreational fishing typically selects for the largest dominant individuals which, even when released, often succumb to hooking mortality. (New fishing regulations now require barbless hooks in many catch-and-release areas in an effort to reduce this mortality factor.)
- Predation is also a major limiting factor, especially in smaller headwater streams where snakes, frogs, kingfishers, mammals (otter, mink, and bears) and even larger fish themselves continually exert downward pressures on the production and recovery of "numbers" of resident fish. This pressure is especially problematic in the colder, more sterile, on-forest headwater streams in which (lacking abundant annual contributions of external nutrients) there is a limited prey base and carrying capacity for fish larger than about 6". Fish larger than 6" require more energy to capture food (such as insects) than they gain from the food. Subsequently larger fish with a limited prey base can develop a negative energy budget and poor condition factor, experience a gradual decline in fecundity, and eventually die if they do not migrate to more productive environments.

Even though existing in an apparent pristine condition (as defined by conventional stream habitat definitions) a relatively large, free flowing, headwater stream that is eight feet wide only contains about one acre of often quite sterile habitat per mile. Even while they may appear to meet the physical criteria for perfect habitat conditions, streams of this nature have limited biotic capabilities and experience conditions in which resident fish populations can become self-limiting. In addition, recovery, if solely defined as an increase in numbers of fish, may often not be an attainable goal, beyond the numbers of fish presently existing within their habitat's biotic capability. (Smith 2003; Todd 2008) After thirty years of total protection and natural habitat conditions, streams within unaffected wilderness areas also typically demonstrate these relationships. Otherwise, by now they should have experienced marked increases in all forms of resident, fluvial and anadromous fish species (Smith 2009).

*Effects Determination:* Because most stream reaches occupied by resident bull trout and/or westslope cutthroat trout occur at higher elevations in on-forest watersheds, the potential effects on these species are anticipated to be beneficial due to an area-wide decrease in the total miles of routes with motorized uses, the elimination of use on numerous unauthorized routes, reductions in acres of dispersed camping within RHCAs and major reductions in RHCA route miles.

## 3.6.7 ENVIRONMENTAL CONSEQUENCES OF THE ALTERNATIVES

### Direct and Indirect Effects

Based upon an in-depth analysis of GIS data for fisheries indicators at a Forest level, the effects to fisheries, streams, and riparian habitats are similar in nature throughout the project area with minor differences being noted between alternatives (reference Fisheries SR Table 5c, summary analyses of watershed changes between alternatives). Differences between alternatives in the values for fisheries indicators occur in relation to the amounts of aquatic and riparian habitat affected by route miles within stream-side buffer zones and number of stream crossings (FSR Tables 5a and 5b). Regardless of respective numbers of these measurements for each route, watershed, or ranger district, direct and indirect effects that are common to all of the alternatives include:

- The direct physical loss of riparian habitat and its ecosystem functions within RHCAs and the 100-year floodplain, as a result of uses that destroy riparian vegetation
- The direct creation of route treads that form drainage pathways and alter natural upland runoff and sediment distribution patterns for both the immediate stream, and its side channels and floodplains
- The indirect conversion of normally dispersed surface run-off and natural sediment filtering functions of upland vegetation within the RHCA, to the creation of point sources for increased contributions of sediment, following vehicle treads from upland areas
- The direct and indirect effects for migratory connectivity of all aquatic organisms within individual streams and between watersheds, as well as creating impediments for seasonal habitat usage (e.g. Seeking thermal refuge or late season spawning) due to the effects of barriers created at stream crossings, especially those with culverts
- The direct effects of channel disturbances from stream-bank damage, which in turn lead to the indirect effects of bank erosion and stream sedimentation as a result of ford crossings
- The direct physical disturbances to potential fish spawning and rearing within ford crossings that may occur from motorized vehicle uses between May through October (depending upon species) plus the creation of indirect affects to site-specific spawning suitability of stream-bottom gravels, in the crossing itself
- Potential direct mortality to fish eggs deposited in redds at ford crossings, as well as to subsequent (indirect) reductions in egg hatching success and intra-gravel juvenile fish rearing, potentially affecting future local fish populations

At a Forest level, Alternative 3 (Wilderness Emphasis) provides for the greatest number of HUC 5 watersheds with improvements due to reductions of impacts to stream and riparian habitats from motorized travel. Alternatives 1 and 4 would have similar numbers of watersheds with improvements, though Alternative 4 would have more miles of motorized routes. Alternative 5 would be better than 4, though not have as many watersheds with improved conditions as Alternative 3. In contrast Alternatives 1, 3, and 5 would generally have similar numbers of watersheds with increased miles and risks for PACfish/INFish RMOs, while Alternative 4 would have the most watersheds with increased numbers of miles and crossings (reference FSR Tables 5a, 5b, and 5c for effects summaries). In total, all alternatives propose improvements over the conditions associated with a No Action Alternative.

## *Alternative 0 - No Action*

The amounts of affected stream mileages, RHCA acres and numbers of route crossings within stream-side buffer zones within Alternative 0 are summarized in Table 2-26, and shown in greater detail in the Fisheries Specialist Report, Tables 2a, 3a, 4a, b and c, and 5a, b and c (Project Record). The overall effects of motorized routes associated with the No Action Alternative would be as follows:

- The 889 miles of motorized roads located within perennial stream RHCA buffer zones would affect 1,078 (0.27% of total) perennial stream RHCA acres within the project area by impacting and/or eliminating riparian vegetation on and along double route treads averaging ten feet in width, creating drainage pathways for interception, concentration and redirection of surface runoff, compacting riparian soils and generating fugitive dust as an additional sediment source to adjacent streams in areas with close proximity and high levels of traffic.
- The 209 miles of motorized roads within intermittent stream RHCA buffer zones would affect 253 (0.15% of total) intermittent stream RHCA acres within the project area by impacting and/or eliminating riparian vegetation on and along double route treads averaging ten feet in width, creating drainage pathways for interception, concentration and redirection of surface runoff, compacting riparian soils and generating fugitive dust as an additional sediment source to adjacent streams in areas with close proximity and high levels of traffic.
- The 465 miles of motorized trails located within perennial stream RHCA buffer zones would affect 225 (0.07% of the total) perennial stream RHCA acres within the project area by impacting and/or eliminating riparian vegetation on and along single route treads averaging four feet in width, creating drainage pathways for interception, concentration and redirection of surface runoff, compacting riparian soils and generating fugitive dust as an additional sediment source to adjacent streams in areas with close proximity and high levels of traffic.
- The 117 miles of motorized trails located within intermittent stream RHCA buffer zones would affect 57 (0.03%) of the total intermittent stream RHCA acres within the project area by impacting and/or eliminating riparian vegetation on and along single route treads averaging four feet in width, creating drainage pathways for interception, concentration and redirection of surface runoff, compacting riparian soils and generating fugitive dust as an additional sediment source to adjacent streams in areas with close proximity and high levels of traffic.
- 67,034 acres (21%) of all perennial stream RHCA acres would be open to dispersed camping which would impact riparian soils and vegetation throughout these areas as vehicles of all types and sizes drive throughout riparian zones, up to within 30’ of their adjacent streams. This will lead to the loss of riparian vegetation, change overland run-off patterns leading to increased sediment generation in heavily used areas, result in fugitive dust problems in heavily used areas as well as reduce the buffering effects provided to streams as the RHCA becomes more open and exposed to solar radiation, leading to higher temperatures and drier conditions, during summer months.
- 18,276 acres (11%) of all intermittent stream RHCA acres would be open to dispersed camping which would impact riparian soils and vegetation throughout these areas as vehicles of all types and sizes drive throughout riparian zones, up to within 30’ of their adjacent streams. This will lead to the loss of riparian vegetation, change overland run-off patterns leading to increased sediment generation in heavily used areas, result in fugitive dust problems in heavily used areas as well as reduce the buffering effects provided to streams as the RHCA becomes more open

and exposed to solar radiation, leading to higher temperatures and drier conditions, during summer months.

- The 1,522 motorized road crossings (0.34/mi.) would directly affect (0.06% of the total) linear perennial stream habitat by essentially removing it from a productive and useable condition for most aquatic life history stages. Estimating one mile of migratory stream habitat affected per crossing, this would also limit approximately 1,522 miles of perennial streams from being fully utilized by migrating fish seeking spawning habitat or thermal refuge.
- The 2,608 motorized road crossings (0.37/mi.) would directly affect (0.07% of the total) linear intermittent stream habitat by essentially removing it from a productive and useable condition for most aquatic life history stages. Estimating one mile of migratory stream habitat affected per crossing, this would also limit approximately 2,608 miles of intermittent stream utilized by migrating fish seeking seasonal thermal refuge, spawning and rearing habitat.
- The 1,020 motorized trail crossings (0.23/mi.) would directly affect (0.02% of the total) linear perennial stream habitat by essentially removing it from a productive and useable condition for most aquatic life history stages. Estimating one mile of migratory stream habitat affected per crossing, this would also limit approximately 1,020 miles of perennial stream utilized by migrating fish seeking seasonal thermal refuge, spawning and rearing habitat.
- The 1,434 motorized trail crossings (0.21/mi.) would directly affect 0.02% of linear intermittent stream habitat by essentially removing it from a productive and useable condition for most aquatic life history stages. Estimating one mile of migratory stream habitat affected per crossing, this would also limit approximately 1,434 miles of seasonal intermittent stream utilized by migrating fish seeking thermal refuge, spawning and rearing habitat.

As noted in Table 2-26 and in the analytical tables of the Fisheries Specialist Report, this alternative would have the greatest number of route miles, riparian acres and crossings impacting stream and riparian habitats for all categories of fisheries indicators, as well as all ranger districts.

### ***Alternative 1 – Designated System Routes***

The types of direct and indirect effects associated with Alternative 1 would generally be the same as those described for the Environmental Consequences, with differences in the amounts and locations of uses from different types of vehicles and seasons of use proposed for specific routes.

Route mileages and numbers of stream crossings within stream buffer zones affected by Alternative 1 are summarized in Table 2-26, with greater detail provided in the Fisheries Specialist Report (Project Record). The amounts of fisheries habitat affected by routes proposed within Alternative 1 would be as follows:

- Motorized access by 749 miles of roads located within perennial stream RHCA buffer zones would affect 908 (0.28% of the total) perennial RHCA acres within the project area by impacting and/or eliminating riparian vegetation on and along double route treads averaging ten feet in width, creating drainage pathways for interception, concentration and redirection of surface runoff, compacting riparian soils and generating fugitive dust as an additional sediment source to adjacent streams in areas with close proximity and high levels of traffic.
- Motorized access by 162 miles of roads within intermittent stream RHCA buffer zones would affect 196 (0.12% of the total) intermittent RHCA acres within the project area by impacting and/or eliminating riparian vegetation on and along double route treads averaging ten feet in width, creating drainage pathways for interception, concentration and redirection of surface

runoff, compacting riparian soils and generating fugitive dust as an additional sediment source to adjacent streams in areas with close proximity and high levels of traffic.

- Motorized access by 310 miles of trails located within perennial stream RHCA buffer zones would affect 150 (0.05% of the total) perennial RHCA acres within the project area by impacting and/or eliminating riparian vegetation on and along single route treads averaging four feet in width, creating drainage pathways for interception, concentration and redirection of surface runoff, compacting riparian soils and generating fugitive dust as an additional sediment source to adjacent streams in areas with close proximity and high levels of traffic.
- Motorized access by 61 miles of trails located within intermittent stream RHCA buffer zones would affect 30 (0.02% of the total) intermittent RHCA acres within the project area by impacting and/or eliminating riparian vegetation on and along single route treads averaging four feet in width, creating drainage pathways for interception, concentration and redirection of surface runoff, compacting riparian soils and generating fugitive dust as an additional sediment source to adjacent streams in areas with close proximity and high levels of traffic.
- Almost 34,000 acres (11%) of perennial stream RHCAs would be open to dispersed camping which would impact riparian soils and vegetation throughout these areas as vehicles of all types and sizes drive throughout riparian zones, to within 30' of their adjacent streams. This will lead to the loss of riparian vegetation, change overland run-off patterns leading to increased sediment generation in heavily used areas, result in fugitive dust problems in heavily used areas, as well as reduce the buffering effects provided to streams as the RHCA becomes more open and exposed to solar radiation, leading to higher temperatures and drier conditions, during summer months.
- Approximately 18,000 acres (4%) of all intermittent stream RHCA acres would be open to dispersed camping which would impact riparian soils and vegetation throughout these areas as vehicles of all types and sizes are able to drive throughout RHCAs, to within 30 feet of their adjacent streams. This will lead to the loss of riparian vegetation and change overland run-off patterns leading to increased sediment generation from heavily used areas, result in fugitive dust problems in heavily used areas, as well as reduce the buffering effects provided to streams as the RHCA corridor becomes more open and exposed to solar radiation, leading to higher temperatures and drier conditions during summer months.
- Motorized access on 1,175 road crossings (0.26/mi.) would directly affect (0.05% of the total) linear perennial stream habitat and essentially remove the crossing area from a productive and useable condition for most aquatic life history stages. Estimating one mile of migratory stream habitat affected per crossing, these crossings would also negatively affect approximately 1,175 miles of perennial streams from being fully utilized by migrating fish seeking spawning habitat and/or thermal refuge during different seasons of the year.
- Motorized access on 1,969 road crossings (0.28/mi.) would directly affect (0.05% of the total) linear intermittent stream habitat, essentially removing the crossings areas from a productive and useable condition for most aquatic life history stages. Estimating one mile of migratory stream habitat affected per crossing, they would also negatively affect approximately 1,969 miles of intermittent stream utilized by migrating fish seeking seasonal thermal refuge, spawning and rearing habitat.
- Motorized access on 619 trail crossings (0.14/mi.) would directly affect (0.01% of the total) linear perennial stream habitat by essentially removing it from a productive and useable

condition for most aquatic life history stages. Estimating one mile of migratory stream habitat affected per crossing, would negatively affect approximately 619 miles of perennial stream utilized by migrating fish seeking thermal refuge, spawning and rearing habitat during different seasons of the year.

- Motorized access on 717 trail crossings (0.10/mi.) would directly affect (0.008% of the total) linear intermittent stream habitat by essentially removing it from a productive and useable condition for most aquatic life history stages. Estimating one mile of migratory stream habitat affected per crossing, they would also negatively affect approximately 717 miles of intermittent stream utilized by migrating fish seeking thermal refuge, spawning and rearing habitat during different seasons of the year.

As noted in Table 2-26 and in the Fisheries Specialist Report (Table 5c) this alternative would have a reduced number of watersheds with route miles, riparian acres and crossings impacting stream and riparian habitats, which in total would be comparable to Alternative 5 at a Forest-wide scale. However, in this alternative the fisheries indicators in all watersheds, across all ranger districts, are being maintained or improved when compared to their baseline conditions within Alternative 0.

The North Fork and Salmon-Cobalt Ranger Districts would experience improved watersheds in almost all categories, while the Leadore and Lost River Ranger Districts would experience moderate numbers, with improvements in about half of their watersheds and the Challis-Yankee Fork and Middle Fork Ranger District would likely experience slight numbers of improvements, in a few of their watersheds.

### ***Alternative 3 – Recommended Wilderness/Roadless Emphasis***

The kinds of direct and indirect effects associated with Alternative 3 would generally be the same as those described for the Environmental Consequences, with differences in the amounts and locations of motorized use by various vehicle classes and the types of uses proposed on specific routes.

Route mileages and numbers of stream crossings within stream buffer zones affected by Alternative 3 are summarized in Table 2-26, and in greater detail in the Fisheries Specialist Report (Project Record). As noted in the Significance of Effects Analyses in Section D of Tables 4a and 4b, as well as Table 4c , values for fisheries habitat indicators on motorized routes associated with Alternative 3 would be as follows:

- Motorized access on 690 miles of roads located within perennial stream RHCAs would affect 836 (0.26% of total) buffer zone acres within the project area by impacting and/or eliminating riparian vegetation on and along double route treads averaging ten feet in width, creating drainage pathways for interception, concentration and redirection of surface runoff, compacting riparian soils and generating fugitive dust as an additional sediment source to adjacent streams in areas with close proximity and high levels of traffic.
- Motorized access on 149 miles of roads within intermittent stream RHCAs would affect 181 (0.11% of the total) intermittent stream RHCA buffer zone acres by impacting and/or eliminating riparian vegetation on and along double route treads averaging ten feet in width, creating drainage pathways for interception, concentration and redirection of surface runoff, compacting riparian soils and generating fugitive dust as an additional sediment source to adjacent streams in areas with close proximity and high levels of traffic.
- Motorized access on 144 miles of trails located within perennial stream RHCAs would affect 70 (0.02% of the total) perennial RHCA buffer zone acres within the project area by impacting and/or eliminating riparian vegetation on and along single route treads averaging four feet in

width, creating drainage pathways for interception, concentration and redirection of surface runoff, compacting riparian soils and generating fugitive dust as an additional sediment source to adjacent streams in areas with close proximity and high levels of traffic.

- Motorized access on 63 miles of trails located within intermittent stream RHCAs would affect 31 (0.02% of the total) intermittent buffer zone acres within the project area by impacting and/or eliminating riparian vegetation on and along single route treads averaging four feet in width, creating drainage pathways for interception, concentration and redirection of surface runoff, compacting riparian soils and generating fugitive dust as an additional sediment source to adjacent streams in areas with close proximity and high levels of traffic.
- No perennial stream RHCA buffer zones would be open to, or affected by motorized use for dispersed camping
- No intermittent stream RHCA buffer zones would be open to, or affected by motorized use for dispersed camping
- Motorized access on 1,057 stream crossings (0.24/mi.) would directly affect (0.04% of the total) linear perennial stream habitat and essentially remove crossing areas from a productive and useable condition for most aquatic life history stages. Estimating one mile of migratory stream habitat affected per crossing, these crossings would also negatively affect approximately 1,057 miles of perennial streams from being fully utilized by migrating fish seeking spawning habitat and/or thermal refuge during different seasons of the year.
- Motorized access on 251 road crossings (0.04/mi.) would directly affect (0.008% of the total) linear intermittent stream habitat, essentially removing habitat within crossing areas from a productive and useable condition for most aquatic life history stages. Estimating one mile of migratory stream habitat affected per crossing, they would also negatively affect approximately 251 miles of intermittent stream utilized by migrating fish seeking seasonal thermal refuge, spawning and rearing habitat.
- Motorized access on 366 trail crossings (0.08/mi.) would directly affect (0.006% of the total) linear perennial stream habitat by essentially removing it from a productive and useable condition for most aquatic life history stages. Estimating one mile of migratory stream habitat affected per crossing, would negatively affect approximately 366 miles of perennial stream utilized by migrating fish seeking thermal refuge, spawning and rearing habitat during different seasons of the year.
- Motorized access on 399 trail crossings (0.06/mi.) would directly affect (0.004% of the total) linear intermittent stream habitat by essentially removing it from a productive and useable condition for most aquatic life history stages. Estimating one mile of migratory stream habitat affected per crossing, they would also negatively affect approximately 399 miles of intermittent stream utilized by migrating fish seeking thermal refuge, spawning and rearing habitat during different seasons of the year.

As noted in Table 2-26 and in the Fisheries Specialist Report (Table 5c), this alternative would have the greatest reductions in numbers of route miles, riparian acres and crossings impacting stream and riparian habitats. This alternative would therefore have the least adverse effects on stream and riparian habitats and be a major improvement towards reducing risks, leading to increased potentials for attainment of PACfish/INFish Riparian Management Objectives. In this alternative, fisheries indicators would be maintained or improved in all but four watersheds, across all Ranger Districts when compared to their baseline conditions within Alternative 0.

As noted in the Fisheries Specialist Report Table 5c, the North Fork, Salmon-Cobalt, Challis-Yankee Fork and Lost River Ranger Districts would experience the greatest numbers of watersheds with improvements in almost all indicators, while the Leadore District would experience a moderate level of watersheds with improvements, and the Middle Fork Ranger District would likely maintain its present conditions while experiencing slight improvements, in a few of its watersheds.

### *Alternative 4 – Maximum Motorized Emphasis*

The types of direct and indirect effects associated with Alternative 4 would also be similar to those described for the Environmental Consequences, with the exception of site-specific increases in the amounts and locations of additional use areas, vehicle classes and types of motorized access proposed.

Route mileages and numbers of stream crossings within stream buffer zones affected by Alternative 4 are summarized in Table 2-26, and displayed in greater detail in the Fisheries Specialist Report (FSR, Project Record). As noted in the Significance of Effects Analyses in Section D of Tables 4a and 4b, as well as Table 4c (FSR), values for fisheries habitat indicators on motorized routes associated with Alternative 4 would be as follows:

- Motorized access on 785 miles of roads located within perennial stream RHCAs would affect 951 (0.29% of total) buffer zone acres within the project area by impacting and/or eliminating riparian vegetation on and along double route treads averaging ten feet in width, creating drainage pathways for interception, concentration and redirection of surface runoff, compacting riparian soils and generating fugitive dust as an additional sediment source to adjacent streams in areas with close proximity and high levels of traffic.
- Motorized access on 185 miles of roads located within intermittent stream RHCAs would affect 224 (0.13% of total) buffer zone acres within the project area by impacting and/or eliminating riparian vegetation on and along double route treads averaging ten feet in width, creating drainage pathways for interception, concentration and redirection of surface runoff, compacting riparian soils and generating fugitive dust as an additional sediment source to adjacent streams in areas with close proximity and high levels of traffic.
- Motorized access on 424 miles of trails located within perennial stream RHCAs would affect 206 (0.06% of total) buffer zone acres within the project area by impacting and/or eliminating riparian vegetation on and along single route treads averaging four feet in width, creating drainage pathways for interception, concentration and redirection of surface runoff, compacting riparian soils and generating fugitive dust as an additional sediment source to adjacent streams in areas with close proximity and high levels of traffic.
- Motorized access on 111 miles of trails located within intermittent stream RHCAs would affect 54 (0.03% of total) buffer zone acres within the project area by impacting and/or eliminating riparian vegetation on and along single route treads averaging four feet in width, creating drainage pathways for interception, concentration and redirection of surface runoff, compacting riparian soils and generating fugitive dust as an additional sediment source to adjacent streams in areas with close proximity and high levels of traffic.
- Over 38,000 acres (12%) of perennial stream RHCAs would be open to dispersed camping which would impact riparian soils and vegetation throughout these areas as vehicles of all types and sizes drive throughout riparian zones, to within 30' of their adjacent streams. This will lead to the loss of riparian vegetation, change overland run-off patterns leading to increased sediment generation in heavily used areas, result in fugitive dust problems in heavily used areas, as well as

reduce the buffering effects provided to streams as the RHCA becomes more open and exposed to solar radiation, leading to higher temperatures and drier conditions, during summer months.

- Almost 8,000 acres (5%) of all intermittent stream RHCA acres would be open to dispersed camping which would impact riparian soils and vegetation throughout these areas as vehicles of all types and sizes are able to drive throughout RHCAs, to within 30' of their adjacent streams. This will lead to the loss of riparian vegetation and change overland run-off patterns leading to increased sediment generation from heavily used areas, result in fugitive dust problems in heavily used areas, as well as reduce the buffering effects for streams as the RHCA corridor becomes more open and exposed to solar radiation, leading to higher temperatures and drier conditions during summer months.
- Motorized access on 1,292 stream crossings (0.29/mi.) would directly affect 0.05% of total linear perennial stream habitat and essentially remove crossing areas from a productive and useable condition for most aquatic life history stages. Estimating one mile of migratory stream habitat affected per crossing, these crossings would also negatively affect approximately 1,292 miles of perennial streams from being fully utilized by migrating fish seeking spawning habitat and/or thermal refuge during different seasons of the year.
- Motorized access on 2,248 road crossings (0.32/mi.) would directly affect 0.06% of total linear intermittent stream habitat, essentially removing habitat within crossing areas from a productive and useable condition for most aquatic life history stages. Estimating one mile of migratory stream habitat affected per crossing, they would also negatively affect approximately 2,248 miles of intermittent stream utilized by migrating fish seeking seasonal thermal refuge, spawning and rearing habitat.
- Motorized access on 820 trail crossings (0.18/mi.) would directly affect 0.01% of total linear perennial stream habitat by essentially removing it from a productive and useable condition for most aquatic life history stages. Estimating one mile of migratory stream habitat affected per crossing, this would negatively affect approximately 820 miles of perennial stream utilized by migrating fish seeking thermal refuge, spawning and rearing habitat during different seasons of the year.
- Motorized access on 1,256 trail crossings (0.18/mi.) would directly affect 0.01% of total linear intermittent stream habitat by essentially removing it from a productive and useable condition for most aquatic life history stages. Estimating one mile of migratory stream habitat affected per crossing, they would also negatively affect approximately 1,256 miles of intermittent stream utilized by migrating fish seeking thermal refuge, spawning and rearing habitat during different seasons of the year.

As noted in Table 2-26 and in the Fisheries Specialist Report (Table 5c), this alternative would have the greatest number of watersheds with increases in the number of route miles, riparian acres and crossings increasing risks for attainment of PACfish/INFish objectives due to increased levels of impacts to stream and riparian habitats. While there would be improvements in many watersheds over the baselines conditions of Alternative 0, this alternative would have the greatest number of watersheds with increased effects on stream and riparian habitats. In this alternative, while fisheries indicators would be maintained or improved in about half of the HUC 5 watersheds, several watersheds in all Ranger Districts would experience increased risks due to greater numbers of RHCA route miles, RHCA acres affected, and stream crossings.

As noted in the Fisheries Specialist Report Table 5c, the North Fork, Salmon-Cobalt, and Leadore Ranger Districts, while experiencing improvements in a majority of their watersheds, would have increased PACFish/INFish attainment risks primarily in the Timber Creek, Pine Creek, Upper Panther Creek, and Owl Creek watersheds.

The Challis-Yankee Fork and Lost River Ranger Districts, while experiencing improvements in about half of their watersheds, would experience increased risks for non-attainment of PACFish/INFish objectives primarily in the Lower Pahsimeroi, Middle Pahsimeroi, North Fork of the Big Lost River, Sawmill Creek, Star Hope Creek and Upper Little Lost River watersheds.

The Middle Fork Ranger District would generally maintain its present conditions while experiencing slight increases for risks, within the Rapid River watershed.

### ***Alternative 5 – Preferred Alternative***

The types direct and indirect effects associated with Alternative 5 would generally be the same as those described for the Environmental Consequences, with differences in the amounts and locations of motorized use by various vehicle classes and the types uses proposed on specific routes.

Route mileages and numbers of stream crossings within stream buffer zones affected by Alternative 5 are summarized in Table 2-26, and displayed in greater detail within the Fisheries Specialist Report Tables (FSR, Project Record). As noted in the Significance of Effects Analyses in Section D of Tables 4a and 4b, as well as Table 4c (FSR), values for fisheries habitat indicators on motorized routes associated with Alternative 5 would be as follows:

- Motorized access by 727 miles of roads located within perennial stream RHCA buffer zones would affect 881 (0.27% of total) perennial RHCA acres within the project area by impacting and/or eliminating riparian vegetation on and along double route treads averaging ten feet in width, creating drainage pathways for interception, concentration and redirection of surface runoff, compacting riparian soils and generating fugitive dust as an additional sediment source to adjacent streams in areas with close proximity and high levels of traffic.
- Motorized access by 169 miles of roads within intermittent stream RHCA buffer zones would affect 205 (0.12% of total) intermittent RHCA acres within the project area by impacting and/or eliminating riparian vegetation on and along double route treads averaging ten feet in width, creating drainage pathways for interception, concentration and redirection of surface runoff, compacting riparian soils and generating fugitive dust as an additional sediment source to adjacent streams in areas with close proximity and high levels of traffic.
- Motorized access by 297 miles of trails located within perennial stream RHCA buffer zones would affect 144 (0.04% of total) perennial RHCA acres within the project area by impacting and/or eliminating riparian vegetation on and along single route treads averaging four feet in width, creating drainage pathways for interception, concentration and redirection of surface runoff, compacting riparian soils and generating fugitive dust as an additional sediment source to adjacent streams in areas with close proximity and high levels of traffic.
- Motorized access by 71 miles of trails located within intermittent stream RHCA buffer zones would affect 34 (0.02% of total) intermittent RHCA acres within the project area by impacting and/or eliminating riparian vegetation on and along single route treads averaging four feet in width, creating drainage pathways for interception, concentration and redirection of surface runoff, compacting riparian soils and generating fugitive dust as an additional sediment source to adjacent streams in areas with close proximity and high levels of traffic.

- Almost 31,000 acres (10%) of perennial stream RHCAs would be open to dispersed camping which would impact riparian soils and vegetation throughout these areas as vehicles of all types and sizes drive throughout riparian zones, to within 30' of their adjacent streams. This will lead to the loss of riparian vegetation, change overland run-off patterns leading to increased sediment generation in heavily used areas, result in fugitive dust problems in heavily used areas, as well as reduce the buffering effects provided to streams as the RHCA becomes more open and exposed to solar radiation, leading to higher temperatures and drier conditions, during summer months.
- Over 6,000 acres (4%) of all intermittent stream RHCA acres would be open to dispersed camping which would impact riparian soils and vegetation throughout these areas as vehicles of all types and sizes are able to drive throughout RHCAs, to within 30' of their adjacent streams. This will lead to the loss of riparian vegetation and change overland run-off patterns leading to increased sediment generation from heavily used areas, result in fugitive dust problems in heavily used areas, as well as reduce the buffering effects for streams as the RHCA corridor becomes more open and exposed to solar radiation, leading to higher temperatures and drier conditions during summer months.
- Motorized access on 1,121 stream crossings (0.25/mi.) would directly affect 0.05% of linear perennial stream habitat and essentially remove crossing areas from a productive and useable condition for most aquatic life history stages. Estimating one mile of migratory stream habitat affected per crossing, these crossings would also negatively affect approximately 1,121 miles of perennial streams from being fully utilized by migrating fish seeking spawning habitat and/or thermal refuge during different seasons of the year.
- Motorized access on 2,040 road crossings (0.29/mi.) would directly affect 0.05% of linear intermittent stream habitat, essentially removing habitat within crossing areas from a productive and useable condition for most aquatic life history stages. Estimating one mile of migratory stream habitat affected per crossing, they would also negatively affect approximately 2,040 miles of intermittent stream utilized by migrating fish seeking seasonal thermal refuge, spawning and rearing habitat.
- Motorized access on 587 trail crossings (0.13/mi.) would directly affect 0.01% of linear perennial stream habitat by essentially removing it from a productive and useable condition for most aquatic life history stages. Estimating one mile of migratory stream habitat affected per crossing, this would negatively affect approximately 587miles of perennial stream utilized by migrating fish seeking thermal refuge, spawning and rearing habitat during different seasons of the year.
- Motorized access on 796 trail crossings (0.11/mi.) would directly affect 0.008% of linear intermittent stream habitat by essentially removing it from a productive and useable condition for most aquatic life history stages. Estimating one mile of migratory stream habitat affected per crossing, they would also negatively affect approximately 796 miles of intermittent stream utilized by migrating fish seeking thermal refuge, spawning and rearing habitat during different seasons of the year.

As noted in Table 2-26 and the Fisheries Specialist Report (Table 5c) while similar to Alternative 1, Alternative 5 would have more watersheds with reduced miles of motorized routes and acres of use within RHCAs, as well as fewer stream crossings. In this alternative, fisheries indicators across most ranger districts would be maintained or improved. In comparison to the No Action alternative

(Alternative 0), Alternative 5 would provide a significant reduction in the number of indicators for all types of streams and motorized uses.

The Lost River Ranger District would experience an increase in the numbers of fisheries indicators in seven of its watershed, the Leadore, North Fork and Salmon-Cobalt Ranger Districts would be similar to alternative 1, and the Challis-Yankee Fork and Middle Fork Ranger Districts would experience slight increases in a few, mostly intermittent watersheds.

### 3.6.8 CUMULATIVE EFFECTS

#### *Alternative 0 – No Action*

Travel routes, types of motorized uses and their associated effects have grown as a result of increasing human activity throughout the project area since pioneer settlement began, over 150 years ago. Since that time, travel routes have been developed and expanded in response to changing social conditions or technological requirements related to mining, logging, agriculture, community development, recreation and tourism. Historically, floodplain areas were characterized by hydrologic processes that included annual flooding throughout the floodplain, ongoing cycles of erosion and deposition, the accumulation and movement of woody debris within streams and floodplains, the extensive formation of gravel bars leading to widespread meandering and braiding of channels, dense riparian vegetation and wetlands throughout floodplains, and the extensive presence of beaver created wetlands on main-stem rivers and streams, as well as within many sloughs and side channels. In combination, the cumulative effects of these natural hydrologic processes resulted in the development of complex and dynamic associations of riparian habitats and species throughout historic streams and floodplains, with very difficult conditions for travel within floodplain areas. As a result, historic routes typically existed in drier upland areas, on adjacent benches or terraces, hillsides and ridges, outside of most stream bottoms and floodplains within the project area.

In the early 20$^{th}$ century, the development of new routes began occurring within historic floodplains and stream bottom areas due to increasing numbers of larger vehicles like horse drawn wagons and stagecoaches, plus the advent of mechanically propelled vehicles utilizing steam and gasoline. Since the 1930s, the greatly increased use of modern vehicles has resulted in the conversion of many historic foot and horse trails into developed roads and highways. This growing use of motorized vehicles has led to a widespread expansion of routes that increasingly affected stream and riparian habitats throughout the Salmon and Challis National Forests during the 20$^{th}$ century.

The relatively recent Forest Plans and Travel Plans form the basis for the No Action Alternative and illustrate how many stream-side areas routes now proposed for designation experienced very limited motorized use only twenty years ago. Many present unauthorized streamside routes developed as a result of recreational extensions of temporary roads that were initially constructed for logging and mining activities. Typically, many of these extensions were only accessible by four wheel drive vehicles in mid- to late summer, when drier conditions were conducive to off-road travel, especially in areas like wet meadows, stream bottoms and riparian zones.

In addition to the spread of motorized trails throughout the landscape, the increased development of on-forest road systems in support of forest management activities during the past 50 years has led to widespread ecological fragmentation of many streams and watersheds, due to the installation of thousands of culvert stream crossings. Typically, these installations impede or totally block upstream migration for most aquatic organisms, especially in regards to their requirements to access headwater areas for thermal refuge and spawning and for migration between watersheds following catastrophic events like wildfires. Many streams have also experienced agricultural water diversions for irrigation,

resulting in a loss of their historic on-forest fisheries populations. In many areas, inland migratory species like westslope cutthroat, Red band rainbow, and bull trout became isolated from seasonal migrations within watersheds, resulting in the loss of periodic genetic exchange between local populations. These events have resulted in the present occurrence of numerous isolated fish populations within headwater streams that are now highly susceptible to extinction from catastrophic events such as large-scale fires. As motorized routes and travel have expanded, floodplains and stream-side buffer zones experienced proportionate increases in uses that have limited attainment of Forest Plan (PACFish/INFish) goals and objectives for restoration of RHCAs and recovery of local fish populations.

Cumulative affects associated with fisheries indicators (motorized route miles/acres within RHCAs and numbers of stream crossings) have included:

- Increasing vehicular travel within floodplains
- More widespread riparian soil compaction
- Increased and more widespread rutting in wet areas
- Increased overland runoff and reduced sediment filtering
- Increases in the direct and indirect loss of riparian vegetation
- Widespread direct and indirect losses of stream habitat and floodplain functions associated with extensive removal of beaver
- Increased mortality of all riparian vegetation and fisheries/wildlife species due to expanded access over greater areas
- Widespread creation of migration barriers for both terrestrial and aquatic organisms
- Widespread losses of large in-stream woody debris due to RHCA fuel-wood cutting and channel clearing on many streams with adjacent routes
- Widespread channelization of streams adjacent to motorized routes through construction of dikes and barriers to preclude natural flooding within floodplains

These factors and their cumulative effects have contributed to declines and losses of native fish species and populations in forest watersheds over the past 50 years. Therefore, almost all native salmonid species on the Salmon-Challis Forest have received protective designations of some type, highlighting the need for proactive conservation measures in order to preclude further declines and work towards recovery of all species.

Within the upper Salmon and Lost River sub-basins, the ecological functions of almost all HUC5 watersheds have been compromised in some manner and can no longer produce or maintain fish populations at 90% of their historic potential, as called for in the Forest Plans. Therefore, the most significant areas remaining today are those stronghold watersheds that are most intact and still maintain migrational connectivity with other watersheds and streams throughout the sub-basin. Examples of these types of priority watersheds (defined by PACFish and INFish) include headwater tributaries of the North Fork Salmon River, Indian and Owl Creeks, the Big and Little Lost Rivers, plus watersheds in the upper Salmon and Middle Fork Salmon Rivers, such as Basin, Valley, Marsh, Bear Valley, and upper Camas Creeks, where remnant populations of rare and listed fish species still exist. Examples of key watersheds (defined by PACFish and INFish) with remnant viable on-forest stream habitats that provide refugia for recovery of local sub-populations include watersheds like Timber, Hawley, Canyon, and Hayden Creeks, plus on-forest reaches of streams within the Pahsimeroi

watershed, Carmen Creek, Sawmill Creek, and the Yankee Fork River. A third priority for concerns of cumulative effects are those remaining watersheds which, though presently fragmented due to development, possess significant on-forest habitat for maintenance or recovery of local populations that could contribute to the long-term survival of resident species like Red band rainbow, westslope cutthroat and bull trout, in areas like the Big 8 Mile, Napias, Panther, McKim, Cow, Hat, Morgan, Squaw, and Herd Creek watersheds.

Therefore, creation of a revised Travel Plan provides an historic opportunity to arrest the ongoing trends in cumulative effects from the effects of growing motorized uses. The development of route-specific travel management prescriptions and supporting management actions (enforcement, monitoring and mitigation) would be a major step towards attainment of Forest Plan (PACFish/INFish) goals and objectives, especially for recovery of aquatic habitats and fish species.

### ***Alternatives 1, 3, 4 and 5***

Though stream specific types and seasons of motorized use would vary by route between the various alternatives, the "kinds" of cumulative effects occurring throughout the project area would generally be similar to those described for Alternative 0. However, cumulative effects in Alternatives 1, 3, 4, and 5 would all be less than the effects that would continue to occur with a No Action Alternative, since each new alternative reduces the total numbers of motorized road and trail miles, stream crossings and RHCA acres affected by cross country travel for dispersed camping. The Fisheries Specialist Report compiles cumulative effects of fisheries indicators for each alternative, and summarizes the number of HUC 5 watersheds with changes in their anticipated cumulative affects. The numbers of watersheds with these potential changes in fisheries indicators and associated cumulative effects are summarized for each alternative, in the tables below.

Table 3-27. Alternative 1, Cumulative Effects Summary

| HUC 5 Watersheds | Alternative 1 Designated Routes | | | |
|---|---|---|---|---|
| Cumulative Effects | RHCA Miles | | Stream Crossings | |
| | Perennial | Intermittent | Perennial | Intermittent |
| 1. Number of Watersheds w/ Reduced Risks | 41 | 28 | 45 | 39 |
| 2. Number of Watersheds w/o Change of Risk | 31 | 44 | 26 | 32 |
| 3. Number of Watersheds w/ Increased Risks | 0 | 0 | 1 | 1 |
| Total Watersheds (72) | 72 | 72 | 72 | 72 |

Table 3-28. Alternative 3, Cumulative Effects Summary

| HUC 5 Watersheds | Alternative 3 Designated Routes | | | |
|---|---|---|---|---|
| Cumulative Effects | RHCA Miles | | Stream Crossings | |
| | Perennial | Intermittent | Perennial | Intermittent |
| 1. Number of Watersheds w/ Reduced Risks | 54 | 42 | 55 | 55 |
| 2. Number of Watersheds w/o Change of Risk | 16 | 28 | 15 | 15 |
| 3. Number of Watersheds w/ Increased Risks | 1 | 2 | 2 | 2 |
| Total Watersheds (72) | 72 | 72 | 72 | 72 |

Table 3-29. Alternative 4, Cumulative Effects Summary

| HUC 5 Watersheds | Alternative 4 Designated Routes | | | |
|---|---|---|---|---|
| Cumulative Effects | RHCA Miles | | Stream Crossings | |
| | Perennial | Intermittent | Perennial | Intermittent |
| 1. Number of Watersheds w/ Reduced Risks | 40 | 24 | 39 | 37 |
| 2. Number of Watersheds w/o Change of Risk | 21 | 37 | 18 | 13 |
| 3. Number of Watersheds w/ Increased Risks | 11 | 11 | 15 | 22 |

| HUC 5 Watersheds | Alternative 4 Designated Routes | | | |
|---|---|---|---|---|
| Cumulative Effects | RHCA Miles | | Stream Crossings | |
| | Perennial | Intermittent | Perennial | Intermittent |
| Total Watersheds (72) | 72 | 72 | 72 | 72 |

Table 3-30. Alternative 5, Cumulative Effects Summary

| HUC 5 Watersheds | Alternative 5 Designated Routes | | | |
|---|---|---|---|---|
| Cumulative Effects | RHCA Miles | | Stream Crossings | |
| | Perennial | Intermittent | Perennial | Intermittent |
| 1. Number of Watersheds w/ Reduced Risks | 49 | 33 | 51 | 49 |
| 2. Number of Watersheds w/o Change of Risk | 20 | 34 | 17 | 14 |
| 3. Number of Watersheds w/ Increased Risks | 3 | 5 | 4 | 9 |
| Total Watersheds (72) | 72 | 72 | 72 | 72 |

### ***Irreversible and Irretrievable Commitments of Resources***

*Irreversible Commitments*: Irreversible commitments of fisheries resources would be associated with local headwater sub-populations that become isolated and experience genetic inbreeding or those local sub-populations that are lost altogether and can therefore no longer be recovered as a result of fish passage barriers created by stream crossings. Having evolved to match their unique headwater stream environments and life history timings in relation to annual stream specific temperature and run-off patterns over the past 10,000 years or more, once lost, the individual genetics of local sub-populations can no longer be recovered. As an example, numerous governmental recovery efforts over the past century have not been able to re-establish on-forest sub-populations of anadromous or resident fisheries that have been lost. While alien and hybridized species like brook trout and hatchery trout have been utilized to re-establish recreational fishing in vacant headwater streams, restoration of the original historically unique, genetically adapted sub-populations of fish has not occurred. Also irreversible are those instances in which direct mortality from stream crossings results in situations where fish eggs within redds and stream bottom gravels may be driven over and crushed. In those cases, while also irreversible, the losses would be associated with individuals, rather than populations.

*Irretrievable Commitments*: Irreversible commitments of fisheries resources takes place when fish migration barriers created by stream crossings limit or preclude upstream migration for spawning and juvenile production, thereby limiting a sub-population's size and long-term ability for survival or persistence. While commitments to maintaining stream crossings that create migration barriers can lead to both the irreversible and irretrievable loss of headwater fisheries spawning and production, these effects on headwater stream "habitat" is not irretrievable. Fish passage barriers can be replaced and headwater migration restored, depending upon funding availability. Replacement costs for migration barriers typically cost from $50,000 to $300,000 per crossing. However, the simple removal of fish migration barrier stream crossings can typically be accomplished for about 10% of the cost of replacement, leading to greater amounts of stream habitat recovery within available funding.

## 3.7 NOXIOUS WEEDS

### 3.7.1 CHANGES BETWEEN THE DRAFT EIS AND THE FINAL EIS

The DEIS identified analyzed the risk of invasive and noxious weed expansion and establishment using a complicated rating assessment and the number of designated routes connecting noxious weed infestations to weed-free areas. Several problems were associated with the DEIS analysis: 1) a weed risk rating was not identified for the No Action Alternative, and 2) it is not definitively known if areas labeled as "weed-free" are truly devoid of invasive or noxious species since weed mapping is based on species

presence not absence. Therefore an improved analysis was conducted for FEIS using linear miles of proposed travel routes that intersect with existing noxious and/or invasive weed infestations and acres of motorized access available for dispersed camping within existing invasive and noxious weed infestations.

### 3.7.2 ISSUES AND INDICATORS

**Noxious Weeds Issue 1:** Increased use of motorized routes may increase the risk of invasive and noxious weed expansion and establishment.

***Indicator:*** The linear miles of proposed travel routes that intersect with existing noxious and/or invasive weed infestations

**Noxious Weeds Issue 2:** Motor vehicle use for the purpose of accessing dispersed camping may increase the risk of invasive and noxious weed expansion and establishment.

***Indicator:*** The acres of motorized access available for dispersed camping within existing invasive and noxious weed infestations

### 3.7.3 METHODOLOGY FOR ANALYSIS

Invasive and noxious weed inventory data (circa 2008) is stored on the SCNF NRIS-PLANTS corporate database. A total of 2,183 inventory sites covering 59,868 acres have been mapped on the SCNF, excluding the FC-RONRW. Of the 57 Idaho State listed noxious weeds, 23 species occur within the project area.

The methodology for analyzing the effects of motorized route designation on invasive and noxious weeds focused on the interaction between invasive and noxious weed infestations and potential motorized routes and associated dispersed camping areas. A three-step approach was used to conduct the analysis, and in each case the No Action Alternative was compared to the Existing Condition, and the other available alternatives were compared to the No Action Alternative. First, each ranger district was evaluated using analysis of the corporate invasive species database to determine the quantity, spatial extent, and species composition of existing infestations compared to a given alternative. Second, each ranger district was evaluated to determine the miles of proposed routes that intersect existing infestations compared to a given alternative. Third, each ranger district was evaluated to determine the acreage of proposed areas of dispersed camping that intersect existing infestations compared to a given alternative.

The defined travel management project area covers more than three million acres of the SCNF, excluding the FCRONRW. The FCRONRW is excluded from the project area because motor vehicle travel is not a legal activity within the Wilderness boundaries.

The defined cumulative effects analysis area includes other public landownership, including BLM, State of Idaho, State of Montana, other USDA lands, and the FC-RONRW acres immediately adjacent to the project area. In addition, this analysis area includes adjacent private land. The cumulative effects analysis area extends beyond the analysis area because invasive and noxious weeds are extremely mobile; they are aggressive and capable of rapidly invading and expanding to this adjacent land.

The Noxious Weed Specialist Report contains the most complete and up-to-date data regarding the presence of invasive and noxious weeds within the project area. The invasive and noxious weed inventory data was obtained from NRIS-PLANTS corporate database and includes inventory data up to 2008. This data was the primary source for the analysis conducted on the project area with respect to invasive and noxious weeds. The SCNF Noxious Weed Management Program Final Environmental Impact Statement (September 2003) was used as the primary analysis reference.

### 3.7.4 COMPLIANCE WITH THE FOREST PLAN AND OTHER REGULATORY DIRECTION

The Challis National Forest LRMP (1987) provides direction regarding invasive plants:

- Forest-wide Direction: "The Forest will develop and maintain a coordinated program for control of selected noxious farm weeds" (IV-14); "new infestations and areas where noxious farm weeds are spreading will receive first priority for treatment" (IV-14); "activities that create or provide for the establishment of noxious weeds will be required for their control" (IV-16).
- Management Area (MA) Direction: MA #19—North Pahsimeroi, contains a direction specific to Range: "Control noxious weeds" (IV-159).

The Salmon National Forest LRMP (1988) provides direction regarding invasive plants:

- Plan Response to Planning Issue 14--Pesticides and Herbicides: "Noxious weeds will be controlled as needed to protect and enhance the value of other resources and to comply with State law. A sufficient amount of acreage will be treated to ensure the eradication of new infestations, prevent the spread of existing infestations to adjacent lands, and gradually eliminate existing infestations. Integrated Pest Management (IPM), the concept of using interdisciplinary expertise to plan for and implement a control program using a combination of biological, mechanical, chemical and preventive management will be emphasized" (p. 111-114, Chapter 3).
- Forest Management Direction: One of the primary goals is to "maintain adequate structural diversity of vegetation on Forest lands to ensure habitat for minimum viable or target populations of all wildlife species and to provide representations of the various ecological stages of endemic plant communities" (IV-I). Range goals include "control [ling] noxious weeds as needed to protect the value of other resources and comply with State law" (IV-2).
- Forest-wide Direction: "Treat 12. Treat noxious farm weeds in the following priority: a) Leafy spurge and Russian knapweed and spotted knapweed, yellow star thistle, and musk thistle; b) Invasion of new plant species classified as noxious farm weeds; c) Infestation of new areas; d) Expansion of existing infestation of Canada thistle and other noxious farm weeds; e) Reduce acreage of current infestations" (IV-25).

The Federal Noxious Weed Act of 1974 requires agencies to develop programs to eradicate undesirable plants and "establish and adequately fund an undesirable plants management program through the agency's budgetary process; complete and implement cooperative agreements with state agencies regarding the management of undesirable plant species on Federal lands under the agency's jurisdiction; and establish integrated management systems to control or contain undesirable plant species targeted under cooperative agreements" (7 USCA § 2418). In addition, federal law requires agencies to consult with state and local agencies to develop a coordinated weed management effort.

Under Idaho's Noxious Weed Control Act (Idaho Noxious Weed Rules 2006), it is unlawful for an individual to allow noxious weeds to propagate or go to seed on their land unless they are complying with an approved management plan. The law directs counties to develop weed control districts to plan and implement weed control efforts. County weed boards must make all reasonable efforts to develop and implement a noxious weed program covering all land within the district owned by the federal government. Idaho's noxious weed statutes and regulations require coordinated efforts among the state, agencies, and counties to control designated noxious weed populations.

The 1998 *Forest Service Strategy for Noxious and Nonnative Invasive Plant Management* provides the Forest Service with a "roadmap into the future for preventing and controlling the spread of noxious weeds and non-native invasive plants."

E.O. 13211 (February 1999) directs federal agencies to conduct activities that reduce invasive weed populations.

Twenty years ago, invasive and noxious weeds were not considered a threat, and Forest Plan direction was geared towards treating and controlling noxious weeds at a relatively small scale. Since then, the emphasis by the SCNF on invasive and noxious weed management has greatly increased, and the Forest is in compliance with the available direction regarding the management of invasive and noxious weeds. In addition, there are numerous federal laws that also address the need of landowners to control noxious weeds on their property and to prevent the spread of noxious weeds onto other properties (E.O. 13112, 1999; Federal Noxious Weed Act 1974). The Forest is also in compliance with these laws with respect to controlling the spread of noxious weeds; it has implemented IWM principles and BMPs. Idaho State law also requires the control of noxious weeds, and the Forest is additionally in compliance with all Idaho State law concerning weed management.

**Design Features**

The risk of invasive and noxious weed expansion or establishment does not directly relate to the designation of motorized routes. Several variables affect the potential for invasive and noxious weed infestations to establish and spread. Motorized vehicle use during different seasons of the year aids in the spread of invasive and noxious weeds in different ways. Consequently, there are not relevant design features or mitigation measures under consideration that reduce the risk of invasive and noxious weed expansion.

**Monitoring**

Monitoring is an integral part of Integrated Weed Management. The Forest would continue to monitor current invasive and noxious weed infestations for reductions or expansions in gross area and/or density. The Forest has a goal of monitoring the majority of all treated sites. Monitoring would be performed using both qualitative and quantitative methodology.

### 3.7.5 EXISTING CONDITION

The number and distribution of motorized routes within the project area present a challenge to invasive and noxious weeds management on the SCNF. There are over 4,000 miles of authorized motorized routes spread over 3.1 million acres. In addition, the Forest estimates that there is an additional 2,700 miles of unauthorized routes. Each of these routes is a potential spread vector for weed seed. Given the size and extent of the motor vehicle travel route system within the project area, the potential for weed seed to be relocated via motorized equipment is great. The existing travel management system authorizes motorized cross-country travel on 980,700 acres within the project area, posing a management challenge by not limiting motor vehicle travel to specific routes. The potential for ground disturbance and seed transportation is high, yet since it is not associated with a route, it is difficult to manage as a spread vector since it could occur anywhere within 980,700 acres, which is about 30% of the project area.

In addition to almost a million acres open to motorized cross-country travel and over 6,700 miles of both authorized and unauthorized motor vehicle travel routes, the existing travel management system allows for off-road motorized access for dispersed camping, fuelwood gathering, and game retrieval within 300 feet of an authorized route. Although this disturbance is easier to monitor and manage as a spread vector, it still has the potential for ground disturbance and weed seed spread. Under the existing travel

management system, over 400,000 acres are available for motorized access to dispersed camping. Despite the presence of numerous spread vectors for invasive and noxious weed seed, at this time approximately 60,000 acres or 2% of the project area is occupied by invasive and noxious weed infestations. Over 90% of these infested areas can be attributed to four species (spotted knapweed, Canada thistle, hoary alyssum, and musk thistle).

### 3.7.6 EFFECTS COMMON TO ALL ALTERNATIVES

An effect common to all alternatives is that some portion of the motor vehicle travel route system within the project area would intersect with known invasive and noxious weed infestations, which has the potential to spread weed seed. What varies among the alternatives is the extent of that interaction. Also common to all alternatives is the fact that some portion of the project area would be available for motorized access for dispersed camping opportunities and that this area would intersect with existing infestations, which also has the potential to spread weed seed. The difference between the available alternatives, in this case, is the quantity of acres that intersect the area available for these dispersed camping opportunities.

### 3.7.7 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

The SCNF has undertaken extensive inventories of invasive and noxious weeds since the mid-1980s. The recognition of the importance of invasive species management has increased dramatically since the first inventories were taken, with a consequent increase in funding levels and personnel assigned to it. Whereas twenty years ago the Salmon and Challis National Forests treated only 60-120 acres of invasive and noxious weeds annually (USDA FS 2003: 1-4 to 1-5), in 2008 over 6,000 acres of invasive and noxious weeds were treated within the project area. Table 3-31 displays the invasive and noxious weed species known to exist within the project area as well as the number of infestations and acres infested by species. Infestations by district can be found in the Noxious Weed Specialist Report in the FEIS Project Record.

Table 3-31. Invasive and noxious weed species known to exist within the project area.

| Common Name | # of Infestations | % # of Infestations | Infested Area (Acres) | % Infested Areas (Acres) |
|---|---|---|---|---|
| Spotted Knapweed | 778 | 35.64% | 47,887 | 79.99% |
| Leafy Spurge | 381 | 17.45% | 1,161 | 1.94% |
| Canada Thistle | 266 | 12.19% | 2,457 | 4.10% |
| Musk Thistle | 158 | 7.24% | 2,178 | 3.64% |
| Hoary Alyssum | 113 | 5.18% | 2,343 | 3.91% |
| Rush Skeletonweed | 107 | 4.90% | 176 | 0.29% |
| Yellow Toadflax | 98 | 4.49% | 296 | 0.49% |
| Gypsyflower | 56 | 2.57% | 888 | 1.48% |
| Sulphur Cinquefoil | 50 | 2.29% | 361 | 0.60% |
| Black Henbane | 44 | 2.02% | 385 | 0.64% |
| Common Tansy | 39 | 1.79% | 60 | 0.10% |
| Bull Thistle | 36 | 1.65% | 1,107 | 1.85% |
| Whitetop | 15 | 0.69% | 48 | 0.08% |
| Oxeye Daisy | 11 | 0.50% | 119 | 0.20% |
| Dalmatian Toadflax | 8 | 0.37% | 136 | 0.23% |
| Broadleaved Pepperweed | 5 | 0.23% | 2 | 0.00% |
| Scotch Cottonthistle | 4 | 0.18% | 13 | 0.02% |
| Puncturevine | 4 | 0.18% | 7 | 0.01% |
| Common St. Johnswort | 4 | 0.18% | 4 | 0.01% |
| Dyer's Woad | 2 | 0.09% | 0 | 0.00% |

| Common Name | # of Infestations | % # of Infestations | Infested Area (Acres) | % Infested Areas (Acres) |
|---|---|---|---|---|
| Hardheads | 2 | 0.09% | 0 | 0.00% |
| Curveseed Butterwort | 1 | 0.05% | 240 | 0.40% |
| Saltcedar | 1 | 0.05% | 0 | 0.00% |
| Total = 23 species | 2,183 | | 59,868 | |

Table 3-32: Linear miles of motorized routes that intersect with known invasive and noxious weed infestation by alternative and district

| | No Action | | Alt 1 | | Alt 3 | | Alt 4 | | Alt 5 | |
|---|---|---|---|---|---|---|---|---|---|---|
| District | Available Miles | Miles Intersect Weeds | Available Miles | Miles Intersect Weeds | Available Miles | Miles Intersect Weeds | Available Miles | Miles Intersect Weeds | Available Miles | Miles Intersect Weeds |
| Challis-Yankee Fork | 965 | 66 | 908 | 65 | 712 | 64 | 952 | 65 | 847 | 65 |
| Leadore | 644 | 90 | 308 | 65 | 240 | 66 | 516 | 78 | 352 | 71 |
| Lost River | 791 | 87 | 631 | 83 | 506 | 78 | 729 | 90 | 661 | 88 |
| Middle Fork | 304 | 2 | 255 | 2 | 241 | 2 | 278 | 2 | 267 | 2 |
| North Fork | 934 | 316 | 525 | 226 | 457 | 216 | 723 | 279 | 537 | 233 |
| Salmon-Cobalt | 1508 | 361 | 796 | 257 | 749 | 237 | 1152 | 297 | 870 | 252 |
| Total | 5147 | 922 | 3,423 | 698 | 2,905 | 663 | 4,350 | 811 | 3,534 | 712 |

Table 3-33: Acres available for motorized access for dispersed camping and acres of invasive and noxious weed infestations that intersect with available acres by alternative and district

| | No Action | | Alt 1 | | Alt 3 | | Alt 4 | | Alt 5 | |
|---|---|---|---|---|---|---|---|---|---|---|
| District | Available Acres | Acres Intersect Weeds | Available Acres | Acres Intersect Weeds | Available Acres | Acres Intersect Weeds | Available Acres | Acres Intersect Weeds | Available Acres | Acres Intersect Weeds |
| Challis-Yankee Fork | 52,860 | 1,115 | 32,539 | 1,013 | 16,380 | 464 | 34,481 | 1,007 | 30,619 | 1,004 |
| Leadore | 56,439 | 1,498 | 11,502 | 958 | 5,739 | 546 | 19,829 | 1,110 | 11,556 | 982 |
| Lost River | 61,528 | 2,359 | 27,116 | 2,117 | 13,249 | 1,186 | 31,126 | 2,263 | 22,693 | 1,283 |
| Middle Fork | 41,212 | 60 | 9,757 | 60 | 5,677 | 38 | 10,852 | 64 | 9,274 | 64 |
| North Fork | 40,622 | 4,742 | 11,725 | 2,498 | 6,994 | 1,151 | 15,202 | 3,004 | 11,889 | 2,519 |
| Salmon-Cobalt | 148,928 | 5,681 | 27,613 | 3,451 | 19,842 | 1,706 | 39,022 | 3,741 | 30,717 | 3,275 |
| Total | 40,589 | 15453 | 120,251 | 10,096 | 67,880 | 5,091 | 150,512 | 11,189 | 116,748 | 9,127 |

### ***Direct and Indirect Effects Common to All Alternatives***

Generally, there are no direct effects from the designation of motorized routes to invasive and noxious weed spread or establishment. Designating a motorized route does not in itself cause invasive and noxious weeds to spread or become established in new or previously weed-free areas.

Direct effects from newly designated motorized routes and dispersed off-road camping can disturb surface native plant and soil resources, reduce ground cover, crush existing invasive and noxious weed plants, and pick up and disperse invasive and noxious weed seeds.

Invasive and noxious weed establishment and expansion can occur from the ground disturbance caused by off-road travel and camping activities accompanied with invasive and noxious weed seed dispersal.

The risk of expanding and establishing invasive and noxious weeds from travel access and camping is dependent upon the number of acres of existing invasive and noxious weeds within the camping area and the miles of routes that run through existing invasive and noxious weed infestations.

### ***Direct and Indirect Effects of the Action Alternatives***

Motorized off-road travel for dispersed camping purposes is greatly reduced in Alternatives 1, 3, 4, and 5 as compared to the No Action Alternative, thereby reducing the number of acres potentially disturbed by activities associated with motor vehicle use and the potential for weed establishment or spread.

Alternatives 3, 4, and 5 show decreased risks of invasive and noxious weed expansion and establishment in the project area compared to Alternative 1. This change in risk is due to the decrease in the miles of routes that pass through existing invasive and noxious weed infestations and the accompanying decrease in acres available to dispersed camping.

Alternative 4 poses the greatest potential for invasive and noxious weed spread or establishment of any of the action alternatives. It proposes the most miles of routes which intersect with known noxious weed infestations, as well as the largest number of acres available for motorized access associated with dispersed camping.

The potential for invasive and noxious weed establishment or spread differs only slightly between Alternative 5 and the No Action Alternative. Alternative 5 would designate 2,670 miles of roads and 864 miles of motor vehicle trails for a total of 3,534 miles of motorized routes Forest-wide, a decrease as compared to the No Action Alternative. Conversely, this alternative reduces somewhat the potential for spread and establishment of invasive and noxious weeds by reducing the area available to motor vehicle travel for dispersed camping by 284,841 acres associated with those routes. Approximately 116,748 acres associated with those routes would be available for motorized access to dispersed camping opportunities.

## 3.7.8 CUMULATIVE EFFECTS

Although travel corridors (both motorized and non-motorized) are prime vectors of invasive and noxious weed expansion, other activities also contribute to their expansion (USDA FS 2003: 3-3 to 3-5). Any ground-disturbing activity increases the risk of invasive and noxious weed establishment due to vegetation disturbance and surface soil alteration. During project development, all authorized ground-disturbing project activities (mining, timber harvesting, range improvement projects, etc.) are designed with BMPs (USDA FS 2001a) geared towards mitigating invasive and noxious weed establishment. Big game animals and domestic livestock grazing also contribute to invasive and noxious weed establishment as a means of seed dispersal and the potential for ground-disturbing activities (USDA FS 2003: 3-3 to 3-5). The risk of invasive and noxious weed expansion from these activities is relatively constant, resulting in little or minimal cumulative effects.

In addition to these effects, the SCNF recognizes that adjacent ownership lands, both public and private, may have some level of infestation by invasive and noxious weeds. Where travel routes intersect with lands outside the project area that are infested with invasive and noxious weeds, there is a potential for invasive and noxious weed establishment or expansion in the project area. Depending on the status of infestations on adjacent lands, a cumulative effect in weed spread or establishment may occur.

Designating motorized routes is not considered an irreversible or irretrievable commitment of resources because roads and trails could be reclaimed or restored returning the landscape to non-committed uses.

# 3.8 CULTURAL RESOURCES

## 3.8.1 CHANGES BETWEEN THE DRAFT EIS AND THE FINAL EIS

- Tribal consultation and clarification of Tribal Treaty Reserved Rights added for Shoshone-Bannock Tribes and Nez Perce Tribe.
- Text and appendices were revised to reflect changes to various alternatives.
- DEIS Revised Proposed Action Alternative (#2) was not carried forward in the analysis, but was used as the starting point for developing the Preferred Alternative (#5).
- The cultural resource issue and indicators were improved to better compare the action alternatives.
- Method of analysis between DEIS and FEIS was refined to reflect results of cultural resource surveys.
- Analysis of the FEIS Preferred Alternative was added.

## 3.8.2 ISSUES AND INDICATORS

**Cultural Resources Issue 1:** Motor vehicle travel on user-created routes and trails that were previously non-motorized, as well as motorized access for dispersed camping have the potential to adversely impact significant cultural resources which the SCNF is mandated to protect.

***Indicators:***

- Miles of user-created routes and trails whose use will change from non-motor vehicle use to motor vehicle use
- Miles of user-created routes and trails whose use will change from non-motor vehicle use to motor vehicle use requiring cultural resource survey
- Number of known sites associated with the above routes
- Number of eligible sites associated with the above routes
- Number of unevaluated sites associated with the above routes

## 3.8.3 METHODOLOGY FOR ANALYSIS

The focus of cultural resource investigations for SCNF travel management purposes was on user-created routes and on the authorization of routes that had previously been closed to motor vehicle use (USDA FS 2005:1-2). New construction of roads and trails is not planned as part of this NEPA analysis. However, routes added to the travel system would be subject to periodic maintenance activities depending on their level of use. These maintenance activities may also have a potential to affect eligible cultural resources.

Analysis methods differed somewhat between the DEIS and the FEIS. For the DEIS, a GIS exercise was first undertaken to determine whether any of the user-created routes or trails whose use will change from non-motor vehicle use to motor vehicle use identified in Alternatives 2, 3 or 4 had been previously surveyed for cultural resources. A number of known sites in association with the routes were identified during the GIS analysis. An associated site was defined as being within 300 feet (91 meters) of a route. This distance was chosen in order to account for the potential effects of access to dispersed camping. Known sites in association with a route were analyzed for potential effect and assigned a risk assessment value between 1 and 4:

1. Route crosses or leads to site; adverse effect likely due to nature of site and impacts associated with travel routes – drop route from consideration.
2. Route crosses site; potential for adverse effect from vehicle use and increased public access – regular monitoring recommended; route maintenance not approved until mitigation measures are in place.
3. Route is within 300 foot of site; potential for adverse effect from dispersed camping – regular monitoring recommended with future mitigation possible.
4. No effect from travel route designation.

Several eligible sites were assigned a risk assessment value of '1' and the associated route was subsequently dropped from consideration. Known sites that have been determined to not be eligible for inclusion to the National Register were assigned a risk assessment value of '4' and will not be analyzed further. Known sites that had not been evaluated for the National Register were assessed as part of the field work conducted during the summer of 2008.

For routes identified in Alternative 2 as requiring cultural resource survey, one hundred percent (100%) of high probability areas were inventoried for all user-created routes and trails whose designation changed from non-motor vehicle use to motor vehicle use. If cultural resources were discovered during this field work, their National Register eligibility status was determined and an assessment of effect was made. If significant cultural resource properties were identified, mitigation measures were recommended to achieve a "no adverse effect" determination. This includes recommendations to drop specific routes from consideration when designation would adversely affect a site.

Management direction for DEIS field work was to conduct intensive cultural resource surveys for each user-created route or trail whose use will change from non-motor vehicle use to motor vehicle use identified in the DEIS Revised Proposed Action (Alternative 2). Survey buffers to incorporate access to dispersed camping were not to be included in this field work. A total of 211.85 miles of survey was conducted on routes identified in the DEIS Revised Proposed Action and an inventory report was submitted to the SHPO as part of the NHPA Section 106 process.

A number of new routes (189 routes totaling 87.45 miles) were added to the Preferred Alternative (Alternative 5) which had not been surveyed for cultural resources. Field work for those routes is planned for spring/summer 2009. Routes that have not been surveyed would not be designated until all requirements of Section 106 of the NHPA have been met.

In addition to the additional routes identified for the Alternative 5, management direction has now been finalized in terms of access to dispersed camping. Only the routes themselves were inspected during the surveys conducted in support of Alternative 2 for the DEIS. Alternative 5 now calls for 300 feet on either side of a user-created road to accommodate access to dispersed camping. Buffers to incorporate access to dispersed camping were not included in the clearance surveys conducted in 2008. This means that most user-created roads identified in Alternative 5 had not been surveyed adequately for access to dispersed camping. Field work to rectify this situation is planned for spring/summer 2009. Access to dispersed camping adjacent to user-created roads would not be designated until surveys are complete and SHPO concurrence is received. Access to dispersed camping would not be allowed along trails, so surveys outside of the trail prism are not required.

Analysis for the FEIS was similar to that described above for the DEIS with several important modifications: (1) routes were added and subtracted to Alternatives 3 and 4 based on public comments on the DEIS; (2) the revised proposed action (Alternative 2) is not being carried forward, and (3) a new alternative (the Preferred Alternative, #5) was developed. Once the alternatives were identified, a GIS

exercise was again undertaken to determine whether any of the user-created roads or trails whose use would change from non-motor vehicle use to motor vehicle use identified in the revised Alternatives 3, 4 or 5 had been previously surveyed for cultural resources. Data gathered during the surveys in support of the DEIS was combined with the GIS data to arrive at risk assessments and recommendations. Known sites associated with a route were analyzed for potential effect and assigned a value between 1 and 6:

1. Route has been surveyed and adverse effects to NRHP eligible sites have been identified. Drop route from consideration.
2. Route has been surveyed and no adverse effects to NRHP eligible sites from route designation were identified. However, adverse effects to NRHP eligible sites from access to dispersed camping were noted. Do not allow access to dispersed camping.
3. Route has been surveyed and no adverse effects to NRHP eligible sites from route designation were identified. However, there is a potential for adverse effects to NRHP eligible sites from access to dispersed camping. Allow access to dispersed camping with regular monitoring recommended. Future mitigation is possible if monitoring reveals adverse effects.
4. Route has been surveyed and no adverse effects to NRHP eligible sites from route designation were identified. However, survey for access to dispersed camping has not occurred so potential effects are unknown. Do not allow access to dispersed camping until surveys are complete, assessments have been made and consultation with SHPO and affected Tribes (if applicable) has been conducted.
5. Survey of route and access to dispersed camping has not occurred so potential effects are not known. Do not designate route until surveys are complete, assessments have been made and consultation with SHPO and affected Tribes (if applicable) has been conducted.
6. Route and access to dispersed camping has been surveyed and no adverse effects to NRHP eligible properties have been identified. No adverse effect from travel route designation.

Specific cultural resource data pertaining to Alternatives 3, 4, and 5 is provided in Appendices A, B, and C of the Cultural Resources Specialist Report (Project Record). Since Alternative 3 is essentially a subset of the routes identified in Alternatives 2 and 5, cultural resource surveys conducted in support of those alternatives will be sufficient for Alternative 3. Cultural resource inventory for all identified routes in Alternative 4, however, was not conducted due to time and financial constraints. While a number of these routes have already been inspected through past project undertakings (as well as for Alternatives 2 and 5), many more remain to be surveyed. The remainder of Alternative 4 routes could be added to the travel system (as appropriate) at a later time once cultural resource surveys have been conducted and mitigations for associated sites are in place. Appendix B of the Cultural Resources Specialist Report contains a list of Alternative 4 routes that have already been cleared for cultural resources.

The best information and data available were used in preparation of this report. The most recent cultural resource GIS data for the Forest was analyzed and field work undertaken in support of this planning effort was conducted in accordance with Forest Service Manual 2360. Sources of information examined as part of the background research to identify previously identified heritage resources and general historic themes common to the project area included Forest Site and Project Atlases and Files, Forest and local histories, Forest Land Status Atlas and files, Government Land Office and Minerals Plats, and early transportation and trail maps.

## 3.8.4 COMPLIANCE WITH THE FOREST PLAN AND OTHER REGULATORY DIRECTION

Each of the alternatives comply with the Forest Plan standards and guides for cultural resources. Travel route designation is considered an undertaking requiring evaluation under Section 106 of the NHPA (USDA FS 2005:1-2). Therefore, routes would not be available to motor vehicle use until all cultural resource surveys are complete, mitigations for associated sites are in place, and consultation with SHPO has occurred.

*The Forest Service Manual (FSM) 2360 - Recreation, Wilderness, and Related Resource Management* contains the Forest Service's policies for cultural resources. Sections of several other manuals and handbooks also cover aspects of cultural resource management, including *Forest Service Handbook (FSH) 1909.15- Environmental Policy and Procedures, Chapter 60.1, Physical Factors,* which provides guidance on cultural resources including archeological, historical, and architectural resources (NTHP 2008).

The LRMP for the Salmon National Forest (USDA FS 1988) identifies goals, objectives, and standards and guidelines that relate to cultural resources within the route designation area. The following management direction applies to the route designation process:

- Locate, determine the significance of, and where appropriate preserve, protect and interpret historical and archaeological sites.
- Nominate or recommend cultural resource sites to the National Register of Historic Places.
- Protect, maintain, find an adaptive use for, or interpret all cultural resources on National Forest System lands which are listed on the National Register of Historic Places, the National Register of Historic Landmarks, or have been determined to be eligible for the National Registers.
- Protect and foster public use and enjoyment of cultural resources.
- Consult with the State Historic Preservation Officer on project effect and site significance (USDA FS 1988: IV-3; IV-6-7).

Similarly, the LRMP for the Challis National Forest (USDA FS 1987) also identifies goals, objectives, and standards and guidelines for managing cultural resources, including the following directly relevant to travel management:

- Identify, protect, interpret, and manage the significant cultural resources on Forest lands.
- All land-disturbing activities will be preceded by a cultural resource inventory (USDA FS 1988: IV-2-3).

**Design Features**

A route would not be designated for motor vehicle use until all cultural resource surveys are complete and mitigations for associated sites are in place. The Forest Archaeologist shall review and approve annual maintenance plans for both roads and trails. Maintenance activity within or adjacent to significant archaeological sites would not be approved unless mitigations measures are in place. Mitigation measures include closing routes or mitigating site disturbance through data recovery or avoidance during scheduled maintenance activities. Although these are examples of mitigation measures which may be considered, the list is not exhaustive and the SCNF Heritage Resources staff in consultation with the Idaho SHPO, Tribes, travel managers, and interested parties will consider all mitigation measures which will preserve and protect these non-renewable resources. Areas of high probability associated with this route designation project would be surveyed and evaluated by a qualified archaeologist in an effort to locate, record, and assess any historic and/or archaeological

properties. In the event that significant archaeological and/or historical resource sites are discovered to be present, and any proposed action will have an adverse effect on the site, mitigation would occur in consultation with the Idaho SHPO. Consultation with the Shoshone-Bannock Tribes and the Nez Perce Tribe would also occur if an affected site is identified as Native American in origin.

**Monitoring**

Sites eligible for the National Register of Historic Places that have been assigned a risk assessment rating of '3' would be monitored regularly to determine if adverse effects related to travel route designation are occurring. If the condition of a particular site is found to have significantly deteriorated due to travel route designation, mitigation of the adverse effects would be conducted. All mitigation would be carried out in consultation with the SHPO and affected Tribes.

## ***Tribal Consultation***

Notification and involvement of the Shoshone-Bannock Tribes and the Nez Perce Tribe concerning Native American cultural resource matters was carried out as specified by the Code of Federal Regulations 36 CFR 296.7, 36 CFR 800 Section 101(d)(6)(B) and in accordance with Presidential Memorandum concerning government-to-government consultation signed April 29,1994. Federally-recognized Tribes with aboriginal territory within the current project area include the Shoshone-Bannock Tribes and the Nez Perce Tribe. Under Section 106 of the NHPA, federal agencies are required to consult with any Indian Tribe that may attach religious or cultural significance to properties located within the project area (16 USC 470a(d)(6)(A) and (B)). Traditional Cultural Properties (TCPs) can include the locations of historic events, sacred areas, sources of raw material for tool making, traditional hunting and plant gathering areas, and natural features. The Forest Service has a federal trust responsibility to the Tribes to manage Forest Service lands under their jurisdiction in a manner to preserve and protect treaty resources on behalf of the Tribes.

A revised Travel Plan has the potential to affect Tribal members' ability to use and access the SCNF including hunting, fishing, and gathering. Other Tribal concerns could be the potential for travel routes to contribute to the spread of noxious weeds which can affect native plant populations. This concern is discussed more specifically under Noxious Weeds, Section 3.7. Travel routes have the potential to impact water quality, fish and fish habitat, and wildlife and wildlife habitat, which could also concern Tribal members. The existing condition for these resources is discussed under their own heading in this chapter. Few TCPs have been documented through consultation with the Tribes. This is primarily due to privacy issues. For this analysis, we assume that the SCNF was, and is, used for traditional activities such as hunting, fishing, and gathering and traditional practices such as ceremonies and religious practices. To protect the privacy of the Tribes, these activities will be analyzed in general terms. Many Tribal members hunt, fish, and gather for subsistence and to maintain their traditional way of life. Access for these activities is important. Some Tribal members rely on motorized access to reach forest areas and some rely on full-sized vehicle access to reach forest areas. The designation of routes under this Travel Management Plan would not affect Tribal reserved treaty rights. The Shoshone-Bannock and Nez Perce Tribes would continue to be able to exercise their off-reservation treaty rights. Further Government-to Government consultation will be conducted regarding motorized access for traditional activities.

A letter dated August 1, 2007 was sent to the Nez Perce Tribal Executive Committee (NPTEC) summarizing the Proposed Action and inviting the NPTEC to comment on the proposal. No comments were received from the tribe. On September 26, 2008, the DEIS was released for public comment and copies were sent to the Tribe, but no comments were received. During government-to-government consultation between the NPTEC and representatives of eight national forests (SCNF, Nez Perce, Clearwater, Umatilla, Boise, Payette, Wallowa-Whitman, and Gallatin National Forests), travel

management issues were discussed at length. The consultation occurred on March 26, 2009 in Lewiston, ID. The main concern voiced by the Tribe was that no erosion of Treaty reserved rights occurs as a result of the new Travel Management Plan. A pre-release version of the FEIS was submitted to the Tribe for comment on June 8, 2009.

## 3.8.5 EXISTING CONDITION

The Existing Condition contains 980,423 acres open to cross-country travel and 4,039 miles of authorized motor vehicle routes (designated roads and motor vehicle trails). In addition, the Existing Condition contains 2,709 miles of unauthorized routes within the SCNF (1,594 miles in restricted areas and 1,108 miles in open areas). Under the Existing Condition, access to dispersed camping is allowed within 401,589 acres of the Forest. Approximately 5% of the Forest has been surveyed for cultural resources and a total of 2,524 sites have been documented. Of these, 610 are considered eligible for the National Register of Historic Places (NRHP).

### Direct and Indirect Effects

Under the Existing Condition, motorized cross-country travel is allowed and use of unauthorized routes continues. Unauthorized routes in restricted areas of the Forest are violations of current management and pose potentially significant threats to cultural resources. The vast majority of the Forest has not been surveyed for cultural resources, so the direct effects of this use are not currently known. However, with the proliferation of unauthorized routes, increased impacts to cultural resources can be expected. If the Existing Condition were to continue, potential adverse effects to cultural resources would be much greater than any of the other alternatives considered here.

### Cumulative Effects

Cumulative effects to cultural resources relate to potential effects to National Register-eligible properties resulting from the impacts of actions in the past, present, and the reasonable foreseeable future. Under the Existing Condition, cumulative effects to cultural resources could include any projects with past, present, or future ground-disturbing activities. For past and present projects, cultural resource surveys would have been conducted and adverse effects mitigated through consultation with SHPO. Future projects occurring on federal land would require prior cultural resource surveys and if potential adverse effects are identified, mitigations measures would be designed and SHPO consultation would be conducted.

## 3.8.6 AFFECTED ENVIRONMENT

The history and prehistory of the SCNF region has been the subject of scholarly interest for many years (Butler 1978, 1986; Cannon et al. 1998; Chatters 1978; Earls et al. 1993; Franzen 1978; Greiser et al. 1992; Guisto and Matz 2004; Hoffert 2002; Holmer 1986; Holmer and Ross 1985; Kautz 1993; Knudson et al. 1981; Kopperl and Renk 2005; Leonhardy and Thomas 1983, 1984; Matz 1994, 1995, 1996; Peterson and Gaston 1991; Ross 1984, 1985; Ross and Holmer 1986; Rossillon 1982; Rushmore et al. 1993; Smith 1973; Swanson 1972; Swanson et al. 1964; Swanson and Bryan 1964; Swanson and Sneed 1966; Torgler 1993; USDA Challis National Forest 1972a; Wildesen 1982; and references contained within). Tribal history goes back to at least 12,000 years before present (B.P.), with use of the area by the Shoshone-Bannock Tribes, the Nez Perce Tribe, and their predecessors at various locations and times. Euro-American use of the area has occurred since at least 1805, when the Lewis and Clark expedition passed through the area. Other Euro-American and Chinese immigrants settled in the area primarily for mining and agricultural pursuits starting in the late 1860s. Rossillon (1982) and Matz (1995) identify a number of themes important to the history and prehistory of the Forest. These themes include Native American utilization and occupation, early Euro-American exploration, mining, timber

production, transportation, agriculture and ranching, the Civilian Conservation Corp, Forest Service administration, and recreation.

Sources of information examined as part of background research to identify previously identified heritage resources and general historic themes common to the project area included Forest Site and Project Atlases and Files, Forest and local histories, Forest Land Status Atlas and files, Government Land Office and Minerals Plats, and early transportation and trail maps.

Only about 5% of the SCNF has been surveyed for cultural resources. Projects consist primarily of inventories, but also include testing, and a few full-scale excavations. Over 3,000 sites have been recorded on the Forest as a result of these projects and at least 1,300 sites have been determined to be eligible for the National Register of Historic Properties.

**Shoshone-Bannock Tribes**

Prehistoric use of southern Idaho has occurred for at least the last 12,000 years (Butler 1986) and significant Native American sites are present throughout the Salmon-Challis National Forest. The types of sites identified on the Forest include villages, lithic scatters, campsites, stone quarries, rock cairns, talus storage pits, pictographs and big horn sheep hunting traps. Many of the prehistoric sites have been determined eligible to the National Register on the basis of their research value. Sites such as the villages, the big horn sheep trap and quarry locations are unique and rare on the Forest and require careful consideration in project planning to avoid disturbance from forest undertakings.

The Shoshone-Bannock peoples' aboriginal lands are vast and far-ranging and encompass a large geographic area of the United States. Rivers provided for the subsistence needs of the various bands, including the fish eaters, *Agai-dika*, the buffalo eaters, *Kutsu-dika*, the bighorn sheep eaters, *Tudu-dika*, and other bands that eventually ended up at the Fort Hall Reservation. Natural resources associated with a riverine ecosystem provided food, medicine, shelter, clothing and other uses and purposes intrinsic to traditional practices. Hunting for fish, wildlife and native plant resources was an important subsistence practice. Intrinsic to these activities is transportation. The topography of the Tribes' aboriginal area required the use of a complex network of trails which crisscrossed along rivers, mountain ranges, and passes. Many of these trails later became travel routes still utilized today.

In June 1867, an Executive Order established the Fort Hall Indian Reservation, as a collective place to consolidate the various bands of Shoshone, Bannocks and even other tribes, from their aboriginal lands, clearing the way for European-American settlers, such as ranchers and miners who desired rich resources present on aboriginal lands. The United States signed the Fort Bridger Treaty of 1868 with Shoshone and Bannock headmen, relinquishing any further claims to lands and title, but expressly reserving the right to hunt, fish, and gather on unoccupied lands in the United States, in Article 4 of the Treaty.

The Lemhi Reservation was established by executive order on February 2, 1875 and encompassed 100 square miles including portions of what would later be encompassed by the Salmon-Challis National Forest. The reservation was home to about 700 *Agai-dikas*, *Tudu-dikas*, and Northern Bannocks. Opposition to the reservation by settlers and Washington policy makers was immediate, resulting in the cession of the reservation by an Act of Congress in 1888. Conflicts between settlers, missionaries, and miners and Indian tribes occurred throughout the 19$^{th}$ century, resulting in the forced removal of tribal people from the area. Many Lemhi Shoshone refused to leave the Lemhi Reservation until 1907 when over 500 traveled to the Fort Hall Reservation. The Fort Bridger Treaty of July 3, 1868 between the Shoshone-Bannock Tribes and the United States retained hunting and fishing rights to Shoshone–Bannock tribal members on "all unoccupied lands of the United States." This right applies to all public domain lands that were reserved for NFS purposes that are presently administered by the SCNF. These

rights are still in effect, and management actions recognize these rights. The Lemhi Shoshone continue to travel back to the Lemhi Valley to hunt, fish, and visit with relatives who remained behind in Salmon. Tribal members continue to exercise off reservation treaty rights and return to aboriginal lands to practice their unique culture and traditions.

**Nez Perce Tribe**

In the Nez Perce Treaty of 1855, Article 3, the United States of America and the Nez Perce Tribe mutually agreed that the Nez Perce retain the right of "… taking fish at all usual and accustomed places in common with citizens of the Territory [of Idaho]; and of creating temporary buildings for curing, together with the privilege of hunting, gathering roots and berries, and pasturing horses and cattle…" These rights apply to all public domain lands that were reserved for NFS purposes that are presently administered by the SCNF. These rights are still in effect, and management actions recognize these rights.

### 3.8.7 ENVIRONMENTAL CONSEQUENCES OF THE ALTERNATIVES

The effect of travel route designation on cultural resources varies by alternative (Table 2-29). Selecting any of the action alternatives would provide better protection for sensitive cultural resources than the No Action Alternative, which allows motorized cross-country travel in open areas of the current Travel Plans.

#### *Effects Common to All Action Alternatives*

The project area includes the approximate 3.1 million acres under the administration of the SCNF, excluding the approximate 1.3 million acre FC-RONRW which is congressionally mandated as non-motorized. Cultural resources are located throughout the project area. Implementation of the 2005 Travel Management Rule, which prohibits cross-country travel off the designated system, would benefit cultural resources by significantly reducing the potential for inadvertent damage to sites by motor vehicles and dispersed camping. Blatant vandalism to sites would also be reduced since fewer routes would be available for use. These beneficial effects would occur regardless of the alternative selected.

Some of the routes had not been surveyed for cultural resources at the time this specialist report was prepared. This is true for Alternatives 3, 4, and 5. Since there are no changes from non-motor vehicle use to motor vehicle use trails and there are no user-created routes designated in Alternatives 0 (the No Action Alternative) and 1 (the Designated System Alternative), cultural resource survey is not required and no project effects are recognized. However, 31% (87.45 miles) of the user-created routes and trails previously closed to motor vehicles identified in Alternative 5 require cultural resource survey before they can be designated for travel. For Alternative 3 this number is 15% (12.41 miles) and for Alternative 4 this number is 50% (367.96 miles). Some (three for Alternative 3, 27 for Alternative 4 and seven for Alternative 5) of the sites that are known to be associated with the routes have not been assessed for eligibility for the National Register so it is currently unknown what the effects of route designation will be on them. The conclusions offered for each alternative currently lack complete data. Therefore, each alternative is discussed in terms of currently known information for each site associated with the routes in question even though that information is incomplete.

Individual travel route designation would not occur until all cultural resource surveys have been conducted and mitigations are in place. For Alternative 5, one hundred percent (100%) of high probability areas would be inventoried for all user-created routes and trails whose designation changed from non-motor vehicle use to motor vehicle use where cultural resource surveys have not been previously conducted. If cultural resources are discovered during this field work, their National Register eligibility status would be determined and a risk assessment value would be assigned following the

protocols described above. If significant cultural resource properties are identified, mitigation measures would be recommended to achieve a "no adverse effect" determination. In addition, those known sites that are currently unevaluated for the National Register would be assessed and if found to be eligible would undergo risk analysis and mitigation if appropriate.

## *Alternative 0 – No Action*

Alternative 0 contains a total of 4,039 miles of authorized motor vehicle routes and 1,108 miles of known unauthorized routes which occur in areas open to motor vehicle travel on current Travel Plan maps. Currently, there are 980,423 acres open to motorized cross-county travel on the SCNF. All NFS trails in open areas displayed on the current Salmon National Forest and Challis National Forest Travel Plan maps (whether actually used for motorized recreation) are interpreted as motor vehicle trails in the calculation of mileages because no official designations allowing or prohibiting motor vehicle use on these trails are currently in effect.

**Direct and Indirect Effects**

Under Alternative 0, cross-country motor vehicle travel is not eliminated and the current system of designated motorized routes is retained. Unauthorized routes in areas not currently open to cross-country travel would not be designated. If Alternative 0 is chosen as the selected alternative there would be adverse effects to cultural resources. Since cross-country travel is not eliminated from this alternative, potential impacts on cultural resources would be high.

## *Alternative 1 - Designated System Routes*

Alternative 1 contains a total of 3,698 miles of authorized motor vehicle routes. The Travel Management Rule prohibits motor vehicle travel off the designated system once routes are designated and the MVUM is published. Alternative 1 would allow motorized access to dispersed camping areas only within 300 feet of designated motorized routes. There would be 120,251 acres of motorized access available for dispersed camping Forest-wide under Alternative 1.

**Direct and Indirect Effects**

Under Alternative 1, the current system of designated motorized routes is retained and motor vehicle travel off the designated system is prohibited. User-created routes are not included in this alternative and trails currently designated for pedestrian/stock use are not identified for motor vehicle use. If Alternative 1 is chosen as the selected alternative there would be no adverse effects to cultural resources. Since motor vehicle travel off the designated system would be prohibited, potential impacts on cultural resources would be greatly reduced.

## *Alternative 3 – Recommended Wilderness/Roadless Area Values Emphasis*

Alternative 3 contains a total of 2,905 miles of authorized motor vehicle routes (designated roads and motor vehicle trails). This alternative is more restrictive in that it offers fewer yearlong opportunities on roads, and is more restrictive of vehicle types on motor vehicle trails. This alternative would allow limited motor vehicle use to dispersed campsites via routes that terminate in dispersed campsites as well as anywhere within 300 feet of current designated system roads and motor vehicle trails (but does not include motorized access to dispersed camping on currently unauthorized routes proposed for designation) where slope, vegetation type, and resource conditions would permit such use without causing unacceptable levels of damage. There would be 67,881 acres of motorized access available for dispersed camping Forest-wide under Alternative 3 and no motorized access for game retrieval would be allowed. Camping with the use of a motor vehicle (e.g. car, motor-home, truck and camp trailer, camper, off-highway vehicle, or motorcycle) would be allowed in 52 designated dispersed camping areas

and designated pull-outs along the Salmon River Road (FR #60030). Dispersed areas #42 and #43 are eliminated in this alternative.

**Direct and Indirect Effects**

Under Alternative 3, motorized cross-country travel and motorized access in Recommended Wilderness would not be allowed. In addition, unauthorized routes in IRAs, motor vehicle trails open to full-sized vehicles IRAs and specific routes (identified from public comments) causing resource impacts would not be designated. Although there may be potential to affect heritage resources, there is also a higher likelihood that any potential affects could be mitigated. By regulating travel routes, potential uses could be analyzed for potential effects. Alternative 3 contains fewer total miles of authorized motor vehicle routes than any of the other alternatives. Fewer user-created routes and trails whose use will change from non-motor vehicle use to motor vehicle use are identified for this alternative as well. Thus there is a potential for fewer direct and indirect effects on cultural resources as a result of travel route designation under Alternative 3.

A summary of Alternative 3 cultural resource issues per individual ranger district is provided in Table 3-34. Details of potential conflicts between cultural resources and specific routes as well as individual site risk assessment analysis are provided in the Cultural Resources Specialist Report (Project Record). Of the 2,905 miles of authorized motorized vehicle routes identified under Alternative 3, 173 routes totaling 82.48 miles are either user-created routes or trails whose use will change from non-motor vehicle use to motor vehicle use. A total of 12.41 miles require cultural resource survey. The remaining 70.07 miles have already been inspected. Since Alternative 3 is a sub-set of Alternatives 2 and 5, areas of high probability were either surveyed during the summer of 2008 or are planned for the spring/summer of 2009. A total of 36 sites are known to be associated with one or more of the user-created routes or trails whose use will change from non-motor vehicle use to motor vehicle use. Eighteen (50%) of these sites have been determined to be eligible and 15 (42%) have been determined to be not eligible for the National Register of Historic Places. The remaining three (8%) sites are currently unevaluated and eligibility assessments are planned during the summer of 2009.

Risk assessment analysis was conducted on the known sites identified for Alternative 3 and assigned a value between 1 and 6, as described in the Methodology for Analysis section above (3.8.3).

Table 3-34 contains a summary of the risk assessment analysis per individual ranger district. Adverse effects (risk assessment 1) to NRHP eligible sites were identified for three routes in the Lost River District: U-LR-F-034, U-LR-F-081, and UR-LR-A004. It is recommended that these three routes be dropped from Alternative 3 consideration. Four additional routes (U032311A, U062310A, U203, and UR-LR-A011) on the Lost River District contain adverse effects to NRHP eligible sites if access to dispersed camping is allowed (risk assessment 2). These routes would be acceptable to drive on, but access to dispersed camping is not recommended. While several user-created routes lead to eligible sites (historic lookouts, etc.) or across eligible sites (historic mining landscapes), continued use of the route would not cause direct adverse effects. Indirect effects could arise through increased visitor use, though beneficial effects (interpretive or volunteer opportunities) are also possible.

A total of 75 routes (43%) were assigned risk assessment ‘6’ meaning that both the route and access to dispersed camping have been surveyed and no adverse effects to NRHP eligible sites were identified. In addition, 78 routes (45%) were assigned risk management ‘4’ meaning that travel route designation would not have an adverse effect on NRHP eligible sites. However, corridors for access to dispersed camping had not yet been surveyed for these 78 routes, so potential effects to NRHP eligible sites are not yet known. Thirteen (8 %) Alternative 3 routes were assigned risk assessment ‘5’ because neither the route nor the access to dispersed camping corridor had been surveyed.

Once designated as a system route, user-created routes and trails whose use will change from non-motor vehicle use to motor vehicle use may require some level of maintenance to protect resources and/or for public safety considerations. Consultation with SHPO may be required prior to any ground-disturbing maintenance activity on routes with associated NRHP eligible sites. Consultation with the Shoshone-Bannock Tribes and the Nez Perce Tribe would also occur if an affected site is identified as Native American in origin.

Table 3-34. Summary of Cultural Resources and Travel Routes by District for Alternative 3.

| | North Fork | Salmon-Cobalt | Leadore | Challis-Yankee Fork | Lost River | Middle Fork | TOTAL |
|---|---|---|---|---|---|---|---|
| Miles of User-created Routes and Trails Whose Use Will Change from non-motor vehicle use to motor vehicle use | 2.85 | 15.27 | 14.59 | 11.86 | 35.99 | 1.92 | 82.48 |
| Miles of User-created Routes and Trails Whose Use Will Change from non-motor vehicle use to motor vehicle use Requiring Cultural Resource Survey | 1.58 | 2.73 | 0.89 | 4.09 | 3.12 | 0 | 12.41 |
| Number of Known Sites Associated with the Above Routes | 4 | 4 | 4 | 4 | 19 | 1 | 36 |
| Number of Eligible Sites Associated with the Above Routes | 3 | 2 | 2 | 1 | 9 | 1 | 18 |
| Number of Non-Eligible Sites Associated with the Above Routes | 0 | 2 | 2 | 3 | 8 | 0 | 15 |
| Number of Unevaluated Sites Associated with the Above Routes | 1 | 0 | 0 | 0 | 2 | 0 | 3 |
| Number of routes assigned a risk assessment value of '1' | 0 | 0 | 0 | 0 | 3 | 0 | 3 |
| Number of routes assigned a risk assessment value of '2' | 0 | 0 | 0 | 0 | 4 | 0 | 4 |
| Number of routes assigned a risk assessment value of '3' | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Number of routes assigned a risk assessment value of '4' | 3 | 2 | 2 | 6 | 61 | 4 | 78 |
| Number of routes assigned a risk assessment value of '5' | 2 | 1 | 1 | 6 | 3 | 0 | 13 |
| Number of routes assigned a risk assessment value of '6' | 0 | 3 | 11 | 8 | 51 | 2 | 75 |

## ***Alternative 4 – Maximum Motorized Emphasis***

Alternative 4 contains a total of 4,351 miles of authorized motor vehicle routes (roads and motor vehicle trails). This alternative offers the least restrictive opportunities for motorized recreation. Included in the maximum motorized emphasis alternative are all system routes identified in Alternative 1 (No Action), all routes identified in Alternative 2 (Revised Proposed Action), and additional routes identified by the public and staff. Cross-country travel off the designated system would not be allowed in this alternative. There would be 150,512 acres of motorized access available for dispersed camping Forest-wide under Alternative 4 and no motorized access for game retrieval would be allowed. This alternative would allow motorized access to dispersed campsites via routes that terminate in dispersed campsites as well as anywhere within 300 feet of designated roads and motor vehicle trails (both system routes and previously unauthorized routes proposed for designation) where slope, vegetation type, and resource

conditions would permit such use without causing unacceptable levels of damage. Additionally, no motorized access would be permitted within 30 feet of streams to provide streambank protection.

**Direct and Indirect Effects**

Under Alternative 4, motor vehicle travel off the designated system would no longer be allowed. Although there may be potential to affect cultural resources, there is also a higher likelihood that any potential affects could be mitigated. By regulating travel routes, potential uses could be analyzed for potential effects. Alternative 4 contains more total miles of authorized motor vehicle routes than any of the other alternatives. More user-created routes and trails whose use will change from non-motor vehicle use to motor vehicle use are identified for this alternative as well. Thus there is a potential for more direct and indirect effects to cultural resources as a result of travel route designation under Alternative 4 when compared to Alternatives 3 and 5. Since cross-country travel would be eliminated, the potential for direct and indirect effects to cultural resources would be greatly reduced. A summary of Alternative 4 cultural resource issues per individual ranger district is provided in Table 3-35. Details of potential conflicts between cultural resources and specific routes as well as individual site risk assessment analysis are provided in the Cultural Resources Specialist Report (Project Record). Of the 4,351 miles of authorized motorized vehicle routes identified under Alternative 4, 931 729.94 miles are either user-created routes or trails whose use will change from non-motorized to motor vehicle use.

Table 3-35. Summary of Cultural Resources and Travel Routes by District for Alternative 4.

| | North Fork | Salmon-Cobalt | Leadore | Challis-Yankee Fork | Lost River | Middle Fork | TOTAL |
|---|---|---|---|---|---|---|---|
| Miles of User-created Routes and Trails Whose Use Will Change from non-motor vehicle use to motor vehicle use | 102.17 | 210.21 | 194.28 | 59.60 | 138.03 | 25.65 | 729.94 |
| Miles of User-created Routes and Trails Whose Use Will Change from non-motor vehicle use to motor vehicle use Requiring Cultural Resource Survey | 80.05 | 119.95 | 104.14 | 36.83 | 26.99 | 0.00 | 367.96 |
| Number of Known Sites Associated with the Above Routes | 30 | 76 | 30 | 9 | 47 | 4 | 196 |
| Number of Eligible Sites Associated with the Above Routes | 9 | 23 | 12 | 4 | 24 | 2 | 74 |
| Number of Non-Eligible Sites Associated with the Above Routes | 14 | 38 | 17 | 5 | 19 | 2 | 95 |
| Number of Unevaluated Sites Associated with the Above Routes | 7 | 15 | 1 | 0 | 4 | 0 | 27 |
| Number of routes assigned a risk assessment value of '1' | 2 | 0 | 1 | 1 | 9 | 0 | 13 |
| Number of routes assigned a risk assessment value of '2' | 3 | 3 | 0 | 3 | 6 | 0 | 15 |
| Number of routes assigned a risk assessment value of '3' | 0 | 0 | 0 | 0 | 2 | 0 | 2 |
| Number of routes assigned a risk assessment value of '4' | 9 | 34 | 5 | 9 | 119 | 13 | 189 |
| Number of routes assigned a risk assessment value of '5' | 54 | 183 | 86 | 25 | 52 | 0 | 400 |
| Number of routes assigned a risk assessment value of '6' | 8 | 58 | 44 | 19 | 178 | 5 | 312 |

A total of 367.96 miles would require cultural resource survey prior to individual travel route designation. The remaining 361.98 miles have already been inspected. A total of 196 sites are known to be associated with one or more of the user-created routes or trails whose use will change from non-motor vehicle use to motor vehicle use. Seventy-four (38%) of these sites have been determined to be eligible and 95 (48%) have been determined to be not eligible for the National Register of Historic Places. The remaining 27 (14%) sites are currently unevaluated and eligibility determinations and risk assessments would be required prior to individual travel route designation.

Risk assessment analysis was conducted on the known sites eligible for the National Register. A number of routes have already been dropped from consideration due to a high potential for adverse effect from travel route designation. As with Alternatives 2 and 3, several user-created routes on the Leadore District would require additional data to ensure that an adverse effect from travel route designation does not exist. Effects from dispersed camping pose the greatest threat to these eligible properties. While several user-created routes lead to eligible sites (historic lookouts, etc.) or across eligible sites (historic mining landscapes), continued use of the route would not cause direct adverse effects. Indirect effects in these situations could arise through increased visitor use, though beneficial effects (interpretive and volunteer opportunities) are possible as well. Regular monitoring would be implemented for the 56 sites assigned a risk assessment value of '2' or '3' with mitigation measures and possible future route closure possible if monitoring indicates that significant resources are impacted by travel route designation.

User-created routes and trails where use will change from non-motor vehicle use to motor vehicle use may require some level of maintenance to protect resources and/or for public safety considerations. Consultation with SHPO may be required prior to any ground-disturbing maintenance activity on routes with associated cultural resources eligible for the National Register.

### ***Alternative 5 – The Preferred Alternative***

The Preferred Alternative would designate 2,670 miles of roads and 864 miles of motor vehicle trails for a total of 3,534 miles of motorized routes Forest-wide. Limited motor vehicle use for dispersed camping would be allowed to access dispersed campsites via routes that terminate in dispersed campsites as well as within 300 feet of either side of **most** designated system roads and motor vehicle trails where slope, topography, vegetation type, and resource conditions would permit such use without causing unacceptable levels of damage. No motorized access for dispersed camping would be allowed within 30 feet of a stream, pond, or lake to provide streambank and water quality protection.

Eight areas of concern were identified in the fall of 2008, after the release of the DEIS. These areas would be closed to any motor vehicle travel off designated routes including dispersed camping due to sensitive resource protection needs. Areas with sensitive resources proposed for closure to motorized off-route travel include the Sawmill Canyon, Antelope, Wildhorse, Pass Creek, and North Fork Big Lost River areas of the Lost River Ranger District, and the Thatcher Creek, Beaver Creek, and Cape Horn areas of the Middle Fork Ranger District. In these areas, all dispersed camping would be restricted to designated sites which would be displayed on the Motor Vehicle Use Map (MVUM) and signed on the ground. A proliferation of unauthorized routes off Forest system roads and trails has adversely impacted cultural and natural resources in these high-use areas.

**Direct and Indirect Effects**

Under Alternative 5, motorized cross-country travel would no longer be allowed. Although there may be potential to affect heritage resources, there is also a higher likelihood that any potential affects could be mitigated. By regulating travel routes, potential uses could be analyzed for potential effects.

A summary of Alternative 5 cultural resource issues per individual ranger district is provided in Table 3-36. Details of potential conflicts between cultural resources and specific routes as well as individual site risk assessment analysis are provided in the Cultural Resources Specialist Report (Project Record). Of the 3,534 miles of authorized motorized vehicle routes identified under Alternative 5, 564 routes totaling 279.50 miles are either user-created routes or trails whose use will change from non-motor vehicle use to motor vehicle use. A total of 87.45 miles would require cultural resource survey prior to individual travel route designation. The remaining 192.05 miles have already been inspected. A total of 110 sites are known to be associated with one or more of the user-created routes or trails whose use will change from non-motor vehicle use to motor vehicle use. Fifty-one (46%) of these sites have been determined to be eligible and 52 (47%) have been determined to be not eligible for the National Register of Historic Places. The remaining seven (6%) sites are currently unevaluated and eligibility determinations and risk assessments would be required prior to individual travel route designation.

As noted previously, surveys in support of the Revised Proposed Action Alternative (#2) were conducted during the summer and fall of 2008. A total of 211.85 miles of roads and trails were inspected. Twenty-three newly discovered sites were recorded and an additional 51 previously known sites were monitored and assessed for effect. The sites identified during this field work consist of 23 prehistoric sites, 47 historic sites, and 4 multicomponent sites. One site is a National Landmark listed on the National Register of Historic Places, 40 sites are National Register eligible, 32 are not eligible, and one previously recorded site could not be relocated and evaluated for eligibility. The prehistoric sites include lithic sites and pictograph sites, and the historic sites include mines, cabins, roads, phone lines, and refuse scatters.

With the addition of new routes to Alternative 5, an additional 87.45 miles of survey is required. Surveys for access to dispersed camping adjacent to user-created routes are also necessary. Archaeological crews will be conducting this field work during the spring and summer of 2009. Individual travel route designation would not occur until all cultural resource surveys have been conducted and mitigations are in place. If cultural resources are discovered during this field work, their National Register eligibility status would be determined and a risk assessment value would be assigned following the protocols described for Alternatives 3 and 4. If significant cultural resource properties are identified, mitigation measures would be recommended to achieve a "no adverse effect" determination.

In addition, those known sites that are currently unevaluated for the National Register would be assessed and if found to be eligible would undergo risk analysis and mitigation if appropriate.

Table 3-36. Summary of Cultural Resources and Travel Routes by District for Alternative 5.

| | North Fork | Salmon-Cobalt | Leadore | Challis-Yankee Fork | Lost River | Middle Fork | TOTAL |
|---|---|---|---|---|---|---|---|
| Miles of User-created Routes and Trails Whose Use Will Change from non-motor vehicle use to motor vehicle use | 14.81 | 51.90 | 72.66 | 20.84 | 104.31 | 14.98 | 279.50 |
| Miles of User-created Routes and Trails Whose Use Will Change from non-motor vehicle use to motor vehicle use Requiring Cultural Resource Survey | 13.02 | 25.13 | 23.45 | 6.91 | 18.47 | 0.47 | 87.45 |
| Number of Known Sites Associated with the Above Routes | 8 | 15 | 28 | 9 | 45 | 5 | 110 |
| Number of Eligible Sites Associated with the Above Routes | 5 | 4 | 12 | 5 | 23 | 2 | 51 |

| | North Fork | Salmon-Cobalt | Leadore | Challis-Yankee Fork | Lost River | Middle Fork | TOTAL |
|---|---|---|---|---|---|---|---|
| Number of Non-Eligible Sites Associated with the Above Routes | 2 | 10 | 15 | 4 | 18 | 3 | 52 |
| Number of Unevaluated Sites Associated with the Above Routes | 1 | 1 | 1 | 0 | 4 | 0 | 7 |
| Number of routes assigned a risk assessment value of '1' | 0 | 0 | 1 | 1 | 10 | 0 | 12 |
| Number of routes assigned a risk assessment value of '2' | 0 | 1 | 5 | 5 | 7 | 0 | 18 |
| Number of routes assigned a risk assessment value of '3' | 0 | 0 | 0 | 0 | 2 | 0 | 2 |
| Number of routes assigned a risk assessment value of '4' | 5 | 3 | 4 | 0 | 105 | 11 | 128 |
| Number of routes assigned a risk assessment value of '5' | 10 | 55 | 21 | 16 | 92 | 0 | 194 |
| Number of routes assigned a risk assessment value of '6' | 1 | 22 | 28 | 14 | 141 | 4 | 210 |

Risk assessment analysis was conducted on the known NRHP eligible sites identified for Alternative 5 and assigned a value between 1 and 6 following the same protocols established for Alternatives 3 and 4. Table 3-36 contains a summary of the risk assessment analysis per individual ranger district. Adverse effects (risk assessment 1) to NRHP eligible sites were identified for twelve routes: one in the Leadore Ranger District (U172728D), one in the Challis-Yankee Fork Ranger District (U161927F), and ten in the Lost River Ranger District (U042327C, U-LR-F-034, U-LR-F-081, U-LR-F-082, U-LR-F-096A, U-LR-F-098, U-LR-F-099, U-LR-F-125, UR-LR-A004, andU042333A). It is recommended that these twelve routes be dropped from Alternative 5 consideration.

Eighteen additional routes contain adverse effects to NRHP eligible sites if access to dispersed camping is allowed (risk assessment 2). One of these routes is located on the Salmon-Cobalt Ranger District (U232013A), five are on the Leadore Ranger District (U162606A, U172628F, U172718A, U172728B, and U212423C), five are on the Challis-Yankee Fork Ranger District (U111315C, U111315C2, U23-17CC, U23-17S, and U25-10H), and seven are on the Lost River Ranger District (U032311A, U032323A, U042334C, U0623310A, U-LR-F-093, U-LR-F-128, and UR-LR-A011). These routes would be acceptable to drive on, but access to dispersed camping is not recommended. While several user-created routes lead to eligible sites (historic lookouts, etc.) or across eligible sites (historic mining landscapes), continued use of routes would not cause direct adverse effects. Indirect effects in these situations could arise through increased visitor use, though beneficial effects (interpretive or volunteer opportunities) are also possible.

Two routes on the Lost River Ranger District ( U062301B and U072336E) were assigned a risk assessment of '3' meaning that monitoring of NRHP eligible sites is appropriate while allowing the route to be designated and access to dispersed camping to occur. A total of 210 routes (37%) were assigned risk assessment '6' meaning that both the route and access to dispersed camping have been surveyed and no adverse effects to NRHP eligible sites were identified. In addition, 128 routes (23%) were assigned risk management '4' meaning that travel route designation would not have an adverse effect on NRHP eligible sites. However, corridors for access to dispersed camping had not yet been surveyed for these 128 routes so potential effects to NRHP eligible sites are not yet known and access to dispersed camping is not recommended until surveys are complete. One hundred ninety four (34 %) Alternative 5 routes were assigned risk assessment '5' because neither the route nor the access to

dispersed camping corridor had been surveyed. These routes are not recommended for travel route designation until surveys have been conducted.

Once designated as a system route, user-created routes and trails whose use will change from non-motor vehicle use to motor vehicle use may require some level of maintenance to protect resources and/or for public safety considerations. Consultation with SHPO may be required prior to any ground-disturbing maintenance activity on routes with associated NRHP eligible sites. Consultation with the Shoshone-Bannock Tribes and the Nez Perce Tribe would also occur if an affected site is identified as Native American in origin.

### 3.8.8 CUMULATIVE EFFECTS

Cumulative effects to cultural resources relate to potential effects to National Register-eligible properties resulting from the impacts of actions in the past, present, and the reasonable foreseeable future. Cumulative effects to cultural resources could include any projects with past, present or future ground-disturbing activities. For past and present projects, cultural resource surveys would have been conducted and adverse effects mitigated through consultation with SHPO. Future projects occurring on federal land would require prior cultural resource surveys and if potential adverse effects are identified, mitigation measures would be designed and SHPO consultation would be conducted.

Cultural resources are non-renewable resources. As such, federal laws have been passed which prohibit disturbance of cultural sites and obligate federal agencies (including the Forest Service) to protect and manage cultural resource properties. The Antiquities Act of 1906, the Historic Sites Act of 1935, the National Historic Preservation Act (NHPA) of 1966 with its 1992 and 2000 Amendments, the Archaeological and Historic Preservation Act of 1974, the Archaeological Resources Protection Act (ARPA) of 1979, and the Native American Graves Protection and Repatriation Act (NAGPRA) of 1990 exemplify the long and progressive history of laws concerning the protection of archaeological resources. As such there would be no Irreversible and/or irretrievable commitment of cultural resources.

## 3.9 WILDLIFE

### 3.9.1 CHANGES BETWEEN DRAFT EIS AND FINAL EIS

- Analysis was done at a ranger district level, rather than HUC 5 watershed level to be consistent with the administrative analysis area in the Travel Management Rule. The results of the analysis were similar at both the ranger district and HUC 5 level, but were more easily described at the ranger district level.
- Gray wolves were removed from the Endangered Species list on May 4, 2009. The species is analyzed under the sensitive species section.

### 3.9.2 ISSUES AND INDICATORS

**Wildlife Issue 1:** Motor vehicle use of new and existing roads and trails can cause disturbance and reduce habitat effectiveness for federally-listed or candidate, USDA Region 4 Sensitive, and SCNF Management Indicator Species, as well as other special status species such as migratory birds and ungulates. The density of designated roads and motor vehicle trails and the seasonal open periods of roads and motor vehicle trails can impact wildlife by resulting in disturbance during critical life stages, compromised security, and/or impacts to habitat.

Issue Indicators:

- Motorized route density (mi/mi$^2$) (yearlong and seasonal motorized routes)
- Motorized route density during critical life stages (fawning/calving and hunting seasons) (mi/mi$^2$) (yearlong motorized routes)
- Acres of security habitat available for wide-ranging species (yearlong and seasonal motorized routes)
- Acres of security habitat available during critical life stages (fawning/calving and hunting seasons) (yearlong motorized routes)
- Miles of open motorized routes within 300' of perennial streams and 100' of intermittent streams

### 3.9.3 METHODOLOGY FOR ANALYSIS

Analysis for effects of motorized routes on wildlife was done using GIS analysis and interpretation. Sensitive species, species recently removed from the ESA list, candidate species, and MIS species occurrences by watershed and ranger district were determined using NRIS FAUNA and Idaho Conservation Data Center data. FAUNA is part of the Natural Resource Information System, a Forest Service web-based data repository system. In November 2008, the server format was changed and is now known as NRIS Wildlife. Current and historical records of wildlife observations, both incidental and surveys, have been entered in to the system, beginning in 2004. Not all ranger districts have had data put into NRIS Wildlife. IDFG Conservation Data Center maintains a GIS database of species occurrence records. The most current version, February 2008, was used. Those records, along with NRIS Wildlife data, were used to identify ranger districts on which sensitive species recently removed from the ESA list, candidate species, and MIS have records of occurring. If other sources of incidental data were available, they were used as well. Very few species have had comprehensive surveys conducted, so a lack of records on a ranger district does not preclude occurrence; however, analysis was done based upon available records.

Idaho Department of Fish and Game data was used for current big game populations and management objectives, which are displayed in tabular form. IDFG defines population objectives at a game management unit (GMU) level. GMUs cover both watershed and ranger district boundaries. The Salmon LRMP identified several areas that had identified management objectives for elk. Most were timber-oriented, but motorized access was identified as an element. The management areas do not line up with ranger district boundaries. For consistency purposes, analyses were done at ranger district levels, with extra discussion given to those management areas with objectives for elk regarding the effect of motorized access.

Effects to migratory breeding birds were analyzed at a ranger district level. Effects to breeding habitat are discussed, but distances of motorized routes through various habitat types, with the exception of riparian areas, were not quantified.

Motorized access and associated human activities can impact wildlife habitat and populations resulting from factors such as snag and down log reduction, negative edge effects, over-hunting and over-trapping (legal and illegal), harassment, collisions, and displacement. One method of quantifying the level of intensity that roads have on wildlife is to measure open road (and for this analysis, motor vehicle trail) densities. For this analysis, motorized route densities are divided into the following three categories as suggested by Wisdom et al. (2000):

- < 0.7 mi/mi$^2$ = low road density
- 0.7–1.7 mi/mi$^2$ = moderate road density
- > 1.7 mi/mi$^2$ = high road density

Security habitat is very important for many species of wildlife. Substantial research has been done regarding elk security habitat and habitat effectiveness (Ralphs et al. 1981, Thomas et al. 1988, Hillis et al. 1991). Elk security areas will be defined as blocks of land greater than 250 acres in size which are 0.5 mile away from a year-long open road or trail. This is a modified interpretation of Hillis et al. (1991), in that cover and terrain are not analyzed. For wide-ranging species, security habitat analysis was done using all (yearlong and seasonally open) motorized routes. For big game species, habitat security analysis was done using yearlong open motorized routes.

The analysis area is the portion of the SCNF that is accessible by motorized vehicles. Most of the FC-RONRW is excluded; however, those portions of the ranger districts that contain "cherry-stemmed" motorized routes were included in the analysis. The acreage for ranger districts is that of the analyzed area, not the total area. The cumulative effects area includes the entirety of the SCNF, inclusive of the FC-RONRW.

The techniques and methodologies used in this analysis consider the best information and data available. The analysis includes a summary of credible scientific evidence which is relevant to evaluating reasonably foreseeable impacts. The analysis also identifies methods used and references the scientific sources relied upon. The conclusions are based on a scientific analysis that shows a through review of relevant scientific information.

The relevant science considered for this analysis consists of several key elements, including review of scientific literature, use of current methods of spatial analysis and cartographic display, and the collective knowledge of the project by ID Team members through integration of science with local conditions.

### 3.9.4 COMPLIANCE WITH FOREST PLAN AND OTHER REGULATORY DIRECTION

The Challis and Salmon LRMPs (USDA FS 1987, 1988) provide general direction for all Forest resources and the foundation for more specific direction at the Management Area level. Big game, Management Indicator Species, and ESA-listed species and associated habitat are identified in the Challis and Salmon LRMP goals, objectives, and standards and guidelines for wildlife related to travel planning. Specific direction related to wildlife resources from the Challis and Salmon Forest Plans is summarized in the Wildlife Specialist Report (Project Record). In addition to the LRMPs, laws and regulations such as the Endangered Species Act (ESA) of 1973 (as amended)**,** the National Forest Management Act (NFMA) of 1976 (P.L. 4-588), the Migratory Bird Treaty Act of 1918, E.O. 13186 (Responsibilities of Federal Agencies to Protect Migratory Birds), and E.O. 13443 (Facilitation of Hunting Heritage and Wildlife Conservation) are considered for the analysis.

### 3.9.5 EXISTING CONDITION

***Roads and Motor vehicle trails*****:** Miles of designated roads, motor vehicle trails, unauthorized routes, unauthorized routes in restricted areas, and acres open to motorized cross-country travel are displayed in Table 3-37. Due to the instability of the data, the existing condition is not presented in a mapped format.

***Dispersed Camping*** The Existing Condition allows motorized access for dispersed camping within 300 feet (either side) of designated motorized routes. Acres of motorized dispersed camping access and acres of motorized dispersed camping access are within RHCA buffers (300 feet for perennial streams

and 100 feet for intermittent streams) and are displayed in Table 3-37. These acres are the same as the No Action Alternative since there are no motorized access dispersed camping corridors along unauthorized routes in restricted areas.

Table 3-37. Existing Condition Route Designation by Ranger District

| Route Status | Challis-Yankee Fork | Leadore | Lost River | Middle Fork | North Fork | Salmon-Cobalt | Total |
|---|---|---|---|---|---|---|---|
| Acres open to cross-country travel | 73,118 | 121,449 | 119,444 | 68,201 | 219,007 | 379,204 | 980,423 |
| Road open yearlong | 542 | 227 | 454 | 237 | 464 | 827 | 2751 |
| Road open seasonally | 39 | 14 | 24 | 0 | 56 | 36 | 169 |
| Total Roads | 581 | 241 | 478 | 237 | 520 | 863 | 2,920 |
| Motor vehicle trail open yearlong | 311 | 101 | 117 | 38 | 162 | 253 | 983 |
| Motor vehicle trail open seasonally | 45 | 5 | 59 | 0 | 18 | 10 | 137 |
| Total Motor vehicle trails | 356 | 106 | 176 | 38 | 180 | 263 | 1,120 |
| Total Roads and Motor vehicle trails | 937 | 347 | 654 | 275 | 700 | 1,126 | 4,040 |
| Miles of unauthorized routes in open areas | 29 | 296 | 138 | 29 | 235 | 383 | 1,108 |
| Miles of unauthorized routes in closed areas | 292 | 188 | 404 | 11 | 379 | 322 | 1,594 |
| Total miles of unauthorized routes | 321 | 484 | 542 | 40 | 614 | 705 | 2,702 |
| Total Miles of All Routes | 1,257 | 831 | 1,196 | 315 | 1,314 | 1,831 | 6,742 |
| Acres of Dispersed Camping | 52,860 | 56,439 | 61,528 | 41,212 | 40,622 | 148,928 | 401,589 |
| Acres Dispersed Camping in RHCAs | 15,790 | 9,350 | 14,874 | 12,054 | 10,429 | 22,814 | 85,311 |
| Miles of Motorized Routes w/in Riparian Buffered Areas (300') | 365.0 | 155.8 | 289.1 | 93.5 | 264.3 | 369.7 | 1537.4 |
| Miles of Motorized Routes w/in Riparian Buffered Areas (100') | 97.8 | 50.1 | 149.4 | 5.8 | 56.0 | 61.7 | 420.9 |

**Direct and Indirect Effects**

Several literature syntheses have compiled data from individual studies that have documented the effects that motorized routes and human activities associated with motor vehicle use have on wildlife species (Stokowski and LaPointe 2000, Wisdom et al. 2000, Gucinski et al. 2001, Gilbert 2003, Proescholdt 2006, Ouren et al. 2007). Wisdom et al. (2000) identified thirteen motorized route associated factors that consistently turned up in the literature as having impacts on wildlife (Table 3-38). These motorized route effects are echoed in the previously cited literature syntheses. Effects are largely negative, some neutral; effects that are positive are not identified in the literature.

Table 3-38. Motorized Route Associated Factors that Negatively Affect Wildlife Habitat or Populations

| Motorized Route Associated Factor | Effect of Factor in Relation to and Facilitated by Motorized Routes |
|---|---|
| Snag reduction | Reduction in density of snags due to removal near motorized routes |
| Down log reduction | Reduction of density of large logs due to removal near motorized routes |
| Habitat loss and fragmentation | Loss and resulting fragmentation of habitat due to establishment and maintenance |

| Motorized Route Associated Factor | Effect of Factor in Relation to and Facilitated by Motorized Routes |
|---|---|
| | of motorized routes and rights-of-way |
| Negative edge effects | Fragmentation of habitat for species that respond negatively to openings or linear edges |
| Over-hunting | Non-sustainable or non-desirable legal harvest by hunting |
| Over-trapping | Non-sustainable or non-desirable legal harvest by trapping |
| Poaching | Increased illegal take of animals |
| Collection | Collection of live animals for human use (such as pets) |
| Harassment or disturbance at specific use sites | Direct interference at specific use sites due to human or motorized activities (nest sites, lek sites, etc.) |
| Collisions | Death or injury resulting from a motorized vehicle running over or hitting an animal |
| Movement barriers | Obstruction of dispersal, migration, or other movements as posed by a motorized route itself or by human activities on or near the motorized route |
| Displacement or avoidance | Spatial shifts in populations or individual animals away from a motorized route or network in relation to human activities on or near a motorized route |
| Chronic, negative interactions with humans | Increased mortality of animals due to increased contact with humans |

The existing Travel Plans for the Salmon and Challis National Forests attempted to identify specific routes in sensitive areas and allowed for cross-country travel in areas that were thought to have few conflicting resource issues. When the plans were developed, recreational vehicles were not capable of accessing many of the areas that they access presently. The number of motorized vehicle users has grown substantially over the last two decades as well. This has resulted in the development of 1,108 miles of unauthorized routes within areas open to cross-country travel. Within areas closed to cross-country travel, there has been the development of an additional 1,594 miles of unauthorized routes, in violation of the current Travel Plans. These routes were developed principally by recreationists and hunters, but also by permitted forest users such as livestock permittees accessing and/or maintaining range improvements. These developments are not static; development of unauthorized routes is continuous and difficult to accurately measure. Since these routes are not engineered and no analysis goes into where they are located, the routes often cause direct habitat damage such as ruts in wet meadow areas, streambank damage at stream crossings, erosion due traveling up excessively steep slopes, and result in crushed and damaged vegetation. Many routes travel along ridge tops, which have extensive influence areas, due to high visibility and noise. Routes tend to parallel one another or be redundant. The noise from motorized recreational vehicles carries and can result in avoidance behavior. Prey species responses to disturbances, such and motorized vehicles, are comparable to anti-predator responses which may result in reduced fitness and population dynamics (Frid and Dill 2002).

There is limited population information, both range-wide and specific to the SCNF, for most species analyzed in this document. Global and state population ranking for species were used in the analysis, when available, to identify the overall status of the species. Population declines directly attributable to motorized access are difficult to characterize and to quantify since impacts are generally additive and tend to occur gradually. The proliferation of unauthorized routes indicates a trend of ever increasing motorized intrusions into areas that previously provided habitat outside motorized influence zones. Unauthorized motorized routes negate the planning process that provides for good habitat management in regards to motorized access.

User conflict is one issue that consistently arises regarding motorized access. Although hunting is a recreational activity, it affects wildlife behavior. IDFG has altered hunting regulations regarding OHVs in recognition of user conflicts. Reasons cited included a substantial increase of registered OHVs in Idaho in the past decade, potential reduced hunter opportunities in the future as a result of increased hunter

access, declines in elk use in areas adjacent to motorized routes, disturbance to elk from slow-moving motorized vehicles, degradation of quality and quantity of elk habitat resulting from motorized vehicle access, and decreased success of hunters using OHVs (IDFG 2009). The proliferation of unauthorized routes in both areas open to cross-country travel and in restricted areas has increased the level of user conflicts during the hunting season.

### 3.9.6 AFFECTED ENVIRONMENT

**Federally Listed or Proposed Species**

The U.S. Fish and Wildlife Service identified one mammal species, the gray wolf, that is threatened or endangered, and one candidate bird species, yellow-billed cuckoo, that could potentially occur on the SCNF (14420-2008-SL-00399 dated December 1, 2008) (Table 1). The gray wolf was removed from the Endangered Species list in May 4, 2009.

**Yellow-billed Cuckoo**

Listing Status: In July 2001, the USFWS published a rule listing of the western distinct population segment (DPS) as threatened was warranted, but precluded due to higher priority listing actions (USFWS 2001). The yellow-billed cuckoo is currently a candidate species.

Biological Requirements: In Idaho, the yellow-billed cuckoo uses riparian areas with dense understory. The species is primarily insectivorous, but will occasionally eat small amphibians, eggs, and some fruits. The species was once widespread throughout the United States, but has declined dramatically during the last few decades. The reason for the decline is not fully understood, but is believed to be, in part, due to deteriorating riparian condition (Groves et al. 1997).

Potential Occurrence: The yellow-billed cuckoo has a global ranking of G5; secure: common, widespread, and abundant, and a state ranking of S2B; imperiled breeding: at risk because of restricted range, few populations, rapidly declining numbers, or other factors that make it vulnerable to range-wide extinction or extirpation. There is no population trend data for Idaho since the populations are too low to make a valid statistical estimate (IDFG 2005). The yellow-billed cuckoo has one record of occurrence each in Lemhi and Custer Counties. One was in the Williams Creek-Salmon River watershed, adjacent to the Salmon-Cobalt Ranger District, and one was in the Garden Creek-Salmon River watershed, adjacent to the Challis-Yankee Fork Ranger District (TREC 2004, ID CDC and NRIS FAUNA data). Neither occurrence was on the SCNF. Since there are no recorded occurrences of the yellow-billed cuckoo on the SCNF, this species will not be discussed further.

**Region 4 Sensitive Species**

Plants and animals designated as sensitive are identified by Regional Foresters as species for which population viability is a concern as evidenced by current or predicted downward trends in population numbers, density, or habitat (FSM 2670.5). The Forest Service must implement management practices that ensure that sensitive species do not become threatened or endangered and must implement management objectives for populations or habitat of sensitive species (FSM 2670.22).

Those animal species that are known or expected to occur on the SCNF include five mammals, eight birds, and one amphibian (Table 3-39). The list was last updated in December 2003. The Columbia spotted frog and the greater sage-grouse, both Region 4 sensitive species, have been designated as SCNF Management Indicator Species (MIS) (USDA 2004b). Effects to the Columbia spotted frog and sage-grouse are assessed under the MIS section.

Included in the sensitive species analyses is the bald eagle, which was recently taken off the Endangered Species list. Also included in the analysis is the Canada lynx, which was removed from the list of ESA species found on the SCNF. The effects of the Travel Plan on the lynx will be considered in this analysis.

In the following discussion, biological requirements for each species have been condensed to include effects resulting from motorized access. For a more thorough discussion of biological requirements for each species, refer to the Wildlife Specialist Report included in the project record.

Table 3-39. SCNF Region 4 Vertebrate Sensitive Species Occurrence by Ranger District

| Species | Scientific Name | Ranger District |
|---|---|---|
| Gray Wolf (delisted) | *Canis lupus* | C-YF, L, LR, MF, NF, S-C |
| Canada Lynx (removed from SCNF ESA species list) | *Lynx canadensis* | C-YF, L, LR, MF, NF, S-C |
| Bald Eagle (delisted) | *Haliaeetus leucocephalus* | C-YF, L, NF, S-C |
| Spotted bat | *Euderma maculatum* | MF |
| Townsend's big-eared bat | *Corynorhinus townsendii* | LR, NF, S-C |
| Pygmy rabbit | *Brachylagus idahoensis* | C-YF, L, LR |
| Fisher | *Martes pennanti* | L, MF, NF, S-C |
| Bighorn Sheep | *Ovis canadensis* | C-YF, L, LR, MF, NF, S-C |
| Wolverine | *Gulo gulo* | C-YF, L, LR, MF, NF, S-C |
| Harlequin duck | *Histrionicus histrionicus* | NF, S-C |
| Northern goshawk | *Accipiter gentiles* | C-YF, L, NF, S-C |
| Peregrine falcon | *Falco peregrinus anatum* | C-YF, LR, NF, S-C |
| Boreal owl | *Aegolius funereus* | MF, NF, S-C |
| Flammulated owl | *Otus flammeolus* | C-YF, MF, NF, S-C |
| Great Grey Owl | *Strix nebulosa* | C-YF, L, MF, NF, S-C |
| Three-toed woodpecker | *Picoides tridactylus* | C-YF, L, MF, S-C |
| C-YF: Challis-Yankee Fork Ranger District, L: Leadore RD, LR: Lost River RD, MF: Middle Fork RD, NF: North Fork RD, S-C: Salmon-Cobalt RD | | |

**Gray Wolf**

Listing Status: In 1994, the gray wolf was classified as an experimental and non-essential population in central Idaho under the provisions of Section 10j of the ESA (USFWS 1994). Wolves were reintroduced in the central Idaho area in the winters of 1995 and 1996. On January 5, 2006, a MOU was signed between the State of Idaho and the US Department of the Interior, giving Idaho primary responsibility for managing wolves in the state. The Northern Rocky Mountain population of the gray wolf was removed from the Endangered Species List on February 27, 2008 (USFWS 2008). On July 18, 2008, the U.S. Federal District Court issued a preliminary injunction that immediately reinstated the Endangered Species Act protections for gray wolves in the northern Rocky Mountains. On December 11, 2008, the USFWS issued a rule re-designating the population in Idaho as experimental, non-essential under the 10j rule of the ESA (USFWS 2008). On April 2, 2009, the USFWS published the final rule to identify the northern Rocky Mountain population of the gray wolf as a distinct population segment and to revise the list of endangered and threatened wildlife in the Federal Register. The rule became effective on May 4, 2009 (USFWS 2009).

Biological Requirements: When road densities exceeded greater than 0.83 km/km$^2$ (1.3 mi/mi$^2$) wolves were displaced or avoided those areas (Mech et al. 1988). Wolves can be affected by motorized access through direct mortality (being hit by cars), increased possibility of being poached, and displacement (Wisdom et al. 2000, Mech et al. 1988, Mech 1989). Wolves could also be affected by motorized impacts to ungulates, their main prey base.

Potential Occurrence: Wolf packs occur on every Ranger District on the SCNF (ID CDC and NRIS FAUNA data) (Table 3-39).

**Canada Lynx**

Listing Status: In March 2000, the contiguous U.S. population of the Canada lynx was listed as threatened under the Endangered Species Act (USFWS 2000). The lynx was removed from the SCNF ESA-listed species list in March 2007 (2007-SL-0303).

Biological Requirements: Road density is one factor determining lynx vulnerability to trapping and other forms of human disturbance, including mortality from vehicle collisions (Ruediger et al. 2000). The degree of human presence and motor vehicle traffic rises as road densities rise, resulting in an even higher likelihood of negative encounters. However, the threshold at which human presence and activities negatively affect lynx is unknown (Ruediger et al. 2000). Lynx can be affected by motorized access, especially by off-highway vehicles, by increasing human-caused disturbance and potential mortality from shootings and collisions (Wisdom et al. 2000).

The Northern Rockies Lynx Management Direction developed objectives and guidelines for lynx habitat. Human Use Project Guideline 7 states that "new permanent roads should not be built on ridge-tops and saddles, or in areas identified as important for lynx habitat connectivity. New permanent roads and trails should be situated away from forested stringers." Habitat connectivity is defined as habitat that "consists of an adequate amount of vegetation cover arranged in a way that allows lynx to move around. Narrow forested mountain ridges or shrub-steppe plateaus may serve as a link between more extensive areas of lynx habitat; wooded riparian areas may provide travel cover across open valley floors (LCAS)" (USDA 2007b). The SCNF is considered to be unoccupied by Canada lynx. Unoccupied national forests are advised to consider the management direction, but are not required to follow management direction until the time that occupancy by lynx is determined (USDA 2007b).

Potential Occurrence: Lynx have records of occurrence on all districts on the SCNF.

**Bald Eagle**

Listing Status: The bald eagle population in the lower 48 states was removed from the Endangered Species List on July 9, 2007 (USFWS 2007).

Biological Requirements: Motorized access has the potential to affect bald eagles by causing direct disturbance. Studies have shown that wintering bald eagles will flush when approached by foot. However, eagles will also become habituated to regularly occurring human activities (Stahlmaster and Newman 1978, Fraser et al. 1985). Human activities did not appear to have an affect on reproductive success (Fraser et al. 1985).

Potential Occurrence: Bald eagles are both summer and winter residents along the Salmon River. They have been documented as nesting on the North Fork Ranger District and adjacent to the Leadore and Salmon-Cobalt Ranger Districts and the Challis-Yankee Fork Ranger District. They winter along the entirety of the Salmon River, which is either within or adjacent to the SCNF.

**Spotted Bat**

Biological Requirements: There are no references in the literature that document the effects of motorized access on spotted bats (Wisdom et al. 2000). Roost sites, in cracks and crevices, are unlikely to be affected by motorized access. Motorized access has the potential to increase the rate of weed dispersal, which could affect foraging habitat.

Potential Occurrence: There is one record of spotted bats on the Middle Fork Ranger District in the FC-RONR Wilderness Area on the SCNF; and one in the Valley Creek watershed adjacent to the Challis-Yankee Fork Ranger District (ID CDC and NRIS FAUNA data). These sightings are major extensions of its known range from southwestern Idaho (Groves et al. 1997).

**Townsend's Big-eared Bat**

Biological Requirements: Motorized access can affect Townsend's big-eared bats by making roosting and hibernacula sites more accessible, increasing human presence, and potentially increasing harassment (Wisdom et al. 2000).

Potential Occurrence: There are records of this species occurring on the SCNF on the North Fork, Salmon-Cobalt, and Lost River Ranger Districts (ID CDC and NRIS FAUNA data).

**Pygmy Rabbit**

Biological Requirements: There are no references in the literature that document the effects of motorized access on pygmy rabbits (Wisdom et al. 2000). However, habitat could be directly impacted by vehicles driving over burrows and collapsing entrances and tunnels.

Potential Occurrence: Pygmy rabbits occur on the Challis-Yankee Fork, Leadore, and Lost River Ranger Districts.

**Fisher**

Biological Requirements: Motorized access has the potential to affect fishers by increasing trapping pressure, which increases considerably in roaded versus unroaded areas (Wisdom et al. 2000). Although there is no trapping season for fisher in Idaho, they can be caught in traps set for other species (Powell and Zielinski 1994). The removal of snags and downed logs for fuelwood, resulting from motorized access, has the potential to affect fisher habitat (Wisdom et al. 2000). Since about 2000, bark beetles and landscape level fires have contributed to the amount of dead and downed trees across the forest. A strategy to deal with the effects of motorized access is to reduce human disturbance in source habitats through management practices such as minimizing construction of new roads (designation of undesignated routes is comparable) and closing unneeded roads that were constructed for timber harvest (Wisdom et al. 2000).

Potential Occurrence: Fishers have been documented as occurring on the SCNF on the Leadore, North Fork, Salmon-Cobalt, and Middle Fork Ranger Districts.

**Wolverine**

Biological Requirements: Motorized access can affect wolverines by increasing human disturbance from hunting and summer recreation traffic. Areas with large contiguous blocks of forest cover with low road densities connected to areas with suitable denning, security, and summer foraging habitat provide for the retention of long-term wolverine habitat (Wisdom et al. 2000).

Potential Occurrence: The wolverine is known to occur on the SCNF throughout the year. They have been documented as occurring on all the ranger districts on the SCNF.

**Bighorn Sheep**

Biological Requirements: Primary habitats include mesic to xeric, alpine to desert grasslands or shrub steppe in mountains, foothills, or river canyons. Elevation varies considerably, both geographically and seasonally, and can range as high as 11,000 feet (Groves et al. 1997). Winter ranges of northern populations, including those within the analysis area, are relatively snow-free because of light snow, steep south aspect, and/or high winds; bighorns generally avoid deep snow (Groves et al. 1997). The

diet is diverse and variable. They are primarily grazers of grass and forbs, but the diet can also include significant amounts of shrubs. The diet changes seasonally (Miller and Gaud 1989, Groves et al. 1997).

Idaho Fish and Game noted that within units 21 and 28 (Panther Creek and the along the roaded areas of the Salmon River below North Fork) have many roads that occur in bighorn sheep range. The roads allow increased human access and potentially high levels of unregulated harvest (Toweill et al. 2007a). Bighorn sheep are very susceptible to the detrimental effects of human disturbance, especially when winter-stressed. Heart rates and energy expenditures increase to levels that could be potentially fatal (Canfield et al. 1999). Studies have indicated that human activity (including OHV use) can negatively affect bighorn sheep distribution and activities in summer range. Bighorn sheep are especially prone to disturbance since suitable habitat is usually very restricted (Canfield et al. 1999). A study conducted on desert bighorns indicated that most sheep avoid high-use road corridors, although some individuals became habituated to high-use roads. The habituation is believed to occur because of the predictability of the location of vehicles in relation to the roads. There was no dispersal of sheep from low-use areas to high-use areas and most sheep in the study avoided road corridors in general (Papouchis et al. 2001). The identified limiting factor for bighorn populations is disease transmission between domestic and wild sheep (Toweill et al. 2007a).

Trend and Potential Occurrence: Bighorn sheep have a global ranking of G4; apparently secure, uncommon but not rare, some cause for long-term concern due to declines or other factors and a state ranking of S3; vulnerable, at moderate risk because of restricted range, relatively few populations, recent and widespread declines, or other factors that make it vulnerable to range-wide extinction or extirpation (NatureServe 2009).

**Harlequin Duck**

Biological Requirements: There are no references in the literature that document the effects of motorized access on harlequin ducks (Cassirer and Groves 1991, Wallen and Groves 1988).

Potential Occurrence: Harlequin ducks have been documented on the Salmon-Cobalt and North Fork Ranger Districts. In Idaho, harlequin ducks have been documented breeding north of the Lochsa River and suspected of breeding in the Priest River area (Cassirer and Groves 1991), but have not been documented breeding on the SCNF.

**Northern Goshawk**

Biological Requirements: The removal of snags and downed logs for fuelwood, resulting from motorized access, has the potential to affect goshawk habitat by impacting habitat for their prey base (Wisdom et al. 2000). Since about 2000, bark beetles and landscape level fires have contributed to the amount of dead and downed trees across the forest. A strategy to deal with the effects of motorized access is to reduce human disturbance in source habitats through management practices such as minimizing construction of new roads and closing unneeded roads that were constructed for timber harvest (Wisdom et al. 2000).

Potential Occurrence: Northern goshawks have been documented as occurring on the SCNF on the Leadore, North Fork, Salmon-Cobalt, and Challis-Yankee Fork Ranger Districts.

**American Peregrine Falcon**

Biological Requirements: There are no references in the literature that document the effects of motorized access on peregrine falcons (Richardson and Miller 1997).

Potential Occurrence: Peregrine falcons have been documented as occurring on the SCNF on the North Fork, Salmon-Cobalt, and Challis-Yankee Fork, and Lost River Ranger Districts.

**Boreal Owl**

Biological Requirements: The removal of large diameter snags for fuelwood, resulting from motorized access, has the potential to affect boreal owl habitat (Wisdom et al. 2000). Since about 2000, bark beetles and landscape level fires have contributed to the amount of dead trees across the forest.

Potential Occurrence: Boreal owls have been documented as occurring on the SCNF on the North Fork, Salmon-Cobalt, and Middle Fork Ranger Districts. Surveys conducted in 2007 by IDFG found boreal owls on the Middle Fork Ranger District (Waterbury 2008).

**Flammulated Owl**

Biological Requirements: The removal of snags and downed logs for fuelwood, resulting from motorized access, has the potential to affect flammulated owl habitat (Wisdom et al. 2000). Since about 2000, bark beetles and landscape level fires have contributed to the amount of dead and downed trees across the forest. A strategy to deal with the effects of motorized access is to reduce human disturbance in source habitats through management practices such as minimizing construction of new roads (designation of undesignated routes is comparable) and closing unneeded roads that were constructed for timber harvest (Wisdom et al. 2000).

Potential Occurrence: Flammulated owls have been documented as occurring on the SCNF on the North Fork and Salmon-Cobalt Ranger Districts. Surveys conducted in 2007 by IDFG found flammulated owls on the Challis-Yankee Fork and Middle Fork Ranger Districts (Waterbury 2008).

**Great Grey Owl**

Biological Requirements: The removal of large diameter snags for fuelwood, resulting from motorized access, has the potential to affect great grey owl habitat (Wisdom et al. 2000). Since about 2000, bark beetles and landscape level fires have contributed to the amount of dead trees across the forest. Closing roads in areas where the removal of snags is impacting great grey owl habitat is one recommendation to improve conservation for this species (Wisdom et al. 2000).

Potential Occurrence: Great grey owls have been documented as occurring on the SCNF on the Leadore, North Fork, Salmon-Cobalt, Challis-Yankee Fork and Middle Fork Ranger Districts.

**Three-toed Woodpecker**

Biological Requirements: The removal of large diameter snags for fuelwood, resulting from motorized access, has the potential to affect three-toed woodpecker habitat (Wisdom et al. 2000). Since about 2000, bark beetles and landscape level fires have contributed to the amount of dead trees across the forest.

Potential Occurrence: Three-toed woodpeckers have been documented as occurring on the SCNF on the Leadore, Salmon-Cobalt, Challis-Yankee Fork and Middle Fork Ranger Districts.

**Management Indicator Species**

The Management Indicator Species lists were identified in the Forest Plan Amendments of February 3, 2004 (USDA 2004b). For both the Salmon and the Challis Forest Plans, bull trout, greater sage-grouse, pileated woodpecker, and Columbia spotted frog were selected. Bull trout is addressed in the Fisheries Section (3.6).

Table 3-40. SCNF Management Indicator Occurrence by Ranger District

| Species | Scientific Name | Ranger District |
|---|---|---|
| Pileated Woodpecker | *Dryocopus pileatus* | C-YF, L, LR, MF, NF, S-C |
| Greater sage-grouse | *Centrocercus urophasianus* | C-YF, L, LR, S-C |
| Columbia spotted frog | *Rana luteiventris* | C-YF, L, LR, MF, NF, S-C |
| C-YF: Challis-Yankee Fork Ranger District, L: Leadore RD, LR: Lost River RD, MF: Middle Fork RD, NF: North Fork RD, S-C: Salmon-Cobalt RD | | |

**Pileated Woodpecker**

Biological Requirements**:** The removal of snags and downed logs for fuelwood, resulting from motorized access, has the potential to affect pileated woodpecker habitat. A strategy to deal with the effects of motorized access is to close roads in areas that are deficient in snags and where cutting snags for fuelwood contributes to low snag density (Wisdom et al. 2000). Since about 2000, bark beetles and landscape level fires have contributed to the amount of dead and downed trees across the forest.

Trend and Potential Occurrence**:** Surveys for pileated woodpeckers have occurred across the SCNF since the species was designated as a MIS in 2004. Sufficient data does not currently exist to establish a Forest-wide base line or determine a long-term trend for this species; this data will be accumulated as transects are monitored over time. Data collected from 2004 through 2007 has been analyzed to show an interim trend (Figure 3-2) (USDA 2008). USGS Breeding Birds Survey data for Idaho, using trend estimates, shows a trend of 2.0% from 1966 to 2007 and -0.9% from 1980 to 2007 for pileated woodpeckers (Sauer et al. 2008).

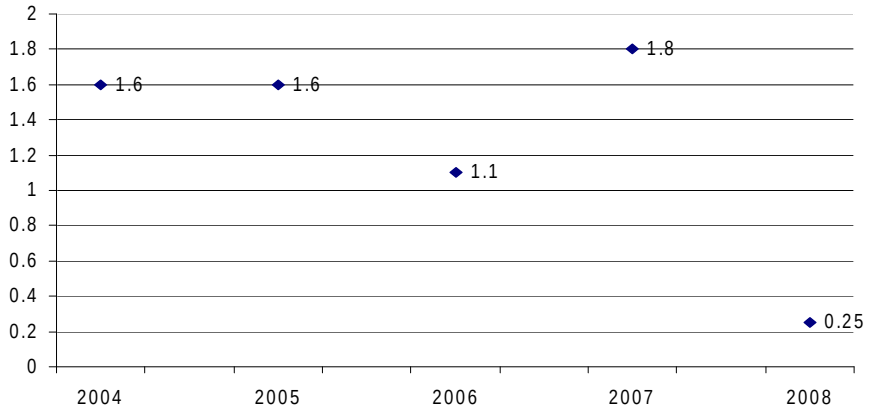



Figure 3-2. Average Number of Pileated Woodpeckers per Route, 2004-2008

The number of acres affected by mountain pine and Douglas-fir beetle infestations has greatly increased over the last decade, which has increased the amount of available foraging and nesting substrate. The SCNF had 520,641 acres burned by wildfire between 2000 and 2003, which also has provided foraging and nesting substrate for pileated woodpeckers. The acres burned by wildfire in the past four years of survey data collection are as follows: 2004 - 4,916; 2005 - 33,115; 2006 - 135,208, and 2007 - 248,145 (CIID 2007).

### Columbia Spotted Frog

Biological Requirements**:** Motorized access has the potential to affect spotted frogs through direct mortality (Gomez 1994, Pilliod et al. 2003, Cushman 2006, Fahrig et al. 1995) Roads may bisect migration or dispersal corridors and frogs are vulnerable to being hit while crossing, although traffic densities are often low at night, when frogs usually travel (Pilliod et al. 2003).

Trend and Potential Occurrence: Spotted frogs have been observed on all ranger districts on the SCNF, most typically in association with vernal pools. Permanent monitoring points were established across the SCNF in 2004. Data that is collected includes egg mass numbers and frog age counts. Data has been collected each year on most ranger districts since 2004. In 2007, 15 spotted frog sites were monitored and 30 surveys completed on four ranger districts. The number of sites surveyed has varied, especially in 2006 and 2007. The number of egg masses detected correlate to the number of sites surveyed, as shown in the figure below (USDA FS 2008). There is some variation of egg masses per number of surveys conducted and number of sites surveyed (Figure 3-3).

Although there is much data concerning presence of Columbia spotted frogs across the Forest and suitable sites have been identified and surveyed for long term monitoring, sufficient monitoring data necessary to indicate trend have not yet been accumulated. Since the establishment of RHCAs across the Forest and implementation of PACFish/INFish standards, which provide riparian buffer strips, riparian areas are considered to be universally in an upward trend. Because of this apparent upward trend in source habitat for, and the extensive occurrence record of, this species across the Forest, the population trend for Columbia spotted frogs on the SCNF is conservatively estimated to be stable. Recent wildfires, especially during FY2000, burned during conditions severe enough to allow stand replacing event to occur in some forested deciduous and coniferous riparian areas. However, the amount of riparian acres burned is less than one percent of the available acres on the Forest and is not considered a factor in overall habitat condition or trend for this species. Future monitoring may provide opportunities to assess fire effects.

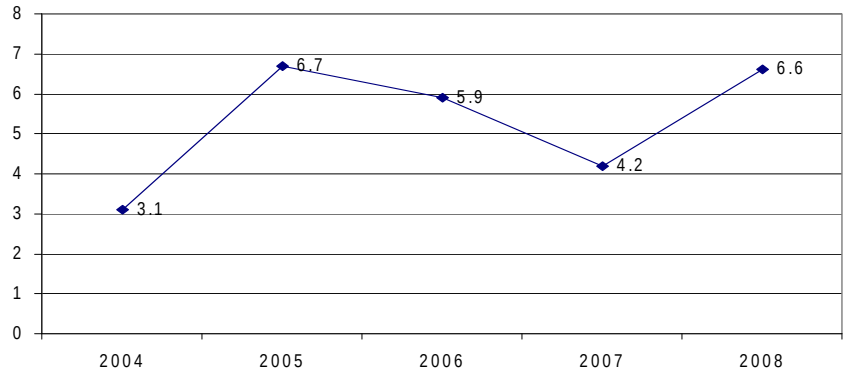



Figure 3-3. Average Number of Spotted Frog Egg Masses per Surveyed Acre, 2004-2008

### Greater Sage-grouse

Biological Requirements: Motorized access has the potential to affect sage-grouse through direct disturbance and harassment on leks or winter concentration areas (Wisdom et al. 2000). One study found that nest success was not decreased near two-track and maintained gravel roads (Kuipers 2004). High traffic on roads associated with oil and gas developments were found to disturb breeding hens

(Lyon 2000). Broods were often observed foraging along roadsides that had low traffic densities (Holloran 1999).

Trend and Potential Occurrence**:** Monitoring of greater sage-grouse populations occurs in cooperation with the Idaho Department of Fish and Game (IDFG) and the Bureau of Land Management (BLM). Monitoring is performed by counting the number of male birds occupying leks along an established lek route in the early spring. Most of the lek areas are located on BLM land; one route is located on the SCNF. Data used to determine trend for the Salmon-Challis MIS were derived from the Antelope Creek, Upper Big Lost, Little Lost, and Upper Birch Creek lek routes in the Upper Snake region and Upper Lemhi, Leadore East, Leadore West, Lower Lemhi, Lower East Pahsimeroi, Lower West Pahsimeroi, Upper Pahsimeroi, Little Hat Creek, and Spring Gulch, Dry Gulch, and Carlson Cabin lek routes in the Salmon Region.

Population numbers and lek activity has been very cyclic over the years throughout the region. Monitoring data generally indicates a continued increasing trend since 1999. Snow conditions during 2008 made accessing many of the leks during peak breeding times difficult or impossible. Exact estimates of trend are difficult to make due to missing data, and variable monitoring and collection methods from year to year. The figure showing trend (Figure 3-4) was derived by averaging the peak number of males on lek routes and dividing that by the number of routes surveyed by year.

Efforts have been made in recent years to identify guidelines as key indicators of adequate sage-grouse habitat (Connelly et al. 2000). These habitat indicators focus on sagebrush heights and canopy cover within all sage-grouse life stage habitats and herbaceous heights and canopy cover primarily on breeding habitat. Appropriate sage-grouse summer and winter habitat conditions are widespread across the Forest. Upland sagebrush/grassland community types are generally in good condition with static or improving trends supporting adequate herbaceous and sagebrush cover primarily due to the efforts made in improved livestock management over the last several decades. Summer and winter habitat conditions are not at present considered limiting sage-grouse occupancy or productivity.

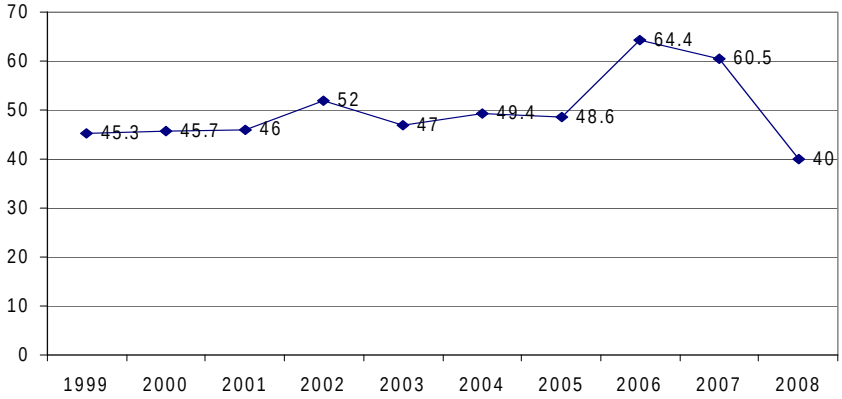



Figure 3-4. Average Number of Male Sage-grouse per Number of Lek Routes, 1999-2008

**Migratory Birds**

Concern over declining continental and local populations of neotropical migratory birds have led federal and state agencies to actively address management and conservation of species and habitat. One step taken to formalize the responsibilities of Federal Agencies in regard to neotropical birds was E.O. 13186, signed January 10, 2001 (66 FR 3853). The E.O. lists several responsibilities of federal agencies to

protect migratory birds, which are discussed in further detail in the Wildlife Specialist Report (Project Record).

The Idaho Bird Conservation Plan (ID PIF 2000) lists bird species that are prioritized based on a number of factors, including relative density in planning unit compared to maximum in range, population trend, threats in breeding habitat, relative abundance, size of breeding range, size of non-breeding range, and threats in non-breeding habitat. High priority species are those species that scored high in the PIF prioritization process, which indicates a high vulnerability of populations. A complete explanation of the rationale is found in the Idaho Bird Conservation Plan, Version 1.0. Rather than taking only a species-based approach to conservation, habitat types are also prioritized. One factor used for prioritization is the number of bird species that use a particular habitat type as primary breeding habitat.

Within the analysis area, the alpine, high elevation mixed conifer forest, lodgepole pine, low elevation mixed conifer, ponderosa pine, juniper/pinyon/mountain mahogany, aspen, sagebrush, non-riverine wetland, riparian, and cliffs/rock outcrops/talus Idaho PIF avian habitats occur (ID PIF 2000). For the purposes of this analysis, high priority birds in primary breeding habitat that would be affected by the proposed action alternatives will be addressed.

Motorized access has the potential to affect migratory breeding birds. Three primary road-associated features have been identified as impacting populations and habitat; snag reduction, down log reduction, and negative edge effects. Snag reduction and down log reduction would largely occur in association with fuelwood gathering, which is facilitated by motorized access. This could reduce foraging and nesting substrate for several species, such as Lewis's woodpeckers, flammulated owls, brown creepers, Williamson's sapsuckers, and black-backed woodpeckers (Wisdom et al. 2000). One study found that nests less than 100 meters from OHV trails experienced an increased rate of nest desertion and abandonment which had negative impacts on nesting success and abundance of breeding birds (Barton and Holmes 2006). Another study found a relationship between high use of trails and lower densities of avian species. The same study found that there was an also increased rate of nest predation near trails, but it was not clear if that was a result of edge effects or of human disturbance, or both (Miller et al. 1998). The first study found that nests built in shrubs less than 100 meters from motor vehicle trails experienced lower predation rates (Barton and Holmes 2006). In a very high traffic area, reduced densities of woodland bird species were found adjacent to roads; the causal factor was attributed to noise load (Reijnen et al. 1995).

Potential Occurrence and Trend: The USFWS completed a strategic plan (USFWS 2004) that outlined and described the USFWS bird conservation activities. Birds of Management Concern (BMC) were listed in this plan. Fourteen of the high priority breeding birds on the Idaho PIF list were designated BMC. Ten species are birds of conservation concern nationally (BCC-N), which is defined as non-game birds that have been determined to be of conservation concern due to declining populations and other factors. The rest of the bird species listed are common, which are considered as having secure populations. A complete list of high priority migratory breeding birds and their global and state rankings are described in the Wildlife Specialist Report.

### *Ungulates*

The action alternatives present different levels of motorized access. All the alternatives provide ample hunting opportunities; the alternatives provide a range between predominantly motorized hunting opportunities to more non-motorized hunting opportunities in an attempt to take in to account the various methods of hunting.

All species of ungulates found on the SCNF; elk, mule deer, bighorn sheep, mountain goats, and pronghorn, are discussed in the Wildlife Specialist report. In this document, only elk and bighorn sheep are discussed due the strong public interest in these species.

**Elk**

Biological Requirements: Abundant literature exists regarding the interactions between motorized access and elk. Elk generally avoid areas near roads (Witmer and deCalesta 1985, Canfield et al. 1999, Rowland et al. 2005, Sawyer et al. 2006). In areas with higher road densities, elk exhibit higher levels of stress and increased rates of movement when disturbed (Rowland et al. 2005). Probability of flight from OHVs remained high for up to 1,500 meters away from the route, which had a considerable effect on elk behavior (Wisdom et al. 2004). Elk tend to use open, more productive habitat near human activities nocturnally or will overuse marginal habitat that is further away from human activity or harassment (Canfield et al. 1999). Human disturbance and harassment during calving periods which result in displacement can increase calf mortality due to increased vulnerability to predation, nutritional stress, and desertion by the cow (Canfield et al. 1999, Phillips and Allredge 2000, Shively et al. 2005). Areas with high road density cause higher levels of higher stress and increased movement rates (Rowland et al. 2005). Many impacts from motorized access occur during hunting season. In areas with high open road density, elk vulnerability to harvest, both legal and illegal, increases (Unsworth et al. 1993, Cole et al. 1997, Rowland et al. 2005). Limited vehicular access during hunting season increases elk habitat security, decreases human disturbance resulting in fewer movements away from roads, increases the use of habitat near roads, and decreases hunter density which may increase hunter success (Cole et al. 1997, Canfield et al. 1999, Gratson and Whitman 2000, Millspaugh et al. 2000). Elk security habitat models include many variables, however, open road density is a factor acknowledged by all authors as having an effect on elk (Ralphs et al. 1981, Lyon 1983, Thomas et al. 1988, Hillis et al. 1991). Various factors, such as rate of traffic, adjacent canopy cover, topography, and class of road, influence how much motorized access affects elk use. Due to the large scale of this analysis, the scope of the analysis will be broad scale and will not include these factors.

Potential Occurrence: Elk occur on all ranger districts on the SCNF. IDFG sets population objectives for elk based upon game management units (GMUs) within zones, which overlap ranger districts. Often, GMUs encompass parts of more than one ranger district. For a more detail description of the GMUs, zones, and information on elk population numbers, refer to the Wildlife Specialist Report (Project Record).

Since the mid-1970s, elk populations increased dramatically. Within the Salmon zone, declining calf recruitment and undesirable bull:cow ratios may indicate that elk herds may have reached undesirable densities. In the Lemhi zone, conservative management has resulted in very good bull:cow ratios. Low calf production may indicate higher than desirable elk population densities. In the Beaverhead zone, calf recruitment and bull:cow ratios have declined since the mid-1990s. In unit 58, elk traditionally summered in Idaho and wintered in Montana. Since the early 1980s, more elk have wintered in Idaho. In the Pioneer zone, management has resulted in desirable bull:cow rations. In the Sawtooth zone, there are indications of recent declines in calf recruitment. The Middle Fork zone has experienced decreased calf production and a less than desired bull:cow ratio in the past decade (Compton et al. 2007a).

### 3.9.7 ENVIRONMENTAL CONSEQUENCES

**Effects Common to All Alternatives**

The existing Travel Plans have yearlong travel and nine seasonal open periods that apply to the Existing Condition and Alternatives 0 and 1 (Table 3-41). Alternatives 3 and 4 have yearlong travel and eight

seasonal periods proposed for the new Travel Plan (Table 3-41.). Alternative 5 has yearlong travel and five seasonal periods proposed for the new Travel Plan (Table 3-41.). Each timeframe was developed to meet specific resource needs.

Table 3-41. Motorized Seasonal Open Periods.

| Seasonal Open Periods in Current Travel Plans, Existing Condition, and Alternatives 0 and 1 | Seasonal Open Periods Alternatives 3 and 4 | Purpose | Proposed Seasonal Open Periods Alternative 5 | Purpose |
|---|---|---|---|---|
| Open year round | Open year round | | Open year round | |
| July 1 - Sep 30 | 1 FBMD* to Aug 25 | Wildlife security during migration and while on winter range, and to provide for non-motorized archery hunting opportunities. | A May 22 to Sept. 7 | Wildlife security during migration and while on winter range, and to provide for non-motorized archery hunting opportunities. |
| Jun 16 - Nov 30 | 2 FBMD to Sep 25 | Wildlife security during migration, while on winter range, and during the general hunt season, as well as providing for non-motorized hunt opportunities | B July 1 to Sept. 30 | Wildlife security during migration, while on winter range, during calving and fawning season, as well as providing for non-motorized hunt opportunities. |
| Apr 1 - Dec 14 | 3 Dec 15 to Sep 25 | Wildlife security during migration | C July 1 to Nov. 15 | Wildlife security during migration, while on winter range, and during calving and fawning season, while providing for motorized hunt opportunities. |
| Jun 16 - Sep 14 | 4 July 1 to April 15 | Security during the elk calving season | D May 22 to Sept. 30 | Provide for motor vehicle use opportunities consistent with prior NEPA decisions. |
| July 1 - Nov 14 | 5 July 1 to Sep 30 | Wildlife security while on winter range, during the elk calving season, and during the general hunt season, as well as providing for non-motorized hunt opportunities | E Apr 1 to Dec 14 | No wildlife rationale |
| July 16 - Mar 31 | 6 Jun 15 to Nov 15 | Wildlife security during migration, while on winter range, and during calving and fawning season, while providing for motorized hunt opportunities. | | |
| May 16 - Sep 24 | 7 June 16 to Nov 14 | | | |
| Dec 16 - Sep 24 | 8 May 1 to Dec 15 | No wildlife rationale | | |
| Jun 16 - Sep 24 | | Big game security | | |
| *FBMD: Friday before Memorial Day | | | | |

## ***Comparison of the Alternatives***

A description of the alternatives can be found in Section 2.5. Comparison of the Alternatives for Wildlife Resources is shown in Chapter 2, Tables 2-30 through 2-33.

## *Direct and Indirect Effects of All Alternatives*

### Region 4 Sensitive Species

#### Gray Wolf

When road densities exceeded greater than 0.83 km/km$^2$ (1.35 mi/mi$^2$), wolves were displaced or avoided those areas (Mech et al. 1988). The Forest-wide route density does not exceed this threshold in any alternative (Table 2-30). Wolves can be affected by motorized access through direct mortality (being hit by cars), increased possibility of being poached, and displacement (Wisdom et al. 2000, Mech et al. 1988, Mech 1989). Acres available for cross-country travel affect the amount of security habitat available. Alternative 3 offers the most acres of security habitat Forest-wide, while Alternative 0 offers the least (Table 2-31).

*Effects Determination:* Decreased route density and increased security habitat could decrease disturbance to wolves. Each of the action alternatives may impact individual gray wolves, but would not likely contribute to a trend towards Federal listing, or cause a loss of viability to the population or species.

#### Canada Lynx

Lynx can be affected by motorized access, especially by off-highway vehicles, by increasing human-caused disturbance and potential mortality from shootings and collisions (Wisdom et al. 2000). Acres available for cross-country travel affect the amount of security habitat available. Alternative 3 offers the most acres of security habitat Forest-wide, while Alternative 0 offers the least (Table 2-31).

Lynx are believed to occur incidentally; the lack of recent confirmed sightings and evidence of reproduction are reasons the species was removed from the SCNF ESA list. Under Alternative 0, direct effects could occur to lynx resulting from disturbance facilitated by cross-country travel, moderate motorized route densities, and low amounts of security habitat. The motorized routes would not be expected to have indirect effects on Canada lynx. The types of roads generally managed by the Forest Service; low traffic and low-speed, do not seem to have a negative effect on lynx. Lynx do not seem to avoid roads (USDA 2007b).

*Effects Determination:* Under Alternatives 1, 3, 4 and 5, all ranger districts would have a decrease in motorized route density; the potential of direct effects to lynx resulting from disturbance facilitated by motorized access would be expected to decrease. Since no construction or maintenance activities are associated with this decision, indirect effects would not be expected.

These alternatives comply with the objectives and guidelines developed for roads in lynx habitat. The SCNF is identified as unoccupied habitat, which indicates that although lynx have been documented on the forest, lynx are not expected to be present numbers sufficient for a breeding population. New roads would not be constructed as a result of the preferred alternative, although some existing unauthorized routes would be authorized. For these reasons; no new construction activities very low lynx population numbers, overall decreased motorized route density and increased security habitat; Alternatives 1, 3, 4, and 5 may affect, but are not likely to adversely affect Canada lynx or their habitat.

#### Bald Eagle

Eagles using the Salmon River during the winter usually are observed adjacent to roads and do not appear to be disturbed by vehicles traveling along those roads. Many of the recorded sightings from the FAUNA database were either incidental sightings or observations during the bald eagle winter count along the Salmon River and major tributaries. Wintering bald eagles foraging along waterways next to roads would not be impacted by passing vehicles. There is one winter roost documented on the Leadore

Ranger District that is adjacent to an existing road. A nest on the North Fork Ranger District is adjacent to a major road. Bald eagles do not appear to be affected by motorized access in either area. Direct and indirect effects to bald eagles are not anticipated from any of the alternatives.

*Effects Determination:* Alternatives 1, 3, 4, and 5 are not expected to have impacts on bald eagles.

**Spotted Bat**

The only occurrence of spotted bats on the SCNF is in the FC-RONRW. Direct effects to spotted bats are not anticipated from this alternative. Indirect effects to habitat could result from weed infestations that are caused or exacerbated by motorized access. Alternatives 0, 1, 3, 4, and 5 would have no direct or indirect effects on spotted bats or their habitat.

*Effects Determination:* The species may occur incidentally elsewhere on the SCNF, but due to the single observation far outside the identified range, the determination is that Alternatives 1, 3, 4, and 5 would have no impact on spotted bats or their habitat.

**Townsend's Big-eared Bat**

Motorized access can affect Townsend's big-eared bats by making roosting and hibernacula sites more accessible, increasing human presence, and potentially increasing harassment (Wisdom et al. 2000). There are no known impacts occurring to Townsend's big-eared bat roosts. However, direct effects from disturbance at roosts facilitated by motorized access and indirect effects resulting from damage to colonial roosts could occur. Under Alternative 4, designation of motorized routes in areas that contain suitable habitat for this species could allow for greater access to mines, adits, and caves that could serve as maternity roosts for this species, therefore potentially increasing direct impacts from disturbance during a critical life stage. No indirect effects would be anticipated from implementation of any of the alternatives.

*Effects Determination:* Decreased route density could decrease disturbance to Townsend's big-eared bats. Any of the alternatives may impact individual Townsend's big-eared bats, but would not likely contribute to a trend towards Federal listing, or cause a loss of viability to the population or species.

**Pygmy Rabbit**

The three ranger districts in which this species occurs (Challis-Yankee Fork, Leadore, and Lost River) have road densities ranging from 0.41 to 1.00 mi/mi$^2$ across the action alternatives (Table 2-30). Alternative 0 has a route density ranging from .56 to 1.21 mi/ mi$^2$. There are no references in the literature that document the effects of motorized access on pygmy rabbits (Wisdom et al. 2000). Burrow complexes within the 300-foot dispersed camping corridor could be directly impacted if burrows are damaged by vehicles driving over and collapsing them. Under Alternative 0, cross-country motor vehicle travel would be allowed on 314,011 acres with occurrences of pygmy rabbits. The number of miles of unauthorized routes within the areas open to cross-country travel in Alternative 0 has the potential to increase.

The elimination of motor vehicle travel off the designated system would reduce the potential of burrow complexes being damaged by motorized access. Decreased route density, reduced acres available for motorized dispersed camping access, and the elimination of motor vehicle travel off the designated system could decrease motorized-facilitated disturbance to pygmy rabbits. Alternatives 1, 3, 4, and 5 may impact individual pygmy rabbits, but would not likely contribute to a trend towards Federal listing, or cause a loss of viability to the population or species.

### Fisher

Motorized route density and acres available for cross-country travel affect the amount of security habitat available. Alternative 0 considers the miles of unauthorized routes within areas open to cross-country travel, which results in reduced security habitat (39% Forest-wide). Moderate motorized route density and low amounts of security habitat could reduce habitat effectiveness for fisher. Potential direct disturbance from motorized access could occur.

All the ranger districts that have documented fisher occurrences have reduced road densities in Alternatives 1, 3, 4, and 5 as compared to Alternative 0. The four ranger districts that have fisher occurrences have motorized route density ratings of low to moderate across the action alternatives (Table 2-30). One strategy for conserving fisher is to minimize human disturbance in source habitats. Portions of the SCNF have been identified as being important as linkage corridors for wolverine (A. Wildlands 2009). Forest-wide, 43% (Alternative 4) to 61% (Alternative 3) of the land would be at least 0.5 miles away from all motorized routes in blocks greater than 250 acres. Although that is a modified measurement developed for elk habitat, it gives a perspective of how much land is available to wildlife, for purposes such as dispersal and foraging, outside the motorized "influence" area. Potential direct disturbance from motorized access would be reduced. Fisher could experience indirect effects from mortality from incidental trapping.

*Effects Determination:* Decreased route density and increased habitat security areas could decrease disturbance to fisher. Alternatives 1, 3, 4, and 5 may impact individual fisher, but would not likely contribute to a trend towards Federal listing, or cause a loss of viability to the population or species.

### Wolverine

Under Alternative 0, the Forest-wide motorized route density rating is moderate (1.06 mi/mi$^2$). Acres available for cross-country travel affect the amount of security habitat available. Alternative 0 considers the miles of unauthorized routes within areas open to cross-country travel, which results in reduced security habitat (39% Forest-wide). Moderate motorized route density and low amounts of security habitat could reduce habitat effectiveness for wolverine. Some degree of direct disturbance from motorized access could occur, although indirect effects are not anticipated.

All ranger districts (all of which have documented wolverine occurrences) would have reduced densities in Alternatives 1, 3, 4, and 5 as compared to the Existing Condition. One strategy for conserving wolverine habitat is to reduce human disturbance from summer and hunting recreation traffic. Portions of the SCNF have been identified as being important as linkage corridors for wolverine (A. Wildlands 2009). Motorized access off designated system routes would not be allowed. This would increase the amount of security habitat (blocks of land greater than 250 acres in size 0.5 miles away from a motorized route) to 43% (Alternative 4) to 61% (Alternative 3) of the SCNF. Although that is a modified measurement developed for elk habitat, it gives a perspective of how much land is available to wildlife, for purposes such as dispersal and foraging, outside the motorized "influence" area. Potential direct disturbance from motorized access would be decreased as compared to the Existing Condition. Indirect effects are not anticipated.

*Effects Determination:* Decreased route density and increased habitat security habitat areas could decrease disturbance to wolverines. Alternatives 1, 3, 4, and 5 may impact individual wolverines, but would not likely contribute to a trend towards Federal listing, or cause a loss of viability to the population or species.

### Bighorn Sheep

Under Alternative 0, Forest-wide motorized route density is 1.06 mi/mi$^2$, which is moderate. Forest-wide route density with seasonal openings factored in is 0.99 mi/mi$^2$ (Table 2-30). Seasonal openings are in place for roads and motor vehicle trails for the purpose of maintaining habitat security during critical life stages such as hunting season, migration, winter, and lambing season.

In Alternative 0, 39% of the land is at least 0.5 miles away from all motorized routes in blocks greater than 250 acres Forest-wide. Factoring in seasonal route openings, 41% of the land is at least 0.5 miles away from all motorized routes in blocks greater than 250 acres (Tables 2-31 and 2-32).

Forest-wide motorized route density for Alternatives 1, 3, 4, and 5 would range from 0.64 mi/mi$^2$ (low route density) to 0.89 mi/mi$^2$ (moderate route density). Forest-wide route density with seasonal openings factored in would range from 0.53 mi/mi$^2$ to 0.82 mi/mi$^2$. Seasonal openings are proposed for roads and motor vehicle trails for the purpose of maintaining habitat security during critical life stages such as hunting season, migration, winter, and fawning/calving season. The Lost River Ranger District would have no seasonal openings.

Forest-wide, 43% to 61% of the land would be at least 0.5 miles away from all motorized routes in blocks greater than 250 acres. Factoring in seasonal motorized route openings, 50% to 65% of the land would be at least 0.5 miles away from all motorized routes in blocks greater than 250 acres. There would be an increase of acreages and percentages of yearlong and seasonal security habitat (Tables 2-31 and 2-32) on all the ranger districts. Forest-wide, there would be an increase in security habitat acres for all motorized routes in all alternatives. The increase is attributable to the elimination of off designated motorized route travel and the reduction in motorized route density. Increased habitat security areas could reduce disturbance to ungulates.

Motorized access was identified as potentially having direct effects on bighorn sheep in the Panther Creek and main Salmon River area due to potentially high levels of unregulated harvest due to increased human access (Toweill 2007a). Alternative 0 would not address these issues. Both the North Fork and Salmon-Cobalt Ranger Districts would have reduced seasonal motorized route designations in all the action alternatives compared with Alternative 0. This may reduce unregulated harvest to some degree, but also may decrease winter-stress related indirect effects due to motorized access.

*Effects Determination:* Moderate motorized route density could result in disturbance to bighorn sheep; however, the elimination of motorized cross-country travel would increase the amount of security habitat available. Alternatives 1, 3, 4, and 5 may impact individual bighorn sheep, but would not likely contribute to a trend towards Federal listing, or cause a loss of viability to the population or species.

**Harlequin Duck**

There are no references in the literature that document the effects of motorized access on harlequin ducks (Cassirer and Groves 1991, Wallen and Groves 1988). No direct or indirect effects would be anticipated.

*Effects Determination:* None of the alternatives are expected to have impacts on harlequin ducks.

**Northern Goshawk**

Forest-wide motorized route density for Alternatives 1, 3, 4, and 5 would be from 0.64 mi/mi$^2$ (Alternative 3) to 0.89 mi/mi$^2$ (Alternative 4). Direct disturbance to goshawks facilitated by motorized access would be expected to be somewhat reduced with the decrease in designated motorized routes in potential habitat. The removal of snags and downed logs for fuelwood, resulting from motorized access, has the potential to directly affect goshawk habitat and to indirectly affect goshawks by reducing habitat for their prey base (Wisdom et al. 2000). Mean density of snags along closed roads has been found to

be twice that of open roads, indicating that travel management can affect snag density (Bate et al. 2007). Since about 2000, bark beetle infestations and landscape level fires have contributed to the amount of dead and downed trees across the forest.

*Effects Determination:* Decreased route density could decrease disturbance to goshawks. Alternatives 1, 3, 4, and 5 may impact individual goshawks, but would not likely contribute to a trend towards Federal listing, or cause a loss of viability to the population or species.

**American Peregrine Falcon**

There are no references in the literature that document the effects of motorized access on peregrine falcons (Richardson and Miller 1997). No direct or indirect effects to peregrine falcons would be anticipated.

*Effects Determination:* Alternatives 1, 3, 4, or 5 are not expected to have impacts on peregrine falcons.

**Boreal Owl, Flammulated Owl, Great Grey Owl, and Three-toed Woodpecker**

Forest-wide motorized route density is moderate (1.06 mi/mi$^2$) under Alternative 0. Forest-wide motorized route density for Alternatives 1, 3, 4, and 5 would be from 0.64 mi/mi$^2$ (Alternative 3) to 0.89 mi/mi$^2$ (Alternative 4) (Table 2-30). Direct effects to the above species as a result of motorized access would not be anticipated. Indirect effects to nesting and foraging habitat could occur as the removal of snags and downed logs for fuelwood (Wisdom et al. 2000). Mean density of snags along closed roads has been found to be twice that of open roads, indicating that travel management can affect snag density (Bate et al. 2007). Since about 2000, bark beetle infestations and landscape level fires have contributed to the amount of dead and downed trees across the forest. Fuelwood gathering is a permitted activity and if habitat effects were to occur as a result of this activity, mitigations would be implemented.

*Effects Determination:* Decreased route density could result in a somewhat decreased disturbance to the above species. Alternatives 1, 3, 4, and 5 may impact individual boreal owls, flammulated owls, great grey owls, and three-toed woodpeckers, but would not likely contribute to a trend towards Federal listing, or cause a loss of viability to populations or species.

**Management Indicator Species**

**Pileated Woodpecker**

Forest-wide motorized route density is moderate (1.06 mi/mi$^2$) under Alternative 0. Forest-wide motorized route density for Alternatives 1, 3, 4, and 5 would be from 0.64 mi/mi$^2$ (Alternative 3) to 0.89 mi/mi$^2$ (Alternative 4) (Table 2-30). Direct effects to pileated woodpeckers as a result of motorized access would not be anticipated. Indirect effects to pileated woodpecker habitat could occur as the removal of snags and downed logs for fuelwood (Wisdom et al. 2000). Mean density of snags along closed roads has been found to be twice that of open roads, indicating that travel management can affect snag density (Bate et al. 2007). Fuelwood gathering is a permitted activity and if habitat effects were to occur as a result of this activity, mitigations would be implemented.

*Effects Determination:* Under the action alternatives, decreased route density could decrease disturbance to pileated woodpeckers. Alternatives 1, 3, 4, and 5 would not be expected to result in a downward trend for this species.

**Columbia Spotted Frog**

Under Alternative 0, the Forest-wide average motorized route densities would be moderate. In this alternative, 1,353.5 miles of motorized routes are within the 300 foot buffer for perennial streams and 327.4 miles of motorized routes are within the 100 foot buffer for intermittent streams. There are 85,311 acres of motorized dispersed camping access available within the perennial and intermittent stream buffers. The substantial amount of miles of motorized routes adjacent to riparian areas and large amount of acres available for motorized dispersed camping access could result in a decline in riparian condition. The quality of the riparian habitat could indirectly affect spotted frogs by influencing reproductive success.

Forest-wide motorized route density for Alternatives 1, 3, 4, and 5 would be from 0.64 mi/mi$^2$ (Alternative 3) to 0.89 mi/mi$^2$ (Alternative 4) (Table 2-30). Miles of motorized routes within perennial stream buffered areas (300 feet either side of the stream) and intermittent streams (100 feet either side of the stream) would decrease within perennial and intermittent stream buffered areas. Acres of dispersed camping in riparian habitat conservation areas would be substantially reduced in Alternatives 1, 3, 4, and 5. This could result in an improvement of quality of riparian habitat which could indirectly affect spotted frogs by influencing reproductive success. Motorized access has the potential to affect spotted frogs through direct mortality (Gomez 1994, Pilliod et al. 2003, Cushman 2006, Fahrig et al. 1995). Traffic density is generally low across the forest, although there is no quantitative data. Individual frogs may be hit, but large numbers would likely not be impacted.

*Effects Determination:* Decreased route density across the action alternatives could decrease disturbance to spotted frogs. Decreased miles of motorized routes adjacent to riparian areas and no acres of motorized dispersed camping access could result in an improvement in riparian condition. Alternatives 1, 3, 4, and 5 may impact individual spotted frogs, but would not likely contribute to a trend towards Federal listing, or cause a loss of viability to the population or species or be expected to result in a downward trend for this species.

**Greater Sage-grouse**

Under Alternative 0, cross-country motor vehicle travel would be allowed on 693,215 acres on the four Ranger Districts with occurrences of sage-grouse. The number of miles of unauthorized routes within the areas open to cross-country travel has the potential to increase. The four ranger districts in which this species occurs, Challis-Yankee Fork, Leadore, Lost River, and Salmon-Cobalt, would have reduced motorized route densities in Alternatives 1, 3, 4, and 5 as compared to Alternative 0 (Table 2-29). Direct disturbance to sage-grouse on the known lek located on the Forest would not be anticipated. Disturbance to lekking birds resulting from observers in motorized vehicles has not been observed (pers. obs.). Hens with broods and individual sage-grouse could be incidentally disturbed by passing motorized vehicles, although traffic volume is expected to remain low, especially during nesting and brood rearing periods. The elimination of motorized access off designated system routes would reduce direct disturbance to sage-grouse.

*Effects Determination:* Across the action alternatives, decreased route density could decrease disturbance to sage-grouse. Alternatives 1, 3, 4, and 5 may impact individual sage-grouse, but would not likely contribute to a trend towards Federal listing, or cause a loss of viability to the population or species or be expected to result in a downward trend for this species.

**Migratory Breeding Birds**

Under Alternative 0, motorized route density is moderate Forest-wide. Disturbance adjacent to motorized routes could directly affect migratory breeding birds by causing displacement and potential nest desertion and abandonment, resulting in lower breeding bird densities and decreased nesting success in areas within the influence zone of the motorized routes. In Alternative 0, a decline of quality

of riparian habitat could occur where routes or access to dispersed camping occur within these influence zones, indirectly affecting birds that utilize riparian habitat for breeding. Indirect effects to migratory birds that rely upon snags and down logs for nesting a foraging substrate could occur as a result of the removal of snags and downed logs for fuelwood. Mean density of snags along open roads has been found to be twice that of closed roads, indicating that travel management can affect snag density (Bate et al. 2007). Since about 2000, bark beetle infestations and landscape level fires have contributed to the amount of dead and downed trees across the Forest.

Under Alternatives 1, 3, 4, and 5, decreased miles of motorized routes adjacent to riparian areas and fewer acres of dispersed camping access could result in an improvement of quality of riparian habitat within these influence areas, indirectly affecting birds positively that utilize riparian habitat for breeding. Given that the total amount of motorized routes would decrease, the amount of influence zones would also be reduced. Decreased route density could decrease direct disturbance to migratory birds. The removal of snags and downed logs for fuelwood could result in indirect effects to migratory birds that rely upon snags and down logs for nesting and foraging substrate. Fuelwood gathering is a permitted activity and if habitat effects were to occur as a result of this activity, mitigation would be implemented.

***Ungulates***

Under Alternative 0, Forest-wide motorized route density is 1.06 mi/mi$^2$, which is moderate. Forest-wide route density with seasonal openings factored in is 0.99 mi/mi$^2$ (Table 2-30). Seasonal openings are in place for roads and motor vehicle trails for the purpose of maintaining habitat security during critical life stages such as hunting season, migration, winter, and fawning/calving season.

In Alternative 0, 39% of the land is at least 0.5 miles away from all motorized routes in blocks greater than 250 acres Forest-wide. Factoring in seasonal route openings, 41% of the land is at least 0.5 miles away from all motorized routes in blocks greater than 250 acres (Tables 2-31 and 2-32).

Forest-wide motorized route density for Alternatives 1, 3, 4, and 5 would range from 0.64 mi/mi$^2$ (low route density) to 0.89 mi/mi$^2$ (moderate route density). Forest-wide route density with seasonal openings factored in would range from 0.53 mi/mi$^2$ to 0.82 mi/mi$^2$. Seasonal openings are proposed for roads and motor vehicle trails for the purpose of maintaining habitat security during critical life stages such as hunting season, migration, winter, and fawning/calving season. The Lost River Ranger District would have no seasonal openings.

Forest-wide, 43% to 61% of the land would be at least 0.5 miles away from all motorized routes in blocks greater than 250 acres. Factoring in seasonal motorized route openings, 50% to 65% of the land would be at least 0.5 miles away from all motorized routes in blocks greater than 250 acres. There would be an increase of acreages and percentages of yearlong and seasonal security habitat (Tables 2-31 and 2-32) on all the ranger districts. Forest-wide, there would be an increase in security habitat acres for all motorized routes in all alternatives. The increase is attributable to the elimination of off designated motorized route travel and the reduction in motorized route density. Increased habitat security areas could reduce disturbance to ungulates.

Motorized access can have a direct effect on elk by causing flight response and reduced use of habitat in areas that are within the influence zone of a motorized route. Overall, this effect may be reduced since route densities would decrease. The increase of seasonal route designations during hunting and calving/fawning seasons would increase the amount of security habitat Forest-wide. Indirect effects such decreased calf survival and stress related impacts should be decreased.

## 3.9.8 CUMULATIVE EFFECTS

Cumulative effects are caused by the aggregate of past, present, and reasonably foreseeable future

actions combined with the effects of the proposed action and alternatives. This section describes the effects of the action alternatives on wildlife including the present and future effects added to the effects that have taken place in the past.

The geographic scope for the cumulative effects assessment for wildlife includes the entire SCNF, including the FC-RONRW.

A list of past, present, and reasonably foreseeable actions is presented in Appendix F. A discussion of reasonably foreseeable actions by species is described.

**Region 4 Sensitive Species**

**Gray Wolf**

Wolves were extirpated from the SCNF during that last century. In the mid-1990s, wolves were reintroduced and have reestablished packs across the forest. Most past and ongoing activities are not expected to have an impact on wolf populations on the SCNF since populations have increased and expanded while these activities occurred (Appendix F). Livestock grazing increases the probability of human-caused mortality as a response to wolf predation on cattle (Wisdom et al. 2000). Individual wolves and entire packs have been removed, and will likely be removed in the future, as a result of preying on livestock.

Future activities would be analyzed under the National Environmental Policy Act (NEPA) and design features providing for the conservation of wolves would be required even after the species is removed from the Endangered Species List.

Current noxious weed management is attempting to prevent further spread of noxious weeds while controlling known infestations. Although elk and deer (wolf prey species) use a wide variety of cover types and structural stages, the amount and condition of winter ranges can often be a limiting factor for wild ungulate herds (Ralphs 1981). Plant communities comprising wild ungulate winter range are those most threatened by noxious weeds.

Adjacent to the Forest boundary, private land is being developed, creating a denser urban interface, which increases encounters between wolves and humans. Lower elevation areas, which are utilized as winter range by prey species, are those lands which are being developed at an increasing rate. Wolf/human conflicts are likely to increase as human presence increases.

Wolf populations met and exceeded recovery goals which led to the Rocky Mountain Distinct Population Segment being removed from the Federal Endangered Species list in May 2009. The State of Idaho has management responsibility for wolves, which are now classified as a game species. Motorized access could facilitate the hunting of this species; however, the amount of designated routes decreased from the Existing Condition and motorized access off the designated system would no longer be allowed. The state adopted state-wide mortality limits, which would regulate the number of wolves legally shot. Illegal shooting and harassment would likely continue to occur.

All alternatives would result in lower motorized route densities than the Existing Condition and No Action Alternative. All the action alternatives would have moderate motorized route densities Forest-wide, except for Alternative 3, which would have low motorized route densities Forest-wide. Motorized access off the designated system would not be allowed. The SCNF would support wolf populations in all the action alternatives. The action alternatives, in addition to past, present, and reasonably foreseeable activities are not expected to result in adverse cumulative impacts to gray wolves.

**Canada Lynx**

Canada lynx are not believed to occur in numbers sufficient for reproductive purposes, which is one of the reasons the species was removed from the list of ESA species that occur on the SCNF. Activities that may cumulatively affect lynx include past timber harvest, fuels and other vegetation treatments (Appendix F). Each past and ongoing project had site specific analyses conducted and were designed to minimize detrimental impacts to Canada lynx.

Future activities would be analyzed under the National Environmental Policy Act (NEPA) and design features providing for the conservation of lynx would be required even though the species is removed from the Endangered Species List for the SCNF.

Other factors recognized as contributing to cumulative effects for lynx include winter recreation activities and noxious weed invasion. Winter recreation is suspected to negatively affect lynx populations through disturbance and by providing access along packed snowmobile trails to bobcats and coyotes into areas where they typically could not go due to deep snow (Ruediger et al. 2000; Wisdom et al. 2000). These species are believed to be potential competitors with lynx for winter prey. The travel plan does not address over-snow travel; the number of miles of groomed snow machine and cross-country ski trails is not expected to increase without NEPA analysis conducted.

Ruediger et al. (2000) recognized the potential impacts of noxious weed invasion to lynx habitat. Current noxious weed management is attempting to prevent further spread of noxious weeds while controlling known infestations.

All the action alternatives provide security habitat outside the motorized "influence zone." The elimination of cross-country travel substantially increases the amount of this area. Alternative 4 provides for the least (43% Forest-wide), while Alternative 3 provides for the most (61% Forest-wide); both are an increase over Alternative 0 (39%) and the Existing Condition (32%). All the alternatives would result in lower motorized route densities than Alternative 0 and Existing Condition. All the alternatives would have moderate motorized route densities Forest-wide, except for Alternative 3, which would have low motorized route densities Forest-wide. The action alternatives, in addition to past, present, and reasonably foreseeable activities are not expected to result in adverse cumulative impacts to Canada lynx.

**Bald Eagle**

No direct or indirect effects to bald eagles were identified from the implementation of any of the action alternatives. None of the alternatives would be expected to result in cumulative impacts to bald eagles or their habitat when added to past, present, or reasonably foreseeable actions.

**Spotted Bat**

Spotted bats are sensitive to human disturbance (Groves et al. 1997). Activities that may negatively impact this species are not well known (Chambers and Herder 2005). Activities that may cumulatively affect big-eared bats include livestock grazing, wildfires, noxious weed invasion and treatments, and human development by altering prey species' composition, density, and distribution. Livestock grazing may have consequences to foraging habitat for spotted bats, by altering foraging quality. Fire could temporarily decrease foraging habitat, but deciduous shrub communities, particularly in riparian areas, typically recover quickly from fire and exhibit renewed vigor (Smith 2000). Weed management activities, including prevention, inventory and control actions, that maintain native plant communities would likewise benefit foraging habitat.

Development on private land adjacent to the Forest boundary could be detrimental to the spotted bat

by reducing foraging habitat and increasing the potential of human disturbance (Chambers and Herder 2005).

This species has one occurrence record within the FC-RONRW. This species may occur elsewhere on the forest, but that would be outside the known range. All the alternatives would have moderate motorized route densities Forest-wide, except for Alternative 3, which would have low motorized route densities Forest-wide. The action alternatives, in addition to past, present, and reasonably foreseeable activities are not expected to result in adverse cumulative impacts to spotted bats.

**Townsend's Big-eared Bat**

Townsend's big-eared bat colonies make habitual use of specific sites for roosting and foraging, greatly increasing this species' vulnerability to disturbance and habitat alteration or loss (ISCE 1995). Activities that cumulatively affect big-eared bats include livestock grazing, mining, wildfires, noxious weed invasion and treatments.

Livestock grazing, wildfire, and noxious weed management can affect Townsend's big-eared bat populations by altering prey species' composition, density, and distribution. Livestock grazing is thought to have consequences to foraging habitat for Townsend's big-eared bats, but the degree is uncertain (ISCE 1995). Fire could temporarily decrease foraging habitat, but deciduous shrub communities, particularly in riparian areas, typically recover quickly from fire and exhibit renewed vigor. Weed management activities, including prevention, inventory and control actions, that maintain native plant communities would likewise benefit foraging habitat.

There are ongoing Abandoned Mine Land reclamations being conducted across the SCNF. Abandoned mines and adits are filled in or have entrances blocked to reduce public safety hazards. Monitoring for the presence of bats is required before any action to close a mine or adit occurs.

The action alternatives, in addition to past, present, and reasonably foreseeable activities are not expected to result in adverse cumulative impacts to Townsend's big eared bats.

**Pygmy Rabbit**

Pygmy rabbits can be affected by livestock grazing, prescribed fire, and range improvement activities. Site specific analysis is conducted for projects and grazing permit renewals and projects designed to minimize detrimental impacts to pygmy rabbits. Impacts resulting from motorized access are not discussed in the literature; however, the elimination of motorized access off the designated system would reduce potential damage to burrow complexes caused by cross-country motor vehicle travel.

The action alternatives, in addition to past, present, and reasonably foreseeable activities are not expected to result in adverse cumulative impacts to pygmy rabbits.

**Fisher**

Activities such as fuels and other vegetation treatments have the potential to affect fisher. Each project has site specific analysis conducted and is designed to minimize detrimental impacts to fisher.

Riparian habitat conservation area buffers are applied to all intermittent and perennial streams as well as to wetlands. These buffers provide linkage among habitats in different cover types and structural stages.

All the action alternatives provide security habitat outside the motorized "influence zone." The elimination of motor vehicle travel off the designated system substantially increases the amount of this

area. Alternative 4 provides for the least (43% Forest-wide), while Alternative 3 provides for the most (61% Forest-wide); both are an increase over Alternative 0 (39%) and the Existing Condition (32%).

The implementation of any of the action alternatives, in addition to past, present, and reasonably foreseeable activities are not expected to result in adverse cumulative impacts to fisher.

**Wolverine**

Activities that cumulatively affect wolverines include past timber harvest, fuels and other vegetation treatments, noxious weed invasion and management. Each project has site specific analysis conducted and is designed to minimize detrimental impacts to wolverine.

The balance of effects of timber harvest to wolverines is uncertain (Ruggiero et al. 1994). However, there are thought to be several threats to wolverines resulting from vegetation alteration. Loss of mature montane and subalpine forest is believed to be detrimental, since these forest types are important to successful wolverine reproduction (Wisdom et al. 2000). The loss of snags can be detrimental to successful wolverine production. Riparian habitat conservation area buffers are applied to all intermittent and perennial streams as well as to wetlands. These buffers provide linkage among habitats in different cover types and structural stages.

Since habitat capability for wolverines is partially dependent on prey base, effects to elk and deer likewise affect wolverines. Although elk and deer use a wide variety of cover types and structural stages, the amount and condition of winter ranges can often be a limiting factor for wild ungulate herds (Ralphs et al. 1981). Plant communities comprising wild ungulate winter range are those most threatened by noxious weeds.

All the action alternatives provide security habitat outside the motorized "influence zone." The elimination of motor vehicle travel off the designated system substantially increases the amount of this area. Alternative 4 provides for the least (43% Forest-wide), while Alternative 3 provides for the most (61% Forest-wide); both increase over the No Action Alternative (39%) and the Existing Condition (32%).

The implementation of any of the action alternatives, in addition to past, present, and reasonably foreseeable activities are not expected to result in adverse cumulative impacts to wolverine.

**Bighorn Sheep**

SCNF activities that cumulatively affect ungulates include livestock grazing and noxious weeds invasion and management.

Livestock grazing can affect bighorn sheep resulting from dietary overlap and spatial segregation (Chaikina and Ruckstuhl 2006).

Current noxious weed management in the project area is attempting to prevent further spread of noxious weeds while controlling known infestations. Bighorn sheep depend on diverse plant communities to meet dietary needs, especially in lower elevation, more arid sites. Weed infestations may result in a decrease of plant species diversity and in turn may compromise bighorn sheep adaptability (Wagner and Peek 2006). Plant communities comprising wild ungulate winter range are those most threatened by noxious weeds.

All the action alternatives provide security habitat outside the motorized "influence zone". The elimination of cross-country travel substantially increases the amount of this area. The Maximum Motorized Emphasis Alternative provides for the least (43% Forest-wide), while the Recommended Wilderness/Roadless Area Values Emphasis Alternative provides for the most (61% Forest-wide); both

are an increase over the No Action Alternative (39%) and the Existing Condition (32%). The elimination of cross-country travel would provide the greatest security habitat benefit for ungulates.

The action alternatives, in addition to past, present, and reasonably foreseeable activities are not expected to result in adverse cumulative impacts to bighorn sheep.

**Harlequin Duck**

No direct or indirect effects to harlequin ducks were identified from the implementation of any of the action alternatives. None of the alternatives would be expected to result in cumulative impacts to harlequin ducks or their habitat when added to ongoing or reasonably foreseeable actions.

**Northern Goshawk**

Activities that cumulatively affect northern goshawks include past timber harvest, fuels and other vegetation treatments, livestock grazing, and fuelwood cutting. Each project has site specific analyses conducted and are designed to minimize detrimental effects on goshawks.

Snags and large, down logs are important to northern goshawk prey species and indirectly to goshawks as well. A major human use of sound snags is for fuelwood. The constant removal of sound snags by fuelwood cutters ultimately yields an overall reduction in dead wood from an area because the progression of decay from sound snags to soft snags to down logs is interrupted. The elimination of motor vehicle travel off the designated system and the designation of specific routes for the purpose of fuelwood gathering would reduce the land base available for snag removal.

The implementation of any of the action alternatives, in addition to past, present, and reasonably foreseeable activities are not expected to result in adverse cumulative impacts to goshawks.

**American Peregrine Falcon**

No direct or indirect effects to peregrine falcons were identified from the implementation of any of the action alternatives. None of the alternatives would be expected to result in cumulative impacts to peregrine falcons or their habitat when added to ongoing or reasonably foreseeable actions.

**Boreal Owl**

Activities that cumulatively affect boreal owls include past timber harvest, fuels and other vegetation treatments, and fuelwood cutting. Each project has site specific analyses conducted and are designed to minimize detrimental effects on boreal owls.

Snags are important to boreal owls as nesting habitat. A major human use of sound snags is for fuelwood. The constant removal of sound snags by fuelwood cutters ultimately yields an overall reduction in dead wood from an area because the progression of decay from sound snags to soft snags to down logs is interrupted. The elimination of motor vehicle travel off the designated system and the designation of specific routes for the purpose of fuelwood gathering would reduce the land base available for snag removal.

The implementation of any of the action alternatives, in addition to past, present, and reasonably foreseeable activities are not expected to result in adverse cumulative impacts to boreal owls.

**Flammulated Owl**

Activities that cumulatively affect boreal owls include past timber harvest, fuels and other vegetation treatments, and fuelwood cutting. Each project has site specific analyses conducted and are designed to minimize detrimental effects on flammulated owls.

Snags are important to flammulated owls as nesting habitat. A major human use of sound snags is for fuelwood. The constant removal of snags by fuelwood cutters ultimately yields an overall reduction in dead wood from an area because the progression of decay from sound snags to soft snags to down logs is interrupted. The elimination of motor vehicle travel off designated systems routes and the designation of specific routes for the purpose of fuelwood gathering would reduce the land base available for snag removal.

The implementation of any of the action alternatives, in addition to past, present, and reasonably foreseeable activities are not expected to result in adverse cumulative impacts to flammulated owls.

**Great Grey Owl**

Activities such as past timber harvest, and current fuels and other vegetation treatments have the potential to affect great grey owls. Each project has site specific analyses conducted and are designed to minimize detrimental effects on great grey owls.

Snags are important to flammulated owls as nesting habitat. A major human use of sound snags is for fuelwood. The constant removal of snags by fuelwood cutters ultimately yields an overall reduction in dead wood from an area because the progression of decay from sound snags to soft snags to down logs is interrupted. The elimination of motor vehicle travel off designated system routes and the designation of specific routes for the purpose of fuelwood gathering would reduce the land base available for snag removal.

The elimination of motor vehicle travel off the designated system would reduce damage to meadow areas by preventing vehicles rutting and compacting saturated soils. This would improve habitat conditions for prey species.

The implementation of any of the action alternatives, in addition to past, present, and reasonably foreseeable activities are not expected to result in adverse cumulative impacts to great grey owls.

**Three-toed Woodpecker**

Activities such as fuels and other vegetation treatments have the potential to affect three-toed woodpeckers. Each project has site specific analyses conducted and are designed to minimize detrimental effects on three-toed woodpeckers.

Snags are important to three-toed woodpeckers as nesting habitat. A major human use of sound snags is for fuelwood. The constant removal of snags by fuelwood cutters ultimately yields an overall reduction in dead wood from an area because the progression of decay from sound snags to soft snags to down logs is interrupted. The elimination of motor vehicle travel off the designated system routes and the designation of specific routes for the purpose of fuelwood gathering would reduce the land base available for snag removal.

The implementation of any of the action alternatives, in addition to past, present, and reasonably foreseeable activities are not expected to result in adverse cumulative impacts to three-toed woodpeckers.

**Management Indicator Species**

**Pileated Woodpecker**

Activities such as fuels and other vegetation treatments have the potential to affect pileated woodpeckers. Each project has site specific analyses conducted and are designed to minimize detrimental effects on pileated woodpeckers.

Snags are important to pileated woodpeckers as nesting habitat. A major human use of sound snags is for fuelwood. The constant removal of snags by fuelwood cutters ultimately yields an overall reduction in dead wood from an area because the progression of decay from sound snags to soft snags to down logs is interrupted. The elimination of motor vehicle travel off the designated system and the designation of specific routes for the purpose of fuelwood gathering would reduce the land base available for snag removal. In the last decade, insect infestations and large fires have increased the amount of standing and downed wood across the SCNF and have benefited pileated woodpeckers.

The implementation of any of the action alternatives, in addition to past, present, and reasonably foreseeable activities are not expected to result in adverse cumulative impacts to pileated woodpeckers.

**Columbia Spotted Frog**

Activities that cumulatively affect spotted frogs owls include past timber harvest, fuels and other vegetation treatments, and livestock grazing. Each vegetation management project has site specific analyses conducted and are designed to minimize detrimental effects on spotted frogs.

Effects of livestock use include the loss of riparian and wetland vegetation, soil compaction, bank instability, downcutting, and lowering of the water table. These impacts may have resulted in reductions of Columbia spotted frog foraging habitat, protective cover, prey species, and suitable breeding sites (Gomez 1994).

The elimination of motor vehicle travel off the designated system in all alternatives has to potential to reduce damage to wetlands and meadow areas. The requirement of vehicles to remain on designated roads and trails would likely benefit riparian areas in all alternatives. Alternative 4 has the most designated motorized routes in the perennial and intermittent buffer areas (1,210 and 295 miles, respectively), while Alternative 3 has the least designated motorized routes in the perennial and intermittent buffer areas (862 and 185 miles, respectively); both are a decrease over Alternative 0 (1,353 and 327 miles, respectively) and the Existing Condition (1,537 and 421 miles, respectively).

The implementation of any of the action alternatives, in addition to past, present, and reasonably foreseeable activities are not expected to result in adverse cumulative impacts to spotted frogs.

**Greater Sage-grouse**

Activities that cumulatively affect sage-grouse include livestock grazing and range improvement activities. Site specific analysis is conducted for projects and grazing permit renewals and projects designed to minimize detrimental impacts to sage-grouse.

Within sage-steppe areas, livestock grazing can reduce the percent cover of native grasses and forbs, damage soil microorganisms, introduce non-native invasive plants, and affect sage cover (either increasing or decreasing to unsuitable levels) (Paige and Ritter 1999).

The action alternatives, in addition to past, present, and reasonably foreseeable activities are not expected to result in adverse cumulative impacts to sage-grouse.

**Migratory Birds**

Activities that cumulatively affect migratory birds include past timber harvest, fuels and other vegetation treatments, noxious weed invasion and management, livestock grazing, and insect infestation. Each project has site specific analysis conducted and is designed to minimize detrimental impacts to migratory birds.

Insect infestations and wildfires may benefit many of the migratory bird species by creating nesting and foraging habitat. Fire could temporarily decrease foraging habitat, but deciduous shrub communities,

particularly in riparian areas, typically recover quickly from fire and exhibit renewed vigor. Weed management activities, including prevention, inventory and control actions, that maintain native plant communities would likewise benefit foraging habitat.

Livestock grazing has been shown to affect bird habitat. Studies have shown that grazing removes nesting substrate and can increase the risk of nest predation (Ammon and Stacey 1997), and can increase percent bare ground, decrease percent willow cover, and increase non-native species (such as Kentucky bluegrass) in riparian areas (Schultz and Leininger 1990). Within sage steppe areas, livestock grazing can reduce the percent cover of native grasses and forbs, damage soil microorganisms, introduce non-native invasive plants, and affect sage cover (either increasing or decreasing to unsuitable levels) (Paige and Ritter 1999).

The action alternatives, in addition to past, present, and reasonably foreseeable activities are not expected to result in adverse cumulative impacts to migratory birds.

### *Ungulates*

SCNF activities that cumulatively affect ungulates include livestock grazing and noxious weeds invasion and management. Livestock grazing can affect elk, deer, and bighorn sheep resulting from dietary overlap and spatial segregation (Chaikina and Ruckstuhl 2006).

Current noxious weed management in the project area is attempting to prevent further spread of noxious weeds while controlling known infestations. Although elk and deer use a wide variety of cover types and structural stages, the amount and condition of winter ranges can often be a limiting factor for wild ungulate herds (Ralphs 1981). Plant communities comprising wild ungulate winter range are those most threatened by noxious weeds.

Adjacent to the Forest boundary, private land is being developed, creating a denser urban interface, which increases encounters between ungulates and humans. Lower elevation areas, which are those lands that are being developed at an increasing rate, are utilized as winter range. Ungulates experience higher vehicle collision mortalities as high speed road traffic increases.

All the action alternatives provide security habitat outside the motorized "influence zone." The elimination of motor vehicle travel off the designated system routes substantially increases the amount of this area. Alternative 4 provides for the least (43% Forest-wide), while Alternative 3 provides for the most (61% Forest-wide); both are an increase over Alternative 0 (39%) and the Existing Condition (32%). The elimination of motor vehicle travel off the designated system would provide the greatest security habitat benefit for ungulates.

The action alternatives, in addition to past, present, and reasonably foreseeable activities are not expected to result in adverse cumulative impacts to ungulates.

## ***Irreversible and Irretrievable Commitments for all Wildlife Species Analyzed***

Permanent facilities or associated wildlife habitat are not changed in any watershed containing TES or MIS species to an extent that loss of wildlife production occurs for an implemented action. Irreversible loss of wildlife production would only occur in a case where an action was implemented that caused permanent loss of some wildlife production. Irretrievable commitments of habitat components for wildlife would be limited to vegetation removal associate with road or trail maintenance or construction activities. These commitments would occur in isolated areas scattered across the forest, and as such, are not expected to impact wildlife production. Avoidance of irretrievable commitments would be insured through maintenance of habitat for wolverine and lynx and through adherence to Forest Plan direction.

# 3.10 SENSITIVE PLANT RESOURCES

## 3.10.1 CHANGES BETWEEN THE DRAFT EIS AND THE FINAL EIS

- Analysis was done at a ranger district level, rather than HUC 5 watershed level, to be consistent with the administrative analysis area in the Travel Management Rule. The results of the analysis were similar when done at both the ranger district and HUC 5 level, but were more easily described at the ranger district level.

## 3.10.2 METHODOLOGY FOR ANALYSIS

Analysis for effects of motorized routes on sensitive plants was done using GIS analysis and interpretation. Sensitive plant species occurrences by watershed were determined using Idaho Conservation Data Center data. IDFG CDC maintains a GIS database of species occurrence records. The most current version, February 2008, was used. Very few species have had comprehensive surveys conducted, so a lack of records in a watershed does not preclude occurrence; however, watershed level analysis was done based upon available records. Point data was overlaid on a SCNF layer and a watershed layer. Analysis was also done at a ranger district level.

Literature searches were conducted to determine the effect motorized access may have upon each of the sensitive species. Increases of motorized routes, especially undesignated routes, were listed in tables. Undesignated non-system roads and trails are considered to be new construction although no actual ground-disturbing activities would occur. Although these routes exist on the ground, they were not authorized for travel and would be considered a new disturbance factor for sensitive plants.

Indicators used to measure impacts to designated plants are:

- Miles of previously undesignated roads and non-motor vehicle trails designated within watersheds and potential habitat areas where specially designated plants are found
- Acres open to cross-country motor vehicle travel within specially designated plant habitat

The techniques and methodologies used in this analysis consider the best information and data available. The relevant science considered for this analysis consists of several key elements, including review of scientific literature, use of current methods of spatial analysis and cartographic display, previous monitoring of similar types of activities on NFS lands, and the collective knowledge of the project by ID Team members through integration of science with local conditions.

## 3.10.3 COMPLIANCE WITH THE FOREST PLAN AND OTHER REGULATORY DIRECTION

The Forest Plan desired future condition for sensitive plants relevant to travel planning is stated differently between the Salmon and Challis LRMPs. The Salmon LRMP does not identify desired future conditions for sensitive plants. In the environmental consequences section, the plan states “the Forest Service list of Sensitive Plant and Animal Species includes those species identified by the Regional Forester for which continuation of population viability is a concern. These species are not protected under the Endangered Species Act…” However, protection is assured under the National Policy and Guidelines for Sensitive Species Occurring on National Forest System Lands. The Forest Service will not authorize or conduct any project or action that is likely to jeopardize the continued existence of any sensitive species” (Salmon LRMP FEIS IV-25).

The Challis LRMP states that the desired future condition would be:

- Habitat will be provided to ensure viability and recovery of Threatened and Endangered and Forest Service Sensitive plants (Challis LRMP IV-36).

The time frame for the attainment of the desired conditions is not defined in the LRMPs. The reasonable time frame would be from the last planning cycle (1988) through the present and the next planning cycle (within the next five to ten years).

## 3.10.4 EXISTING CONDITION

The existing Travel Plans for the Salmon and Challis National Forests attempted to identify specific routes in sensitive areas and allowed for cross-country travel in areas that were thought to have few conflicting resource issues. When the plans were developed, recreational vehicles were not capable of accessing many of the areas that they access presently. The number of motorized vehicle users has grown substantially over the last two decades as well. This growth has resulted in the development of 1,108 miles of unauthorized routes within areas open to cross-country travel. Within areas closed to cross-country travel, there has been the development of an additional 1,594 miles of unauthorized routes, in violation of the current Travel Plans. These developments are not static; development of unauthorized routes is continuous and difficult to accurately measure. Since these routes are not engineered and no analysis goes into where they are located, the routes often cause direct habitat damage. Motorized cross-country travel can result in soil disturbance which can result in decreased vegetative cover and density. Soil compaction can reduce plant size and survivorship (Ouren et al. 2007). Loss of vegetative cover increases susceptibility of soil to wind and water erosion which reduces the ability for plants to reestablish an area (Taylor n.d.). Plants are also vulnerable to direct damage (crushing and breakage) from being run over by motorized vehicles (Ouren et al. 2007). Motorized routes create an edge habitat area that can promote the encroachment of non-native and invasive plant species (Ouren et al. 2007, Watkins et al. 2003). Motor vehicle travel increases dust which can inhibit plant growth, decrease plant size, and reduce survivorship (Ouren et al. 2007).

There is limited information, both range-wide and specific to the SCNF, for most species analyzed in this document. Global and state population ranking for species were used in the analysis, when available, to identify the overall status of the species. Population declines directly attributable to motorized access are difficult to characterize and to quantify since impacts are generally additive and tend to occur gradually. The proliferation of unauthorized routes indicates a trend of ever increasing motorized intrusions into areas that previously provided habitat outside motorized influence zones. Unauthorized motorized routes negate the planning process that provides for good habitat management in regards to motorized access.

## 3.10.5 AFFECTED ENVIRONMENT

Federally Listed or Proposed Species

The U.S. Fish and Wildlife Service identified no plant species that are threatened or endangered, or candidate species that could potentially occur on the SCNF (14420-2009-SL-0039 dated December 01, 2008).

Region 4 Sensitive Species

Plants designated as sensitive are identified by Regional Foresters as species for which population viability is a concern as evidenced by current or predicted downward trends in population numbers, density, or habitat (FSM 2670.5). The Forest Service must implement management practices that ensure that sensitive species do not become threatened or endangered and must implement management objectives for populations or habitat of sensitive species (FSM 2670.22).

Those plant species that are known or expected to occur on the SCNF are listed in the table below (Table 3-42). The list was last updated in December 2003.

Table 3-42. Region 4 Sensitive Plant Species for the SCNF.

| Scientific Name | Common Name | Habitat Association | MF | C-YF | LR | S-C | NF | L |
|---|---|---|---|---|---|---|---|---|
| *Agoseris lackschewitzii* | Pink agoseris | Wet meadows with soil saturated through the growing season. | | | | X | | X |
| *Astragalus amnis-amissi* | Lost River milkvetch | Cracks in ledges of similar sites on near vertical limestone cliffs, and in talus at base of cliffs; mostly in moist shaded areas. | | | X | | | |
| *Astragalus aquilonius* | Lemhi milkvetch | Shale and gravel banks. | | X | X | | | |
| *Astragalus diversifolius* | Meadow milkvetch | Moist, often alkaline soil. | | | X | | | |
| *Astragalus vexilliflexus* var. *nubilus* | White Cloud milkvetch | Dry open ridges in White Cloud Range. | | X | | | | |
| *Botrychium lineare* | Slender moonwort | Moist to dry meadows, bogs, swamps, roadside ditches, dry fields, and forests at middle elevations in the mountains. | | | | | | |
| *Carex incurviformis* var. *incurviformis* | Seaside sedge | Alpine and subalpine moist tundra and wet rock ledges. Elevation 10,000 to 12,200 ft. | | | X | | | |
| *Collomia debilis* var. *camporum* | Flexible alpine collomia | Talus slopes at high elevations. | | | | X | X | |
| *Cymopterus douglassii* | Douglas' biscuitroot | Alpine and subalpine areas on open slopes, ridges, and summits in calcareous or dolomitic substrates. | | X | X | | | X |
| *Draba densifolia apiculata* | Rockcress draba | Moist, gravelly alpine meadows and talus slopes, often on limestone-derived soils. | | | | | | |
| *Draba trichocarpa* | Stanley whitlow-grass | Steep slopes on granitic parent material. | | | | | | |
| *Eriogonum capistratum* var. *welshii* | Welsh buckwheat | Rocky volcanic slopes and gravelly clay or sedimentary barren flats with minimal vegetation consisting of scattered sagebrush and grasses. | | | X | | | |
| *Eriogonum meledonum* | Guardian buckwheat | Unstable scree slopes on granitic parent materials. | | | | | | |
| *Oxytropis besseyi* var. *salmonensis* | Challis crazyweed | Sagebrush and salt desert shrub in sandy washes or open slopes of rocky volcanic soil. | | X | X | | | |
| *Penstemon lemhiensis* | Lemhi penstemon | Grassland and open ponderosa pine forests between elevation 6,300 and 7,200 ft. | | | | X | X | X |
| *Physaria didymocarpa* var. *lyrata* | Salmon twin bladderpod | Rocky, sparsely vegetated, south slopes. Bare ground and rock coverage (1-3 inches rock). | | | | X | | X |

| Scientific Name | Common Name | Habitat Association | MF | C-YF | LR | S-C | NF | L |
|---|---|---|---|---|---|---|---|---|
| *Poa abbreviata* ssp. *Marshii* | Marsh's bluegrass | Alpine fell-fields. | | X | X | | | |
| *Thelypodium repandum* | Wavy-leaf thelypody | Moderate to steep, unstable, generally southerly facing slopes of rocky, gravelly to cindery substrate derived from Challis volcanic and metamorphic rock. Associated vegetation is sparse (5 to 20% cover), and bare ground coverage is high. | | X | | | | |
| *Thlaspi idahoense* var. *aileeniae* | Stanley thlaspi | Rocky, sandy flats with sagebrush or river gravel. | X | | | | | |
| *Xanthoparmelia idahoensis* | Idaho range lichen | Mountain rangelands of central Idaho in sagebrush. | | | | | | |

**Pink Agoseris (*Agoseris lackschewitzii*)**

Biological Requirements: This species occurs in wet montane meadows in soils that are saturated throughout the growing season at elevations from mid-montane to subalpine elevations. When overstory trees are present they are usually subalpine fir, Engelmann spruce, whitebark pine, and Douglas-fir. Associated species are tufted hairgrass, bistort, elephant's-head lousewort, and arrowleaf groundsel (NY Botanical Gardens 1984, USDA FS 1989). Cattle-grazing has been identified as a threat to this species (NatureServe 2008a).

Trend and Potential Occurrence: The pink agoseris has a has a global ranking of G4; apparently secure, uncommon but not rare, some cause for long–term concern due to declines or other factors, and a state ranking of S2; imperiled, at risk because of restricted range, few populations, rapidly declining numbers, or other factors that make it vulnerable to rangewide extinction or extirpation (NatureServe 2009). In Idaho, it has been found in Fremont and Lemhi Counties. Pink agoseris is known to occur in Lemhi County in the Lemhi Range within the Mill Creek Basin (NY Botanical Gardens 1984,USDA FS 1989). Mapped locations occur on the SCNF within the Lemhi Range (ID CDC 2008g).

**Lost River Milkvetch (*Astragalus amnis-amissi*)**

Biological Requirements: The Lost River milkvetch occurs on ledges and rock crevices of nearly vertical limestone cliffs and in talus at the base. It prefers moist, shaded microsites within these general habitats (NY Botanical Gardens 1957, USDA 1989). This milkvetch blooms June to July. There are no known threats to this species habitat (NatureServe 2008).

Trend and Potential Occurrence: The Lost River milkvetch has a has a global ranking G3 and a state ranking of S3, vulnerable, at moderate risk because of restricted range, relatively few populations, recent and widespread declines, or other factors that make it vulnerable to rangewide extinction or extirpation (NatureServe 2009). This species is distributed on the eastern and western slopes of the southern half of the Lost River Range and the southern end of the Lemhi Range in Custer and Butte Counties (ID CDC 2008).

**Lemhi Milkvetch (*Astragalus aquilonius*)**

Biological Requirements: It is found on unstable substrates, steep banks, sandy washes, and gullies within the shrub-steppe zone. It occurs often on southerly aspects in gravelly and sandy to ashy and

sometimes clayey soils (USDA FS 1989, ID CDC 2008f). This species blooms May to June. Livestock and pronghorn grazing have been identified as a threat to this species (NatureServe 2008).

Trend and Potential Occurrence: The Lemhi milkvetch has a has a global ranking G3 and a state ranking of S3; vulnerable, at moderate risk because of restricted range, relatively few populations, recent and widespread declines, or other factors that make it vulnerable to rangewide extinction or extirpation (NatureServe 2009).

Lemhi milkvetch is endemic to east-central Idaho and occurs in Custer, Butte, and Lemhi Counties at lower elevations. Main distributions are found the lower slopes of the Salmon River from Ellis to Clayton, and the East Fork Salmon River upstream to the vicinity of Herd Creek. Populations are also found on the southern end of the Lemhi Range, the Lemhi River valley near Lemhi, and scattered locations in the Pahsimeroi and Lost River valleys (USDA Forest Service 1989) (ID CDC 2008f).

**Meadow Milkvetch (*Astragalus diversifolius*)**

Biological Requirements: The meadow milkvetch occurs on moist, often alkaline meadows and in sagebrush valleys. This species flowers in June and July (ID CDC 2008a). Threats to this species include livestock grazing and loss of habitat to agriculture (NatureServe 2008).

Trend and Potential Occurrence: The meadow milkvetch has a global ranking of G2 and a state ranking of S2; imperiled, at risk because of restricted range, few populations, rapidly declining numbers, or other factors that make it vulnerable to rangewide extinction or extirpation (NatureServe 2009).

This species is endemic to central Idaho and northern Utah with one historical report for the Green River Basin in western Wyoming. In Idaho, it is distributed primarily in Custer and Lemhi counties, in the valleys of the Big Lost, Little Lost, Pahsimeroi, and Lemhi Rivers and in Birch Creek (ID CDC 2008a).

**White Cloud Milkvetch (*Astragalus vexilliflexus var. nubilus*)**

Biological Requirements: It is found on scree slopes and in sagebrush communities. This species blooms from August to September (USDA FS 1989).

Trend and Potential Occurrence: The White Cloud milkvetch has a has a global ranking of G4; apparently secure, uncommon but not rare, some cause for long-term concern due to declines or other factors; an infraspecific taxon rank of T2; and a state ranking of S2; imperiled, at risk because of restricted range, few populations, rapidly declining numbers, or other factors that make it vulnerable to rangewide extinction or extirpation (NatureServe 2009).

This species is found in Custer County in subalpine and alpine areas in the White Cloud Range (USDA FS 1989). Mapped locations occur on portions of the SCNF that are administered by the Sawtooth National Recreation Area (ID CDC 2008g).

**Slender Moonwort (*Botrychium lineare*)**

Biological Requirements: It is found on grassy slopes, stream sides, and forest stands (ID CDC 2008b). In Montana, this species has been found on roadsides or other open, disturbed habitat (MT Field Guide 2008).

Trend and Potential Occurrence: The slender moonwort has a global ranking of G2; imperiled, at high risk of extinction due to very restricted range, very few populations, steep declines, or other factors with an inexact numeric rank which denotes some uncertainty, and a state ranking of SH; possibly extirpated species occurred historically (verified in the past 20 to 40 years) in the state, and there is some possibility that it may be rediscovered (NatureServe 2009).

This species occurs from Washington to California, east to Montana and Colorado. Distribution in Idaho is known from one collection in the Upper Priest Lake area (ID CDC 2008b). There are no mapped occurrences on the SCNF.

**Seaside Sedge (*Carex incurviformis var. incurviformis*)**

Biological Requirements: This sedge occurs in alpine and subalpine zones on moist tundra and wet rock ledges. It is a circumpolar species that is known from high elevation areas (10,000 to 12,000 feet) from Canada, south to Colorado and California (NatureServe 2008).

Trend and Potential Occurrence: The seaside sedge has a global ranking of G5/G4 and an infraspecific taxon rank of T4/T5; a range rank that is used to indicate the range of uncertainty of the status of the species. The status is approximately equal between being secure, common, widespread and abundant and apparently secure, uncommon but not rare, some cause for long-term concern due to declines or other factors. The species is unranked, the state conservation status having not yet been assessed (NatureServe 2009).

There is one mapped location of this species on the SCNF that is within a roadless area.

**Flexible Alpine Collomia *(Collomia debilis* var. *camporum)***

Biological Requirements: The flexible alpine collomia inhabits stabilized talus slopes (Moseley 1992a).

Trend and Potential Occurrence: The flexible alpine collomia has a has a global ranking of G5 secure, common, widespread and abundant; an infraspecific taxon rank of T2; and a state ranking of S2; imperiled, at risk because of restricted range, few populations, rapidly declining numbers, or other factors that make it vulnerable to rangewide extinction or extirpation (NatureServe 2009).

This species occurs in the North Fork of the Salmon River drainage in Idaho and in adjacent Montana (Moseley 1992a). There are mapped locations on the SCNF from the Morgan Creek summit area north to the Hughes Creek area (ID CDC 2008g).

**Douglas' Biscuitroot (*Cymopterus douglassii*)**

Biological Requirements: Populations consisted of thousands to tens of thousands of individuals (NatureServe 2008). It occurs in alpine and subalpine zones on open slopes, ridges, and summits with calcareous or dolomitic substrates and blooms from mid-June to August (USDA Forest Service 1989). In high mountain cirque terrain it is found on sites that are level, gravelly, and with evidence of frost heaving (Moseley 1992b). There are no known threats to this species (NatureServe 2008).

Tend and Potential Occurrence: The Douglas' biscuitroot has a has a global ranking G3 and a state ranking of S3, vulnerable, at moderate risk because of restricted range, relatively few populations, recent and widespread declines, or other factors that make it vulnerable to rangewide extinction or extirpation (NatureServe 2009).

This plant is known to occur in the Lost River Ranger District at high elevations over 9,000 feet. Eight populations have been located; seven of which that were found in the Lost River Range the vicinity of Borah Peak, and one found on Sheep Mountain in the Lemhi Range (Moseley 1992b, ID CDC 2008g).

**Rockcress Draba (*Draba densifolia apiculata*)**

Biological Requirements: This species occurs in moist, gravelly alpine meadows and on granitic talus slopes or rock crevices. This species usually prefers limestone-derived soils. It occurs at some high elevation sites in Wyoming, Utah, Montana, central Colorado, and Idaho (NatureServe 2008).

Trend and Potential Occurrence: The rockcress draba has a global ranking of G5; secure - common, widespread and is unranked in the state, the state conservation status having not yet been assessed (NatureServe 2009). It is known to occur in the Birch, Little Lost, Big Lost, and Upper Salmon HUC 4 watersheds (NatureServe 2008). There are no mapped locations on the SCNF.

**Stanley's Whitlow-grass *(Draba trichocarpa)***

Biological Requirements: It is found in sagebrush/Idaho fescue habitat type variation with a mosaic that includes mountain big sagebrush (Moseley and Mancuso 1990). On a majority of sites, it was found growing with guardian buckwheat (see listing below). Both of these species were found on gentle ridgelines that are relatively stable and on steep rock outcrops and scree slopes (Moseley and Mancuso 1993).

Trend and Potential Occurrence: The Stanley's whitlow-grass has a global ranking of G2 and a state ranking of S2; imperiled, at risk because of restricted range, few populations, rapidly declining numbers, or other factors that make it vulnerable to rangewide extinction or extirpation (NatureServe 2009).

This species is endemic to Idaho and all known populations are restricted to granite outcroppings surrounding the floor of the Stanley Basin in south-central Idaho (Moseley and Mancuso 1990). There are mapped locations adjacent to the SCNF on the Sawtooth NRA (ID CDC 2008g).

**Welsh Buckwheat (*Eriogonum capistratum var. welshii*)**

Biological Requirements: The Welsh buckwheat occupies dry, sparsely vegetated rocky volcanic slopes. It is often associated with scattered sagebrush and grasses, usually at elevations between 6,000 to 7,800 feet. The plant flowers in late June to early July (ID CDC 2008c). Threats to this species include livestock grazing, OHV use, and mining (Murphy 2002).

Trend and Potential Occurrence: The Welsh buckwheat has a has a global ranking of G4; apparently secure, uncommon but not rare, some cause for long-term concern due to declines or other factors; an infraspecific taxon rank of T2; and a state ranking of S2; imperiled, at risk because of restricted range, few populations, rapidly declining numbers, or other factors that make it vulnerable to rangewide extinction or extirpation. The taxonomy of this species is questionable; resolution of this uncertainty may result in change from a species to a subspecies or hybrid, or the inclusion of this taxon in another taxon, with the resulting taxon having a lower-priority conservation priority (NatureServe 2009).

This species is endemic to east-central Idaho. It is known to occur in the valleys and foothills of the upper Big Lost, Little Lost, and Pahsimeroi rivers in Custer and adjacent potions of Lemhi and Butte counties (ID CDC 2008c).

**Guardian Buckwheat (*Eriogonum meledonum*)**

Biological Requirements: The guardian buckwheat occurs on unstable scree slopes on granitic parent materials (U.S. Forest Service 1990). Weed invasion and OHV use are identified threats to this species (NaureServe 2008).

Trend and Potential Occurrence: The guardian buckwheat has a global ranking of G2 and a state ranking of S2; imperiled, at risk because of restricted range, few populations, rapidly declining numbers, or other factors that make it vulnerable to rangewide extinction or extirpation. This species is endemic to Custer County in central Idaho (NatureServe 2009).

It occurs in similar habitats as the Stanley whitlow grass, but extends further south in the Stanley Basin. It is known from eight occurrences that are mostly located on the Sawtooth NRA (Mancuso 2001). There are no mapped locations on the SCNF.

**Challis Crazyweed (*Oxytropis besseyi var. salmonensis*)**

Biological Requirements: This is a species of sagebrush and salt desert shrub habitat. It occurs in sandy washes and open slopes with rocky volcanic soils where it blooms June through July (USDA FS 1990). Threats to this species have not been identified.

Trend and Potential Occurrence: The Challis crazyweed has a has a global ranking of G5 secure, common, widespread and abundant; an infraspecific taxon rank of T3; and a state ranking of S3, vulnerable, at moderate risk because of restricted range, relatively few populations, recent and widespread declines, or other factors that make it vulnerable to rangewide extinction or extirpation (NatureServe 2009).

This species is endemic to Custer County. It is known to occur in the Big Lost, Pahsimeroi, and Upper Salmon HUC 4 watersheds (NatureServe 2008). Mapped locations occur on the Lost River Range and on adjacent BLM lands (ID CDC 2008g).

**Lemhi Penstemon (*Penstemon lemhiensis*)**

Biological Requirements: The Lemhi penstemon's bright sky-blue flowers appear from June to July. This penstemon is an early seral species that requires bare soil to become established. It appears to be dependent on small-scale disturbances and has adapted to man-made disturbed sites, such as road cuts and fills and responds favorably after fire. Populations from artificial habitats (such as road cuts) do not contribute appreciably to the overall viability of the species. It occurs in a variety of habitats, including dry grasslands, three-tipped sage/Idaho fescue and big sagebrush/needle-and-thread communities, mountain big sagebrush/bluebunch wheatgrass, open conifer ponderosa pine or Douglas-fir/grass lands, and ecotones between forest and shrub-steppe. It occurs at elevations from 3,200 to 8,100 feet (Moseley et al. 1990a, Moseley 1992a). Threats to this species include road construction, road maintenance, mining, botanical collection, herbicide spraying, weed invasion, and livestock grazing (Moseley et al. 1990a, NatureServe 2008).

Trend and Potential Occurrence: The Lemhi penstemon has a has a global ranking G3 and a state ranking of S3, vulnerable, at moderate risk because of restricted range, relatively few populations, recent and widespread declines, or other factors that make it vulnerable to rangewide extinction or extirpation (NatureServe 2009). This species is endemic to Lemhi County and adjacent counties in Montana (Moseley et al. 1990a). There are 105 mapped occurrences on the SCNF (ID CDC 2008g).

**Salmon Twin Bladderpod (*Physaria didymocarpa var. lyrata*)**

Biological Requirements: This species is found on scablands, shale banks, talus slopes, and gravelly soil (USDA FS 1990a). It grows on steep south-facing slopes between 4,050 and 6,800 feet in the big sagebrush/bluebunch wheatgrass zone. It has been found growing on loose, but stable, substrate along roadcuts and other disturbance sites. It is generally found on sites with little plant cover (Moseley et al. 1990b, ID CDC 2008d). Flowering is related to spring weather conditions; it usually begins in late May and goes through late June. If the weather remains cool and moist, flowering can extend throughout the summer (ID CDC 2008d). Threats, such as mining activities and herbicide spraying, have been identified for this species. No threats have been identified for the Bear Valley Creek population (ID CDC 2008d).

Trend and Potential Occurrence: The Challis crazyweed has a has a global ranking of G5, secure-common, widespread and abundant; an infraspecific taxon rank of T1; and a state ranking of S1, critically imperiled because of extreme rarity or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state (NatureServe 2009).

This perennial mustard is endemic to Idaho. Until the 1980s, it was known only from one location on BLM land at Williams Creek in the Salmon River Mountains. It is currently known from seven occurrences. Populations are known in Pattee Creek, Williams Creek, Agency Creek, Basin Creek, and Bear Basin Creek. The Bear Basin Creek population occurs on the SCNF, on the Leadore Ranger District (ID CDC 2008d). A previously unknown population was documented in 2008 at the Lake Mountain area on the Salmon-Cobalt Ranger District (Cochrane 2008).

**Marsh's Bluegrass (*Poa abbreviata ssp. Marshii*)**

Biological Requirements: Marsh's bluegrass grows on high alpine rocky slopes in scree and talus (NatureServe 2008).

Trend and Potential Occurrence: The Challis crazyweed has a has a global ranking of G5, secure-common, widespread and abundant; an infraspecific taxon rank of T2; and a state ranking of S1, critically imperiled because of extreme rarity or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state (NatureServe 2009).

This dwarf grass is currently known from three states - Idaho, Nevada, and California. It is recorded as occurring in the Birch HUC 4 watershed (NatureServe 2008). There is one mapped location on the SCNF located within a roadless area (ID CDC 2008g).

**Wavy-leaf Thelypody (*Thelypodium repandum*)**

Biological Requirements: The wavy-leaf thelypody inhabits steep shale banks derived from volcanic and metamorphic rocks where it is associated with bunchgrasses and herbaceous perennials across a wide elevational range (4,900 to 7,000 feet). It will also inhabit road cuts and fills, expanding from populations further upslope (NatureServe 2008). It blooms from May through September (USDA FS 1989, ID CDC

2008e). Identified threats include road maintenance, weed control, mining activities, and OHV use (NatureServe 2008).

Potential Occurrence: The wavy-leaf thelypody has a has a global ranking G3 and a state ranking of S3, vulnerable, at moderate risk because of restricted range, relatively few populations, recent and widespread declines, or other factors that make it vulnerable to rangewide extinction or extirpation (NatureServe 2009). This mustard is endemic to Custer County and a small part of Lemhi County in central Idaho. Populations are found along the Salmon River and lower elevations of tributaries from Ellis, south to Clayton; along the East Fork Salmon River and tributaries; and south of Challis (ID CDC 2008e).

**Stanley Thlaspi (*Thlaspi idahoense var. aileeniae*)**

Biological Requirements: The Stanley thlaspi is a perennial, low-growing, densely tufted, white flowered forb in the mustard family. Habitat is described as steep slopes on sandy and gravelly soil on sagebrush flats (USDA FS 1989). It flowers from May to July (USDA FS 1989). The species appears to be locally abundant and has no identified threats (Moseley 1988).

Trend and Potential Occurrence: The Stanley thlaspi has a global ranking of G3/G4 and an infraspecific taxon rank of T3; a range rank that is used to indicate the range of uncertainty of the status of the species. The status is approximately equal between being vulnerable, at moderate risk of extinction due to a restricted range, relatively few populations, recent and widespread declines, or other factors and apparently secure, uncommon but not rare, some cause for long-term concern due to declines or other factors and a state ranking of S3, vulnerable, at moderate risk because of restricted range, relatively few populations, recent and widespread declines, or other factors that make it vulnerable to rangewide extinction or extirpation (NatureServe 2009).

This variety is only found in the Stanley Basin, Custer County, Idaho (NatureServe 2008). It was originally found on a stony flat with low-growing sagebrush on the Cape Horn Road between Knapp and Valley creeks (NY Botanical Gardens 1983). Several populations have been located in the Cape Horn area (Purvine 2005).

**Idaho Range Lichen (*Xanthoparmelia idahoensis*)**

Biological Requirements: Habitat is calcareous badlands that are barren to sparsely vegetated, with shrub-steppe vegetation. This species is found on slopes 45% or less (NatureServe 2008).

Potential Occurrence: The Idaho range lichen has a has a global ranking G1, critically imperiled, at very high risk of extinction due to extreme rarity, very steep declines, or other factors and a state ranking of S1, critically imperiled because of extreme rarity or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state (NatureServe 2009).

The range lichen is known from three localities; one each in Idaho, Colorado, and Alberta. Occurrences are recorded in the Middle Salmon-Panther and Lemhi HUC 4 watersheds (NatureServe 2008). There are mapped locations on BLM lands adjacent to the SCNF, but no mapped locations on the forest (ID CDC 2008g).

## 3.10.6 ENVIRONMENTAL CONSEQUENCES OF THE ALTERNATIVES

### *Effects Common to All Alternatives*

There were no mapped populations of slender moonwort, rockcress draba, Stanley's whitlow-grass, guardian buckwheat, or Idaho range lichen found on the SCNF (ID CDC 2008g). These species will have no further analysis in this document.

### *Alternative 0 - No Action*

**Direct and Indirect Effects**

The effects to all species resulting from motorized route density would be similar to the analysis discussed in Alternative 1, below. The main difference is the acres open to cross-country travel. Twenty-eight watersheds with sensitive plant occurrences have varying acreages currently open to cross-country travel. Direct impacts to sensitive plants, such as being driven on, are likely occur within open areas that are accessible to motorized vehicles. Habitat impacts, such as increased erosion and soil compaction, could also occur. The number of user-created routes would continue to increase in the areas open to cross-country travel which would increase the overall undesignated route density Forest-wide.

**Pink Agoseris**

GIS mapped locations indicate that a system road and system trails occur in the vicinity of this species. The mapped location has a potential error of 0.5 to 3 miles. The road and trails likely occur near potential habitat, but not within the saturated soils this species requires. One the two districts on which this species has mapped occurrences, Leadore and Salmon-Cobalt, there are 500,653 acres open to cross-country travel, some of which may encompass suitable habitat for this species. There are 679.1 miles of undesignated routes within the areas open to cross-country travel. There are 205,367 acres available for dispersed camping motorized access in this alternative which could result in direct impact to individual plants by vehicles if suitable habitat occurs within these areas.

**Lost River Milkvetch**

Given the habitat where this species is found, cliffs and talus slopes, motorized access would have limited impacts to this species.

**Lemhi Milkvetch**

GIS mapped locations indicate that system roads occur in the vicinity of this species. The mapped location has a potential error of 0.5 to 3 miles. On the two districts on which this species has mapped occurrences, Challis-Yankee Fork and Lost River, there are 192,562 acres open to cross-country travel, some of which may encompass suitable habitat for this species. There are 165.8 miles of undesignated routes within the areas open to cross-country travel. The habitat where this species is found- steep, unstable slopes- may preclude effects from motorized access.

**Meadow Milkvetch**

This species has very limited occurrences on the SCNF. GIS mapped locations indicate that system roads occur in the vicinity of this species. The mapped location has a potential error of 0.5 to 3 miles. On the district on which this species has mapped occurrences, Lost River, there are 119,444 acres open to cross-country travel, some of which may encompass suitable habitat for this species. There are 136.6 miles of undesignated routes within the areas open to cross-country travel. There are 61,528 acres available for dispersed camping motorized access in this alternative which could result in direct impact to individual plants by vehicles if suitable habitat occurs within these areas.

**White Cloud Milkvetch**

This species has limited occurrence on the SCNF. The one mapped location is in an area that has no motorized routes. No direct or indirect effects to this species from motorized access are anticipated.

**Seaside Sedge**

This species has one mapped location on the SCNF in an area that contains no motor vehicle trails or roads. This species occurs on rocky ledges in alpine areas which would preclude effects from motorized access.

**Flexible Alpine Collomia**

GIS mapped locations indicate that a system road and system trails occur in the vicinity of this species. The mapped locations have a potential error of 0.5 to 3 miles. One the two ranger districts on which this species has mapped occurrences, Salmon-Cobalt and North Fork, there are 598,211 acres open to cross-country travel, some of which may encompass suitable habitat for this species. There are 617.5 miles of undesignated routes within the areas open to cross-country travel. There are 189,550 acres available for dispersed camping motorized access in this alternative which could result in direct impact to individual plants by vehicles if suitable habitat occurs within these areas. This species occurs on stabilized talus slopes, which could limit effects from motorized access.

**Douglas' Biscuitroot**

Mapped locations of this species occur in areas that contain few motor vehicle trails or roads. This species occurs in alpine and subalpine zones on open slopes, ridges, and summits which may preclude effects from motorized access. There are 314,011 acres open to cross-country travel on the Challis-Yankee Fork, Leadore, and Lost River Ranger Districts, some of which may encompass suitable habitat for this species.

**Welsh Buckwheat**

A population of this species occurs within the footprint of an unauthorized route; other populations occur immediately adjacent to system and other unauthorized routes. On the ranger district on which this species has mapped occurrences, Lost River, there are 119,444 acres open to cross-country travel, some of which may encompass suitable habitat for this species. There are 136.6 miles of undesignated routes within the areas open to cross-country travel. There are 61,528 acres available for dispersed camping motorized access in this alternative which could result in direct impact to individual plants by vehicles if suitable habitat occurs within these areas.

**Challis Crazyweed**

GIS mapped locations indicate that system roads occur in the vicinity of this species. The mapped locations have a potential error of 0.5 to 3 miles. On the two ranger districts on which this species has mapped occurrences, Challis-Yankee Fork and Lost River, there are 192,562 acres open to cross-country travel, some of which may encompass suitable habitat for this species. There are 165.8 miles of undesignated routes within the areas open to cross-country travel. There are 114,388 acres available for dispersed camping motorized access in this alternative which could result in direct impacts to individual plants by vehicles if suitable habitat occurs within these areas.

**Lemhi Penstemon**

Numerous unauthorized and system routes occur with the mapped occurrences of this species. On the three ranger districts on which this species occurs, there are 719,660 acres open to cross-country travel, some of which may encompass suitable habitat for this species. There are 913.8 miles of undesignated routes within the areas open to cross-country travel. There are 245,989 acres available for dispersed camping motorized access in this alternative which could result in direct impacts to individual plants by vehicles if suitable habitat occurs within these areas.

**Salmon Twin Bladderpod**

One population of this species found on the SCNF is located on a steep talus slope across the drainage from a road, in an area closed to cross-country travel. The habitat in which this species occurs would preclude effects from motorized access. The other population is located behind a locked gate and motorized access by the public is prohibited. Maintenance activities in association with a facility located in the vicinity of this population could damage individual plants.

**Marsh's Bluegrass**

This species has one mapped location on the SCNF in an area that contains no motor vehicle trails or roads. This species occurs on high alpine rocky slopes in scree and talus which would preclude effects from motorized access.

**Wavy-leaf Thelypody**

GIS mapped locations indicate that system roads and motor vehicle trails occur in the vicinity of this species. On the district on which this species occurs, there are 73,118 acres open to cross-country travel, some of which may encompass suitable habitat for this species. There are 29.2 miles of undesignated routes within the areas open to cross-country travel. There are 52,860 acres available for dispersed camping motorized access in this alternative which could result in direct impacts to individual plants by vehicles if suitable habitat occurs within these areas and indirect impacts such as slope instability caused by OHV use occur.

**Stanley Thlaspi**

Populations of this species have been located adjacent to system roads (Purvine 2004). On the ranger district on which this species occurs, there are 73,118 acres open to cross-country travel, some of which may encompass suitable habitat for this species. There are 29.2 miles of undesignated routes within the areas open to cross-country travel. There are 52,860 acres available for dispersed camping motorized access in this alternative which could result in direct impacts to individual plants by vehicles if suitable habitat occurs within these areas.

## ***Alternatives 1, 3, 4 and 5***

**Direct and Indirect Effects**

**Pink Agoseris**

GIS mapped locations indicate that a system road and system trails occur in the vicinity of this species. The mapped location has a potential error of 0.5 to 3 miles. The road and trails are likely to occur near potential habitat, but not within the saturated soils this species requires.

Cross-country travel is being eliminated in these alternatives as compared the No Action Alternative. The elimination of acres available for cross-country travel and the substantial decrease in motorized dispersed camping access acres and amount of miles of undesignated motorized routes would decrease the potential that pink agoseris would be impacted by motorized vehicles.

*Effects Determination:* Alternatives 1, 3, 4, and 5 may impact individual pink agoseris plants, but would not likely contribute to a trend towards Federal listing, or cause a loss of viability to the population or species.

**Lost River Milkvetch**

Given the habitat where this species is found, cliff and talus slopes, motorized access would have limited, if any, impacts this species. Cross-country motor vehicle travel would be eliminated.

*Effects Determination:* Alternatives 1, 3, 4, and 5 are not expected to have impacts on Lost River milkvetch.

**Lemhi Milkvetch**

GIS mapped locations indicate that system roads occur in the vicinity of this species. The mapped location has a potential error of 0.5 to 3 miles. Cross-country travel is being eliminated in these alternatives as compared to the No Action Alternative. The elimination of acres available for cross-country travel and the substantial decrease in motorized dispersed camping access acres and amount of miles of undesignated motorized routes would decrease the potential that Lemhi milkvetch would be impacted by motorized vehicles. The habitat where this species is found- steep, unstable slopes - may preclude effects from motorized access.

*Effects Determination:* Alternatives 1, 3, 4, and 5 may impact individual Lemhi milkvetch plants, but would not likely contribute to a trend towards Federal listing, or cause a loss of viability to the population or species.

**Meadow Milkvetch**

This species has mapped occurrences only on the Lost River Ranger District. GIS mapped locations indicate that system roads occur in the vicinity of this species. The mapped location has a potential error of 0.5 to 3 miles. Cross-country travel is being eliminated in these alternatives as compared to the No Action alternative. The elimination of acres available for cross-country travel and the substantial

decrease in motorized dispersed camping access acres and amount of miles of undesignated motorized routes would decrease the potential that meadow milkvetch would be impacted by motorized vehicles.

*Effects Determination:* Alternatives 1, 3, 4, and 5 may impact individual meadow milkvetch plants, but would not likely contribute to a trend towards Federal listing, or cause a loss of viability to the population or species.

**White Cloud Milkvetch**

This species has limited occurrence on the SCNF. The one mapped location is in an area that has no motorized routes designated or proposed. No direct or indirect effects to this species from motorized access are anticipated.

*Effects Determination:* Alternatives 1, 3, 4, and 5 are not expected to have impacts on White Cloud milkvetch.

**Seaside Sedge**

This species has one mapped location on the SCNF in an area that contains no motor vehicle trails or roads. Cross-country travel would be eliminated in these alternatives, similar to current management. This species occurs on rocky ledges in alpine areas which would preclude effects from motorized access.

*Effects Determination:* Alternatives 1, 3, 4, and 5 would have no impact to individual seaside sedge plants or the populations.

**Flexible Alpine Collomia**

Cross-country travel is being eliminated in these alternatives as compared to the No Action alternative. This species has mapped occurrences only on the Salmon-Cobalt and North Fork Ranger Districts. GIS mapped locations indicate that a system road and system trails occur in the vicinity of this species. The mapped locations have a potential error of 0.5 to 3 miles. The elimination of acres available for cross-country travel and the substantial decrease in motorized dispersed camping access acres and amount of miles of undesignated motorized routes would decrease the potential that flexible alpine collomia would be impacted by motorized vehicles. This species occurs on stabilized talus slopes, which could limit effects from motorized access.

*Effects Determination:* Alternatives 1, 3, 4, and 5 may impact individual flexible alpine collomia plants, but would not likely contribute to a trend towards Federal listing, or cause a loss of viability to the population or species.

**Douglas' Biscuitroot**

Mapped locations of this species occur in areas that contain few motor vehicle trails or roads on only the Challis-Yankee Fork, Leadore, and Lost River Ranger Districts. This species occurs in alpine and subalpine zones on open slopes, ridges, and summits which would preclude effects from motorized access. Cross-country travel is eliminated in these alternatives as compared to the No Action alternative.

*Effects Determination:* Alternatives 1, 3, 4, and 5 would have no impact to individual Douglas' biscuitroot plants or the populations.

**Welsh Buckwheat**

A population of this species occurs within the footprint of an unauthorized route on the Lost River Ranger District; other populations occur immediately adjacent to system and other unauthorized routes. This alternative would not designate the routes on or near which this species occurs. Alternatives 1, 4, and 5 would designate a route adjacent to where this species occurs, but would not designate the route

that would result in the greatest impact to a population of this species. These alternatives would eliminate cross-country travel as compared to the No Action alternative. The elimination of acres available for cross-country travel and the substantial decrease in motorized dispersed camping access acres and amount of miles of undesignated motorized routes proposed for designation would decrease the potential that Welsh buckwheat would be impacted by motorized vehicles.

*Effects Determination:* Alternatives 1, 3, 4, and 5 may impact individual Welsh buckwheat plants, but would not likely contribute to a trend towards Federal listing, or cause a loss of viability to the population or species.

**Challis Crazyweed**

GIS mapped locations indicate that system roads occur on the Challis-Yankee Fork and Lost River Ranger Districts in the vicinity of this species. The mapped locations have a potential error of 0.5 to 3 miles. These alternatives would eliminate cross-country travel as compared to the No Action alternative. The elimination of acres available for cross-country travel and the substantial decrease in motorized dispersed camping access acres and amount of miles of undesignated motorized routes proposed for designation would decrease the potential that Challis crazyweed would be impacted by motorized vehicles.

*Effects Determination:* Alternatives 1, 3, 4, and 5 may impact individual Challis crazyweed plants, but would not likely contribute to a trend towards Federal listing, or cause a loss of viability to the population or species.

**Lemhi Penstemon**

Numerous unauthorized and system routes occur with the mapped occurrences of this species. Cross-country travel would be eliminated in these alternatives as compared to the No Action Alternative. The elimination of acres available for cross-country travel and the substantial decrease in motorized dispersed camping access acres and amount of miles of undesignated motorized routes proposed for designation would decrease the potential that Lemhi penstemon would be impacted by motorized vehicles.

*Effects Determination:* Alternatives 1, 3, 4, and 5 may impact individual Lemhi penstemon plants, but would not likely contribute to a trend towards Federal listing, or cause a loss of viability to the population or species.

**Salmon Twin Bladderpod**

One known population of this species found on the SCNF is located on a steep talus slope. The other known population is located behind a locked gate and motorized access by the public is prohibited. Maintenance activities in association with a facility located in the vicinity of this population could damage individual plants. Cross-country travel is being eliminated in these alternatives as compared to the No Action alternative. The elimination of acres available for cross-country travel and the substantial decrease in motorized dispersed camping access acres and amount of miles of undesignated motorized routes would decrease the potential that Salmon twin bladderpod would be impacted by motorized vehicles.

*Effects Determination:* Alternatives 1, 3, 4, and 5 may impact individual Lemhi penstemon plants, but would not likely contribute to a trend towards Federal listing, or cause a loss of viability to the population or species.

**Stanley Thlaspi**

Populations of this species have been located adjacent to system roads on the Middle Fork Ranger District (Purvine 2004). Cross-country travel is being eliminated in these alternatives as compared to the No Action alternative. The elimination of acres available for cross-country travel and the substantial decrease in motorized dispersed camping access acres and amount of miles of undesignated motorized routes would decrease the potential that Stanley thlaspi would be impacted by motorized vehicles.

*Effects Determination:* Alternatives 1, 3, 4, and 5 may impact individual Stanley thlaspi plants, but would not likely contribute to a trend towards Federal listing, or cause a loss of viability to the population or species.

## 3.10.7 CUMULATIVE EFFECTS

Cumulative effects are caused by the aggregate of past, present, and reasonably foreseeable future actions combined with the effects of the proposed action and alternatives. This section describes a methodology and reports the effects of the action alternatives on sensitive plants including the present and future effects added to the effects that have taken place in the past.

The geographic scope for the cumulative effects assessment for sensitive plants includes the entire SCNF, inclusive of the FC-RONRW. The SCNF is divided into six ranger districts: Challis-Yankee Fork, Leadore, Lost River, Middle Fork, North Fork, and Salmon-Cobalt.

Road densities indicate how much motor vehicle travel opportunity occurs in each watershed. Undesignated routes are considered "new construction" for the purpose of this analysis, although no ground disturbance would actually occur. Although these routes exist on the ground, they were not authorized for travel and would be considered a new disturbance factor for sensitive plants. Tables displaying unauthorized routes and motorized route density by HUC 5 watershed are displayed in the Wildlife Specialist Report (Project Record). The HUC 5 watershed table contains all watersheds on the SCNF and displays the motorized route density, inclusive of the FC-RONRW.

All action alternatives would reduce the miles available for motor vehicle use and eliminate motorized access off designated system routes.

**Challis-Yankee Fork Ranger District**

Reasonably foreseeable actions that contribute to increased cumulative effects to sensitive plants on the Challis-Yankee Fork Ranger District include permitted uses such as livestock grazing and fuelwood gathering, road maintenance, and herbicide spraying.

Lemhi milkvetch, Challis crazyweed, and wavy-leaf thelypody have the potential to be cumulatively impacted by the activities listed above in combination with the alternatives since all the species are of limited distribution. Alternative 3 would have the fewest cumulative impacts due to the least number of miles of designated motorized routes. Cumulative impacts to White Cloud milkvetch Douglas' biscuitroot, Marsh's bluegrass would not be anticipated from any of the alternatives since these species are found in non-motorized areas.

**Leadore Ranger District**

Reasonably foreseeable actions that contribute to increased cumulative effects to sensitive plants on the Leadore Ranger District include permitted uses such as livestock grazing and fuelwood gathering, herbicide spraying, road maintenance, and a spring enclosure project.

Pink agoseris and Lemhi milkvetch have the potential to be cumulatively impacted by the activities list above in combination with the alternatives. Pink agoseris grows in saturated soils, so activities in those

areas would be restricted. Lemhi penstemon both tolerates disturbance (such as road cuts) and is impacted by disturbance (such as being sprayed by herbicide targeting noxious weeds in the road cuts). It has many occurrences on the districts where it occurs. Alternative 4 would likely have the greatest cumulative impact due to the greatest number of designated motorized routes. Salmon twin-bladderpod has extremely limited occurrences on the Salmon NF. The locations are either protected from disturbance by topography or administrative designations. Although impacts could occur from activities listed above (such a grazing), cumulative effects resulting from motorized access would not be anticipated. Cumulative impacts to Douglas' biscuitroot would not be anticipated from any of the alternatives since this species is found in non-motorized areas.

**Lost River Ranger District**

Reasonably foreseeable actions that contribute to increased cumulative effects to sensitive plants on the Lost River Ranger District include permitted uses such as livestock grazing and fuelwood gathering, allotment improvements, herbicide spraying, road maintenance, an aspen treatment project and fuels reduction near Mackay.

Lost River milkvetch, Lemhi milkvetch, meadow milkvetch, Welsh buckwheat, and Challis crazyweed have the potential to be cumulatively impacted by the activities listed above in combination with the alternatives since all the species are of limited distribution. Lost River milkvetch and Lemhi milkvetch grow on steep, talus slopes which may preclude many effects from other activities. Meadow milkvetch and Challis crazyweed could be cumulatively impacted by the above activities due to suitable habitat being in close proximity to motorized routes. Welsh buckwheat is very vulnerable to cumulative impacts due to the extremely limited occurrences of this plant. Alternative 4 would have the great potential for cumulative impacts to the above species due to the greatest number of designated motorized routes, but would have the greatest impact to Welsh buckwheat due to the designation of a motorized route in the vicinity of a mapped population. Cumulative impacts to seaside sedge, Douglas' biscuitroot, Marsh's bluegrass would not be anticipated from any of the alternatives since these species are found in non-motorized areas.

**Middle Fork Ranger District**

Reasonably foreseeable actions that contribute to increased cumulative effects to water resources on the Middle Fork Ranger District include permitted uses such as livestock grazing and fuelwood gathering, herbicide spraying, road maintenance, fuels reduction projects and small mining operations.

Stanley thlaspi has the potential to be cumulatively impacted by the activities listed above in combination with all the alternatives due to it's presence near system routes that would be designated under all the action alternatives. All the alternatives are very similar, although Alternative 4 designates the greatest amount of motorized routes.

**North Fork Ranger District**

Reasonably foreseeable actions that contribute to increased cumulative effects to water resources on the North Fork Ranger District include permitted uses such as livestock grazing and fuelwood gathering, herbicide spraying, road maintenance, fuels reduction in the Hughes Creek drainage, harvesting on private land, bridge replacements on Indian Creek, small mining operations, and flood damage repair work on the Salmon River Road.

Flexible alpine collomia and Lemhi milkvetch have the potential to be cumulatively impacted by the activities list above in combination with the alternatives. Flexible alpine collomia grows on stabilized talus slopes which may preclude effects from other activities. Lemhi penstemon both tolerates disturbance (such as road cuts) and is impacted by disturbance (such as being sprayed by herbicide

targeting noxious weeds in the road cuts). It has many occurrences on the districts where it occurs. Alternative 4 would likely have the greatest cumulative impact due to the greatest number of designated motorized routes.

**Salmon-Cobalt Ranger District**

Reasonably foreseeable actions that contribute to increased cumulative effects to sensitive plants on the Salmon-Cobalt Ranger District include permitted uses such as livestock grazing and fuelwood gathering, herbicide spraying, road maintenance, fuels reduction projects, a proposed cobalt mine operation, salvage timber sales, a channel restoration project and a fish passage culvert replacement project on Deep Creek.

Pink agoseris, flexible alpine collomia, and Lemhi milkvetch have the potential to be cumulatively impacted by the activities list above in combination with the alternatives. Pink agoseris grows in saturated soils, so activities in those areas would be restricted. Flexible alpine collomia grows on stabilized talus slopes which may preclude effects from other activities. Lemhi penstemon both tolerates disturbance (such as road cuts) and is impacted by disturbance (such as being sprayed by herbicide targeting noxious weeds in the road cuts). It has many occurrences on the districts where it occurs. Salmon twin-bladderpod has extremely limited occurrences on the Salmon NF. The locations are either protected from disturbance by topography or administrative designations. Alternative 4 would likely have the greatest cumulative impact due to the greatest number of designated motorized routes.

### *Irreversible and Irretrievable Commitments*

None of the alternatives would have irreversible commitments to Region 4 sensitive plant species. All alternatives could result in impacts to individual plants or populations, but would not result in the listing of any of the above species under the Endangered Species Act or endanger the continued existence of these species.

## 3.11 SOCIAL AND ECONOMIC RESOURCES

### 3.11.1 CHANGES BETWEEN DRAFT EIS AND FINAL EIS

The analysis has been updated to incorporate changes in economic and social conditions in the three counties affected by this project. Sections pertaining to USDA Civil Rights Policy, Persons with Disabilities and Civil Rights Monitoring and Evaluation, have been included.

### 3.11.2 ISSUES AND INDICATORS

A variety of concerns about the social and economic impact of changes to motorized access were raised by interested members of the public. The following is a sampling of the primary concerns that were raised.

- Proposed limitations on motorized access must not limit access to private land or mining claims.
- Proposed limitations on motorized access may adversely impact the provision of emergency services such as EMTs, fire fighters, and search and rescue.
- Proposed limitations on motorized access may adversely impact the ability of grazing permittees to access and manage grazing allotments.
- OHV access must be limited to protect important resources and recreational experiences for the members of the public seeking a natural, wild forest environment.

- Limitations on motorized access unfairly impact elderly and disabled visitors, excluding them from enjoying the same opportunities as more able bodied visitors.
- The ability to use OHVs for game retrieval is needed to ensure that older or disabled hunters can still enjoy this activity.
- Equal access to special areas, such as the Continental Divide National Scenic Trail, requires that motorized access be allowed, so that all members of the public may enjoy them.
- Restricting motorized access will negatively affect local lifestyles.
- Restricting motorized access will positively affect local lifestyles.

The effects of the alternatives relative to these concerns are measured in terms of the miles of access provided and potential effects to lifestyles, traditional uses, and culture.

The following concerns were raised relative to economic effects.

- Restricting off-road riding and camping may have an adverse effect on the local economy.
- Reducing motorized access will negatively impact recreation levels and therefore negatively impact local economies.
- Protecting more areas from motor vehicle uses will increase recreation levels thereby benefiting local economies.

The effects of the alternatives relative to this issue are measured in terms of jobs and labor income supported within the analysis area economy.

### 3.11.3 METHODOLOGY FOR ANALYSIS

Economic activity stimulated as a result of recreation activities on the SCNF results in direct, indirect, and induced job and income effects. For example, in response to the demand for gasoline to run an ATV, a gas station reacts by producing an appropriate level of output (gasoline) to meet that demand. The output produced and the employment required to produce that level of output are direct effects. In order to produce the output included in the direct effects, the gas station owner must purchase supplies and services from other industries. The output and employment stimulated in other industries, or sectors, by these purchases are the indirect effects. In addition to the direct and indirect effects, induced effects are the output and employment stimulated throughout the local economy as a result of the expenditure of new household income generated by direct and indirect employment.

Another factor to consider when estimating economic impacts however, is commonly referred to as leakage. Part of the monies spent by businesses and individuals is spent within the local economy, while a portion of those monies is spent outside of the local economy. In the example cited in the previous paragraph, the owner of the gasoline station must purchase his supply of gasoline from a supplier. The owner of the gas station must very likely “import” the gasoline from a supplier located outside the local economy. For this reason, a large portion of the money spent to purchase gasoline from his station is in turn expended or “leaked” outside the local economy. By the same token, economic activity is introduced when businesses within the area export goods and services that are paid for by purchasers from outside of the area, thereby introducing new money into the local economy. This occurs when visitors from outside the local area purchase gasoline at local gas stations.

IMPLAN attempts to estimate these complex economic relationships in order to approximate the effects on the economy as a whole. Response coefficients or “multipliers” are developed as a means to estimate the change in direct, indirect, and induced effects as a result of an adjustment in the level of

final demand for the goods or services provided by a given sector of the economy. These response coefficients also take into account the effects of leakage and exports.

To estimate job and labor income impacts of current Forest Service recreation activities, an IMPLAN model was used to estimate response coefficients. The NVUM spending profiles described above were run through an IMPLAN model of the local economy in order to estimate response coefficients for each recreation activity. These response coefficients were then imported into an Excel Workbook application called Travel Management Economic Contribution Application (TMECA) along with national forest visitor estimates for the SCNF. TMECA then calculated the estimated job and labor income impacts of the various recreation activities.

**Economic Contribution of Motorized Recreation Activities**

Table 3-43 displays the estimated economic contribution of motorized recreation activities under the No Action Alternative. The impacts of local residents are separated from the effects of non-local residents. Although providing these opportunities to local residents is an important contribution, the recreation expenditures of locals do not represent new money introduced into the economy. If national forest related opportunities were not present, it is likely residents would participate in other locally based recreation activities and this money would still be retained in the local economy. However, expenditures by non-local visitors represent the introduction of "new money" into the economy, which in turn stimulates new economic activity. Motorized recreation by local residents supports an estimated 5.1 jobs and $97,710 of labor income. Motorized recreation by non-local visitors supports an estimated 3.7 jobs and $67,464 of labor income in the local economy.

Table 3-43. Contribution Analysis: Employment and Labor Income stimulated by Motorized Recreation Activities Based on NVUM Estimates.

| Motor vehicle use | | Employment Effects (full and part time jobs) | | | | Labor Income (2008 dollars) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Direct | Indirect | Induced | Total | Direct | Indirect | Induced | Total |
| OHV Use | Local Day | 1.0 | 0.1 | 0.0 | 1.1 | 18,560 | 2,142 | 1,583 | 21,732 |
| | Local Overnight | 0.5 | 0.0 | 0.0 | 0.5 | 9,147 | 1,008 | 787 | 10,639 |
| | **Local** | **1.5** | **0.1** | **0.1** | **1.7** | **27,707** | **3,150** | **2,370** | **32,371** |
| | Non-Local Day | 0.2 | 0.0 | 0.0 | 0.3 | 4,646 | 535 | 395 | 5,440 |
| | Non-Local Overnight | 1.1 | 0.1 | 0.0 | 1.2 | 20,033 | 2,207 | 1,723 | 23,300 |
| | **Non-Local** | **1.3** | **0.1** | **0.1** | **1.5** | **24,679** | **2,742** | **2,118** | **28,741** |
| Driving for Pleasure | Local Day | 2.6 | 0.2 | 0.1 | 2.9 | 47,252 | 5,381 | 3,931 | 55,282 |
| | Local Overnight | 0.4 | 0.0 | 0.0 | 0.4 | 6,171 | 740 | 582 | 7,211 |
| | **Local** | **3.0** | **0.2** | **0.1** | **3.3** | **53,423** | **6,121** | **4,513** | **62,493** |
| | Non-Local Day | 0.3 | 0.0 | 0.0 | 0.3 | 4,906 | 559 | 408 | 5,740 |
| | Non-Local Overnight | 1.6 | 0.1 | 0.1 | 1.8 | 26,108 | 3,129 | 2,464 | 30,508 |
| | **Non-Local** | **1.9** | **0.1** | **0.1** | **2.1** | **31,015** | **3,688** | **2,872** | **36,248** |
| Snowmobiling | Local Day | 0.0 | 0.0 | 0.0 | 0.0 | 538 | 61 | 45 | 629 |
| | Local Overnight | 0.0 | 0.0 | 0.0 | 0.0 | 186 | 23 | 18 | 218 |
| | **Local** | **0.0** | **0.0** | **0.0** | **0.0** | **723** | **84** | **63** | **846** |

| Motor vehicle use | | Employment Effects (full and part time jobs) | | | | Labor Income (2008 dollars) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Direct | Indirect | Induced | Total | Direct | Indirect | Induced | Total |
| | Non-Local Day | 0.0 | 0.0 | 0.0 | 0.0 | 146 | 18 | 13 | 172 |
| | Non-Local Overnight | 0.0 | 0.0 | 0.0 | 0.0 | 450 | 56 | 43 | 528 |
| | **Non-Local** | **0.0** | **0.0** | **0.0** | **0.0** | **597** | **74** | **56** | **700** |
| Other Motorized Activity | Local Day | 0.1 | 0.0 | 0.0 | 0.1 | 1,147 | 132 | 98 | 1,342 |
| | Local Overnight | 0.0 | 0.0 | 0.0 | 0.0 | 565 | 62 | 49 | 657 |
| | **Local** | **0.1** | **0.0** | **0.0** | **0.1** | **1,712** | **195** | **146** | **2,000** |
| | Non-Local Day | 0.0 | 0.0 | 0.0 | 0.0 | 287 | 33 | 24 | 336 |
| | Non-Local Overnight | 0.1 | 0.0 | 0.0 | 0.1 | 1,238 | 136 | 106 | 1,439 |
| | **Non-Local** | **0.1** | **0.0** | **0.0** | **0.1** | **1,525** | **169** | **131** | **1,775** |
| TOTAL MOTORIZED RECREATION | Local Day | 3.7 | 0.3 | 0.1 | 4.1 | 67,497 | 7,716 | 5,657 | 78,985 |
| | Local Overnight | 0.9 | 0.0 | 0.0 | 0.9 | 16,069 | 1,833 | 1,436 | 18,725 |
| | **Local** | **4.6** | **0.3** | **0.1** | **5.1** | **83,565** | **9,550** | **7,092** | **97,710** |
| | Non-Local Day | 0.5 | 0.0 | 0.0 | 0.6 | 9,985 | 1,145 | 840 | 11,688 |
| | Non-Local Overnight | 2.8 | 0.2 | 0.1 | 3.1 | 47,829 | 5,528 | 4,336 | 55,775 |
| | **Non-Local** | **3.3** | **0.2** | **0.2** | **3.7** | **57,816** | **6,673** | **5,177** | **67,464** |

Source: USDA 2008a and 2008b, and IMPLAN

Table 3-44 displays the jobs and income supported by all recreation activities on the SCNF. Motorized recreation by local residents supports 3.9 percent of the jobs and 3.5 percent of the income currently supported by all SCNF recreation activities. Motorized recreation by non-local visitors represents 3.1 and 2.4 percent respectively of the total jobs and labor income supported.

Table 3-44. Contribution Analysis: Employment and Labor Income, All SCNF Recreation Activities.

| Activity Type | | Employment Effects (full and part time jobs) | | Labor Income (2008 dollars) | |
|---|---|---|---|---|---|
| | | Total | % of Total | Total | % of Total |
| Motorized Activities | Local Day | 4 | 3.1% | 78,985 | 2.8% |
| | Local Overnight | 1 | 0.8% | 18,725 | 0.7% |
| | **Local** | **5** | **3.9%** | **97,710** | **3.5%** |
| | Non-Local Day | 1 | 0.8% | 11,688 | 0.4% |
| | Non-Local Overnight | 3 | 2.3% | 55,775 | 2.0% |
| | **Non-Local** | **4** | **3.1%** | **67,464** | **2.4%** |
| Non-Motorized Activities[1] | Local Day | 5 | 3.9% | 86,832 | 3.1% |
| | Local Overnight | 1 | 0.8% | 33,596 | 1.2% |
| | **Local** | **6** | **4.7%** | **120,426** | **4.3%** |
| | Non-Local Day | 1 | 0.8% | 16,234 | 0.6% |
| | Non-Local Overnight | 10 | 7.8% | 157,170 | 5.7% |
| | **Non-Local** | **11** | **8.6%** | **173,406** | **6.3%** |

| Activity Type | | Employment Effects (full and part time jobs) | | Labor Income (2008 dollars) | |
|---|---|---|---|---|---|
| | | Total | % of Total | Total | % of Total |
| All Other Activities[2] | Local Day | 25 | 19.5% | 538,590 | 19.4% |
| | Local Overnight | 23 | 18.0% | 554,056 | 20.0% |
| | **Local** | **48** | **37.5%** | **1,092,646** | **39.4%** |
| | Non-Local Day | 6 | 4.7% | 117,705 | 4.2% |
| | Non-Local Overnight | 48 | 37.5% | 1,105,969 | 39.9% |
| | **Non-Local** | **54** | **42.2%** | **1,223,674** | **44.1%** |
| **TOTAL** | | **128** | **100.0%** | **2,775,326** | **100.0%** |

Source: USDA 2008a and 2008b, and IMPLAN

[1] Non-Motorized Activities includes backpacking, hiking and walking, horseback riding, bicycling, cross-country skiing, and other non-motorized activities.

[2] All Other Activities includes developed camping, dispersed camping, resort use, picnicking, sightseeing, viewing historic sites, motorized water activities, non-motorized water activities, gathering forest products, relaxing, and those who reported no activity. Although many of these activities may incorporate some motorized activities, survey respondents did not indicate that motorized activities was their primary activity.

Relative to the total economy of the analysis area, total local and non-local motorized recreation represents 0.069 percent of area employment and 0.027 percent of labor income.

Table 3-45. Contribution Analysis: SCNF Recreation as a Percent of Total Area Employment and Total Area Labor Income Effects

| Type of Activity | | Employment Effects (full and part time jobs) | Labor Income (2008 dollars) |
|---|---|---|---|
| Total Non-Motor vehicle use | Local | 0.050% | 0.020% |
| | Non-Local | 0.080% | 0.028% |
| Total Motor vehicle use | Local | 0.040% | 0.016% |
| | Non-Local | 0.029% | 0.011% |
| Total All Other Use | Local | 0.371% | 0.179% |
| | Non-Local | 0.422% | 0.200% |
| | Total Use | 0.993% | 0.454% |
| **Total for Area** | | **12,762** | **$611,045,000** |

Source: USDA 2008a and 2008b, and IMPLAN.

The above estimates indicate that while motorized recreation activities contribute to the attractiveness of the area for some and influence lifestyles and customs of many local residents and visitors, actual economic contributions are quite small. The purchase of durable goods, such as off-road vehicles is often cited as a large contribution to the local economy. It should be remembered however, that although such vehicles may be purchased locally, a large portion of the purchase price actually leaves the local economy as local dealers purchase their inventory of vehicles from manufacturers located outside the local area. Only a relatively small portion of the purchase price is retained by the local dealer and spent again within the local economy in the form of salaries and the purchase of goods and services.

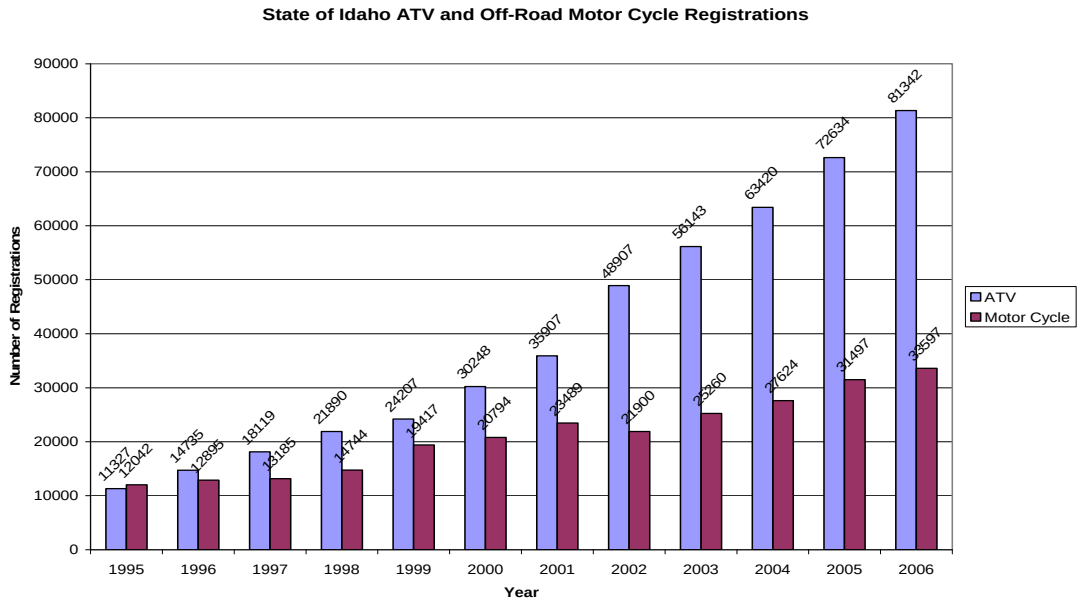
## Off-Highway Vehicle Trends

Off-highway vehicles are popularly defined as: 1) 4-wheel drive jeeps, automobiles, pickups or sport utility vehicles; 2) motorcycles designed for cross-country use; 3) all-terrain vehicles, better known as ATVs, and 4) other specially designed or modified off-road motor vehicles used in a wide variety of ways. OHV annual sales more than tripled to over 1.1 million vehicles between 1995 and 2003. Since 2003, however, sales have been flat, even dipping slightly in 2005, and again in 2006. The total number of OHVs in existence in the U.S. (previously purchased and newly purchased) increased by 174 percent between 1993 and 2003 (estimates of total number of OHVs have not been updated since 2003). In just 10 years, the total existing number of OHVs grew from fewer than three million vehicles to more than eight million in 2003. Sales in 2004-2006 totaled almost 3.25 million vehicles. If sales in 2007 were at least 1 million new vehicles, and assuming that 80 percent of all vehicles are still operable, there would be nearly 9.8 million ATVs and off-road motorcycles in the U.S. as of January, 2008 (Cordell et al. 2008).

There has been a consistent upward trend in the number of OHV participants. Based on the latest data, estimates indicate that nearly one in five Americans age 16 and older participated one or more times in OHV recreation within the past year. The West Region (Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming) had the highest OHV participation rate of all the regions of the United States. Here, an estimated 28.1 percent of all people age 16 and older reported participating in off-highway vehicle recreation. However, this region has the next-to-smallest average annual days of OHV use with 23.2 days for participants (Cordell et al. 2008).

In Idaho, an estimated 34.2 percent of those, age 16 or older participate in OHV recreation (Cordell et al. 2008). The number of off-highway vehicle registrations within Idaho from 1995 through 2006 is displayed in Figure 3-5. The number of off-highway vehicle registrations within the three counties of the analysis area from 1995 through 2006 is displayed in Figure 3-6.

Figure 3-5. ATV and Off-Road Motor Cycle Registrations in Idaho, 1995 through 2006.




Registrations state-wide have increased by an annual average of 16 percent from 1995 through 2006. The increase within the analysis area has been even greater, with an annual average increase of 25 percent.

## Attitudes, Beliefs, Values, and Lifestyles

Traditional forest uses in the area long focused on the utilization of forest resources for economic and subsistence benefits. Roads and trails into the forest represented access to resources critical to community health and well-being. Lifestyles were often built around the processing and use forest related products through timber harvest, grazing, mining, and subsistence activities such as fuelwood gathering, hunting, and berry picking. Today, the economic importance of the consumptive use of many forest products has declined. However, the imprint of these earlier lifestyles remains culturally important to many residents. Therefore, access to the forest via historically used roads and trails is still considered critically important to the culture and lifestyles of many local residents.

Recreational use of the forest has increased significantly in recent years. More and more people seek the forest environment for rest, relaxation, and fun. Motor vehicle use of forest roads and trails to access favored recreational experiences and areas are of primary importance to many. For some, motorized access is their only avenue for accessing remote areas. However, there are also those who find the incursion of motorized vehicles into the forest a negative impact on their experience. For these persons, areas protected from the sight, sounds, and smells associated with motorized vehicles are of critical importance.

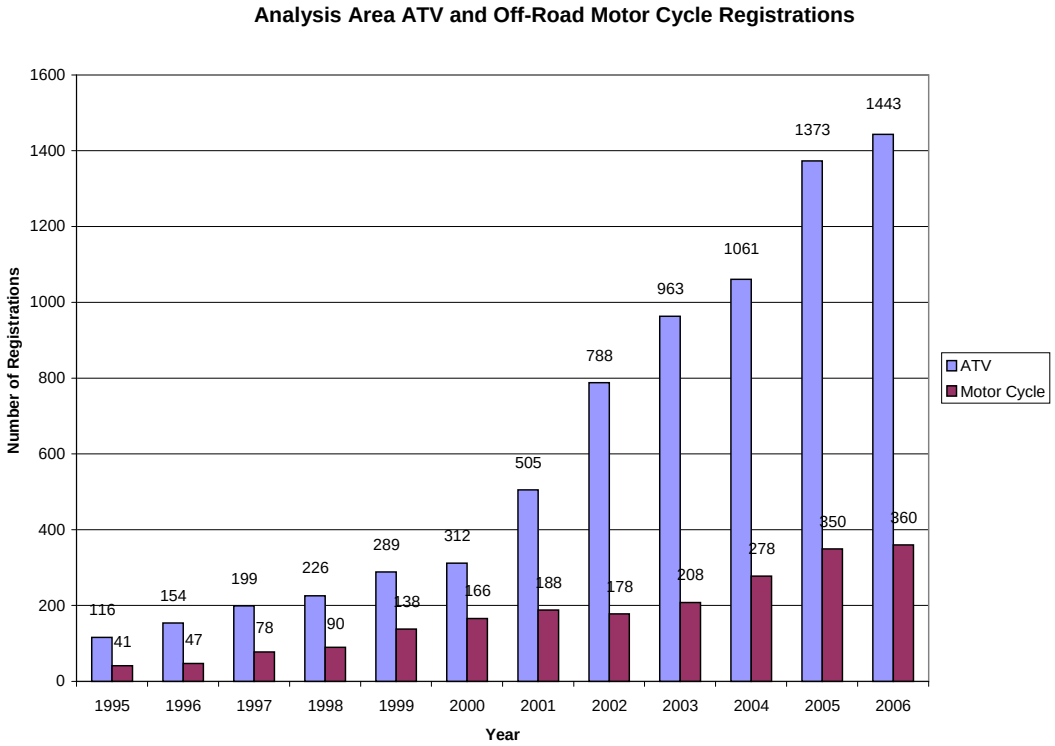



Figure 3-6. ATV and Off-Road Motor Cycle Registrations in the Analysis Area, 1995 through 2006.

Focus group research conducted in 2002 and cited by Mortenson in the "SCNF Forest-wide Roads Analysis: The Social Dimension," found that the majority of interest groups placed a high degree of importance on the preservation of access to the forest in the form of roads and trails. Environmental interests supported environmentally mitigated uses and the preservation of roadless area characteristics. Many residents, particularly long-term residents, view roads as culturally important to their lifestyle and therefore carry considerable value just by virtue of their existence. "Roads represent

the preservation of access for historic and traditional uses…and the opportunity for future use and enjoyment" (Mortenson 2002). Proposals to limit access to those roads and trails in any manner, are viewed by some as a waste, as a loss of a historic right, and/or as a negative impact on the lifestyle or culture to which they are accustomed.

However, Mortenson noted a difference between the ways in which local residents view roads and how more distant publics at the regional and national levels view them. A preponderance of non-local stakeholders placed considerable value in knowing that roadless forest areas exist. Roads and trails represented a negative impact and reduce the value of the forest experience for these individuals (Mortenson 2002). For these people, the closing of roads and trails and/or limitations on motorized access are viewed favorably. This difference in the way that locals and non-locals view forest access issues, results in feelings of inequality when proposals to close or limit access to forest roads and trails is proposed. Locals feel that such proposals are being driven by non-local interests who are trying to take control from locals. Non-locals often believe that local interests in national resources are given more weight than non-local interests.

### 3.11.4 COMPLIANCE WITH THE FOREST PLAN AND OTHER REGULATORY DIRECTION

NEPA implementing regulations (40 CFR Sec. 1508.14) provide that the "human environment" shall be interpreted comprehensively to include the natural and physical environment and the relationship of people with that environment (see the definition of "effects" (Sec. 1508.8)). This means that economic or social effects are not intended by themselves to require preparation of an environmental impact statement. When an environmental impact statement is prepared and economic or social and natural or physical environmental effects are interrelated, then the environmental impact statement will discuss all of these effects on the human environment."

### 3.11.5 AFFECTED ENVIRONMENT AND EXISTING CONDITION

The economic analysis area for direct, indirect and cumulative effects is Butte, Custer, and Lemhi Counties as these are the areas with the closest economic ties to the SCNF.

**Population**

The table below displays the 2000 and estimated 2008 population by county. Overall, the analysis area population is estimated to have decreased by about 1.6 percent between 2000 and 2008. The population of Lemhi County remained constant during this period (U.S. Census 2009a, b).

Table 3-46. 2000 and Estimated 2008 Population by County.

| County | 2000 Census Population | Estimated 2008 Population | Percent Change from 2000 to 2006 |
|---|---|---|---|
| Butte | 2,899 | 2,751 | - 5.1 % |
| Custer | 4,342 | 4,254 | - 1.9 % |
| Lemhi | 7,806 | 7,808 | 0.0 % |
| TOTAL | 15,047 | 14,813 | - 1.6 % |

Source: Population Division, U.S. Census Bureau (Release date: March 19, 2009)

The analysis area is generally very rural in nature, with population densities ranging from 0.8 to 1.7 persons per square mile in each of the three counties. Only a portion of the population in Lemhi County, located in the city of Salmon, is classified as urban.

Butte County is located in east-central Idaho. The federal government manages over 86 percent of the land base within the county (Idaho Dept. of Commerce 2008). Approximately 16 percent of the land base in the county lies within the Challis National Forest (USDA 2007a). Craters of the Moon National

Monument, with thousands of acres of lava flows and volcanic craters, is located in the southwest corner of the county. The county relies on agriculture and employment at the Idaho National Laboratory, one of the state's largest employers. Services and government are also significant employers (Idaho Dept. of Commerce 2008).

Custer County is located in mountainous central Idaho. The federal government manages over 93 percent of the land base within the county (Idaho Dept. of Commerce 2008). Over 59 percent of the county is within the Challis National Forest (USDA 2007a). The Sawtooth National Recreation Area, Redfish Lake, the Yankee Fork Gold Dredge, and Borah Peak, the highest point in Idaho at an elevation of 12,662 feet, are all attractions located here. Mining and agriculture are the major basic industries, with trade, services and government providing the largest portion of employment opportunities (Idaho Dept. of Commerce 2008).

Lemhi County is located in central Idaho, bordering Montana along the Continental Divide. The federal government manages nearly 91 percent of the land base within the county (Idaho Dept. of Commerce 2008). Over 68 percent of the county lies within the Salmon and Challis National Forests (USDA 2007). The city of Salmon serves as a major whitewater recreation hub. Rafters and kayakers are drawn to the "River of No Return" Salmon River. Government employment and tourism are significant industries in the county, as are, to a lesser extent, mining and forest products manufacturing (Idaho Department of Commerce 2008).

Table 3-47 displays the 2000 population of the analysis area by Race and Hispanic Origin. The population within the three counties in the analysis area is very similar to that of the state. Over 90 percent of the population is White, not of Hispanic origin. The percentage of minority populations is generally similar or smaller than is reflected in the state-wide population statistics.

Table 3-47. Population by Race or Hispanic Origin, 2000 Census.

| Race or Hispanic Origin | United States | Idaho | Butte Co. | Custer Co. | Lemhi Co. |
|---|---|---|---|---|---|
| Not Hispanic or Latino: | 87.5% | 92.1% | 92.6% | 95.5% | 98.0% |
| White alone | 69.1% | 88.0% | 90.4% | 94.3% | 95.8% |
| Black or African American alone | 12.0% | 0.4% | 0.3% | 0.0% | 0.0% |
| American Indian and Alaska Native alone | 0.7% | 1.2% | 0.2% | 0.3% | 0.3% |
| Asian alone | 3.6% | 0.9% | 0.3% | 0.0% | 0.1% |
| Native Hawaiian and Other Pacific Islander alone | 0.1% | 0.1% | 0.0% | 0.0% | 0.0% |
| Some other race alone | 0.2% | 0.1% | 0.1% | 0.0% | 0.0% |
| Two or more races | 1.8% | 1.5% | 1.3% | 0.9% | 1.6% |
| Hispanic or Latino: | 12.5% | 7.9% | 7.4% | 4.5% | 2.0% |
| White alone | 6.0% | 2.9% | 2.5% | 2.7% | 1.1% |
| Black or African American alone | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% |
| American Indian and Alaska Native alone | 0.1% | 0.1% | 0.2% | 0.0% | 0.0% |
| Asian alone | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Native Hawaiian and Other Pacific Islander alone | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Some other race alone | 5.3% | 4.2% | 4.4% | 1.4% | 0.8% |
| Two or more races | 0.8% | 0.6% | 0.3% | 0.3% | 0.1% |

Source: U.S. Census Bureau.

**Employment and Labor Income**

Employment and labor income in the analysis area were estimated with IMPLAN Pro 2.0, using data for 2006, the most recent data available. IMPLAN is an economic modeling program originally developed by the Forest Service in cooperation with the Federal Emergency Management Agency and the Bureau of

Land Management. IMPLAN has since been privatized and is now provided by Minnesota IMPLAN Group (MIG). IMPLAN utilizes a database of basic economic statistics constructed by MIG. Information for this database was obtained from major government sources such as the Bureau of Economic Analysis, County Business Patterns, Regional Economic Information System (REIS), Bureau of Labor Statistics, U.S. Census, etc., and converted to a consistent format using widely accepted methodologies.

The IMPLAN database breaks the economy down into 509 sectors based on the North American Industrial Classification System (NAICS). The 509 IMPLAN sectors were aggregated in order to summarize the data.

Estimated employment and labor income are presented in Table 3-48. Employment figures presented represent full-time, part-time, and intermittent jobs. Therefore one person, who has two part-time jobs, would be counted twice in the data. For this reason, employment numbers can not be directly compared with population estimates. Professional, Scientific, & Tech. Services represent 40 percent of analysis area employment and 55 percent of labor income. Government & non-NAICS employment is the next largest aggregated sector with 13.2 percent of employment and 18.5 percent of labor income.

Table 3-48. Estimated 2006 Employment and Labor Income in Analysis Area.

| Sector | Employment[1] | Percent of Total Employment | Labor Income ($1,000s) | Percent of Total Labor Income |
|---|---|---|---|---|
| Ag, Forestry, Fish & Hunting | 1,049 | 8.2% | $22,538.6 | 3.7% |
| Mining | 381 | 3.0% | $34,727.4 | 5.7% |
| Utilities | 66 | 0.5% | $7,824.4 | 1.3% |
| Construction | 513 | 4.0% | $15,130.9 | 2.5% |
| Manufacturing | 176 | 1.4% | $9,316.4 | 1.5% |
| Wholesale Trade | 112 | 0.9% | $3,699.8 | 0.6% |
| Transportation & Warehousing | 167 | 1.3% | $4,948.1 | 0.8% |
| Retail trade | 745 | 5.8% | $16,324.9 | 2.7% |
| Information | 108 | 0.8% | $2,421.0 | 0.4% |
| Finance & Insurance | 135 | 1.1% | $5,447.1 | 0.9% |
| Real Estate & Rental | 231 | 1.8% | $2,650.1 | 0.4% |
| Professional, Scientific & Tech Services | 5,111 | 40.0% | $335,954.7 | 55.0% |
| Management of Companies | 5 | 0.0% | $151.7 | 0.0% |
| Administrative & Waste Services | 126 | 1.0% | $2,704.5 | 0.4% |
| Educational Services | 15 | 0.1% | $443.9 | 0.1% |
| Health & Social Services | 528 | 4.1% | $14,133.8 | 2.3% |
| Arts, Entertainment & Recreation | 409 | 3.2% | $5,028.3 | 0.8% |
| Accommodation & Food Services | 629 | 4.9% | $8,421.6 | 1.4% |
| Other Services | 569 | 4.5% | $6,237.4 | 1.0% |
| Government & non NAICs | 1,687 | 13.2% | $112,940.7 | 18.5% |
| TOTAL | 12,762 | 100.0% | $611,045.3 | 100.0% |

Source: IMPLAN 2008.
[1]Employment includes full-time, part-time, and intermittent jobs.

Following the Office of Management and Budget's (OMB) Statistical Policy Directive 14, the Census Bureau uses a set of money income thresholds that vary by family size and composition to determine who is in poverty. If a family's total income is less than the family's threshold, then that family and every individual in it is considered in poverty. In 2007 the poverty threshold for a family of 4 was $21,027. Table 3-49 displays the estimated percentage of the area population with incomes falling below poverty level in 2007. Butte County is estimated to have the highest rate of poverty among the counties within the analysis area.

### Environmental Justice

E.O. 12898 (February 11, 1994) directs federal agencies to focus attention on the human health and environmental conditions in minority and low-income communities. The purpose of E.O. 12898 is to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects on minority and low-income populations. The Council on Environmental Quality (CEQ) defines a minority as "Individual(s) who are members of the following population groups: American Indian or Alaska Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic." CEQ further directs:

> "Minority populations should be identified where either (a) the minority population of the affected area [emphasis added] exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis…a minority population also exists if there is more than one minority group present and the minority percentage, as calculated by aggregating all minority persons, meets one of the above stated thresholds (CEQ 1997)."

Table 3-49. Estimated Percentage of Population Below Poverty Level

| Location | Estimated Percentage Below Poverty Level (90% Confidence Interval) |
|---|---|
| Idaho | 12.1% |
| Butte County | 16.0% |
| Custer County | 12.4% |
| Lemhi County | 13.5% |

Source: U.S. Census Bureau, Small Area Income and Poverty Estimates.

Table 3-49 above displays a breakdown of the analysis area population by race and Hispanic origin. The minority population as a percent of the analysis area is not meaningfully different than that of the state. Therefore, a minority population as defined by E.O. 12898 does not exist in the analysis area.

CEQ defines "low-income population" as:

> "Low-income populations in an affected area should be identified with the annual statistical poverty thresholds from the Bureau of the Census' Current Population Reports, Series P-60 on Income and Poverty. In identifying low-income populations, agencies may consider as a community either a group of individuals living in geographic proximity to one another, or a set of individuals (such as migrant workers or Native Americans), where either type of group experiences common conditions or environmental exposure or effect (CEQ 1997)."

Table 3-49 above displays poverty levels by county within the analysis area. Poverty levels are not significantly different within these counties, than at the state level.

### USDA Civil Rights Policy

The Civil Rights Policy for the USDA, Departmental Regulation 4300-4 dated May 30, 2003, 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 Salmon-Challis National Forest 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. The objectives of this review and analysis are to prevent disparate treatment and minimize adverse Civil Rights impacts that may have caused an effect of discrimination against minorities, women and persons with disabilities and to ensure compliance with all Civil Rights statutes, Federal regulations, and USDA policies and procedures.

**Persons with Disabilities**

Some comments received during the travel management planning process expressed concern that any changes to motorized access would prevent future access to National Forest system lands for those with disabilities. The Salmon-Challis National Forest travel management plan applies equally to all members of the public and is not discriminatory towards persons with disabilities.

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.

People were defined as having a disability within the 2000 Census survey, 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.

Overall, about 19 percent of the United States population (2000 Census) is considered to be living with a disability. In Idaho, among people at least five years old from 2005-2007, 15 percent reported a disability. In Idaho, 23.9 percent of the population was defined as living with a disability (2000 Census).

The likelihood of having a disability varied by age - from 6 percent of people 5 to 15 years old, to 13 percent of people 16 to 64 years old, and to 42 percent of those 65 and older.

**Civil Rights Monitoring and Evaluation**

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 and that the alternatives and mitigations are considered. Toward that end, the SCNF will:

- Implement any future travel management projects only after an appropriate level of NEPA is completed and the decision documented.
- Complete project-level NEPA with adequate public involvement that will consider access and concerns from minorities, women, persons with disabilities, and low income populations.
- Consult early and often with Idaho Tribal Governments regarding Special Areas of Historic Tribal Significance for implementation of travel management plans.
- Design travel management planning and public involvement opportunities that consider access concerns from minorities, women, persons with disabilities, and low income populations.

### Forest Recreation Use

The National Visitor Use Monitoring Survey (NVUM) is used to estimate the annual number of recreation visits to national forests. To achieve this, a selection of individual forests in each region is sampled yearly with each administrative forest in the National Forest System being sampled once every five years. In addition to data necessary to estimate visitation, a separate economics survey is administered to roughly a fourth of those sampled in order to gather spending information for use in developing spending profiles for forest visitors.

Table 3-50 displays the National Visitor Use Monitoring Survey (NVUM) estimates for the number of National Forest visitors and their primary activity on the SCNF for one year. Total annual national forest visits are estimated at 348,741. Survey results indicate that the primary activities for approximately 43,929 (12.6 percent) of these visitors were motorized. The remaining visitors were primarily engaged in non-motorized activities (USDA 2008a). It is acknowledged that visitors engaged in both motorized and non-motorized activities, traveled to and from those activities via motorized transportation. However, visits were categorized based on the nature of the recreational activity itself.

Table 3-50. National Visitor Use Monitoring Survey (NVUM) Results for the SCNF.

| Activity[1] | Estimated Annual National Forest Visits | Percent of Total National Forest Visits |
|---|---|---|
| MOTORIZED ACTIVITIES | | |
| OHV Use | 8,813 | 2.5% |
| Driving for Pleasure | 27,426 | 7.9% |
| Snowmobiling | 170 | 0.05% |
| Other Motorized Activity | 544 | 0.2% |
| Other Non-motorized | 6,976 | 2.0% |
| NON-MOTORIZED ACTIVITIES | | |
| Backpacking | 1,871 | 0.5% |
| Hiking / Walking | 41,241 | 11.8% |
| Horseback Riding | 3,539 | 1.0% |
| Bicycling | 68 | 0.02% |
| Cross-country Skiing | 34 | 0.01% |
| Fishing | 55,872 | 16.0% |
| Hunting | 54,511 | 15.6% |
| Viewing Wildlife | 14,257 | 4.1% |
| Non-motorized Water | 4,764 | 1.4% |
| Developed Camping | 11,025 | 3.2% |
| Primitive Camping | 4,764 | 1.4% |
| Resort Use | 681 | 0.2% |
| Picnicking | 3,164 | 0.9% |
| Viewing Natural Features | 18,749 | 5.4% |
| Visiting Historic Sites | 10,821 | 3.1% |
| Nature Center Activities | 919 | 0.3% |
| Relaxing | 27,051 | 7.8% |
| Gathering Forest Products | 2,450 | 0.7% |
| No Activity Reported | 49,033 | 14.1% |
| Total | 348,741 | 100.0% |

Source: USDA National Visitor Use Monitoring Surveys.

[1] Each visitor was asked to indicate the recreation activity that was their primary reason for visiting the Forest.

Visits were further divided into local and non-local visitors and non-primary visitors, or those who indicated that recreating on the national forest was not their primary purpose. Local visitors were

defined as those living within 50 miles of the recreation site. Results for the SCNF indicated that approximately 34 percent of recreation visitors were from the local area. Approximately 66 percent were non-locals (USDA 2008a).

The economic data collected was divided into seven trip type segments; local day trips, local overnight trips on the national forest, local overnight trips off the national forest, non-local day trips, non-local overnight trips on the national forest, non-local overnight trips off the national forest, and non-primary trips. Overnight visitors were those who reported being away from home more than 24 hours on their trip. Overnight trips on the national forest were those who stated that they spent the previous night on the national forest (Stynes and White 2006).

NVUM economic data sample sizes were too small at the individual forest level to reliably capture differences in spending for individual forests. However, spending will vary somewhat from one area to another based upon local prices and spending opportunities. To account for spending variations, national forest visitor spending profiles were estimated by grouping forests with above or below average spending. Forests with above or below average spending were identified by comparing spending averages for each forest with the national averages. Day and overnight visitor spending averages (excluding non-primary visitors) were estimated based on the sample of visitors on each forest. To control for differences in visitor mix across forests, a standardized average was computed for each forest, assuming a fixed mix of 60 percent for day trips and 40 percent for overnight trips. The standardized average for each forest was compared to the national standardized average. Of the forests sampled in the NVUM study, 48 have visitor spending averages that are not significantly different from the national average, 44 forests have below average spending, and 28 have above average spending. The SCNF was identified as having below average spending (Stynes and White 2006).

The low spending profiles identified by Stynes and White (2006) are displayed in Table 3-51.

Table 3-51. Low Spending Profile by Segment and Spending Category, $ per party per trip

| Activity | Non-Local Day Trips | Non-Local Overnight Trips | Local Day Trips | Local Overnight Trips |
|---|---|---|---|---|
| Cross-country Skiing | $44 | $215 | $31 | $129 |
| Snowmobile | $89 | $207 | $62 | $124 |
| Hunting | $66 | $142 | $36 | $119 |
| Fishing | $35 | $133 | $41 | $108 |
| Nature-related | $43 | $143 | $26 | $101 |
| OHV-use | $49 | $120 | $43 | $72 |
| Driving | $31 | $111 | $21 | $74 |
| Developed Camping | -- | $103 | -- | $92 |
| Primitive Camping/Backpacking | -- | $75 | -- | $74 |
| Hiking/Biking | $30 | $133 | $19 | $72 |
| Other | $41 | $127 | $33 | $102 |
| TOTAL | $43 | $134 | $30 | $95 |

Source: USDA NVUM 2008.

## 3.11.6 ENVIRONMENTAL CONSEQUENCES OF THE ALTERNATIVES

### Incomplete and Unavailable Information

Insufficient information is available to project changes in motorized vehicle use that may result following implementation of the proposed action or alternatives analyzed in this report. Such predictions would be highly speculative and would likely be minimized by regional and national population and motorized recreation trends. The Travel Management Rule prohibits travel off designated systems and requires

the designation of roads, trails, and areas open to motor vehicle use on Forest System lands and the assignment of the type and seasonal open periods where appropriate. While prohibitions on travel off designated systems may cause some users to seek other, less restrictive public lands for their motorized recreation activities, the Travel Management Rule applies to all National Forest System lands and is outside the scope of this analysis. However, the system-wide application of its restrictions makes the potential for shifts in motorized recreation activities between national forests as a result of the SCNF proposed action or alternatives more unlikely. Regardless, insufficient information is available to be able to estimate the nature or magnitude of such shifts. Estimated economic contributions under existing conditions are calculated and displayed above. The analysis of the impacts of the action alternatives will focus on changes in opportunities and the potential direction of change from the existing condition, but not the size of economic impacts relative to these changes.

**Spatial and Temporal Context for Effects Analysis**

The analysis area for direct, indirect, and cumulative effects is the three county analysis area described earlier over a 15-year time period. The Travel Management Rule requires an annual review of each Forest's travel management plan and consideration and implementation of updates or corrections if needed. However, a complete revision of the SCNF Travel Planning and Route Designation is not expected to occur for approximately 10 to 15 years.

Descriptions and side-by-side comparisons of the alternatives are found in Chapter 2.

## *Alternative 0 – No Action*

**Direct and Indirect Social Effects**

There would be no direct or indirect social effects under the No Action Alternative. Recreation activity levels reflected in the NVUM survey results would continue. Access to the forest via roads and trails would remain unchanged. Cross-country travel in the areas currently open to motor vehicle use would continue. Local lifestyles and customs relative to motor vehicle travel would remain unchanged.

**Direct and Indirect Economic Effects**

There would be no direct or indirect effects under the No Action Alternative. The economic contributions estimated above in the description of the existing condition would continue. The population of those who participate in off-highway vehicle recreation activities is expected to continue to increase (Cordell 2008). As described above, under Off-Highway Vehicle Trends, the number of ATV and off-road motor cycle registrations has increased by an average of 16 and 25 percent annually in Idaho and the analysis area respectively since 1995. Future trends are uncertain, but a conservative estimate, based on expected population growth (U.S. Census 2005) would indicate that participants in motorized recreation would increase by approximately 29 percent by 2020. Increasing numbers of motorized recreation participants would result in increased user density on the designated trail system. Some users may elect to seek other locations to pursue these activities, or some may seek other forms of recreation. However, total use would be likely to increase and a majority of participants would gradually adjust to higher densities on designated roads and trails. The number of jobs and income supported within the local economy may increase over time; however, the relative size of impacts to the economy as a whole is unlikely to change measurably.

**Environmental Justice**

No minority populations, as defined by E.O. 12898 were identified within the analysis area. Poverty levels within the analysis area are similar to those found at the state level. Implementation of

Alternative 0 would not be expected to have a disproportionately high or adverse human health or environmental effect on low-income populations in the analysis area.

**Summary of Effects**

No direct or indirect social or economic effects would occur under Alternative 0. Motorized recreation activities under the No Action Alternative would continue to support an estimated 9 jobs and $165,164 in labor income within the three-county analysis area. Of this sum, approximately 4 jobs and $67,464 of labor income are supported by the activities of non-local visitors and therefore represent "new" money introduced into the economy. These job and labor income impacts represent a very small proportion of the analysis area economy at only 0.13 and 0.048 percent respectively.

No disproportionately high or adverse human health or environmental impacts to minority or low income populations are expected under Alternative 1.

No cumulative effects would occur under Alternative 1.

## *Effects Common to All Action Alternatives*

**Direct and Indirect Social Effects**

Residents, who value the ability to access the forest and view this as an historic right, would perceive implementation of these alternatives as a reduction in their access to the forest and therefore a negative effect on their culture and lifestyle. Cross-country motor vehicle use for game retrieval would not be allowed and would negatively affect some hunters, particularly those with mobility limitations. Some visitors may find it more difficult to access favored areas of the forest due to the reduction in the miles of motorized system routes available for use in addition to the inability to use unauthorized routes. These users may perceive this as an inequity relative to the opportunities available to visitors who prefer non-motorized activities.

Some OHV users may believe that the quality of their motorized recreational experience is reduced under these alternatives. The reduced miles of available trails and limitations on cross-country travel would tend to increase the concentration of users on the designated road and trail systems. OHV users may experience an increased number of encounters with other users, reducing the perception of remoteness for some visitors.

Designated motorized system routes are also, often used by recreationists pursuing non-motorized activities. Despite a higher tolerance among these individuals for encounters with motorized vehicles, increased concentrations of OHVs may reduce the quality of their recreation experience. Some of these individuals may elect to discontinue the use of motorized system routes in order to pursue their activities in locations where motor vehicle uses are prohibited. Such decisions may require balancing the loss of access to favored locations against the desire to avoid increased encounters with motor vehicle users.

Some forest visitors are likely to view reductions in designated motorized system routes as a favorable impact on their forest experience. Those who object to the presence of motorized recreation activities would perceive these alternatives favorably when compared to the No Action Alternative. The limitations on cross-country OHV travel would increase areas available to those seeking an experience dominated by the sights and sounds of nature, away from motorized activities. By reducing motorized system routes and eliminating the motor vehicle use of unauthorized routes, the action alternatives may reduce the potential for conflicts between motorized and non-motor vehicle users. However, motorized recreationists are likely to perceive such a decision as providing a disproportionate benefit to non-motor vehicle user groups.

Reduced environmental impacts from motorized vehicles would be favored by those concerned about the effects of OHVs on the environment. Those who value knowing that wild areas are protected from motorized activities would favor one or more of the action alternatives over Alternative 0.

**Environmental Justice**

No minority populations, as defined by E.O. 12898 were identified within the analysis area. Poverty levels within the analysis area are similar to those found at the state level. Implementation of any of the alternatives would not be expected to have a disproportionately high or adverse human health or environmental effect on low-income populations in the analysis area.

## *Alternative 1 – Designated System*

**Direct and Indirect Social Effects**

Forest visitors who actively participate in motorized recreation activities will perceive a decrease in opportunities, particularly for those who utilize unauthorized routes or participate in cross-country travel. Motorized OHV activities would be allowed on 3,424 miles of designated routes. This represents a reduction of 15 percent in miles of designated routes available for use. Across the Forest, the decrease in the miles of designated routes is greatest on the North Fork and Salmon-Cobalt Ranger Districts with reductions of 25 and 29 percent respectively. In addition, 1,108 miles of unauthorized routes in open areas would no longer be available for use. The unauthorized routes in restricted areas of current Travel Plans are violations and are not considered available motorized public use. The total reduction in the miles of trail available for use under this alternative is 1,723 miles or a decrease of approximately 33 percent. Across the Forest, the greatest overall percentage reduction occurs on the Leadore and Salmon-Cobalt Ranger Districts at 52 and 47 percent, respectively. Cross-country travel would be limited to approximately 120,251 acres, on which travel may occur within 300 feet of system roads and trails for the purpose of accessing dispersed camping sites. When compared to Alternative 0, this represents a reduction of 70 percent.

Because the suitability for OHV types was not determined for the No Action Alternative, only a comparison of total miles of motor vehicle trails is a valid comparison of the No Action Alternative and Alternative 1. All system trails in areas open to cross-country were calculated as motor vehicle trails open yearlong to OHVs in the No Action Alternative whether they were actually suitable or used for motor vehicle travel because no official designations allowing or prohibiting motor vehicle use on these trails are currently in effect. Compared to the No Action Alternative, total miles of motor vehicle trails decreases by 27 percent under this alternative.

**Direct and Indirect Economic Effects**

Although implementation of the Travel Management Rule under Alternative 1 would reduce access to some areas of the Forest, little change in the number of motor vehicle users is anticipated. The availability of substitute public lands allowing cross-country travel is very limited. Other federal lands, such as Bureau of Land Management lands in the area are also revising travel management direction and limiting off-road motor vehicle uses. State lands are limited and scattered. Although an increased concentration of users may lead some visitors to forgo recreation on the Forest, it is expected that the overall level of recreation use on the SCNF would remain relatively constant. Therefore the economic impacts of Alternative 1 are expected to remain similar to those described under the No Action Alternative.

The population of those who participate in off-highway vehicle recreation activities is expected to continue to increase (Cordell 2008). As described above, under Off-Highway Vehicle Trends, the number of ATV and off-road motor cycle registrations has increased by an average of 16 and 25 percent annually

in Idaho and the analysis area respectively since 1995. Future trends are uncertain, but a conservative estimate, based on expected population growth (U.S. Census 2005) would indicate that participants in motorized recreation would increase by approximately 29 percent by 2020. Increasing numbers of motorized recreation participants would result in increased user density on the designated trail system. Some users may elect to seek other locations to pursue these activities, or some may seek other forms of recreation. However, total use would be likely to increase and a majority of participants would gradually adjust to higher densities on designated roads and trails. The number of jobs and income supported within the local economy, may increase over time, however, the relative size of impacts to the economy as a whole is unlikely to change measurably.

**Summary of Effects**

Those preferring motorized recreation activities may perceive that the quality of experience available on the SCNF is reduced. Those who prefer non-motorized recreation activities are likely to believe that the quality of opportunities available to them would be improved. Those concerned about the environmental impact of OHVs would favor the increased restrictions that would be applied under this alternative.

Motorized recreation activities under the Alternative 1 are expected to continue to support the same level of economic activity as described under Alternative 0.

No disproportionately high or adverse human health or environmental impacts to minority or low income populations are expected under Alternative 1.

## *Alternative 3 – Wilderness/Roadless Emphasis*

**Direct and Indirect Social Effects**

Most Forest visitors who participate in motorized recreation activities would perceive a decrease in opportunities. Motorized OHV activities would be allowed on 2,905 miles of designated system routes. This represents a reduction of 28 percent of the miles of designated system routes available Forest-wide. Across the Forest, the decrease in the miles of designated routes is greatest on the Leadore, North Fork and Salmon-Cobalt Ranger Districts with reductions of 30, 35 and 33 percent respectively. The total reduction in the miles of roads and trails available for use under this alternative is 2,242 miles or a decrease of approximately 44 percent. Across the Forest, the greatest overall percentage reduction occurs on the Leadore and North Fork Ranger Districts with reductions of 63 and 51 percent respectively. This is largely due to the miles of unauthorized routes in areas open to cross-country travel on these districts considered under the No Action Alternative. Cross-country travel would be limited to approximately 67,881 acres, on which travel may occur within 300 feet of system roads and trails for the purpose of accessing dispersed camping sites. When compared to Alternative 0, this represents a reduction of 83 percent.

Because the suitability for OHV types was not determined for the No Action Alternative, only a comparison of total miles of motor vehicle trails is a valid comparison of the No Action Alternative and Alternative 3. All system trails in areas open to cross-country were calculated as motor vehicle trails open yearlong to OHVs in the No Action Alternative whether they were actually suitable or used for motor vehicle travel because no official designations allowing or prohibiting motor vehicle use on these trails are currently in effect. Compared to the No Action Alternative, total miles of motor vehicle trails decreases by 57 percent under this alternative.

**Direct and Indirect Economic Effects**

Jobs and labor income supported under Alternative 3 would likely be somewhat less than those described under Alternatives 0 and the other action alternatives. Additionally, the population of those who participate in off-highway vehicle recreation activities is expected to continue to increase as described above. Increasing numbers of motorized recreation participants would further increase user density on the designated trail system.

Due to a higher density of use on designated roads and trails, some users may elect to seek other locations for their motorized recreation and some may elect to pursue other forms of recreation. Projected increases in the number of motorized recreation participants would tend increase the intensity of this effect. The scale of the resultant economic effects would depend upon the number of displaced users choosing to travel to more distant locations to find alternative motorized alternatives and the number that chose to pursue other activities locally. Those that leave the area to find other motorized recreation opportunities would reduce economic activity within the analysis area. Those that choose to pursue other activities locally would continue to stimulate economic activity in the local economy.

**Summary of Effects**

Those preferring motorized recreation activities would perceive that the quality of experience available on the SCNF is reduced. Those who prefer non-motorized recreation activities would believe that the quality of opportunities available to them would be improved. Those concerned about the environmental impact of OHVs would favor the increased restrictions that would be applied under this alternative to the greatest extent of the action alternatives.

Motorized recreation activities under the Alternative 3 are expected to support a reduced level of economic activity than that described under Alternative 0.

No disproportionately high or adverse human health or environmental impacts to minority or low income populations are expected under Alternative 3.

Cumulative effects that would occur under this alternative include an increased concentration of motorized recreation activities on designated trail systems across most public land systems in general as more managing agencies seek to better regulate motorized activities.

## ***Alternative 4 – Maximum Motorized Emphasis***

**Direct and Indirect Social Effects**

Forest visitors who participate in motorized recreation activities would favor Alternative 4 over the other action alternatives. Alternative 4 would authorize a 3 percent increase in the miles of system roads and an increase of 19 percent in the total miles of motor vehicle trails over the No Action Alternative. This alternative would authorize the most miles of system trails open year long and seasonally to OHVs of the action alternatives. Because the suitability for OHV types was not determined for the No Action Alternative, only a comparison of total miles of motor vehicle trails is a valid comparison of the No Action Alternative and Alternative 4.

Motorized OHV activities would be allowed on 4,351 miles of designated routes. This represents an increase of 8 percent of the miles of designated system routes available Forest-wide when compared to the No Action Alternative. The increase in the miles of designated system routes is greatest on the Leadore Ranger District at 169 miles or 49 percent, followed by the Lost River Ranger District with an increase of 75 miles or 11 percent. Some previously unauthorized routes are proposed for designation under this alternative. The total reduction in the miles of trail available for use under this alternative is

796 miles or a decrease of approximately 15 percent. The decrease in total miles of routes (system and unauthorized) available for use across the forest ranges from a low of 9 percent on the Middle Fork Ranger District to a high of 23 percent on the North Fork Ranger District. Cross-country travel would be limited to approximately 150,512 acres, on which travel may occur within 300 feet of system roads and trails for the purpose of accessing dispersed camping sites. When compared to Alternative 0, this represents a reduction of 63 percent.

**Direct and Indirect Economic Effects**

Increased opportunities may attract a small increase in motorized recreation users seeking less populated trails in the SCNF. Additionally, the population of those who participate in off-highway vehicle recreation activities is expected to continue to increase as described under the existing condition section above. The level of jobs and labor income supported within the local economy under Alternative 4 may increase slightly over those estimated under the existing condition as a result of the increased number of motorized participants; however, any increases would likely be unnoticeable.

**Summary of Effects**

Those preferring motorized recreation activities would perceive that the quality of experience available on the SCNF maintained to a greater extent under Alternative 4 than under the other action alternatives. Those who prefer non-motorized recreation activities would believe that the quality of opportunities available to them would be reduced under this alternative to a greater extent than under other action alternatives. Those concerned about the environmental impact of OHVs would not favor this alternative.

Motorized recreation activities under the Alternative 4 are expected to support a similar level of economic activity as described under Alternative 0.

No disproportionately high or adverse human health or environmental impacts to minority or low income populations are expected under Alternative 4.

Cumulative effects that would occur under this alternative include an increased concentration of motorized recreation activities on designated trail systems across most public land systems in general as more managing agencies seek to better regulate motorized activities.

## *Alternative 5 – Preferred Alternative*

**Direct and Indirect Social Effects**

Forest visitors who actively participate in motorized recreation activities would perceive a decrease in opportunities, particularly for those who utilize unauthorized routes or participate in cross-country travel. Motorized OHV activities would be allowed on 3,534 miles of designated routes. This represents a reduction of 13 percent in miles of designated routes available for use. This decrease would be less than would occur under Alternatives 1 or 3, but greater than Alternative 4. Across the Forest, the decrease in the miles of designated routes is greatest on the North Fork and Salmon-Cobalt Ranger Districts with reductions of 23 percent on both districts. The Challis-Yankee Fork and Middle Fork Ranger Districts would reduce system roads and trails by 10 and 3 percent respectively. The Leadore and Lost River Ranger Districts would both increase the miles of system roads and trails by 1 percent. This would result in a total reduction in the miles of motorized routes available for use under Alternative 5 of 1,613 miles or a decrease of approximately 31 percent when compared with the No Action Alternative. This is less than both Alternatives 1 and 3. Across the Forest, the greatest overall percentage reduction occurs on the Leadore, North Fork and Salmon-Cobalt Ranger Districts at 45, 43, and 42 percent respectively. This is largely due to the miles of unauthorized routes in areas open to

cross-country travel on these districts considered under the No Action Alternative. Cross-country travel would be limited to approximately 116,748 acres, on which travel may occur within 300 feet of system roads and trails for the purpose of accessing dispersed camping sites. When compared to Alternative 0, this represents a reduction of 71 percent.

This alternative would decrease the miles of system trails open year long and seasonally to OHVs by 23 percent relative to those considered under the No Action Alternative.

**Direct and Indirect Economic Effects**

Although implementation of the Travel Management Rule under Alternative 5 would reduce access to some areas of the forest, little change in the number of motor vehicle users is anticipated. The availability of substitute public lands allowing cross-country travel is very limited. Other federal lands, such as Bureau of Land Management lands in the area are also revising travel management direction and limiting off-road motor vehicle uses. State lands are limited and scattered. Although an increased concentration of users may lead some visitors to forgo recreation on the Forest, it is expected that the overall level of recreation use on the SCNF would remain relatively constant. Therefore the economic impacts of Alternative 5 are expected to remain similar to those described under the existing condition.

As described under Alternative 1, the population of those who participate in off-highway vehicle recreation activities is expected to continue to increase. Increasing numbers of motorized recreation participants would result in increased user density on the designated trail system. Some users may elect to seek other locations to pursue these activities, or some may seek other forms of recreation. However, total use would be likely to increase and a majority of participants would gradually adjust to higher densities on designated roads and trails. The number of jobs and income supported within the local economy, may increase over time, however, the relative size of impacts to the economy as a whole is unlikely to change measurably.

**Summary of Effects**

Those preferring motorized recreation activities may perceive that the quality of experience available on the SCNF is reduced. Those who prefer non-motorized recreation activities are likely to believe that the quality of opportunities available to them would be improved. Those concerned about the environmental impact of OHVs would favor the increased restrictions that would be applied under this alternative.

Motorized recreation activities under the Alternative 5 are expected to continue to support the same level of economic activity as described under the existing condition.

No disproportionately high or adverse human health or environmental impacts to minority or low income populations are expected under Alternative 5.

Cumulative effects that would occur under this alternative include an increased concentration of motorized recreation activities on designated trail systems across most public land systems in general as more managing agencies seek to better regulate motorized activities.

## 3.11.7 CUMULATIVE EFFECTS

### *Alternative 0*

Implementation of Alternative 0 would maintain the existing level of motorized opportunities on the SCNF. Because there are no direct or indirect effects under this alternative, there are no cumulative effects.

Cumulative effects that would occur under Alternative 1 include an increased concentration of motorized recreation activities on designated trail systems across most public land systems in general as more managing agencies seek to better regulate motorized activities.

### *Alternatives 1 and 3*

The Travel Management Rule prohibits the use of motor vehicles off the designated system not only within the SCNF, but on all National Forest System lands nationwide, with localized small exceptions. The result of these restrictions is an increase in the concentration of users on designated road and trail systems. Therefore, encounters between motorized recreation users would be likely to increase not only on the SCNF, but on other public lands as well. The increased likelihood of encountering other visitors may cause some users to abandon OHV activities. However, a majority of users would likely adjust to the increased concentration. Many of these users may perceive that the quality of experience available to them has been reduced.

### *Alternative 4*

The Travel Management Rule prohibits the use of motor vehicles off the designated system not only within the SCNF, but on all National Forest System lands nationwide, with localized small exceptions. The result of these restrictions is an increase in the concentration of users on designated road and trail systems. However, any increase in user concentrations as a result of the elimination of unauthorized routes and limitations on cross-country travel would be least noticeable under Alternative 4 due to the increased number of designated roads and trails. None-the-less, encounters between motorized recreationists would be likely to increase over time not only on the SCNF, but on other public lands as well. The increased likelihood of encountering other visitors may cause some users to abandon OHV activities. However, a majority of users would likely adjust to the increased concentration. Many of these users may perceive that the quality of experience available to them has been reduced.

### *Alternative 5*

The Travel Management Rule prohibits the use of motor vehicles off the designated system not only within the SCNF, but on all National Forest System lands nationwide, with localized small exceptions. The result of these restrictions is an increase in the concentration of users on designated road and trail systems. Therefore encounters between motorized recreation users would be likely to increase not only on the SCNF, but on other public lands as well. The increased likelihood of encountering other visitors may cause some users to abandon OHV activities. However, a majority of users would likely adjust to the increased concentration. Many of these users may perceive that the quality of experience available to them has been reduced.

## 3.12 ROAD MAINTENANCE AND SUSTAINABILITY OF USE CONSIDERATIONS IN DESIGNATING ROUTES

### 3.12.1 TRAVEL MANAGEMENT; DESIGNATED ROUTES AND AREAS FOR MOTOR VEHICLE USE

On November 9, 2005 the Forest Service published a final rule titled "*Travel Management; Designated Routes and Areas for Motor Vehicle Use" (*36 CFR Parts 212, 251, 261, and 295), which will be referred to as the Travel Management Rule in the following discussion.

The primary purposes of the rule were to clarify policy related to motor vehicle use, provide consistent display of allowable motor vehicle use throughout the National Forest System and reduce resource damage by managing cross country travel. These regulations implement Executive Order (E.O.) 11644 (February 8, 1972), ''Use of Off-Road Vehicles on the Public Lands,'' as amended by E.O. 11989 (May 24,

1977). The final rule responds to the growing popularity of off highway vehicles and the resource concerns resulting from what is often unmanaged use by redirecting use to a system of managed roads, trails and areas where suitable opportunities may be provided within the constraints of other resource issues. As the title of the rule indicates, the primary means of managing motor vehicle use will be through the designation of routes or areas where use is allowed. In some cases, this is a complete turn around from travel management plans that relied primarily on restricted use designations.

Even though the policy covers roads, trails and areas, this discussion will focus primarily on comparing potential impacts of implementing the various alternatives on the road system and specifically on our ability to maintain the routes for the designated use(s). Routes designated for public use need to be maintained at levels that provide for the designated use(s) without undue damage to adjacent resources or risk to public safety. Traffic volumes, types of vehicles, season of use, road design, construction methods and materials, and environmental factors all impact condition and maintenance needs on the road system. Of these, travel management influences traffic volume, vehicle types and season of use.

Traffic volumes influence needed maintenance through degradation of the road surface either by the development of wheel depressions which channel water down the road and leads to rutting and loss of road surface material or by the development of washboards and pothole that can lead to loss of vehicle control. A third and often overlooked consequence of allowing traffic is that surface fines are mobilized as dust and leave the roadway. Fines are critical in providing stabile road surfaces as they bind the larger aggregates together. Over time, this will eventually lead to a need to place additional surfacing on the roadway. Obviously lower levels of use or use constrained to periods when wear is likely to be minimized, certainly reduce the maintenance burden but may not always be desirable in terms of providing public opportunities to visit the forest. The policy recognizes and responds to the need to strike a balance between public opportunities, resource risks, and financial capability in the general criteria for the designation of roads, trails and areas.

The following excerpt from Section 212.55 of the rule outlines general criteria for the designation of roads, trails and areas. Most of the criteria will be addressed elsewhere in resource specific discussions, but it is important to note that the rule recognizes that providing motor vehicle access requires a certain expenditure of maintenance and administration resources to sustain the opportunities, and directs the responsible official to consider the availability of these resources when making the designations.

**§ 212.55 Criteria for designation of roads, trails, and areas.**

(a) *General criteria for designation of National Forest System roads, National Forest System trails, and areas on National Forest System lands.* In designating National Forest System roads, National Forest System trails, and areas on National Forest System lands for motor vehicle use, the responsible official shall consider effects on National Forest System natural and cultural resources, public safety, provision of recreational opportunities, access needs, conflicts among uses of National Forest System lands, the need for maintenance and administration of roads, trails, and areas that would arise if the uses under consideration are designated; and the availability of resources for that maintenance and administration.

Although the rule requires consideration of the sustainability of the route system, it does not require that designation be dependent on the availability of operational resources for current or proposed uses and traffic levels. The responsible official has the latitude to make designation decisions based on other criteria such as resource risks, may designate routes for vehicle types which do not require the highest standard of maintenance, or limit periods of use to prevent traffic induced maintenance.

The Forest Service's authority to develop and maintain a road system is for the administration, protection and utilization of the forest (16 U.S.C. 532). This is an administrative authority that recognizes the need for a transportation system to facilitate legitimate uses and management activities. As a result, the road system is not considered a "Public" road system in the sense that it is not intended to provide for the general commerce, convenience, and transportation needs of the public at large in the same manner that the public highway systems do. It is however recognized that public use of the forest is legitimate, and the road and trail systems need to accommodate the access and use of the forest by the public, provided that these uses are consistent with existing laws, regulations, and management objectives.

Because forest roads are intended for management purposes but public use is allowed, the Forest Service finds itself in a situation where we maintain roads for both administrative and public traffic. Some roads that provide primary access to general forest areas as well as a few local routes leading to developed recreation sites, administrative sites etc., are maintained to standards that allow passenger car use. The agency has also voluntarily attempted to comply with the Highway Safety Act standards on these roads in recognition of the significant public use. A second group of roads is maintained to a standard suitable for high clearance vehicles and resource protection, but not necessarily passenger cars. These roads are primarily maintained for administrative purposes, although public use is also allowed on many of these roads as well. Maintenance requirements differ significantly between the two groups with substantially more resources committed to the passenger car routes. A third group of roads includes closed roads that are intermittently opened for active management activities but are closed to protect resources and minimize maintenance costs during periods of non-use.

### 3.12.2 CURRENT STATE OF THE ROAD MAINTENANCE PROGRAM

Agency-wide, road maintenance programs are under-funded for the amounts and types of roads presently on the system and open to the public. For Fiscal 2009, the initial budget for road maintenance and construction was roughly $600,000. Some adjustment may occur as final allocations are made but the expectation is that this is roughly the total amount available. This money is used for not only road maintenance but also other engineering functions such as road and bridge conditions surveys, project development, materials and supplies, training, shops, office space and other costs associated with the program. Of the roughly $600,000 in the 2009 appropriation, $375,000 may be available for on the ground expenditures.

As a result, a substantial maintenance backlog has developed. For the 2003 forest-wide *Roads Analysis Report (*Beke et. al. 2003*)* deferred (backlog) maintenance was estimated at 60 million dollars to correct existing deficiencies over all maintenance levels. Nearly one-half (29 million dollars) of the estimated deferred maintenance occurred on Maintenance Level 3 roads that provide the bulk of the primary access to the forest. Estimated annual maintenance needs would consume roughly 3.1 million dollars to achieve a level of maintenance that would fully maintain routes at the assigned maintenance levels and arrest increases in backlog work. More current estimates are difficult to build because of changes in the data collection procedures that lead to a statistically sound sample at the national level, but provide little confidence at the local level. Nevertheless, the illustration does point out that current annual maintenance allocations are inadequate to prevent the growth of backlog maintenance needs. Since the period included in the estimate, the forest has experience both a decline in road maintenance budget and significant increases in operating cost due primarily to large increases in the costs of fuel and materials, further limiting maintenance capability.

These estimates are significantly higher than the estimate that will be used to compare the alternatives. The assumption when building the 2003 estimate was that all work would be done by contract and

included all identifiable and anticipated work at the time of the survey including the actual cost of completing the work, overhead, contracting and project management costs at the Forest, Regional and National levels. Changes in design criteria or more stringent resource considerations between the date of construction and present also led to the identification work such as road relocation or re-alignment being identified as needed to accomplish road objectives. The goal of that exercise was to establish a value for needed maintenance that could be used to demonstrate nationally where the Forest Service was in terms of financial need to support existing infrastructure and fulfill resource objectives. The estimate used to compare alternatives need not be as comprehensive, can focus on direct costs associated with route designation and is essentially limited to costs that would be incurred at the Forest level and does not address Regional and National taps. In essence, the comparative estimate attempts to capture costs most directly affected by the implementation of the rule (maintenance induced by traffic) and uses these costs to compare the effects of potentially implementing each alternative on the overall maintenance program. Other aspects of the road and bridge maintenance program will continue to occur but because they are more or less static over the range of alternatives (e.g. periodic inspections of all bridges would not change) do not need to be included in the comparative analysis. It is important to remember that the program does have a certain amount of "fixed" costs that cannot be diverted to on the ground maintenance and that these costs have not been included in the analysis.

A number of strategies either singularly or in combination may be needed to address both resource risks and public safety issues that arise out of this inability to fully maintain the entire system. Strategies that may be used include: reducing the open road mileage, restricting access to periods in which traffic will be less likely to damage roads, or changing the types of vehicles that may use routes. To a certain extent, one or more of these strategies is included in each of the various alternatives either with an eye towards managing the cost of the transportation system or in response to specific resource concerns.

### 3.12.3 ESTIMATING THE IMPACTS OF TRAVEL MANAGEMENT DECISIONS ON THE SUSTAINABILITY OF THE OPEN ROAD SYSTEM.

Travel management decisions can impact maintenance needs by affecting use patterns, periods of use or whether or not use is allowed. Increased traffic volume creates more wear and increases the maintenance load. Surface wear can also reduce drainage functionality and increase erosion and sediment delivery from the roads. Likewise, even low volumes of traffic occurring during wet road conditions, greatly increases the risk of rutting and drainage failures. Restricting or eliminating use during vulnerable periods can significantly reduce needed maintenance.

Lacking good predictive models for behavioral change as a result of the rule and the return frequency for corrective maintenance based on all the various factors (including traffic) that affect road conditions, a confident model to predict maintenance costs for each road under various alternatives doesn't exist. A relative assessment of each alternative against the current situation may be reached by comparing expected traffic-induced maintenance estimates based on expected return intervals that are developed from a combination of three criteria: maintenance standard, average maintenance costs, and expected period of use. Lacking a robust model and data to develop a model, the following assumptions are made.

**Assumption #1*: Total use of the forest road system (total vehicle miles per year) is not expected to change between alternatives over the planning area as a result of travel planning decisions.***

Discussion: It is not expected that users will forego use of the forest as a result of decisions made under the rule. Generally, it would be expected that the total volume of public use does not significantly change over the range of alternatives but would be distributed over available routes, which would vary by alternative. The implication that alternatives with fewer routes will probably have more traffic on

these routes is valid but not predictable. Given that most forest roads receive light traffic, small to moderate changes in total traffic on a single route would probably not significantly influence the return interval for maintenance. As a result, the analysis dismisses traffic volume as a measure that provides meaningful differences between the alternatives.

**Assumption #2: The primary costs of maintaining roads as a result of designating use are embedded in surface maintenance and associated activities.**

Discussion: The travel plan, by allowing use, implies that traffic induced maintenance will follow designation. Other maintenance activities will also take place incidental to this use but generally do not add significant costs to the program or occur at intervals that are cyclic with long periods between activities. The intent is to capture the day-to-day costs of maintenance as the result of travel designations. Storm damage and other non-traffic related events may induce significant costs but are generally not the result of allowing traffic. The cost estimates include an allowance for some incidental maintenance such as culvert cleaning, sign maintenance and brushing.

**Assumption #3: None of the alternatives results in use pattern shifts that would substantially alter maintenance frequencies for one or more road maintenance levels.**

Discussion: Some roads within a maintenance level will experience increased or decreased traffic as a result of the designation of routes in each alternative. The resulting maintenance needs may follow these changes as well. However, the average maintenance frequency for the group is not likely to be affected when averaged across the forest. Displacement is not expected to have any affect on maintenance level 3, 4 and 5 roads as the mileage is the same in all alternatives and these routes are generally the primary access to the forest. The difference in mileage between alternatives for maintenance level 2 routes is only about 600 miles forest-wide and is also expected to be insignificant if potential displacement is somewhat evenly distributed across the forest. As stated in assumption #1, small increases in traffic on lightly used routes would not likely affect the maintenance return interval.

These assumptions in combination with the lack of data to support a more detailed model result in a selected approach that focuses on traffic-induced maintenance by assigning maintenance frequencies based on the assigned maintenance level (standard of maintenance) whether or not public traffic is allowed (open –v- closed), and seasonal constraints (lower maintenance frequencies would be predicted under a seasonal opening). A short discussion of each of these considerations and how they are included in the development of the assigned maintenance costs for each maintenance level.

## ***Maintenance Level***

The Forest Service assigns operational and objective maintenance levels to all roads managed as part of the forest road system. The maintenance levels range from Level 1- *closed for periods greater than a year* to Level 5 which emphasizes free flowing traffic and high comfort levels. Public traffic may be allowed on maintenance Levels 2-5 with level 1 roads reserved for intermittent administrative use associated with management treatments or forest protection. These maintenance levels are used as an indicator in developing relative costs between alternatives as they indicate general maintenance guidance for the various classes of roads along with implied maintenance frequencies. In general, roads with an assigned maintenance Level of 3, 4 or 5 are maintained for low clearance passenger cars and will require more frequent maintenance than level 2 roads which are maintained for high clearance vehicles such as pickups and SUVs. Past experience leads us to believe that the following grading schedules would be adequate to achieve minimum maintenance standards for each maintenance level:

**Level 1** - not graded unless open for administration

**Level 2** - grade on a 3 year interval to correct drainage issues and eliminate deep ruts.

**Level 2 (seasonal)** - grade on a 5 year interval to correct drainage issues and eliminate deep ruts.

**Level 3** - grade on an annual basis, smoothness and ride have low emphasis but low clearance vehicles should not be hindered by surface irregularities.

**Level 4** - grade on a semi-annual bases, smoothness and ride have moderate emphasis and should remain fair to good throughout the use period.

**Level 5** - grade multiple times per year with emphasis on user comfort; Forest-wide expect an average of three times per year. Some Level 5 roads are paved but maintenance costs can be expected to remain roughly the same since operations such as pavement markings, patching, and signing have higher emphasis.

### ***Seasonal Open Periods***

Because damage to road surfaces is both more common and more severe during wet periods of the year, roads open yearlong are more likely to incur a higher maintenance frequency than those that are open seasonally during periods of lower precipitation. Experience has shown us that many seasonally open roads have very low maintenance costs when compared to roads where unrestricted use is allowed. Minor variations in open and close dates are not expected to significantly change the outcomes in terms of induced maintenance and as a result are not considered in the analysis. For the purpose of the analysis, the return interval is about 60% less frequent than if the roads have unrestricted use.

### ***Closed vs. Open Routes***

Closed roads (Maintenance Level 1) are assigned a very low cost primarily associated with minor upkeep of drainage structures. For the purpose of this assessment, these costs are considered non- existent since they are not the result of designation for public travel. In comparing alternatives, alternatives with more closed roads will show lower overall maintenance estimates even though the costs of maintaining these routes were not defined or analyzed.

Given the previous discussion, our approach is to develop a relative comparison of the expected maintenance costs associated with traffic-induced maintenance on open roads. Surface maintenance (grading) is the primary maintenance need most closely associated with use of open roads. As a result, the assessment will focus on two variables, the assigned Maintenance Level (operational) and period of use (seasonal vs. yearlong) to estimate the costs of maintaining the system under each alternative. Other activities such as culvert cleaning, sign repairs, brushing and hazard tree removal are more or less incidental to surface maintenance and completed concurrently with the blade maintenance. A cost allowance for these activities is included in the overall blading cost.

Costs will be calculated on a system-wide basis rather than a road-by-road basis where a single set of values are assigned to all of the variables for each Maintenance Level/Period of Use pair. Our inability to model shifts in use patterns or traffic volume leads us to this approach. Finally, the costs are an *estimate* of the direct *annual maintenance costs* to maintain roads at their assigned maintenance level under each alternative. The estimate does not include other included costs associated with the maintenance program such as program management, support facilities, emergency repairs, and the replacement of surfacing and obsolete or deficient structures, which also are funded out of the same program dollars. The previously alluded to deferred maintenance is not included as it is result of inadequate funding in the past and exists whether a road continues to be open or not. It is however reasonable to predict that where substantial differences in annual funding levels and annual maintenance needs occur, deferred maintenance backlog will continue to increase.

Table 3-52 displays the maintenance frequencies assumed to be adequate to maintain each class of road to the minimum standard for the assigned maintenance level as well as the estimated annual cost to complete the work on 1 mile of road. Table 3-53 displays the estimated mileage for each Maintenance Level/Period of Use pair by alternative. Table 3-54 summarizes the estimated annual cost of blade maintenance and incidental work by alternative.

Table 3-52. Maintenance Frequencies for road classes on the SCNF.

| Estimated Annual Maintenance Cost by Road Maintenance Level and Use Period | | | | | | |
|---|---|---|---|---|---|---|
| | Expected # Annual Bladings @ 100% level of maintenance | | | | | |
| | ML-5 | ML-4 | ML-3 | ML-2 | ML-2 SEAS. | ML-1 |
| Surface Blading Frequency | 3.00 | 2.00 | 1.00 | 0.50 | 0.20 | 0.00 |
| Estimated $/Mile | $843 | $843 | $625 | $400 | $400 | *N/A* |
| Estimated $/Mile/Year | $2,529 | $1,686 | $625 | $200 | $80 | $0 |

Table 3-53. Estimated mileage for each maintenance class on the SCNF

| Estimated Mileage for Each Use Period/Maintenance Level Pair by Alternative | | | | | | |
|---|---|---|---|---|---|---|
| | ML-5 | ML-4 | ML-3 | ML-2 | ML-2 SEAS. | Total |
| Alternative 0-No Action | 28 | 55 | 586 | 2082 | 169 | 2920 |
| Alternative 1-Designated System | 28 | 55 | 586 | 1774 | 169 | 2612 |
| Alternative 2-Revised Proposed | Not Carried Forward From DEIS | | | | | |
| Alternative 3-Wild/Roadless Emph. | 28 | 55 | 586 | 1501 | 254 | 2424 |
| Alternative 4-Motorized Emphasis | 28 | 55 | 586 | 2142 | 208 | 3019 |
| Alternative 5-Preferred | 28 | 55 | 586 | 1768 | 233 | 2670 |

Table 3-54. Estimated cost of annual maintenance on the SCNF.

| Estimated Annual Maintenance Cost By Use Period/Maintenance Level Pair by Alternative | | | | | | |
|---|---|---|---|---|---|---|
| | ML-5 | ML-4 | ML-3 | ML-2 | ML-2 SEAS. | Total |
| Alternative 0-No Action | $70,812.00 | $92,730.00 | $363,750.00 | $416,400.00 | $13,520.00 | $957,212.00 |
| Alternative 1-Designated System | $70,812.00 | $92,730.00 | $366,250.00 | $354,800.00 | $13,520.00 | $898,112.00 |
| Alternative 2-Revised Proposed | Not Carried Forward From DEIS | | | | | |
| Alternative 3-Wild/Roadless Emph. | $70,812.00 | $92,730.00 | $366,250.00 | $300,200.00 | $20,320.00 | $850,312.00 |
| Alternative 4-Motorized Emphasis | $70,812.00 | $92,730.00 | $366,250.00 | $428,400.00 | $16,640.00 | $974,832.00 |
| Alternative 5-Preferred | $70,812.00 | $92,730.00 | $366,250.00 | $353,600.00 | $18,640.00 | $902,032.00 |

### 3.12.4 SUMMARY OF FINDINGS

The analysis points out a couple of important items. First that relatively little difference is displayed between alternatives as a result of the small differences in open road mileage between the alternatives and the fact that the differences occur in the classes of roads with the lowest maintenance costs. Alternatives 3 and 4 display the lowest and highest direct annual costs with a difference of approximately $125,000 dollars. The preferred alternative lands squarely mid-range and represents somewhat of an improvement over the No Action. A second observation is that the estimated annual expenditure for all alternatives exceeds the entire road maintenance budget before additional expenditures for overhead costs and non-included maintenance. The analysis focuses on a single component of the maintenance program as an *indicator* of comparative road maintenance costs

associated with the designation of open routes under the various alternatives and therefore does not capture these additional obligations.

Given that in an average year roughly 65% of the road maintenance budget is available for on-the-ground work, and that the indicator (surface maintenance) is not a complete estimate of all the work that *should* be done, a fully funded program would likely require four to five times the current budget to prevent the continuing accumulation of deferred maintenance. Ultimately, the sustainability of the proposed uses on some portion of the system could be compromised in all alternatives. Although a continuing decline in the serviceability of the road system can be expected under current funding levels, there are a few mitigating elements that will slow the decline. Not all road maintenance is financed completely out of the appropriated funding with some accomplishment coming from special funds set aside for road or resource improvements, work performed as part of timber sales and other commercial uses of the road system, or recreation fees. As a result, the rate of deterioration is slower than if the program is entirely dependent on annual appropriations. With the exception of the recreation fee collections that are utilized to do some maintenance on the Salmon River Road and the access roads to the Boundary Creek Launch Site in support of the river recreation program, most of these sources have been pretty unstable in the recent past. The work or financing resulting from timber harvest has been sporadic and is highly dependent on successful offer of timber sales which has been hindered by poor markets and environmental appeals. Special funding for improvement projects is competitive between forests and although we can expect some projects, the likelihood of continuous funding from a given source is low. Overall, we can expect to finance more maintenance than the annual appropriation would indicate, but need to keep in mind that much of this funding is cyclic or highly dependent on outside influences such as commodity values on the open market. Of the analyzed alternatives, Alternative 3 is the most financially sustainable. Alternative 1 (Designate system routes currently open but eliminate cross country travel and unauthorized routes) and Alternative 5 (Preferred) appear to fall mid-range. Alternatives 1 and 4 have the highest associated maintenance costs and would be most difficult to maintain over time without substantial increases in funding.

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