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Lightning Creek Restoration Project

Sandpoint Ranger District, Idaho Panhandle National Forests
Bonner County, Idaho

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Cover Photos: Examples of damage from the 2006 flood. **Top:** Lightning Creek and road 419. Damage at mile marker 5 is seen at bottom of photo. **Middle right:** Forest Service hydrologists stand on the edge of what is left of Rattle Creek Road 473. **Bottom:** Remainder of East Fork Road 1184 after the flood.

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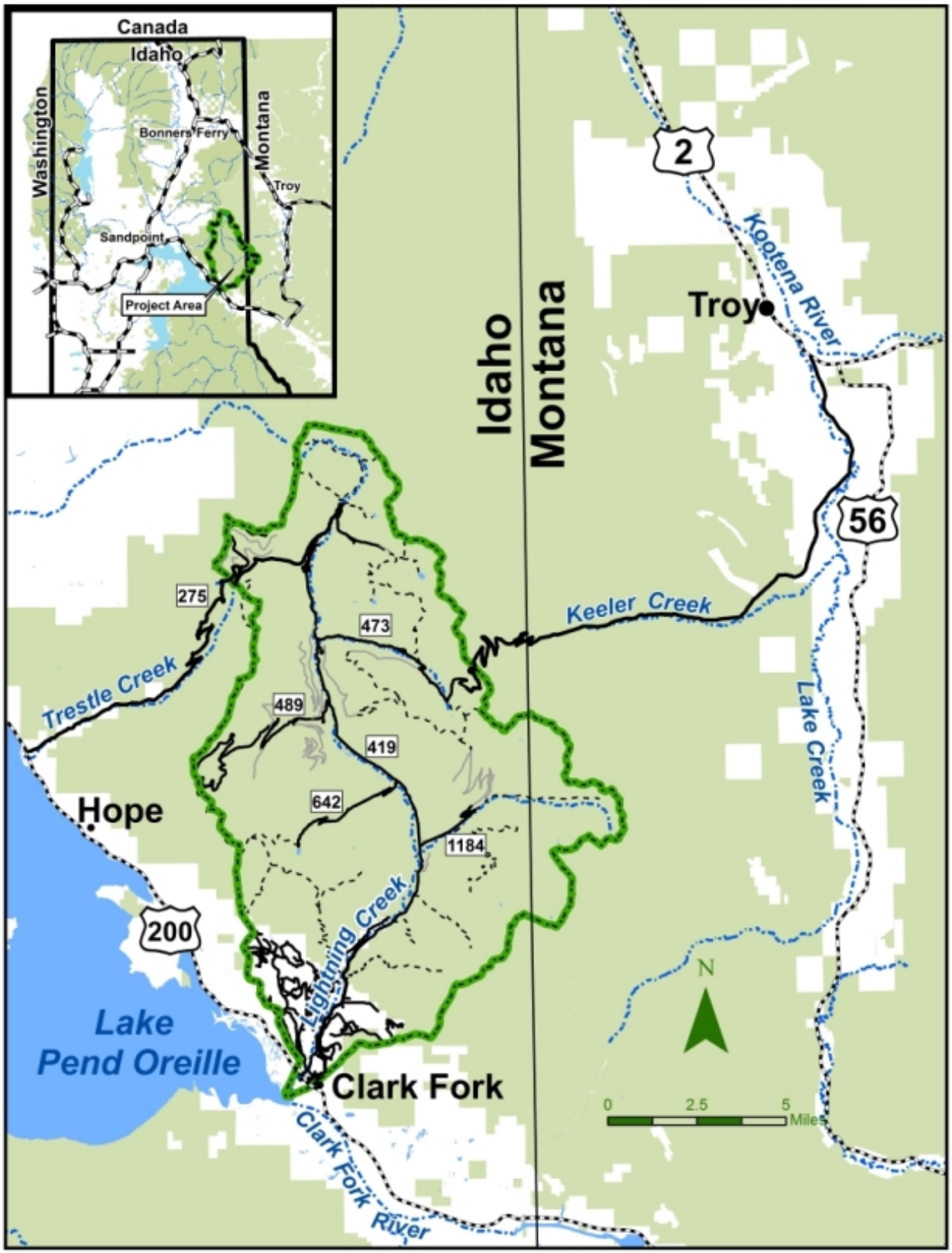


Figure 1. Location of the Lightning Creek watershed

Purpose and Need for Action

Introduction

The Sandpoint Ranger District, Idaho Panhandle National Forests, has proposed to repair and decommission roads, to change the level of access on specific roads and trails, and to conduct watershed restoration activities in the Lightning Creek watershed. District staff prepared this environmental assessment (EA) to briefly provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact (40 CFR 1508.9(a)(1)).

The Lightning Creek project area encompasses National Forest System (NFS) lands of the Lightning Creek watershed, which is located about 20 miles east of Sandpoint, Idaho. The Lightning Creek valley runs in a north-to-south direction along the Idaho/Montana border and drains about 118 square miles. Lightning Creek joins the Clark Fork River west of the town of Clark Fork, Idaho, in Township 55 North, Range 2 East, Section 3 (see Figure 1).

Background

The Lightning Creek watershed is a unique area in northern Idaho for a number of reasons. This drainage features steep, forested canyon walls, alpine lakes and streams, awe-inspiring vistas, hunting, fishing, camping, and berry picking. Lightning Creek carves its way through the canyon for 22 miles. People explore the drainage on a network of roads and trails that provide both motorized and nonmotorized recreation opportunities. The Lightning Creek ecosystem provides clear streams and large expanses of unroaded habitat for a number of fish and wildlife species, many of which are listed as sensitive, threatened, or endangered.

Lightning Creek watershed is also the wettest place in Idaho, which—combined with its geologic history—makes it susceptible to landslides, avalanches, and high-energy runoff events. Flood events have been a common thread in the drainage for at least a century. The earliest documented flood event occurred in 1894, and since that time numerous flood events have been recorded (see Geology and Engineering Report, pp. 3-9). As a result, Lightning Creek watershed has the highest recurrence of major road damage on the Idaho Panhandle National Forests, and possibly in the entire Inland Northwest. Such continual road damage contributes excess sediment to streams and degrades important fish habitat. In addition, the watershed has a large number of roads that not only contributes to the sediment problem, but also reduces the amount of secure habitat for wildlife.

In 2002, the Forest Service, in cooperation with the Avista Corporation, approved funding to commence a watershed analysis of the Lightning Creek drainage to identify road-related threats to the watershed and potential mitigation measures. Based on the findings and recommendations of the Lightning Creek Watershed Assessment (Phillip, Williams, and Associates 2004; see Aquatics Report), the Sandpoint Ranger District began a roads analysis process (RAP) to identify the risks associated with each individual road as it relates to various resources (see Appendix A, p. 59 for a summary of the RAP, and the Project Development section of the project file for the detailed report).

Through this process, the district began to compile a list of specific activities that would begin to address problems of water quality, degraded aquatic habitat, and degraded terrestrial habitat - specifically, secure habitat for grizzly bears. Opportunities to improve resource conditions in the context of maintaining recreation opportunities were identified throughout the watershed. In

general, activities included road maintenance, road decommissioning, converting trails from motorized to nonmotorized use, and improving aquatic species passage at road-stream crossings. Road maintenance and improved design features were to be proposed for primary roads, road decommissioning was to be proposed for certain secondary and closed roads, and a conversion from motorized to nonmotorized trail was to be proposed for the Lake Darling Trail. Another activity that was being explored was a reroute of the Rattle Creek road (473) because of its continuous maintenance issues, its extreme risk of failure, and its effect on water quality and aquatic habitat (see Geology and Engineering Report, pp. 15-16; and project file).

The November 2006 Flood

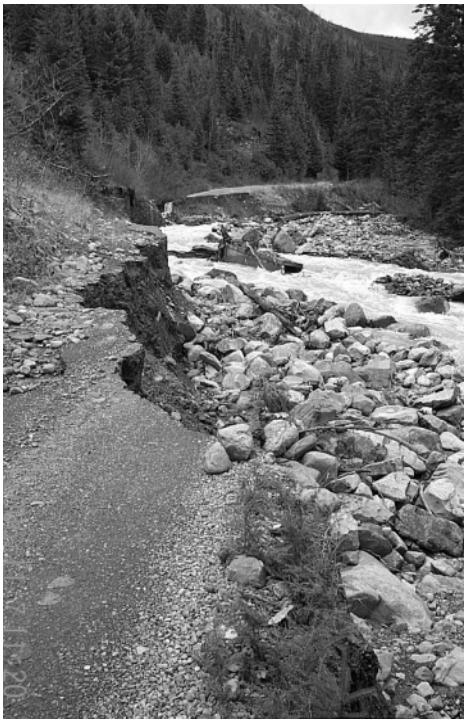
In November 2006, the interdisciplinary team working on the Lightning Creek Project was preparing to send out a project proposal when a record-setting flood event occurred in the Lightning Creek watershed. After two days of snowfall, warmer temperatures turned the precipitation to rain, causing rapid runoff. Between November 4 and 8, 2006, the water discharge rate in Lightning Creek went from 12 cubic feet/second to 18,700 cubic feet/second[1], resulting in widespread movement of sediment and debris and extensive damage to the road system (see Aquatics Report, pp. 18-29). In several areas where previously drivable roads were located next to streams, large sections of road prism were washed away, drainage structures were swept into stream channels or destroyed, and massive amounts of bedload and woody debris were deposited within stream channels and on roadbeds (see photos in Figure 2). The damage that occurred during the flood event affected approximately 28 miles of roads in the watershed.

Prior to the 2006 flood, the hydrology staff at Sandpoint District had identified numerous roads in the watershed that were in a state of disrepair. Most of the roads identified were originally closed to motorized vehicles to provide secure habitat for grizzly bears and were impassable due to the abundance of vegetation growing on the road surface. Although these roads have not been driven by vehicles for many years, they were identified as sources of sediment to streams in the area, and/or at risk of failure (see Project Development section of the project file).

Other road segments that were used regularly by the public prior to the flood were heavily damaged during the November 2006 flood event. These include Forest Service roads 419 (Main Lightning), 1184 (East Fork), 473 (Rattle Creek), and 642 (Porcupine Creek). For decades, these roads have been extremely prone to massive failure in places where they cross or are next to streams in the Lightning Creek drainage. In past weather events, these roads have suffered from plugged and failed culverts, mass failures, failed structures such as bridges and fords, and in larger events, the loss of entire road sections (see Geology and Engineering Report, pp. 6-12).

The 2006 flood event also changed access and recreation opportunities in the watershed. Prior to the flood, road access into the Lightning Creek drainage was via Trestle Creek road (275) at the north end, and Lightning Creek road (419) at the south end (out of Clark Fork). At milepost 5 on road 419, a large section of road washed out where it crossed private land. Public access on that section of road was provided by an easement to the Forest Service from the private landowner. Shortly after the flood, the Forest Service placed a gate at milepost 5 for public safety and to prevent unauthorized access across the private land since the Forest Service no longer had a valid easement. Since the flood damage, an easement has been obtained from the landowner and a new gate has been installed just above the East Fork crossing. The primary access into the drainage is by way of Trestle Creek road.

[1] as recorded by the United States Geological Survey (USGS). The average peak flow for Lightning Creek is 4,500 cubic feet/second.



Above: Washout of Rattle Creek Road 473 that placed a box culvert in the middle of the creek. **Top right:** Loss of East Fork Creek road 1184 at milepost 1.3. **Bottom right:** The bridge across Lightning Creek to Porcupine Lake road 642 no longer has its earthen approach.

Figure 2. Areas of damage caused during the 2006 flood event

Several types of recreation opportunities were changed by the flood also. In locations where major access roads became impassable to standard motorized vehicles, recreationists resorted to hiking, mountain biking, and using off-highway vehicles and packstock to visit the watershed. The earthen approach to the bridge accessing the Porcupine Lake road (643) was washed away, preventing high-clearance motorized access to a favorite high mountain lake for many, as well as access to service the outhouse and campground there (see Figure 2). Overall, motorized access was affected the most (see Table 1).

Table 1. Types of vehicle access before and after the 2006 flood (National Forest road miles only)

Road Management Status	Before Flood	After Flood
Open, drivable roads	60.9	22.1
Restricted*, drivable roads	9.4	3.4
Closed (not drivable or closed w/barrier)	53.5	60.9
Motorized single-track trails	2.1	2.1
Motorized vehicles <50 in.	0	31.5
Restricted*, motorized vehicles <50 in.	0	6.0

* Restricted = closed April 1 - November 15

Purpose of the Proposed Project

By decreasing overall road density and fixing road sites with chronic problems, the Sandpoint Ranger District would be able to move toward compliance with various State and Federal laws, standards and requirements. These include water quality standards set by the Idaho Department of Environmental Quality (IDEQ), and habitat requirements set by the U.S. Fish and Wildlife Service for threatened species such as grizzly bear and bull trout. A decrease in road density and repair of problem sites also would help to achieve transportation and recreation objectives for a safe, stable, and functioning road system in the Lightning Creek watershed that can be maintained within current and anticipated budget levels.

In consideration of these conditions, the purpose of this project is two-fold:

- Improve watershed resource conditions, and aquatic and terrestrial habitat in the Lightning Creek watershed that have been compromised by the November 2006 flood event, and/or previous management activities. Specific resource considerations are the improvement of water quality, improving habitat conditions for native bull trout and west slope cutthroat trout, and improving secure habitat for grizzly bear.
- Attain a transportation system in the watershed that
    - can be maintained at designated safe operating levels under current budgetary constraints,
    - continues to provide a diversity of recreational opportunities, and
    - is at a decreased risk to the regular incidence of flood damage that has historically occurred in the watershed.

Need for the Project

The need for the project is derived by examining how the existing conditions compare to desired conditions that are established by Federal and State laws, Forest Service regulations and policies, and the Idaho Panhandle National Forests Forest Plan. The “need statements” below were developed in consideration of the laws, regulations and policies that guide the desired conditions for the Lightning Creek area (see the complete list of laws and regulations in the Project Development section of the project file).

- There is a need to minimize future road-related risks from inevitable flood events to protect resources and to be able to maintain roads with limited budgets.
- There is a need to improve water quality to comply with State water quality standards and provide fish habitat to meet Endangered Species Act.
- There is a need to reduce road densities in the watershed to increase the availability of secure habitat for grizzly bears and meet Endangered Species Act habitat requirements.
- There is a need to balance the demand for continued recreation access in the Lightning Creek watershed within the context of future financial considerations and natural resource protection measures.

Idaho Panhandle Forest Plan

The National Forest land within the Idaho Panhandle National Forests has been divided into 19 management areas (MAs), each with different management goals, resource potential, and limitations (Forest Plan, pp.III-1 to III-88). The Lightning Creek project area consists of MAs 2, 3, 4, 9, 10, 11 and Inland Native Fish Strategy riparian habitat conservation areas (see Project

Development section of the project file). Standards for the management areas where proposed activities would occur include:

- managing grizzly bear habitat in accordance with approved recovery plans
- managing recreation for a diversity of roaded-modified, roaded-natural, and semi-primitive recreation opportunities according to the Recreation Opportunity Spectrum (ROS) [2]
- managing roads and trails for project-level needs and to avoid areas of critical grizzly bear habitat
- using lowest standard roads to meet transportation objectives compatible with resource protection requirements

No activities are proposed in MA 4 (which emphasizes timber production in big game winter range) or MA 11(which consists of lands designated as proposed wilderness).

Forest Service Manual for Roads and Transportation Systems

The Forest Service manual (FSM 7700) provides agency policy for national forest transportation systems. FSM 7712 provides direction on conducting a science-based "roads analysis". A roads analysis was completed for the Lightning Creek drainage prior to the 2006 flood and was subsequently revised to update road conditions and recommendations after the flood (see Appendix A and the Lightning Creek Roads Analysis in the Project Development section of the project file). The need for the Lightning Creek Project is supported by this analysis.

Proposed Action

The proposed action has been modified from what was originally sent to the public for early comments. As development of the environmental assessment began, the original proposed action was labeled as Alternative 2. This alternative has since been eliminated from detailed analysis (see Appendix C, p. 75). The modified proposed action is now labeled as Alternative 4 and is described in detail starting on page 8. It includes:

- restoring motorized passenger and high clearance vehicle access to 12.8 miles of Lightning Creek road 419 that was damaged by the flood
- constructing a bridge over East Fork Creek on Lightning Creek road 419
- decommissioning between 3.9 and 6.4 miles of open road (depending on option selected)
- decommissioning 46 miles of grown-in and closed roads
- converting 5.9 miles of open road to nonmotorized trail
- converting 10.3 miles of closed and gated roads to nonmotorized trail
- converting 2.1 miles of single-track motorized trail to nonmotorized trail
- converting between 5 and 7.5 miles of open road to OHV trail (depending on option selected)
- constructing 0.1 mile of administrative use only OHV trail

[2] **Roaded Modified** = All forms of access and travel modes may occur, although roads are generally not well suited to highway-type vehicles. OHV use on designated routes or areas is encouraged. Use by high clearance vehicles is common. **Roaded Natural** = All forms of access and travel modes may occur. Access to and through the area is typically by passenger vehicle, although motorized use may be restricted to provide for resource protection, user safety, or to provide a diversity of recreation opportunity. **Semi-primitive** = Travel on motorized and non-motorized trails and lower service level roads provide access to and through the area. Use by high clearance vehicles is common. Road density is less than one mile per square mile. Off-road snow machine travel on snow may occur.

The proposed action also includes riparian and aquatic habitat improvement actions in the lower reach of East Fork Creek, Rattle Creek, and Lightning Creek (for more details, see the description for Alternative 4 on page 8 and Table 2).

Scope of Analysis

The analysis contained in the supporting specialist reports (which are summarized in this document and located in the project file) is limited to an assessment of the direct, indirect, and cumulative effects of proposed site-specific road management, recreation, and watershed restoration activities in the Lightning Creek watershed. It does not include any proposed programmatic management or larger scale travel management planning. The analysis summarized in this environmental assessment is intended to determine whether proposed activities would cause any significant effects that would warrant the preparation of an environmental impact statement.

Issues and Alternatives

This section discusses alternative-driving issues and lists other issues that were analyzed but did not warrant the development of separate alternatives. It also contains a description of the alternatives considered in detail. The desired condition, purpose and need statements, and management area objectives identified previously, in conjunction with the issues outlined in this section, provided the framework from which the alternatives were developed. See the Project Development section of the project file.

Public Involvement

The Lightning Creek Restoration project file contains the public letters, records of phone calls and visits to the area, mailing lists, news articles, the Quarterly Schedule of Proposed Actions, and other documentation of the outreach and discussions held with members of the public. The following public involvement activities have taken place during the planning process (see the Project Development section of the project file):

- Two public meetings were held for this project (April 11, 2007 and September 18, 2007)
- Newspaper articles and news releases have been published in the Bonner County Daily Bee since the 2006 flood informing the public of storm damage, meetings, workshops, the changing condition of Lightning Creek, and access restrictions.
- The Sandpoint Ranger District Staff has made over 35 contacts with individuals and groups to discuss the Lightning Creek Restoration Project. These contacts have included meetings with the Bonner County Commissioners, conservation groups, advisory groups, state government officials, ATV and backcountry horsemen groups, and briefings with the IPNF Forest Supervisor.
- On December 11, 2007, a letter introducing the proposed action was mailed to 214 people, agencies or organizations. Thirty-eight individuals and organizations responded to our letter with comments, suggestions, and alternatives to consider. Content analysis of these comments generated the issues below; this documentation can be found in the public involvement section of the project file.

Issues

Key Issues

This section describes the key issues that were used to develop alternative actions to meet all or portions of the purpose and need for the project. These issues were identified through public involvement and the scoping process. See the Project Development section of the project file.

Issue: **Public desire to restore motorized access to the Lightning Creek watershed to pre-flood conditions.** Alternative 3 addresses this issue by restoring most of the flood-damaged roads to their pre-flood condition. It was not possible to restore the Rattle Creek road to pre-flood condition due to the hydrology, geology, topography, and precipitation events typical of the Rattle Creek drainage and its inherent high risk of landslides and failures. Specific rationale for excluding this road from any alternative is described in "Alternatives Considered but Eliminated from Detailed Study" on page 75.

Issue: **Public desire to have more nonmotorized access in the Lightning Creek watershed.** Alternative 4 addresses this issue by decommissioning more roads and turning some roads into nonmotorized trails.

Analysis Issues

Analysis issues are those issues that did not warrant development of alternatives to the proposed action. These issues were analyzed to show the effectiveness of accomplishing the purpose and need and design features, to show compliance with environmental laws and regulations (e.g., the Endangered Species Act) and to disclose the potential environmental effects of the alternatives on the various resources.

- The effects of road density on watershed condition
- The effects of road reconstruction, decommissioning, and maintenance on water quality parameters of temperature and sediment
- The effects of road encroachment, stream crossings, and in-channel improvements on channel morphology and fish habitat
- Effects to threatened, endangered, sensitive and management indicator wildlife and fish species
- The effects of project activities on public access and the ability to provide a diversity of recreational activities within the Lightning Creek drainage
- The effects of project activities on populations of threatened, endangered and sensitive plants and Forest species of concern (rare plants) and/or suitable rare plants habitat.
- The effects of project activities on the risk of spread of existing weed infestations and introduction of new weed invaders, the long-term effect of project activities on the ability to treat noxious weeds, and the relative cost-efficiency of weed treatments.

Alternatives Considered

The Lightning Creek interdisciplinary team considered 11 alternatives. Some were generated by the team and others were suggested by the public. After preliminary analysis, the team eliminated eight of the alternatives, including Alternative 2, the original proposed action that was sent out to the public during the initial comment period. See Appendix C, page 75, for a list of the alternatives considered but eliminated from detailed study, and the rationale for not considering them further. The interdisciplinary team carried forward three alternatives for analysis.

Alternatives Considered in Detail

Alternative 1

The "no action" alternative is considered in this analysis to serve as the environmental baseline against which to compare environmental effects of proposed actions. Under Alternative 1, current management of the area would continue as it is today, and the activities proposed in this document would not be implemented. Current motorized use would be restricted to mostly OHV use on roads previously accessible to standard two-wheel-drive vehicles. Roads would not be repaired or decommissioned, and the approach to the bridge to the Porcupine Lake road would not be reconstructed. No riparian or aquatic habitat improvement would occur.

Alternatives 3 and 4

These are the "action" alternatives (Alternative 2, the original proposed action, was eliminated from detailed study; see Appendix C on page 75). See Table 2 for descriptions of specific activities proposed in each alternative, and the map packet to see where activities would occur.

> **Alternative 3** was designed to restore as much of the pre-flood access in the watershed as is reasonable given constraints related to budgets and compliance with environmental laws and regulations. This alternative was requested by the public, and was deemed a reasonable alternative to consider that still meets the purpose and need for the project.
>
> **Alternative 4** is the modified version of the original proposed action. It evolved from what was originally proposed after we reviewed public comments and received new information about funding from Federal Highways Administration.

Alternatives 3 and 4 share common elements, which are important to understanding their design:

- **Rattle Creek Road (473) cannot be reconstructed in its entirety under any alternative.** Given funding sources, the unstable geology, and the hydrologic and climatic conditions of the area, it is impractical and cost prohibitive to reconstruct or reroute the entire Rattle Creek Road (see Appendix C, p.76 and the Geology and Engineering Report, pp. 15-19 for a full explanation). The upper portion of the road is proposed to continue providing some motorized and nonmotorized access to the Rattle Creek drainage, with each alternative providing different options.
- **Both alternatives propose decommissioning 46 miles of roads that were closed before the 2006 flood.** Both Alternatives 3 and 4 propose at least 46 miles of decommissioning (roads will be permanently closed). Although this seems like a large amount of roads to be decommissioned, it does not reflect a loss in roads open to the public. These 46 miles consist of roads and road segments that have been grown-in with brush, or were already closed to motorized vehicles. Many of these roads are not needed for management in the future and do not receive regular maintenance; therefore, they need to have erosion hazards removed or stabilized so natural processes can occur without negative effects to the watershed. Out of all the miles being decommissioned in each alternative, only 3.9 to 6.4 miles were open prior to the flood, depending on the alternative and option selected. The Rattle Creek road decommissioning represents 3.9 miles.
- **Available funding and environmental conditions have greatly influenced the design of each alternative.** Each alternative was designed with compromises and trade-offs. Factors influencing these trade-offs include funding availability from Federal Highways Administration and regular Forest Service road and trail budgets, habitat protection

requirements for threatened species in the watershed (i.e., grizzly bear and bull trout), the unstable and erodable nature of the watershed, and the desire to continue providing a diversity of recreation opportunities. For example:

In Alternative 3, restoring as many of the flood damaged roads as possible means we have less funding from Federal Highways to put a bridge over the East Fork of Lightning Creek. In this alternative, Federal Highways would fund replacement of the earthen approach that was previously at the bridge to the Porcupine Road, but would not fund a better bridge, because the road does not meet their requirements for level of use. The earthen approach is no longer an environmentally acceptable way to restore bridge access (see Appendix C, p. 75 for details). Therefore, restoring the pre-flood access to the Porcupine Road would require a three-span bridge, which we currently do not have funding for. (However, we have designed the alternative with the assumption that funding for such a bridge becomes available, so that option can be fully considered and analyzed).

In Alternative 4, we are now able to propose construction of a bridge on Lightning Creek road 419 over the East Fork. When we sent out our original proposed action, this was not an option due to lack of funding. However, Federal Highways is now willing to fund an environmentally sound bridge, given the savings we would incur by not reconstructing the Porcupine Road bridge, East Fork Road (1184) and Rattle Creek road (473). Federal highways does not want to keep reinvesting in continually failing roads (see Geology and Engineering Report for flood history and costs associated with each event). In this alternative, the Porcupine Road will only be accessible to OHVs and nonmotorized recreationists.

With these considerations in mind, the interdisciplinary team developed the following detailed actions proposed under each alternative.

Riparian and Aquatic Habitat Improvement

In either Alternative 3 or 4, riparian and aquatic habitat improvement would take place in lower East Fork Creek, Rattle Creek, and Lightning Creek. In East Fork Creek, this includes the installation of near-vertical log sections on point bars that will help slow floodwater velocities, and to trap and maintain free-floating woody debris at flood stage in order to promote the formation of debris jams. In Lightning Creek, Rattle Creek (in the area of the 419 crossing), and East Fork Creek (under Alternative 3), it would include creating log vanes, root wads, and engineered debris jams along with riparian planting to help protect banks from excessive erosion while providing some habitat complexity to aquatic organisms. This activity would help to attain the Forest's riparian management objectives (RMOs) for improving bank stability, riparian and aquatic habitat complexity, and providing shade to the stream channel. This would also contribute to meeting water quality objectives outlined by the IDEQ for reducing sediment and instream temperature.

Road and Trail Construction, Decommissioning, and Management

Table 2 provides detailed descriptions of the road and trail management proposed in Alternatives 3 and 4 in a side-by-side comparison so the differences are clearly shown. Table 3 provides a summarized list of the proposed road and trail activities and compares them in miles. Refer to Appendix A on page 59 for a summary of the roads analysis process that helped define the alternatives.

Table 2. Detailed descriptions of proposed road and trail activities in Alternatives 3 and 4

	Alternative 3 (see maps 3 and 4)	**Alternative 4 (see maps 5 and 6)**
Alternative Intent and Description	Alternative 3 would include reconstructing and maintaining 22.8 miles of flood-damaged road, decommissioning 3.9 miles of open road, and decommissioning 46 miles of grown-in and closed roads. About 1 mile of previously open road and about 3.4 miles of closed road would be converted to nonmotorized trails (see Table 3). There would be no change in the management of any other roads in the watershed or in the overall management of snowmobile use in the watershed. Alternative 3 would also include riparian and aquatic habitat improvement in the lower reaches of East Fork Creek, Rattle Creek, and Lightning Creek.	Alternative 4 would include reconstructing 12.8 miles of flood-damaged road, decommissioning 3.9 or 6.4 miles of open road (depending on the option selected – see descriptions for road 2240 below), and decommissioning 46 miles of grown-in and closed roads. About 16.3 miles of road would be converted to nonmotorized trail, 7.5 miles of road would be converted to OHV trail, and 2.1 miles of motorized trail would be converted to nonmotorized trail (see Table 3). About 0.1 mile of a new OHV trail would be constructed for administrative access to a snow and climatic monitoring station. Alternative 4 would also include riparian and aquatic habitat improvement in the lower reaches of East Fork Creek, Rattle Creek, and Lightning Creek.
Lightning Creek Road 419	**Reconstruct Road.** Road reconstruction would occur on sections of Forest Service road 419 and would include about 12.8 miles (see Table 3). Reconstruction would occur where reasonable opportunities exist to both restore access and decrease the risk of future flood damage, within current or foreseeable budgetary constraints. The proposed action would include: • removing soil, rock and sediment deposited on the road surface from tributary drainages • replacing drainage structures (culverts) and associated road fill • resurfacing • rerouting the road at mileposts 5.0, 13.1, and 14.2. These are areas where Lightning Creek scoured away sections of road fill during the flood and would continue to be damaged if rebuilt in the same location. • Maintaining a ford at the East Fork Creek crossing.	**Reconstruct Road and Construct Bridge Across East Fork.** Activities proposed would be the same as described for Alternative 3 except, instead of a ford a new 110- to 150-foot single span bridge would be constructed across the East Fork of Lightning Creek.

	Alternative 3 (see maps 3 and 4)	Alternative 4 (see maps 5 and 6)
East Fork Creek Road 1184 and Road 1030	**Reconstruct Road Segments.** The road segments that were damaged by the 2006 flood would be reconstructed to pre-flood maintenance levels. Road 1184 would be open to motorized vehicles from its junction with road 419 for 1.3 miles. Trailhead signs would be installed at the junctions with trails 563 (East Fork Peak) and 61 (Savage Creek). Road 1030 would continue to be a seasonally restricted (gated) road.	**Maintenance of First Half-mile and Trailhead Construction.** The first one-half mile of road 1184 from its junction with road 419 would be kept as open to motorized vehicles to provide access to dispersed campsites along the creek. A trailhead and parking area would be constructed to accommodate room for a vehicle towing a trailer to turn around. The parking area would be level with a gravel surface. The old road prism would be blocked with large boulders to prevent motorized use but allow for the safe passage of pack stock, mountain bikes, and hikers. Trailhead signs would be installed. **Conversion to Nonmotorized Trail**. The remainder of road 1184 (1.3 miles) and all of road 1030 (6 miles) would be converted to nonmotorized system trails. These segments will become extensions of other existing trails in the area (trails 212 and 134).
Rattle Creek Road 473	**Decommission Lower Half of Road -** Due to the extreme instability of the Rattle Creek drainage and no practical or economical options for restoring and reconstructing this road (see page 75), the Rattle Creek road would be decommissioned from its junction with road 419 for 3.2 miles east to below the bridge in section 5. A short unclassified road located in the same area (473UA, 0.2 mile) would also be decommissioned. Decommissioning would consist of a variety of techniques that include removing exposed and failing fill adjacent to the stream channel, full and partial recontouring, surface ripping, installing waterbars, removing culverts and bridges, and seeding and mulching. At Rattle Creek junction with road 419, a small parking area would be constructed and dispersed campsites would be restored.	**Decommission Lower Half of Road** – This would be the same as described in Alternative 3.

	Alternative 3 (see maps 3 and 4)	Alternative 4 (see maps 5 and 6)
Rattle Creek Road 473 (cont.)	**Convert 1 Mile to Nonmotorized Trail.** From below the bridge in section 5 east to Button Creek, what remains of the road prism (0.9 mile) would be converted to a nonmotorized system trail. Access to this trail would be from the Montana side of the Cabinet Mountains in the Kootenai National Forest. The trail is intended to provide continued recreational access to the upper portion of the Rattle Creek watershed and trails. A trailhead and small parking area would be constructed at Button Creek to accommodate room for a vehicle towing a trailer to turn around. The parking area would be level with a gravel surface. The old road prism would be blocked with large boulders to prevent motorized use but allow for the safe passage of pack stock, mountain bikes, and hikers. Trailhead signs would be installed. Dispersed campsites along the nonmotorized trail would be retained. A trailhead sign would be installed at the junction with Trail 134 (Rattle Ridge). **Maintain Upper Section of Road from Button Creek to the Montana border**. On this upper section, the Rattle Creek road would be maintained as open to motorized vehicles for 2.8 miles from the Montana border. This would allow continued access to the slate quarry site in section 4, which gets a lot of commercial and individual permitted use. Access to this segment of road would be from the Montana side of the Cabinet Mountains in the Kootenai National Forest. A trailhead would be created at the end of the road where the nonmotorized trail would begin.	**Convert 3.7 Miles to Nonmotorized Trail.** From below the bridge in section 5 east to Clatter Creek, what remains of the road prism will be converted to a nonmotorized system trail. This would provide nonmotorized recreational access to the upper portion of the Rattle Creek watershed and trails, and contribute more area to grizzly bear habitat security. The same trailhead and parking area described in Alternative 3 would be constructed at Clatter Creek Dispersed campsites along the nonmotorized trail would be retained as described in Alternative 3. **Maintain Upper Section of Road from Clatter Creek to the Montana border**. On this upper section, the Rattle Creek road would be maintained as open to motorized vehicles for 1 mile from the Montana border.
Access to NRCS Permitted Site	**Maintain Access.** The Natural Resource Conservation Service (NRCS) has a permit with the Forest Service to operate and maintain a snow and climate monitoring station south of Rattle Creek road near the Montana border. Access by NRCS to this site has been via OHV on an old road	**Construct Short OHV Trail for NRCS Administrative Use.** Because under this alternative, the area where NRCS has accessed the site from Rattle Creek road would be converted to a nonmotorized trail, a new access trail would be constructed. This trail would be between 700 and 1,200

	Alternative 3 (see maps 3 and 4)	Alternative 4 (see maps 5 and 6)
	segment off the Rattle Creek road. To prevent public use, a gate and sign would be installed to allow administrative use only.	feet in length with a 60-inch-wide tread to accommodate permitted OHV use. A gate and sign would be installed to allow administrative use only.
Porcupine Road 642	**Construct Bridge and Manage for High-clearance Vehicles.** Although no funding source has been identified, this alternative assumes funding becomes available to provide an environmentally sound three-span bridge across Lightning Creek to access the Porcupine Road. This would allow restoration of the pre-flood high-clearance vehicle use on 5 miles of the Porcupine Road. The road would receive general maintenance and repair work.	**Convert to OHV Trail –** Due to lack of funding and the inability to construct an environmentally acceptable approach to the existing concrete bridge span across Lightning Creek (see page 75), the Porcupine road (5 miles) would be converted to a motorized OHV system trail. Access to the Porcupine Road and campsite at Porcupine Lake would be limited to motorized vehicles less than 50 inches and nonmotorized use. Where culverts and other drainage features are removed along road 642, appropriate grades would be constructed in and out of culvert removal sites and drainages to accommodate safe OHV crossing. Recreationists would ford Lightning Creek to access the Porcupine Road. The existing concrete bridge span would be removed. A trail tread suitable for OHVs with a 60-inch riding surface would be constructed on each side of the ford at Lightning Creek to provide OHV access to the creek from road 419 (Lightning Creek road) and road 642 (Porcupine). A parking area would be constructed along road 419 near the ford site to accommodate 15 vehicles with trailers. The parking area would be level with a gravel surface and ample room to turn around. Boulders would be installed on either side of the ford to prevent vehicles larger than 50 inches from crossing the creek. The toilet at Porcupine Lake would be removed and the vault would be filled in. The toilet site would be capped with boulders and a wilderness composting toilet would be constructed.

	Alternative 3 (see maps 3 and 4)	Alternative 4 (see maps 5 and 6)
Mud Creek Road 340	**Convert Road to Nonmotorized Trail.** The first 0.4 mile of this road is open to motorized vehicles and would remain open to access a rock pit and a dispersed campsite. The remainder of this road, which is currently closed to motorized use, would be decommissioned and converted to a nonmotorized trail (2.8 miles). A trailhead sign would be installed.	**Convert Road to Nonmotorized Trail.** This road would be managed as described in Alternative 3
Road 2240	**Maintain Pre-flood Condition.** Road 2240, creates a loop with the end of Auxor road 489. In this alternative, management of this road would be to maintain its pre-flood condition.	Two options are being considered for the management of this road: **Option A** would designate road 2240 (2.5 miles) as an OHV trail to provide a loop opportunity in conjunction with road 489 and Strong Creek trail 444. Auxor road 489 would be open to high-clearance motorized vehicles as it was prior to the flood. Information signs would be installed to inform the public of these access changes. **Option B** would decommission road 2240. This option is being considered to analyze contributions of more nonmotorized area to secure habitat for grizzly bears. Information signs would be installed at both ends of road 2240 to inform the public of the decommissioning.
Road 1091A (Lunch Peak Spur Road)	**Convert to Nonmotorized Trail and Decommission.** This road, which is currently closed to motorized use, would be converted to a nonmotorized trail from its junction with road 1091 for 0.6 miles. This would become an extension of system trail 526. The remainder of the road (0.9 mile) would be decommissioned.	**Convert to Nonmotorized Trail and Decommission.** This road would be managed as described in Alternative 3.
Roads 1091 B and C	**Maintain Current Seasonal Restrictions.** These roads, which are currently closed to motorized vehicles April 1 – Nov 15 would not change.	**Decommission Roads.** These roads would be decommissioned to provide additional secure habitat for grizzly bears (3.3 miles).

	Alternative 3 (see maps 3 and 4)	Alternative 4 (see maps 5 and 6)
Decommissioning of Existing Closed Roads	**Road decommissioning would occur on 46 miles** of closed roads throughout the Lightning Creek watershed. These roads are grown in or were already closed for grizzly bear habitat protection. Although these roads are currently closed to motorized vehicle traffic, they still contain drainage structures and design features, or traverse areas of high mass failure potential that pose a risk to watershed resources.	**Road decommissioning would occur on the same 46 miles** of closed roads throughout the Lightning Creek watershed as described in Alternative 3.
Lake Darling Trail 52	**Allow Continued Single-track Motorized Use.** Lake Darling is listed on the Kaniksu Forest travel plan map as open to motorcycles. Motorized use has been occurring on 2.1 miles of this trail for at least 20 years. This alternative would continue to allow single-track motorized use on the Lake Darling Trail.	**Convert Single-track Motorized Trail to Nonmotorized Trail.** In this alternative, Lake Darling would be converted to a nonmotorized trail to provide secure habitat for grizzly bears and to comply with Forest Plan direction to provide more of a semi-primitive recreation experience. Information signs would be installed at the trailhead regarding new access changes and restrictions.

Table 3. Road and trail activities proposed for each alternative (approximate miles). The only difference between Alternative 4 options A and B is in treatment of the Auxor Basin road 2240.

Proposed Activities	Alternative 1 No Action	Alternative 3 Restore More Roads to Pre-Flood Conditions	Alternative 4 Proposed Action Modified	
			Option A	Option B
Road Reconstruction and Maintenance				
Road 419 (Lightning Cr)	0	12.8	12.8	12.8
Road 642 (Porcupine)	0	5.0	0	0
Road 1184 (East Fork)	0	1.3	0	0
Road 1030	0	0.9	0	0
Road 473 (East end of Rattle Cr)	0	2.8	0	0
Total Reconstruction and Maintenance	**0**	**22.8**	**12.8**	**12.8**
Road Decommissioning				
*Open Roads**				
473 and 473UA (Rattle)	0	3.4	3.4	3.4
419 (Lightning portion rerouted)	0	0.5	0.5	0.5
2240 (Auxor Basin)	0	0	0	2.5
Total Open Roads Decommissioned*	0	3.9	3.9	6.4
Restricted Roads	0	0	3.3	3.3
Impassable and already closed roads	0	46.0	46.0	46.0
Total All Decommissioning	**0**	**49.9**	**53.2**	**56.7**
Roads Converted to Nonmotorized Trail				
*Open Roads**				
473 (Upper Rattle Creek)	0	0.9	3.7	3.7
1184 (East Fork Creek)	0	0	1.3	1.3
1030	0	0	0.9	0.9
Total Open Road Converted to Nonmotorized Trail	0	0.9	5.9	5.9
Closed Roads				
340 (Mud Creek)	0	2.8	2.8	2.8
1184 (East Fork Creek)	0	0	0.9	0.9
1091A	0	0.6	0.6	0.6
Seasonally Restricted Roads (1030)	0	0	6.0	6.0
Total All Roads Converted to Nonmotorized Trail	**0**	**4.4**	**16.3**	**16.3**
Open Road* Converted to OHV Trail				
Porcupine Road (642)	0	0	5.0	5.0
Road 2240 (Auxor Basin)	0	0	2.5	0
Total Open Road* Converted to OHV Trail	**0**	**0**	**7.5**	**5.0**
Motorized Trail Converted to Nonmotorized Trail (Lake Darling Trail 52)	0	0	2.1	0
New Motorized Trail Construction (Permit Access)	0	0	0.1	0.1

* Open road refers to open before the 2006 flood

Proposed Action Definitions

The following provides detailed descriptions for the actions proposed in Alternatives 3 and 4. Management and maintenance levels of roads in the watershed that do not fall into one of the first five categories would not change. Snowmobile restrictions would also not change.

Road Reconstruction – Road reconstruction would be focused on repairing specific sections of road that were affected by the flood to return them to their pre-flood maintenance levels and condition. This would consist of measures to decrease risk of future road damage, and may include repairing drainage structures, reinforcement, and relocating specific segments to more stable locations.

Road Decommissioning – Decommissioning a road means physically deconstructing it and/or administratively removing it from the Forest transportation system. It can be accomplished with actual on-the-ground road work, or it can be accomplished with just an administrative change to the road's status on the transportation system. On-the-ground road work may entail one or more of the following to prevent future failures and erosion hazards: full or partial recontouring of the road prism, ripping or subsoiling the road surface, removing culverts and recontouring stream crossings, and planting and seeding, mulching, or slashing disturbed areas. If no hydrologic problems or risks of mass failure are present, and/or the road is grown in to the point that use is not possible, decommissioning may entail barricading the road to restrict motorized access and removing its status as a classified road from the transportation system. In some cases, a barrier may not even be necessary.

Convert Road to Motorized Trail – This would entail changing the designated vehicle access on a road from passenger or high-clearance four-wheeled vehicles to off-highway vehicles (OHVs) 50 inches wide or less. Where roads cross streams, drainage features would be removed, the crossings would be made hydrologically stable, and would be designed to accommodate OHV passage in an environmentally sound manner.

Convert Road to Nonmotorized Trail – This means converting an old road prism to a designated nonmotorized system trail. This activity would entail fully or partially obliterating the road prism, installing waterbars, removing culverts, and recontouring stream crossings. During this process, a 30-inch-wide trail tread would be installed to accommodate foot, bicycle, and equestrian traffic. Clearing limits would be 8 feet wide and 10 feet high. Trails would be maintained as nonmotorized when there is no snow. There would be no restrictions to snowmobile traffic during winter months.

Converting Motorized Trail to Nonmotorized – This means eliminating motorized use on trails formerly designated for this type of use, while maintaining access for nonmotorized users. A Forest order would change the use designation, information signs would be posted, and barriers such as boulders would be placed and arranged to prevent motorized vehicles of all sizes from entering the trail.

Riparian and Aquatic Habitat Improvement - Riparian and aquatic habitat improvement measures would include installing point-bar structures and native riparian planting to promote the formation and maintenance of an effective floodplain, providing habitat complexity for aquatic species, and enhancing stream stability.

Design Features and Mitigation Measures

To prevent and minimize significant effects of proposed activities on the environment, design features and mitigation measures would be carried out in conjunction with the proposed actions. See Appendix B on page 67 for a detailed list.

Monitoring

Not all monitoring is considered mandatory, and its implementation is not a consideration in the determination of environmental effects. Monitoring projects are designed to be accomplished during project activities, but are dependent upon the availability of funds and other resources. Monitoring is planned to validate the effectiveness of rare plant protection measures, noxious weed prevention measures, best management practices, and road decommissioning (erosion control, noxious weed spread and wildlife security). See the specialist reports for detailed measures.

Environmental Impacts of the Proposed Action and Alternatives

Introduction

This section provides a summary of the environmental impacts of the alternatives considered in detail. It provides the information to determine whether it is necessary to prepare an environmental impact statement. The associated Finding of No Significant Impact (FONSI) discusses whether the proposed action has significant effects. Further analysis and conclusion about the potential effects are available in reports for each resource and other supporting documentation cited in those reports. These documents are available online at http://www.fs.fed.us/ipnf/eco/manage/nepa/index or upon request from the Sandpoint Ranger District office.

The effects analysis in this section discloses the direct, indirect and cumulative effects of the proposed action and alternatives, as directed by the Forest Service NEPA procedures (36 CFR part 220). The analysis of cumulative effects considers the effects of past, present and reasonably foreseeable actions in combination with effects predicted from the proposed action and alternatives. Regarding the consideration of past actions, the Forest Service NEPA procedures follow guidance provided by the Council on Environmental Quality:

> With respect to past actions, during the scoping process and subsequent preparation of the analysis, the agency must determine what information regarding past actions is useful and relevant to the required analysis of cumulative effects. Cataloging past actions and specific information about the direct and indirect effects of their design and implementation could in some contexts be useful to predict the cumulative effects of the proposal. The CEQ regulations, however, do not require agencies to catalogue or exhaustively list and analyze all individual past actions. Simply because information about past actions may be available or obtained with reasonable effort does not mean that it is relevant and necessary to inform decisionmaking. (36 CFR 220.4 (f))

A summary list of the past, present, and reasonably foreseeable actions that could contribute to cumulative effects are shown below (details of these actions are located in the Project Development section of the project file and in specialist reports). Past actions (e.g., road

construction, timber harvest) and natural processes (such as floods or landslides) contribute to present effects or existing environmental conditions. Not all listed actions may be considered in each cumulative effects analysis; each analysis examines only those actions and events that are relevant to the resource in question.

Past Actions and Events

- Timber harvest
- Road construction and maintenance
- Road decommissioning
- Mining
- Large woody debris removal in lower Lightning Creek
- Flood and debris flow events

Ongoing Actions

- Road maintenance
- Fire suppression
- Recreation (hunting, trapping, hiking, fishing, dispersed camping, berry picking, driving for pleasure, snowmobiling, horseback riding, OHV use)
- Rock removal (head of Rattle Creek and in East Fork Creek)
- Firewood gathering
- Helispot maintenance
- Communication site maintenance
- Permitted climate station maintenance
- Private land development
- Noxious weed treatment and monitoring

Reasonably Foreseeable Actions

- Land exchange at mile marker 5 on road 419 to restore public access at the south end of the watershed
- Mine exploration in the Lightning Mountain area
- Hope/Sagle land exchange (gain of parcels in the Hope area)
- Bridge removal on road 1022A
- Culvert replacement on road 419 at Quartz Creek and Cascade Creek

Watershed and Hydrology

Lightning Creek is considered a flashy system due to its very high levels of precipitation, unstable landtypes, exposed bedrock, shallow soils, and steep terrain. Much of the watershed exists within the rain-on-snow zone (Aquatics Report, p. 10). Idaho Water Quality Standards designate beneficial uses for Lightning Creek. Lightning Creek and its tributaries are listed as supporting cold-water biota, salmonid spawning, primary contact recreation, secondary contact recreation, domestic water supply, and it is also listed as special resource water (Aquatics Report, pp. 2 & 20). The Idaho Department of Environmental Quality (IDEQ) has identified (under the 303(d) portion of the Clean Water Act) sediment and temperature as the primary pollutants inhibiting beneficial uses of water in the Lightning Creek watershed. In 2007, IDEQ released a final Total Maximum Daily Loads (TMDL) for the Lower Clark Fork Subbasin. Under this status, there will be no net increase in sediment or temperature due to management activities in Lightning Creek (Aquatics Report pp. 2 & 4).

Sediment interfering with beneficial uses in the Lightning Creek system is related to large bedload material. Some of the factors influencing the large amounts of bedload in the Lightning Creek system is its geology (Aquatics Report, pp. 9-10) and past timber harvest and roading (Aquatics Report, pp. 12-14). The effect of roads on watershed condition has been widely documented in terms of increasing the rate of sediment delivery to streams, increasing the potential of mass failure, and inhibiting the local productivity of vegetation (Aquatics Report, pp. 4 & 12). Sediment from forest roads compromises water quality, the beneficial uses of water, aquatic habitat, stream morphology, and channel stability (Aquatics Report, p. 4).

In the Lightning Creek drainage, water temperature monitoring results since 2001 shows exceedence values for cold water aquatic life and salmonid spawning. Since it is not known what natural temperature levels are in the watershed, IDEQ adopted a method known as potential natural vegetation (PNV) to assess target levels for temperature in Lightning Creek. If stream temperatures exceed a set level for cold-water life, but riparian and channel conditions are unchanged from a natural state, then the existing conditions become the standard. Many upper watershed reaches in Lightning Creek exhibit elevated temperatures but still possess the natural vegetation and stream channel qualities. However, many stream reaches have experienced a loss of riparian vegetation and a widening of the stream channel, which influences temperature increases in these reaches and downstream (Aquatics Report, p. 26).

The November of 2006 flood event occurred at such a large scale that many stream reaches in Lightning Creek were significantly altered from previously recorded conditions. Heavy flood damage occurred in the Lightning Creek drainage, especially in Rattle Creek and East Fork Lighting Creek drainages (Aquatics Report, pp. 17-20). Impacts to transport reaches included aggradation/degradation of coarse bedload in channel, streambank erosion, floodplain erosion and headcutting, recruitment of large riparian vegetation, and the addition of heavy sediment and debris from mass failure sites (Aquatics Report, p. 20).

Alternative 1

Direct and Indirect Effects

Under this alternative, watershed resources in the Lightning Creek drainage would remain in a state where roads would continue to pose a chronic source of risk to watershed conditions and sediment would continue to affect water quality and aquatic ecosystems in the basin. Roads that traverse steep hillsides on moderate to high mass failure potential landtypes would continue to be at risk of mass failure. Roads in riparian areas would continue to be susceptible to damage during flood events. Since the damage that occurred during the 2006 flood event, sediment delivery is elevated (see Table 4) in the Lightning Creek watershed. As Lightning Creek, Rattle Creek, and East Fork Creek roads continue to erode, sediment rates would continue to exceed those of pre-flood conditions in areas where creeks are now directly adjacent to damaged and over-steepened road fills (Aquatics Report, p. 26-27).

Table 4. Sediment from Forest Service roads in the Lightning Creek watershed in tons/year

Pre Flood Condition	Alternative 1	Alternative 3	Alternative 4 (*)
941 tons/year	1,235 tons/year	150 tons/year	112 tons/year

*Sediment yield differences between Alternatives 4A and 4B are negligible and therefore not differentiated.

The effects to stream temperature from no active management would be somewhat variable. Where riparian vegetation was lost, the channel aggraded, and/or become braided, causing increased direct solar radiation, which may increase stream temperatures. However, where large woody debris is contributing to channel stabilization and deeper pools, or the channel has decreased its width-to-depth ratio by carving into deposited material, direct solar radiation may decrease and help to lower temperatures. These effects are likely to offset one another to some degree (Aquatics Report, p. 27).

Cumulative Effects

With respect to water quality parameters of sediment and temperature, and progress toward attainment of the TMDL, maintaining roads in their current condition would not improve resource conditions. Potential foreseeable activities that would help to improve conditions would be the replacement of three culverts that act as a chronic source of sediment to tributaries of Lightning Creek. The replacement of these culverts would not contribute substantially to the overall reduction of sediment needed to attain resource objectives with water quality in the drainage, although they would contribute to a decreased risk of sediment delivery through failure. There would be no effect to temperature (Aquatics Report, p. 27).

One of the mitigating factors for increased sediment generation from damaged road sections from the 2006 flood event was the addition of large amounts of wood to the stream. Individual pieces and aggregates of large wood in the stream and on floodplains serve to benefit aquatic habitat, stream morphology, and stream stability, as well as to catch and retain sediment and bedload. On the 3.5 miles of stream below National Forest land, wood was removed from the channel and floodplain during the spring of 2008. This activity also removed the services that wood provided lower Lightning Creek. With the current level of bedload movement through the system, compounded by additional sediment being generated from damaged road segments and an absence of wood in lower Lightning Creek, the cumulative effect of a no action alternative may be most pronounced in the lower reaches with a deterioration of aquatic habitat, channel instability and associated sediment generation (Aquatics Report, p. 27).

Effects Common to Alternatives 3, 4A and 4B

Direct and Indirect

Direct and indirect effects will be divided into three categories and addressed in term of road work, instream work, and stream crossings.

Road Work

One component of each of the action alternatives is the restoration of a travel route on Lightning Creek road 419. Activities would include road rerouting, road resurfacing, removal of alluvial material across the road, replacement of drainage structures, and the repair of damaged road prism (Aquatics Report, p. 28).

Road resurfacing is designed to reduce sediment production from roads and would have a beneficial effect to watershed and fisheries resources. Excavation of buried drainage structures and installation of their replacements would generate some sediment during the period of operation. Machinery would operate outside of the channel and best management practices as well as site-specific mitigation measures would help to reduce sediment input (see Appendix A in this document). The long term benefits of chronic sediment reductions gained by replacing and improving buried and blown-out drainage structures would outweigh the short-term sediment production during construction (Aquatics Report, p. 29).

In areas where the road 419 prism was affected by the lateral migration of Lightning Creek, a combination of repair and mitigation measures would be used to reestablish a travel corridor. A combination of riprap, rootwads and log vanes would be used to protect the road and streambanks from erosion while diverting energy of high flows away from the streambanks. Installation of these structures would require excavation into the bed and banks of the stream to adequately bury the material to prevent it being dislodged and transported during high flow periods. This work would produce suspended sediment during periods of operation, but the short-term production of

suspended sediment would be less than what is generated through the chronic delivery of sediment from over steepened raw cut banks immediately adjacent to the stream (Aquatics Report, p. 29).

Three sections of road 419 would be completely realigned. Similar treatment of the over-steepened banks would occur as described above to reduce erosion and sedimentation. While all of the reroute locations would remain within the riparian habitat conservation area of 300 feet from the stream, they would be chosen to minimize the risk of future road damage. In all reroute cases, shading of the channel would not be decreased from the existing condition. Restoration work and planting would occur within the limits of the road rerouting. The long-term indirect effects of vegetation growth on these sites would provide further bank stability and shade to the stream channel, which would help lower water temperatures, and provide an increased buffer of vegetation to help filter sediment. Although road rerouting in these areas would not decrease road densities, it would help to trend water quality parameters of sediment and temperature toward the attainment of load reductions outlined in the TMDL. Estimated long-term sediment generation values for rerouted sections of road are presented in Table 4 (Aquatics Report, p. 29).

Road decommissioning is a component of the project that would be common to either of the action alternatives. The means by which decommissioning would take place would vary by site. In many cases, this work would be carried out using machinery to decompact and/or recontour slopes, and remove drainage structures. In some cases, roads that would be decommissioned are situated on relatively stable landtypes, and have been closed so long that they have become heavily vegetated with trees and brush. While much of the overall length of these roads have stabilized, they still contain drainage structures that produce some level of chronic sediment and present an ongoing risk of failure. Clearing vegetation, for miles in some places, to facilitate the use of machinery for culvert removal would set back progress on site recovery and could destabilize fill material. In these areas, certain drainage structures would be removed using explosives and a hand-crew to recontour streambanks to their proper dimensions. Each site would be planted, seeded, and BMPs would be used to lessen the potential for sediment generation during recovery (see Aquatics Report, Appendix A). Additional benefits to the use of blasting in site-specific situations are a shortened duration of disturbance and sediment production during removal. Turbidity levels were observed to return to baseline levels within 30 minutes on a tributary to Snow Creek where a culvert was removed by these means. Here too, the long-term benefits to watershed condition and water quality would outweigh the short-term sediment production that would occur during removal (Aquatics Report, p.30).

Instream Work

The direct effect of point bar structures in lower East Fork Creek would be a reduction of stream energy, the recruitment of woody debris and formation of aggregates, and the creation of a stable depositional environment during high flows in the area of point bars and some mid-channel bars. Indirect effects of these structures would likely be an increased deposition of fine-grained sediment on the floodplain, and an improved medium for the natural recruitment and planting of riparian species. Other anticipated indirect effects are improved channel formation (i.e., decreased width-to-depth ratios, increased pool frequency, improved pool-riffle ratios), increased aquatic habitat complexity, and overall improved channel stability. With decreased width-to-depth ratios, deeper and more frequent pools, and increased cover formed by large woody debris (LWD), instream temperatures would likely trend toward colder temperatures. Engineered debris jams would be incorporated into restoration efforts in Lightning Creek and lower East Fork Creek. The direct effects of these structures would be similar to those listed above with the added direct benefit of providing streambank protection (Aquatics Report, p.31).

Where road damage exposed streambanks during the 2006 flood event, a combination of rootwads, riprap, engineered debris jams, and log vanes (see engineering plans in Aquatics project file), in combination with riparian planting would be used to reduce stream energy and the accelerated erosion on streambanks, and would improve site conditions. Direct effects of bank stabilization would be a decrease in bank erosion and in stream sedimentation. Indirect effects include potential increased recruitment of woody debris and formation of debris jams, as well as improved habitat complexity. All of these factors would contribute to a trend in improved water quality conditions (Aquatics Report, p. 33).

Alternative 3

Direct and Indirect Effects

Road Work

The direct effects of Alternative 3 on watershed resources through road decommissioning would create a long-term improvement of watershed condition through a decrease in road densities (see the following tables), a decreased risk of road failure, a long-term reduction of chronic sediment delivery to streams (see Table 4), and a contribution to decreased peak flows. Road densities for the watershed would decrease by 37 percent from 1.27 miles/square mile to 0.80 miles/sq. mile, which would greatly improve watershed condition by decreasing the primary mechanism by which sediment is routed to streams (Table 5; Aquatics Report, p. 32).

Alternative 3 provides a long-term reduction in hydrologic connectivity of roads to streams and reduces the risk of road failure (as well as the associated sediment pulse) by reducing riparian road densities by 28 percent 2.09 miles/square mile to 1.5 miles/square mile (see Table 6).

There would be a long-term decrease in road densities and risk of failure in landtype areas rated with moderate to high mass failure potential by reducing densities 61 percent 1.0 miles/square mile to 0.39 miles/square mile (see Table 7). A reduced risk of failure also reduces the risk of large pulses of sediment followed by inputs from chronic wasting being added to the hydrologic system, further hillslope destabilization, a loss of productive soils, and a reduction in soil-groundwater holding capacity (Aquatics Report, p. 33).

Projected sediment inputs from roads compared to pre-flood conditions are estimated to drop approximately 84 percent from 941 tons/year to 150 tons/year for a net decrease of 791 tons/year following road decommissioning. Sediment differences for future conditions compared with existing conditions are estimated to decrease by 88 percent from 1,235 tons/year to 150 tons/year for a net difference of 1,085 tons/year (see Table 4). Besides road decommissioning, other project design features and best management practices (BMPs) (Aquatics Report, Appendix A) would further add to sediment reductions. Design features for bank stability at road repair and decommissioning sites (Appendix B of this report) would also contribute sediment reductions beyond those calculated for road decommissioning, repair, and rerouting (Aquatics Report, p. 33).

Table 5. Road densities in the Lightning Creek watershed in miles/square mile

Pre/Post Flood Condition Alternative 1	Alternative 3	Alternative 4A	Alternative 4B
1.27	0.80	0.68	0.66

Road density includes all open and closed roads

Table 6. Road densities within Riparian areas in the Lightning Creek watershed in miles/square mile

Pre/Post Flood Condition Alternative 1	Alternative 3	Alternative 4A	Alternative 4B
2.09	1.5	1.23	1.29

Road density includes all open and closed roads

Table 7. Road densities in the Lightning Creek watershed within moderate to high mass failure potential landtypes in miles/square mile

Pre/Post Flood Condition Alternative 1	Alternative 3	Alternative 4A	Alternative 4B
1.00	0.39	0.28	0.28

Road density includes all open and closed roads

Although there is a substantial long-term reduction in sediment, there is the possibility of some short-term sediment generation from the act of road decommissioning. The potential of sediment delivery would be minimized through the implementation of BMPs (Aquatics Report, Appendix A).

Some road building would also be associated with Alternative 3. This primarily would be on 1.3 miles of East Fork Road (1184) in the riparian area of East Fork Creek. Reconstruction would occur to the extent possible as described above for the road 419. However, because the valley becomes so constricted in the locations of major road damage, opportunities for rerouting road 1184 do not exist. Therefore, reconstruction would require introducing fill material sufficient to achieve the desired road width. To do this, East Fork Creek would have to be diverted off of its north bank for approximately 500 feet so that road construction could occur along with installation of streambank stabilization measures using root wads and log vanes, and protecting road fill riprap. In other sites not immediately adjacent to East Fork Creek, reconstruction would primarily consist of restoring a deeply eroded road surface and drainage structures. Integrated road design features, timing restrictions, BMPs and site-specific mitigation measures would be put in place to minimize sediment production during construction and in the long term (Aquatics Report, p. 33).

The direct effects to watershed resources associated with reconstructing road 1184 would be sediment generation during the period of reconstruction. The long-term indirect effects of reconstruction are roughly equivalent to the effects road 1184 had on watershed condition, water quality, and riparian and aquatic habitat prior to the flood. Some of these effects include a potential for chronic sediment generation, which would affect water quality, and a risk of failure due to its proximity to the stream and location on moderate mass failure landtypes (project file) t. Effects would be somewhat reduced through mitigation measures (see Appendix B). Others include continued issues associated with no riparian productivity for approximately 1,000 feet where the road is immediately adjacent to the stream. This will continue to have long-term effects on water quality through reduced shade to the stream channel, thereby contributing to increased temperatures, and eliminating the potential for large woody debris production from this site that contributes to riparian and aquatic habitat complexity (Aquatics Report, p. 34).

Another element of road reconstruction under Alternative 3 involves restoring access to Porcupine Lake via road 642. The vast majority of the work and related effects are discussed below associated with bridge construction. However, some minor resurfacing of road 642 would

occur to improve road conditions. Because the majority of this road system is outside of the riparian area of Porcupine Creek, the effects to water quality are minimal. There would be an ongoing risk to watershed condition and water quality associated with potential failure and the need for ongoing maintenance of at-risk culverts on tributaries to Porcupine Creek (Aquatics Report, p. 34).

Stream Crossings

The short-term effects of any extra sediment generated during the Porcupine Bridge construction would be substantially offset by the long-term reduction in risk of failure, and the elimination of any negligible amount of sediment generated by vehicular traffic through the temporary fording of the side channel leading to the bridge approach. Conversion to a triple span bridge crossing would also eliminate the risk of motorists in low clearance, or highway vehicles damaging their vehicles on coarse substrate while attempting to ford the side channel, and of pollutants entering the stream from damaged vehicles (Aquatics Report, p. 34-35).

Alternative 4

Direct and Indirect Effects

Road Work

The effects of the proposed action on watershed resources through road decommissioning would create a long-term improvement of watershed condition through a decrease in road densities (see tables, previous page), a long-term reduction of chronic sediment delivery to streams (see Table 4), and a contribution to decreased peak flows. Road decommissioning would also provide a long-term decreased risk of road failure on mid-slope roads in land type areas of moderate to high mass failure potential, and a long-term decreased risk of damage to roads in riparian areas, where there are frequent road/stream crossing failures and lateral migration of the stream channel.

Under Alternative 4, Option A, road densities for the watershed would decrease by 46 percent from 1.27 miles/ square mile to 0.68 miles/square mile (see Table 5). Within riparian areas, road densities would decrease by 41 percent from 2.09 miles/square mile to 1.23 miles/square mile, and within moderate to high mass failure landtypes, road densities would decrease by 72 percent from 1.0 miles/square mile to 0.28 miles/square mile (see Table 6and Table 7; (Aquatics Report, p. 35). With respect to riparian road densities, the modified proposed action (Alternative 4, Option A) would provide an additional 13 percent, or 0.27 miles/square mile reduction over Alternative 3 (Aquatics Report, p. 35). The additional riparian road decommissioning under both options A or B is primarily adjacent to East Fork Creek, an important stream for bull trout spawning. Recovery in this area would help to improve water quality parameters of sediment and temperature, and would better contribute to recovery in the basin. Road density reductions in areas of moderate to high mass failure potential under Alternatives 4A and B would exceed reductions calculated under Alternative 3 by 11 percent, or 0.11 miles/square mile (Aquatics Report, p. 35).

Projected sediment inputs from roads under both Options A and B compared to pre-flood conditions are estimated to drop 88 percent from 942 tons/year to 112 tons/year for a net decrease of 830 tons/year. Sediment differences for future conditions compared with existing conditions are estimated to decrease 91 percent from 1,235 tons/year to 112 tons/year for a net difference of 1,123 tons/year (see Table 4; (Aquatics Report, p. 35-36). Because much of the reduction would be associated with the decommissioning of roads in the East Fork Creek drainage where they are closely situated to the channel, it would have an especially meaningful contribution to the recovery of water quality parameters, as well as aquatic and riparian habitat in that subwatershed.

As previously discussed, integrated design features for bank stability at road repair and decommissioning sites and BMPs would also contribute sediment reductions beyond those calculated for road decommissioning, repair, and rerouting. Other related benefits are discussed under Alternative 3.

The anticipated indirect effects to watershed resources from reduced road densities and sediment input are improved water quality, as well as aquatic and riparian habitat parameters. The sediment reductions calculated in Table 4 would provide considerable gains in attaining water quality objectives for sediment. In correspondence with the IDEQ, it was recognized that the proposed activities in the Lightning Creek Restoration Project would contribute substantially to load reductions described in the TMDL, especially with reductions in Rattle Creek and East Fork Creek meeting or exceeding sediment load reductions allocated for those subwatersheds (Aquatics Report, p. 36; Hydrology project file).

Stream Crossings

The direct effect of the Porcupine Bridge removal would be a decreased risk of future failure and the associated pulse of sediment that occurs during a failure event. It is likely that minor amounts of sediment would be added to Lightning Creek in the short term during the removal process. All disturbed areas associated with the bridge removal would be outside of the active channel, and for the most part, above the floodplain. Appropriate mitigation measures (Appendix B of this document) and BMPs (Aquatics Report, Appendix A) would minimize the potential for sedimentation during operations at this site. Any detrimentally disturbed banks would be rehabilitated. The biggest risk from replacing the Porcupine Bridge with a low-water ford would be the potential for pollutants to enter Lightning Creek from a damaged OHV (Aquatics Report, pp. 36-37).

East Fork Bridge construction would require instream work to move the existing channel to a more central location under the bridge and within the channel margins. Bridge construction would require land-disturbing activities that would take place outside of the existing and/or reconstructed floodplain (Aquatics section of the project file). BMPs would minimize the potential for sediment being delivered to the stream from sites where bridge abutments would be installed (Aquatics Report, Appendix A). During construction, machinery would be crossing the channel via a temporary bridge that would serve to reduce sediment quantities beyond what is normally generated during periods of high use at the same time of year, compared to a ford. Any disturbed areas on site would be rehabilitated following construction. The short-term effects of any extra sediment generation that may occur during construction would be substantially offset by the long-term reduction in sediment generated by eliminating vehicular traffic through the ford. The conversion to a bridge crossing would also eliminate the risk of motorists damaging their vehicles on coarse substrate while attempting the ford, and of pollutants entering the stream from damaged vehicles (Aquatics Report, pp. 37-38).

Channel building on the East Fork would be accomplished prior to turning the stream into the rebuilt segment. It is expected that the effects of channel reconstruction through the area of the bridge would produce sediment that would exceed normal levels for this time of year. When the water is turned into the new channel, it is expected there would be a period of downstream settling for coarse-grained material, accompanied by a dispersion of sand-sized sediment that would clear up within a period of an hour. The short-term sediment generation associated with these activities would be offset over time with sediment reductions that would come with decreased bank disturbance, as well as streambank and riparian restoration (Aquatics Report, p. 38).

Overall, the effects to watershed resources from activities in the modified proposed action would be most beneficial to aquatic resources in the long term. As in Alternative 3, road rerouting, improvements, and decommissioning, along with streambank stabilization, point bar structures, and stream crossing improvements are all designed to improve watershed conditions and aquatic habitat. In Alternative 4, road decommissioning and bank stabilization measures are more extensive and would better meet the purpose and need of trending watershed condition, sediment production, and water quality in a positive direction (Aquatics Report, p. 38).

Cumulative Effects Common to Alternatives 3, 4A, and 4B

In examining the net effects of past management and/or disturbance, as described in the Affected Environment section of the Aquatics Report (pp. 12-14), it is clear that the lingering effects of logging and roads continue to out-weigh recovery, or any restorative efforts that have occurred thus far in contributing to an undesirable watershed condition, elevated sediment loads, and water quality conditions that do not support beneficial uses. Although logging units are in various stages of recovery and would continue to trend in that direction, the infrastructure of roads (system and nonsystem) continues to impact slope stability, riparian productivity, and contribute sediment to aquatic systems (Aquatics Report, p. 39).

Another past management activity that will continue to have a detrimental impact to aquatic habitat, channel stability, and sediment generation (as discussed under Alternative 1) is the wood removal that occurred on the 3.5 miles of stream below National Forest Land during the spring of 2008. With the current level of bedload movement through the system and the large runoff events that the watershed is susceptible to, even repairs made to the upper watershed will not mitigate the potential for substantial channel adjustments (aggradation and lateral migration), increased bedload routing, and effects to aquatic species (Aquatics Report, p. 40). Although it is beyond the scope of this project, restoration of this section of Lightning Creek would have a substantial impact on channel stability and aquatic habitat.

At this time, there are very limited foreseeable activities within the watershed outside of what is being proposed in this project. Some activities include very minor timber extraction (project file), and home building/urbanization in the lower parts of the watershed on private land, road maintenance, and fish passage improvement projects on Cascade and Quartz Creeks.

The additive effect of this project with past and reasonably foreseeable activities within the watershed would only serve to improve watershed conditions, improve water quality, improve riparian and aquatic habitat, and decrease the risk of future road failures (Aquatics Report, p. 40).

Fisheries

Effects to fisheries are focused on special status species and their habitat that the Forest Service is required to protect and conserve according to laws, regulations, and agency policies. Species that were analyzed in detail are those that are known to occur or have habitat in the project area, and would potentially be impacted by proposed activities. Only two fish species of concern could potentially be affected by the proposed action: bull trout, a threatened fish species, and westslope cutthroat trout, a Forest Service sensitive species.

The Aquatics Report contains a more detailed description of the regulatory framework; analysis methodology; existing condition; direct, indirect and cumulative effects to fish species and their habitat; consistency with regulatory direction; and the supporting rationale for fish species not analyzed in detail. Since there is no vegetation management proposed in this project, changes to habitat based on vegetation changes is not an issue considered in analysis. Instead, most analysis

for the fish species considered in this project is focused on the potential disturbance to and displacement of species while project activities are occurring, and effects to sediment yield, large woody debris frequency, and water temperature.

Most of the types of project activities that have the potential to impact fish species would be the same for both species under each of the action alternatives. These activities include the use of mechanized equipment and explosives for tasks such as road decommissioning, road maintenance, culvert replacement or removal, and associated activities.

Bull Trout

The bull trout analysis area is comprised of the entire Lightning Creek watershed, which includes Cascade, Morris, East Fork, Savage, Porcupine, Wellington, and Rattle Creeks, where bull trout are known to spawn. A significant percentage of bull trout spawning occurs in East Fork Creek. As recently as 1983, the basin supported more bull trout spawning activity than any other tributary system in the Pend Oreille key watershed, exceeding even Trestle Creek. Historic redd count information, provided by Idaho Fish and Game from 1983-2008, shows a declining trend of redd counts conducted in Lightning Creek and its tributaries (Aquatics Report, p. 22).

Bull trout are vulnerable to human-induced factors that increase water temperature and sediment loads, change flow regimes, block migration routes, and establish non-native trout, particularly brook trout. Other factors posing a threat to bull trout in the Lightning Creek watershed are illegal harvest (an unquantified amount of bull trout poaching), exotic species (predation, reproductive advantages, competitive exclusion) and urbanization (channel constrictions at crossings, diking to prevent flooding; Aquatics Report, p. 24).

The Lightning Creek Watershed Assessment (2004), found that channel stability decreases in areas with intermittent water flow, increased levels of fine sediments in spawning areas, and elevated stream temperatures. In addition, the interaction between habitat alteration and the presence of non-native fish species affect the abundance and population stability of bull trout in the Lightning Creek watershed. Reducing sediment delivery and restoring habitat connectivity are two very important tools for managing bull trout recovery (Aquatics Report, p. 24).

Westslope Cutthroat Trout

Westslope cutthroat trout have been documented in Lightning Creek and ten of its tributaries, including Cascade, Char, East Fork, Porcupine, Quartz, Rattle, Savage, Smorgasboard, Thunder, and Wellington Creeks. Various studies of westslope cutthroat trout in Idaho have determined that populations in northern Idaho have declined (Aquatics Report, p. 24). The primary cause of the decline in westslope cutthroat was found to be habitat loss and degradation. Competition, predation by non-native species, genetic introgression and overfishing have also contributed to the decline of westslope cutthroat trout populations.

Westslope cutthroat trout have been negatively affected by the presence of introduced rainbow trout and eastern brook trout. Rainbow trout have been stocked extensively into Lightning Creek and some of its tributaries (including lakes) by the Idaho Department of Fish and Game and eastern brook trout are present in the project area (Aquatics Report, pp. 25).

Alternative 1

Direct, Indirect and Cumulative Effects

The no action alternative would not directly affect fisheries habitat in the project area, since no changes would occur under this alternative. However, the continued effect to the watershed from the erosion of stream crossings and road segments that were washed out during the flood would likely continue to have deleterious effects from increased fine sediment levels (see Table 4, p. 20), which would continue to degrade pool quality and increase embeddedness ratios. Salmonid production was found to be inversely proportional to cobble embeddedness and fines in spawning gravel (Aquatics Report, p. 27). Excessive sediment interferes with water flowing through spawning gravels and reduces the transport of oxygen to incubating eggs, which in turn lowers egg and fry survival. Fine sediments in cobble substrate fill interstitial spaces and reduce summer and winter rearing habitat for salmonids, and also impact macroinvertebrate abundance and diversity, an important food source for salmonids, particularly juveniles (Aquatics Report, p. 27). Sediment can also reduce the volume of pools, further degrading summer and winter rearing habitats for salmonids (Aquatics Report, p. 27).

One of the mitigating factors for increased sediment generation from damaged road sections from the 2006 flood event was the addition of large amounts of wood to the stream. Individual pieces and aggregates of large wood in the stream and on floodplains serve to benefit aquatic habitat, stream morphology, and stream stability, as well as to catch and retain sediment and bedload. On the 3.5 miles of stream below National Forest Land, wood was removed from the channel and floodplain during the spring of 2008. This activity also removed the services that wood provided lower Lightning Creek. With additional sediment being generated from damaged road segments and an absence of wood in lower Lightning Creek, the cumulative effect of a no-action alternative may be most pronounced in the lower reaches with a deterioration of aquatic habitat, channel instability and associated sediment generation (Aquatics Report, p. 27).

Potential foreseeable activities that would help to improve aquatic conditions would be the replacement of three culverts that present a fish barrier as well as chronic source of sediment to tributaries of Lightning Creek. While removal of these barriers would open up several miles of habitat for native fish, these replacements would not contribute substantially to the overall reduction of sediment needed to attain resource objectives with water quality in the drainage (Aquatics Report, p.27).

Alternative 1 would continue to deliver sediment to Lightning Creek at a level even higher than pre-flood conditions (Table 4). Lightning Creek and its tributaries would continue to erode road fills at washouts and crossings, therefore continuing to add vast amounts of bedload and sediment to the system. Alternative 1 would likely continue negatively trending Lightning Creek fish habitat until a natural stabilization of the channels occurs (Aquatics Report, p.27).

Effects Common to Alternatives 3, 4A and 4B

Direct and Indirect Effects

Several project design features have been developed to minimize short-term increases in sediment delivery and turbidity associated with culvert removals and other ground disturbing activities (see Aquatics Report Appendices A and B). Timing restrictions combined with physical mitigations would limit the impact of proposed activities to streams at any given point in time (Aquatics Report, Appendix C).

Any short-term potential sediment generation associated with culvert removals and upgrades, streambank stabilization, and bridge construction or removal, could have localized effects to individual fish, if present, such as temporary displacement. On the other hand, road surfacing at crossings would reduce sediment delivery at these locations. The relocation and decommissioning of riparian roads (Table 6) would result in even greater reductions in sediment delivery (Table 4; (Aquatics Report, p.30).

There would be no direct effects expected to large woody debris frequency or water temperature from the proposed road work. Indirectly, road realignment work in Alternative 4 would move road sections farther away from the stream and likely lead to healthier riparian areas, which would eventually result in increased canopy cover, increased shade (lower water temperatures) and increased large woody debris recruitment (Aquatics Report, p. 30).

The effects of instream work for streambank and point bar stabilization would improve local channel morphology and stability, as well as improved aquatic and riparian habitat complexity. Other anticipated effects are improved channel formation (i.e., decreased width-to-depth ratios, increased pool frequency, improved pool/riffle ratios), increased aquatic habitat complexity, and overall improved channel stability. With decreased width-to-depth ratios, deeper and more frequent pools, increased cover formed by large woody debris, in-stream temperatures will likely trend toward colder temperatures (Aquatics Report, p. 31).

The implementation of either of the action alternatives has the potential to have short-term negative impacts on bull trout or westslope cutthroat trout, if present, within close proximity to work sites during and immediately following project activities due to the possibility of increased sediment delivery and turbidity. Following project implementation, and as each subdrainage recovers from the disturbance associated with project activities, streams within the project area would experience greatly reduced amounts of sediment delivery (Table 4), which would correspond to improved fish habitat. Ultimately, the long-term benefits from road improvements discussed above would trend Lightning Creek and its tributaries toward higher quality fish habitat (i.e., reduced sediment, decreased water temperature) and therefore result in higher spawning success rates and individual survival of fishes (Aquatics Report, p. 30).

While Alternative 3 represents a substantial decrease in sediment delivery over the pre-flood condition and a reduction in riparian road densities, an even greater level of reduction in these criteria would be achieved by Alternative 4 (Aquatics Report, pp. 28-40). Alternative 4 (either option A or B) represents the greatest benefit to fish and their habitat.

Cumulative Effects

At this time, there are very limited foreseeable activities within the watershed outside of what is being proposed in this project. Some activities include very minor timber extraction (project file), and home building/urbanization in the lower parts of the watershed on private land, road maintenance, and fish passage improvement projects on Cascade and Quartz Creeks.

One of the past activities that will continue to have negative impacts to fish habitat is the large woody debris removal that occurred on the 3.5 miles of Lightning Creek below the National Forest boundary. The large woody debris removal, coupled with the increased bedload and sediment delivery from the 2006 flood, could lead to increased subsurface flows in the summer. This would result in a loss of connectivity in Lightning Creek for migrating native salmonids.

The culvert upgrades on Cascade Creek and Quartz Creeks would restore fish passage to these tributaries. These upgrades will restore connectivity to an additional 7 miles of fish habitat.

While removal of these barriers would open up several miles of habitat for native fish, these replacements would not contribute substantially to the overall reduction of sediment needed to attain resource objectives with water quality in the drainage (Aquatics Report, pp.39-40)

The Hope-Sagle Land Exchange would result in the Forest Service gaining ownership of the headwaters of Spring Creek, which is a tributary to Lightning Creek. Spring Creek is a known bull trout and westslope cutthroat trout stream (district files). By gaining ownership of this portion of Spring Creek, it would be subject to increased protection from the Inland Native Fish Strategy, when compared to State standards.

Although there would be a short-term impact to stream segments adjacent to project-related activities that could potentially disturb and displace fish, the implementation of either of the action alternatives, in conjunction with the past actions, ongoing activities and reasonably foreseeable actions would trend the affected streams toward higher quality fish habitat due to a substantial decrease in sediment delivery, increase in connectivity, and the additional stream miles falling under protection from Inland Native Fish Strategy guidelines(Aquatics Report, pp. 39-40).

Determinations

Bull Trout - The implementation of any of the action alternatives is ***likely to adversely affect*** bull trout because of the potential for short-term disturbance or displacement during project activities but ***not likely to adversely affect*** designated critical habitat (Aquatics Report, p. 41, and biological assessment in the project file).

Westslope Cutthroat Trout - Due to the potential for short-term disturbance or displacement, the implementation of any of the action alternatives ***may impact individuals or habitat, but would not likely contribute to a trend towards Federal listing or cause a loss of viability to the population or species*** (Aquatics Report, p. 41; and biological assessment in the project file).

Wildlife

Effects to wildlife are focused on special status species and their habitat that the Forest Service is required to protect and conserve according to laws, regulations, and agency policies. Species that were analyzed in detail are those that are known to occur or have habitat in the project area, and would potentially be impacted by proposed activities. The Wildlife Report contains a more detailed description of the regulatory framework; analysis methodology; existing condition; direct, indirect and cumulative effects to wildlife species and their habitat; consistency with regulatory direction; and the supporting rationale for wildlife species not analyzed in detail. Since there is no vegetation management proposed in this project, changes to habitat based on vegetation changes is not an issue considered in analysis. Instead, most analysis for the wildlife species considered in this project is focused on the potential disturbance to and displacement of species while project activities are occurring, and effects to habitat security.

Most of the types of project activities that have the potential to impact wildlife species would be the same under each of the action alternatives. These activities include the use of mechanized equipment (e.g., excavators, chainsaws), explosives, and helicopters for tasks such as road decommissioning, road maintenance, culvert replacement or removal, and associated activities.

Standards for Grizzly Bear Habitat

Decreasing grizzly bear numbers can be greatly attributed to habitat loss and human-caused mortality, either directly or indirectly. Controlling motorized access is one of the most important tools in managing grizzly bear recovery.

The Amended Biological Opinion for the Continued Implementation of the Idaho Panhandle National Forests Land and Resource Management Plan (from here forward referenced as the "2001 Biological Opinion") provided a strategy for minimizing risks to grizzly bears by setting uniform standards for open motorized road density (OMRD), total motorized road density (TMRD) and core habitat within each bear management unit. In 2002, the IPNF produced a forest plan amendment regarding access management within BMUs that revised the standards for core, OMRD and TMRD to implement BMU-specific standards. Based on the specific characteristics of each BMU, in most cases, these standards set a higher standard than those required by the 2001 Biological Opinion. However, due to litigation, the 2002 Forest Plan Motorized Access Amendment is no longer in place.

The IPNF is currently working on a supplemental amendment and after its completion, along with the subsequent Biological Opinion from the Fish and Wildlife Service, the standards are expected to be the same, if not more stringent, than those required by the 2002 amendment. Therefore, while the Forest Service is currently only required to meet BMU standards of the 2001 Biological Opinion, the IPNF will continue to work toward meeting the standards contained in the 2002 Amendment and the Draft Supplemental Amendment because it affords greater protection for grizzly bears than the standards and guidelines set by previous documents. In addition, it will trend the affected BMUs towards compliance with the likely minimum standards that will be in place upon completion of the Final Supplemental Amendment and associated Biological Opinion.

In addition, the BMUs within the project area are evaluated with respect to the original Forest Plan standards for grizzly bear security. Questions over the effectiveness of using security as a tool for determining the ability of habitat to support grizzly bears led to the development of the Forest Plan Motorized Access Amendment. Consequently, the security analysis alone may not accurately depict impacts to grizzly bear, so the grizzly bear analysis for this project will include the effect of the alternatives on grizzly bears with respect to the standards and guidelines contained in the 2001 Biological Opinion, the 2002 Forest Plan Motorized Access Amendment and Draft Supplemental Forest Plan Motorized Access Amendment, and the original Forest Plan.

Threatened and Endangered Species

Grizzly Bear

The grizzly bear analysis area is comprised of bear management units (BMUs), which roughly represent the size of a female grizzly bear's home range containing all necessary habitat components. The analysis area for this project contains the North Lightning BMU and the Scotchman BMU, which are analyzed separately (see Figure 2 in the Wildlife Report, p. 14). Created by the Forest Service in the early 1980s, BMUs were later adopted by the U.S. Fish and Wildlife Service. BMUs are the principle unit for evaluating and analyzing potential impacts on grizzly bears, but do not represent actual home ranges.

The decline in grizzly bear numbers can be greatly attributed to habitat loss and human-caused mortality, either directly or indirectly (Wildlife Report, p. 16). Controlling motorized access is one of the most important tools in managing grizzly bear recovery. The grizzly bear recovery plan states that roads likely pose the most imminent threat to grizzly bears and recommends that road management be given top priority within all recovery zones. By managing motorized access, certain objectives can be achieved including minimizing human/bear interactions and the potential for grizzly bear mortality, and reducing the displacement of bears from important habitats.

Based on the best available information, grizzly bear density in the Cabinet-Yaak ecosystem is currently relatively low at about 30 to 40 individuals over a 2,600 square mile recovery zone. Within the entire Scotchman BMU, there has been one documented sighting in the past 10 years, which is comprised of a sow with a yearling in the West Fork Blue Creek drainage in 2003. Within the North Lightning BMU, there have been two documented sightings in the past 10 years; one sighting of a sow with young in the Kirby Creek drainage and one lone bear near Lake Darling (Wildlife Report, p. 18).

In addition to the previously documented sightings, two grizzly bears that were radio collared in Montana were documented within the Scotchman and North Lightning BMUs in 2006 and 2007. Although both bears have spent the majority of their time in Montana, both have utilized the eastern edge of the drainage, particularly in the East Fork Peak, Upper Rattle Creek, and Moose Lake areas. The radio collar on one of these bears quit transmitting in the fall of 2007, so it is unknown if that bear is continuing to visit the drainage (Wildlife Report, p. 18).

The potential effects on grizzly bears were determined by calculating changes in the open and total motorized road densities within the affected BMUs, and the associated reduction or impacts to grizzly bear core habitat. Also, temporary changes in security (e.g., disturbance and displacement) that would result from implementation of the alternatives were analyzed based on the intensity, seasonality, and duration of project activities.

Direct, Indirect and Cumulative Effects of Alternative 1

This alternative would have no impacts on grizzly bear or their habitat because there would be no new management activities within the project area and therefore no disturbance or displacement of grizzly bears.

Alternative 1 does represent about a 7 mile decrease in drivable miles of roads and trails when compared to the pre-flood road condition. This change translates to an increase in the amount of core habitat and a decrease in both total and open motorized road densities in the North Lightning BMU when compared to the pre-flood condition. As a result, the existing condition has increased the security of grizzly bear habitat within the project area since the 2006 flood.

Because there would be no road decommissioning or conversion of roads and motorized trails to nonmotorized trails under this alternative, there would be no additional decrease in total motorized or open motorized road densities or increase in grizzly bear core habitat or security within the North Lightning or Scotchman BMU. Since Alternative 1 would have no impact on grizzly bear or their habitat, there would be no cumulative effects (Wildlife Report, p. 20).

Direct and Indirect Effects Common to Alternatives 3, 4A and 4B

Road decommissioning would entail conducting activities such as removing culverts, installing waterbars, and the full or partial recontouring of the road prism to render it hydrologically inert. To accomplish this would require the use of ground-based mechanized equipment (e.g., excavators), explosives, and/or helicopters depending on the site-specific variables such as topography, microsite characteristics (e.g., amount of fill, substrate) and distance from a drivable road. Almost all ground-based activities within core habitat would take place on existing road prisms, although some would occur on prisms that are currently brushed in and impassable.

Several project design features have been developed to minimize disturbance and displacement of bears during the life of the project (see Appendix B). Timing restrictions combined with a spatial arrangement of activities in different subdrainages would substantially limit the impact of

proposed activities to core habitat and security at any given point in time. These measures also allow bears to displace to nearby areas away from activities as they are occurring (Wildlife Report, pp. 21-30).

Because of the low density of grizzly bears within the Cabinet-Yaak ecosystem, if a grizzly bear is displaced by project activities, it is far more likely to be able to find adequate displacement habitat nearby that is not occupied by another grizzly bear (Wildlife Report, pp. 29-31).

Increases in grizzly bear mortality have been linked to increases in roads into bear habitat and the associated increase in public access. Because there would be very little new road construction (the exception being a few short reroutes) under any of the action alternatives, there would be no increase in access onto National Forest lands or into grizzly bear habitat over the pre-flood condition. However, Alternative 3 would represent an increase in access over the existing condition. (Wildlife Report, pp. 31-33)

The implementation of any of the action alternatives has the potential to have negative impacts on grizzly bears within close proximity during and immediately following project activities due to the possibility of temporary disturbance and displacement. There would be a temporary impact to core habitat and security from project activities, but no reduction in the amount of core, and only a temporary reduction in security. There would be a greater risk of temporary disturbance or displacement of grizzly bears under Alternative 3 than with Alternatives 4A or 4B because the proposed activities would include additional road reconstruction. Following project implementation, and as each subdrainage recovers from the disturbance associated with project activities, the Scotchman and North Lightning BMUs would have a substantial increase in their ability to support grizzly bears under Alternatives 4A and 4B. This increase is largely due to the reduction in miles of drivable roads and the conversion of Trail 52 to nonmotorized use, which leads to more secure habitat. Alternative 4B represents the greatest benefit to grizzly bears and their habitat, closely followed by Alternative 4A (See Table 8 and Table 9). Alternative 3 does represent an increase in secure habitat for grizzly bears over the pre-flood condition in the North Lightning BMU, but not to the level achieved by the other action alternatives and not to the required standard (Wildlife Report, pp. 21-35).

Cumulative Effects of Alternatives 3, 4A and 4B

The implementation of any of the action alternatives, in conjunction with the past actions, ongoing activities and reasonably foreseeable actions would trend the affected BMUs toward more effective grizzly bear habitat due to the increase in core habitat and security, and a decrease in total and motorized road densities. However, there would be a short-term impact to core habitat and security that could potentially disturb and displace grizzly bear (Wildlife Report, pp. 33-34).

Determination

The implementation of any of the action alternatives is ***likely to adversely affect*** grizzly bears or their habitat during project activities because of the potential for short-term disturbance or displacement associated with the project. However, the proposed actions would not likely cause direct mortality of any individuals (Wildlife Report, p. 35).

Table 8. Comparison of alternatives to grizzly bear management unit standards for the each affected BMUs. The percent of each standard for each BMU is typically reported by rounding to the nearest whole number. To better illustrate the differences between the alternatives, the numbers have been shown out to the hundredths, with the numbers rounded to whole numbers in parentheses.

North Lightning BMU	% Core	% OMRD	% TMRD
2001 FWS Biological Opinion Standard	55	33	26
Draft Supplemental Forest Plan Motorized Access Amendment Standard	61	35	26
Alternative 1	63.33 (63)	35.37 (35)*	18.71 (19)
Alternative 3	62.22 (62)	36.35 (36)**	19.26 (19)
Alternative 4A	64.67 (65)	34.38 (34)*	17.70 (18)
Alternative 4B	65.30 (65)	33.77 (34)*	16.95 (17)
Scotchman BMU			
2001 FWS Biological Opinion Standard	55	33	26
Draft Supplemental Forest Plan Motorized Access Amendment Standard	62	35	26
Alternative 1	63.40 (63)	34.76 (35)*	26.26 (26)
Alternative 3	63.40 (63)	34.80 (35)*	26.41 (26)
Alternative 4A	66.47 (66)	33.46 (33)	24.68 (25)
Alternative 4B	66.47 (66)	33.46 (33)	24.68 (25)

* Indicates where the 2001 FWS B.O. standards would not be met.

** Indicates where neither the 2001 Biological Opinion nor the Draft Supplemental Forest Plan Motorized Access Amendment standard would be met.

Table 9. Comparison of alternatives to Forest Plan grizzly bear habitat security standard (square miles). The amount of square miles of security for each BMU is typically reported by rounded to the nearest whole number. However, to better illustrate the differences between the alternatives, particularly within the North Lightning BMU, the numbers have been shown out to the tenths with the numbers rounded to whole numbers in parentheses.

	Square miles of Scotchman BMU	Square miles of North Lightning BMU
1987 Forest Plan Standard	70	70
Pre-Flood Condition	67	71
Alternative 1	67.2 (67)	73.7 (74)
Alternative 3	67.2 (67)	72.7 (73)
Alternative 4A	67.9 (68)	74.7 (75)
Alternative 4B	67.9 (68)	75.3 (75)

Gray Wolf

The potential effects on wolves were determined by analyzing the change in miles of motorized roads/trails and road density as a result of each alternative and the potential impacts to habitat security for wolves from disturbance and displacement during project implementation. Limiting wolf mortality associated with human/wolf interactions, limiting human disturbance around den and rendezvous sites, and managing for an abundant prey base are key in the recovery of wolf

populations. The density and distribution of open roads provides a good measure for determining the level of risk to wolves from human-caused mortality and disturbance to den and rendezvous sites (Wildlife Report, p. 37).

While occasional wolf sightings are reported in northern Idaho, currently there is only one confirmed pack in the vicinity of the project area, which is the Calder Mountain pack just to the north. There are currently no other confirmed, established wolf packs or home ranges (e.g., observations of reproduction, den sites, rendezvous sites) within close proximity of the project area. However, on separate occasions in July 2008, what was thought to be a lone wolf was seen along Forest road 419 and wolf tracks were reported along the shore of Lake Darling, both of which are within the project area. This activity might indicate transient wolves, lone individuals, or wolves from a neighboring pack such as the Calder Mountain pack. The probability of wolves being present within the proposed action area during project activities is low to moderate due to the limited wolf activity documented in the area (Wildlife Report, p. 36).

Direct, Indirect and Cumulative Effects of Alternative 1

This alternative would have no effects on wolves or their habitat because there would be no new management activities within the project area and therefore no disturbance or displacement of wolves. Alternative 1 does represent about a 7 mile decrease in drivable miles of roads and trails, and a slight decrease in road density over the pre-flood condition, which corresponds to increased security of wolf habitat within the project area. Since Alternative 1 would have no effect on wolves or their habitat, there would be no cumulative effects (Wildlife Report, p. 37).

Direct and Indirect Effects Common to Alternatives 3, 4A and 4B

There would be no detrimental modification of habitat for gray wolves or their prey species resulting from the proposed action. The proposed action would not increase the exposure of wolves to humans and it would not decrease the abundance of prey species available to wolves. In addition, due to the ability of gray wolves to thrive under a variety of land uses, the U.S. Fish and Wildlife Service concluded that successful wolf recovery in the northern Rocky Mountains does not depend on land-use restrictions, with the possible exception of temporary restrictions around active den sites on federally managed lands. However, the project activities could potentially cause a temporary disturbance or displacement of wolves (Wildlife Report, p. 38).

Project design features have been developed to minimize disturbance and displacement of wolves during the life of the project through timing restrictions and spatial arrangements of activities (see Appendix B). Other features are designed to protect any den sites and rendezvous sites if they are discovered during the life of the project.

Alternative 3 would have a higher probability of disturbance or temporary displacement over Alternatives 4A and 4B (Wildlife Report, p. 38) because the intensity and length of time needed to complete the activities associated with reconstructing Forest road 1184 and more of the upper portion of Forest road 473 would be greater than what would be required under Alternatives 4A and 4B (Table 9).

Cumulative Effects of Alternatives 3, 4A and 4B

The implementation of any of the action alternatives, in conjunction with past actions, ongoing activities and reasonably foreseeable actions discussed above, would trend the project area toward providing more effective wolf habitat by reducing the miles of drivable roads and motorized trails, and reducing road densities (Table 10). Alternative 4B would be most beneficial because it would have the largest reduction. (Wildlife Report, p. 39-40)

Determination

The implementation of any of the action alternatives ***may affect, but is not likely to adversely affect*** the gray wolf, due to the potential for short-term disturbance to individuals that may utilize the area as transients during project activities (Wildlife Report, p. 40).

Table 10. Comparison between the alternatives in the amount of motorized roads and trails (approximate miles) and motorized road and trail density (approximate miles/square mile) within the Lightning Restoration project area

Motorized Access Type	Pre-Flood Condition	Alt 1	Alt 3	Alt 4A	Alt 4B
Open Roads	60.9	22.1	55.4	42.9	42.9
Restricted Roads	9.4	3.4	9.4	0.1	0.1
Motorized Trails	2.1	39.6*	2.1	7.6	5.1
Roads on non-Federal Lands	43.2	43.2	43.2	43.2	43.2
Total Motorized Access	115.7	108.3	110.1	93.8	91.3
Motorized Road/Trail Density (mi/mi^2)	0.98	0.92	0.93	0.79	0.77

*Includes 6 miles of restricted motorized trails that are closed to motorized use from April 1 through November 15

Canada Lynx

The primary risk factors impacting lynx populations are largely based on the alteration of forest habitats through vegetation management, fire or grazing and the resulting impact on its ability to provide habitat for snowshoe hare (its primary prey species), particularly in winter (Wildlife Report, p. 41). Because project activities would be limited to existing road prisms, vegetation alteration is not an issue that will be analyzed here. A more relevant risk factor for lynx is a potential increase in competition from other predators, particularly coyotes and bobcats, due to activities that result in snow compaction in the winter. Snow compacting activities include snowmobiling, cross-country skiing, and snowshoeing, particularly when these activities occur on groomed routes. While displacement by humans does not appear to be a major factor, access via roads may increase the mortality risk to lynx from incidental trapping or illegal shooting. Roads can also directly affect the amount of denning and foraging habitat by removing forest cover (Wildlife Report, p. 41). Therefore, the appropriate method to determine the impact of this project on lynx and their habitat is to analyze the change in habitat security as measured by the change in miles of groomed snowmobile routes, miles of drivable roads, and the level of disturbance and displacement during and following proposed activities (Wildlife Report, p. 43).

Lynx Analysis Units (LAUs)

For Canada lynx, the cumulative effects analysis area is the Scotchman Lynx Analysis Unit (LAU), Lightning LAU, Lunch LAU and Trestle LAU (see Figure 3 in Wildlife Report, p. 11), which will each be analyzed separately. Per the direction from the Lynx Conservation Assessment and Strategy (LCAS), the Forest Service and other agencies delineated LAUs. LAUs are not intended to depict actual lynx home ranges, but are intended to provide analysis units of the appropriate scale with which to analyze the potential direct, indirect, and cumulative effects of projects or activities on lynx and changes to their habitat. The Northern Rockies Lynx Management Direction superseded the LCAS by providing further direction on refining lynx habitat based on more recent research findings and defining risk factors to lynx, as well as establishing standards and guidelines on how to address risk factors in order to reduce or eliminate impacts on lynx and their habitat, but maintained the use of LAUs as the appropriate analysis areas.

Direct, Indirect and Cumulative Effects of Alternative 1

This alternative would have no effect on lynx or lynx habitat because there would be no new management activities and therefore no disturbance or displacement of lynx. Alternative 1 does represent about a 7 mile decrease in miles of drivable roads and motorized trails and a decrease in groomed snowmobile routes of approximately 19 miles from the pre-flood condition because of access problems related to flood damage. This alternative would maintain this change in access. As a result, the existing condition has increased the security of lynx habitat and decreased the possibility of competition from other predators within the project area compared to pre-flood conditions. Since Alternative 1 would have no impact on Canada lynx or their habitat, there would be no cumulative effects.

Lynx presence has been historically documented throughout much of the IPNF, although their population numbers were not thought to be abundant. There are sporadic unverified sightings reported on the Sandpoint Ranger District, with the last such sighting in the Lightning Creek drainage occurring in 1998 in Upper Quartz Creek within the Lunch LAU. Although there is no reliable information to determine if there is a currently a resident lynx population in northern Idaho, if lynx are present it is believed to be at low numbers (Wildlife Report, p. 44).

Direct and Indirect Effects Common to Alternatives 3, 4A and 4B

No portion of the Lightning, Trestle, Scotchman, or Lunch LAUs is within proposed critical habitat designated by the U.S. Fish and Wildlife Service in February 2008. Consequently, there would be no adverse modification of proposed critical habitat for lynx (Wildlife Report, p. 43).

Although the proposed action would not negatively impact vegetation within lynx habitat, increase access or mortality risk, and would increase habitat connectivity, there would be a possibility of disturbance and temporary displacement of lynx during project implementation. Lynx are described as being generally tolerant of humans and anecdotal reports suggest that lynx are not displaced by human presence; however, the increased noise and activity levels above natural conditions within or in close proximity to lynx habitat during the implementation of the project could potentially temporarily displace lynx from the affected area (Wildlife Report, pp. 44-45). The probability of this occurring is expected to be low because of the low density or absence of lynx within the affected area. The project design features described in Appendix B would also limit the scale and noise level of project activities, which would be expected to further reduce the chance of negative impacts on lynx (Wildlife Report, p. 44).

Alternative 3 would result in an increase in miles of roads, motorized trails, and groomed snowmobile routes over the existing condition in the Lightning LAU, but a decrease over the pre-flood condition (Table 10 and Table 12). Following implementation of Alternatives 4A or 4B there would be no change or decrease in miles of drivable roads and motorized trails within each LAU (Table 11), and no change or decrease in the miles of groomed snowmobile routes over the pre-flood condition within each LAU. Therefore, there would be an increase in the availability of secure habitat for lynx as compared to the existing and pre-flood conditions (Wildlife Report, pp. 45-46).

Cumulative Effects Common to Alternatives 3, 4A and 4B

Because the implementation of any of the action alternatives would improve the security of lynx habitat after project implementation, cumulative impacts would be negligible or discountable (Wildlife Report, pp. 46-47).

Determination

The implementation of any of the action alternatives ***may affect, but is not likely to adversely affect*** Canada lynx because of the potential for short-term disturbance or displacement associated with the project (Wildlife Report, p. 47).

Table 11. Comparison of drivable roads and motorized trails (miles) within each LAU

Pre-Flood Condition and Alternatives	Lightning LAU	Trestle LAU	Scotchman LAU	Lunch LAU
Pre-Flood	27.5	18.0	3.7	17.1
Alt 1 (Existing)	20.3	18.0	3.5	17.1
Alt 3	23.1	18.0	3.7	17.1
Alt 4A	12.3	18.0	3.7	11.6
Alt 4B	12.3	15.5	3.7	11.6

Table 12. Comparison of groomed snowmobile routes (miles) within each LAU

Pre-Flood Condition and Alternatives	Lightning LAU	Trestle LAU	Scotchman LAU	Lunch LAU
Pre-Flood	17.6	1.9	3.7	6.7
Alt 1 (Existing)	3.1*	0	1.0**	6.6
Alt 3	13.5*	1.9	3.7	6.7
Alt 4A	10.7*	1.9	3.7	6.7
Alt 4B	10.7*	1.9	3.7	6.7

*These figures include the upper portion of Forest road 473 (Rattle Creek Road) that remains an open, drivable road, the length of which is different under each alternative, as being groomed from the Montana side. Although this assumption may be incorrect, it is used here to analyze for the maximum amount of groomed snowmobile routes under each alternative.

**This section was designated as a groomed route before the flood and although the existing condition of this section remains an open, drivable road, it is unlikely to be groomed under this alternative because it is a short segment not connected to any other groomed routes.

Sensitive Species

Wolverine

Because wolverines use a wide variety of habitats and the alternatives analyzed do not propose any vegetation management activities, the alternatives analyzed would not alter the suitability of habitat within the project area for wolverine (Wildlife Report, p. 49).

Wolverine appear to be very sensitive to human disturbance, particularly at maternal dens. Land use activities that fragment habitat or increase human access into habitat also appear to negatively affect wolverine. These impacts are considered likely to be similar to those that have been described for grizzly bears. Krebs et al. (2007) suggested that wolverines negatively responded to human disturbance and that human use, particularly winter recreation, helicopters and the presence of roads, reduced the value of habitat for wolverines (Wildlife Report, p. 48).

Therefore the potential effects on wolverine were determined by analyzing the change in miles of motorized roads/trails and road density as a result of each alternative and the potential impacts to habitat security for wolverine from disturbance and displacement during project implementation (Wildlife Report, p. 49).

Little information exists on wolverine distribution in northern Idaho, but the presence of wolverine has been historically documented in the northern portion of the IPNF. Although there have been no confirmed recent sightings of wolverine anywhere on the Sandpoint Ranger District, there have been sporadic reports of sightings or tracks within the Lightning Creek drainage, with the most recent sighting occurring in the Trestle Ridge area in 1997. There are a minimum of 16 cirque basins within the project area that have the potential to be used as denning areas for wolverine (Wildlife Report, p. 49).

Direct, Indirect and Cumulative Effects for Alternative 1

This alternative would have no effects on wolverine or their habitat because there would be no new management activities, and therefore no disturbance or displacement of wolverine. Alternative 1 does represent about a 7 mile decrease in drivable miles of roads and trails and a slight decrease in road density over the pre-flood condition, which corresponds to increased security of wolverine habitat within the project area. Since Alternative 1 would have no effect on wolverine or their habitat, there would be no cumulative effects (Wildlife Report, p. 49).

Direct and Indirect Effects Common to Alternatives 3, 4A and 4B

There are no roads within potential wolverine denning habitat within the project area. All project activities are expected to occur in late spring, summer, and fall, which is outside the wolverine denning period. Consequently, there would be no disturbance to wolverine dens or denning habitat as a direct result of the implementation of project activities (Wildlife Report, p. 50).

Although there is a possibility of disturbance or displacement of wolverine during project activities, the risk would be reduced because it only has the potential to impact wandering or foraging wolverine. There would be no increased access into remote areas as a result of the project (Wildlife Report, p. 50). The project design features described in Appendix B would limit the scale and noise level of project activities, which would be expected to further reduce the chance of negative impacts on wolverine. The project area would also be expected to recover from human disturbance after the completion of project activities since there would be no permanent increase in human presence or development within the project area due to of the implementation of any of the action alternatives. In addition, there would be an increase in the availability of secure habitat for wolverine as a result of road decommissioning within the project area with Alternative 4B having the greatest increase in secure habitat (see Table 10).

Cumulative Effects Common to Alternatives 3, 4A and 4B

Because the implementation of any of the action alternatives would improve the security of wolverine habitat after project implementation, cumulative impacts would be negligible or discountable (Wildlife Report, pp. 51-52).

Determination

Due to the potential for short-term disturbance or displacement, the implementation of any of the action alternatives ***may impact individuals or habitat, but will not likely contribute to a trend towards Federal listing or cause a loss of viability to the population or species*** (Wildlife Report, p. 52).

Harlequin Duck

The potential effects on harlequin duck were determined by analyzing the change to streams used for breeding as a result of the alternatives based on the miles of roads within the RHCA of

breeding streams, the direct disturbance and displacement of harlequin ducks during project implementation, and changes to water quality (Wildlife Report, p. 54).

Management activities or natural events that impact stream quality, including those that could increase water yield beyond the stream's capability, have the potential to impact harlequin ducks. Disturbances that alter the seclusion or isolation that mountain streams provide to breeding pairs and their young can also impact the species (Wildlife Report, p. 52).

The presence of harlequin duck has been documented within the Lightning Creek drainage since the late 1970s and periodic sightings were reported in the early 1980s. However, it was not until Idaho Fish and Game and the Forest Service began surveying for harlequin ducks in the drainage in the late 1980s that their use of the drainage was more clearly defined, including recent use of the drainage. The majority of observations of harlequin ducks and documentation of the appropriate habitat for breeding pairs was concentrated on East Fork Creek between Thunder Creek and Lightning Creek (Wildlife Report, p. 53).

Direct and Indirect Effects of Alternative 1

Under this alternative, there would be no direct impact or disturbance and displacement to harlequin ducks or their breeding streams within the project area because there would be no new management activities. However, there would continue to be an indirect effect to the watershed from stream crossings and roads identified as existing or potential threats to aquatic resources. Under this alternative, none of the identified threats such as failing culverts, mass failures, or unstable road prisms would be eliminated or improved and the existing sediment delivery from these sources would continue to negatively impact water quality. As a result, there could be a decrease in the effectiveness of some breeding streams to support harlequin ducks.

Alternative 1 does represent a decrease of about 17 miles of open road and an increase of about 13 miles of motorized trail over the pre-flood condition within 150 meters of streams with potential harlequin duck breeding habitat. This overall decrease of about 4 miles of open roads and motorized trails decreases the likelihood of disturbance and displacement of harlequin ducks, because it would retain the decrease in miles of roads and motorized trails within 150 meters of potential breeding streams compared to the pre-flood condition (Wildlife Report, p. 54).

Direct and Indirect Effects Common to Alternatives 3, 4A and 4B

During the implementation of any of the action alternatives, there is the possibility of disturbance to harlequin ducks and an increase in sediment delivery to streams that would temporarily reduce the suitability of the streams has breeding habitat. Best management practices (BMPs) would be in place to protect water quality and fish habitat and the implementation of the proposed action would also be in compliance with Inland Native Fish Strategy (INFS) standards, which require that protective measures be implemented to protect waterways and wetlands (see Aquatics Report Appendices A and B). Although their may be an increase in sediment into potential breeding habitat during project activities, the implementation of any of the action alternatives would ultimately improve the aquatic condition of the drainage and would therefore improve the habitat in harlequin duck breeding streams (Wildlife Report, p. 55-56).

The proposed activities, along with the implementation of the design features, would trend the project area streams toward a better aquatic condition that would be more able to support breeding harlequin ducks because it would provide a lower chance of disturbance from humans and a larger macroinvertebrate population. Alternatives 4A and 4B would be the most beneficial

to harlequin ducks and their habitat (Wildlife Report, p. 57) because it would have the greatest decrease in roads and motorized trails within 150 meters of potential breeding streams (Table 13).

Table 13. Comparison of roads and trails (miles) within 150 meters of potential harlequin duck breeding streams, including roads on private lands

Roads and Trails	Pre-Flood	Alt 1 (Existing)	Alt 3	Alts 4A and 4B
Open Roads	30.3	13.3	26.5	23.9
Motorized Trails	1.1	14.3	1.1	0.9
Total Motorized Roads/Trails	31.4	27.6	27.6	24.9
Nonmotorized Trails	4.1	4.1	4.5	7.2
Total	35.5	31.7	32.1	32.1

Cumulative Effects of all Alternatives

Because the implementation of Alternative 1 would not address threats to water quality within the drainage, any past, present or reasonably foreseeable actions that also negatively impact water quality would act cumulatively to affect the aquatic resource and harlequin ducks. Because the implementation of any of the action alternatives would improve the security of harlequin duck breeding habitat and improve water quality, cumulative impacts would be negligible or discountable (Wildlife Report, p. 56).

Determination

Due to the potential for short-term disturbance and an increase in sediment delivery to streams, the implementation of any of the alternatives ***may impact individuals, but would not contribute to a trend toward federal listing or cause a reduction in the viability of the population or species*** (Wildlife Report, p. 57).

Western Toad

The potential effects on western toads were determined by analyzing the change to breeding habitat (ponds, wetlands, streams) as a result of the alternatives and the direct disturbance and displacement of western toads during project implementation. The loss or alteration of aquatic breeding habitat, migration barriers (i.e., roads) between breeding habitat and terrestrial habitat and mortality risk from roads bisecting migration routes appear to be the primary risk factors for western toads.

During wildlife surveys conducted for this project in 2008, two western toads were observed along Trail 52 (Lake Darling Trail). Although there have been no other documented observations of western toads within the project area, their presence is likely, based on the widespread distribution of the species and potential breeding habitat (Wildlife Report, p. 57-58).

Direct, Indirect and Cumulative Effects of Alternative 1

This alternative would have no direct impacts on western toad or their habitat because there would be no new management activities within the project area and therefore no disturbance or displacement of western toads. However, there would continue to be an indirect effect to the watershed from stream crossings and roads identified as existing or potential threats to aquatic resources. Under this alternative, none of the identified threats such as failing culverts, mass failures or unstable road prisms would be decommissioned or improved and the existing sediment

delivery from these sources would continue to negatively impact water quality. As a result, there would likely be a continued decrease in the effectiveness of some potential breeding sites to support western toads (Wildlife Report, p. 58).

Direct and Indirect Effects Common to Alternatives 3, 4A and 4B

There is a possibility of displacement and/or mortality to western toads as a result project activities. However, project activities are designed to improve the aquatic condition of the watershed by reducing or eliminating existing or potential sediment sources (see Aquatics Report), which would improve the condition of western toad breeding habitat within the drainage. Although all of the action alternatives would improve the aquatic condition, Alternatives 4A and 4B would more fully benefit western toads because they would decommission or convert to nonmotorized trail more miles of existing roads and motorized trails (Wildlife Report, p. 58-59).

Cumulative Effects of all Alternatives

Because the implementation of Alternative 1 would not address threats to water quality within the drainage, any past, present or reasonably foreseeable actions that also negatively impact water quality would act cumulatively to have a negative affect on the aquatic resource and western toads. Because the implementation of any of the action alternatives would improve potential western toad breeding habitat and decrease mortality risk associated with roads, cumulative impacts would be negligible or discountable (Wildlife Report, p. 59-60).

Determination

Due to the potential for short-term disturbance, the implementation of any of the alternatives ***may impact individuals, but would not contribute to a trend toward federal listing or cause a reduction in the viability of the population or species*** (Wildlife Report, p. 60).

Management Indicator Species and Others

Northern Goshawk

Because project activities would be limited to existing road prisms, there would be no direct impact to vegetation in goshawk habitat within the project area and there would be no effect on habitat suitability for goshawks. Although the primary risk factor to goshawks is forest management activities that reduce the amount of old forests and their associated structures, another risk factor is human disturbance near nest sites. Disturbance in close proximity to the nest during the nesting season, particularly during the incubation period can cause nest failure (Wildlife Report, p. 61). Consequently, the appropriate method to determine the impact of each alternative on goshawks and their habitat is to analyze the change in habitat security as measured by the level of disturbance and displacement during and following project activities.

Surveys were conducted in multiple years within the Lightning Creek watershed. Goshawk responses and documented observations along the south side of East Fork Creek indicate that it is an active goshawk territory (Wildlife Report, p. 62).

Direct, Indirect and Cumulative Effects of Alternative 1

There would be no impacts to northern goshawks from this alternative because there would be no new management activities. The quantity, quality, and distribution of nesting habitat would continue to change over time as natural disturbances, fire suppression and stand development influence habitat suitability for northern goshawks.

Alternative 1 does represent about a 7 mile decrease in drivable miles of road and trails and a slight decrease in road density over the pre-flood condition, which corresponds to a decreased likelihood of disturbance or displacement of goshawk nesting habitat within the project area. Since Alternative 1 would have no impact on goshawks or their nesting habitat, there would be no cumulative effects (Wildlife Report, p. 63).

Direct and Indirect Effects Common to Alternatives 3, 4A and 4B

The suitability of the vegetative characteristics for goshawk nesting habitat would not be directly impacted by project activities. However, during project implementation, there is the potential for the disturbance and short-term (one nesting season) displacement of nesting goshawks, particularly in the East Fork Creek subdrainage, where there is one known territory. Although potential goshawk nesting habitat in other areas of the drainage, such as the lower portions of Rattle Creek, would become more secure, under Alternative 3 the potential for disturbance to nesting goshawks associated with the reconstruction of Forest road 1184 and subsequent road use within the known goshawk territory would not be reduced (Wildlife Report, p. 63-64). Under Alternatives 4A and 4B, the majority of activities associated with the conversion of the road to a motorized trail and the bridge construction would likely occur during low water flow (mid-June through September), therefore they would likely not be ongoing during the courtship, incubation and hatchling stages when goshawks are most sensitive to disturbance (Wildlife Report, p. 64).

After project implementation, goshawk-nesting habitat in the areas receiving road decommissioning (particularly those areas where roads are changing from drivable roads and motorized trails) would become more secure and have a substantially decreased chance of disturbance or displacement to nesting goshawks into the future. Although there may be a short-term impact to nesting goshawks, there would be a benefit in the long term because of the increase in secure nesting habitat. Alternatives 4A and 4B would be the most beneficial to goshawks and their habitat (Wildlife Report, p. 65-66).

Cumulative Effects Common to Alternatives 3, 4A and 4B

Because the implementation of any of the action alternatives would improve the security of goshawk nesting habitat, cumulative impacts from this project would be negligible (Wildlife Report, p. 65).

Determination

Due to the potential for short-term disturbance and displacement to goshawks, the implementation of any of the action alternatives ***may impact individuals or habitat, but would not indicate a local or regional change in habitat quality or population status*** (Wildlife Report, p. 65).

Rocky Mountain Elk

Because the alternatives analyzed do not propose any vegetation management activities and would therefore not alter the amount of forage or cover, the potential effects to elk will be determined by analyzing the change in miles of motorized roads and trails, and change in road density as a result of each alternative. In addition, potential impacts to habitat security for elk from disturbance and displacement during project implementation will be analyzed.

Risk factors for elk include a high degree of roads that increases the vulnerability of elk to poaching, stress, hunting loss, accidents and displacement and the loss of winter range (Wildlife Report, p. 67).

The Lightning Restoration project area lies within the Idaho Department of Fish and Game's Game Management Unit 1. Game Management Unit 1 covers the entire northern portion of the Idaho panhandle from the north shore of Lake Pend Oreille to the border with Canada. The elk population in this management unit has experienced substantial growth during the last decade and herd sizes are expanding (Wildlife Report, p. 67).

Direct, Indirect and Cumulative Effects for Alternative 1

This alternative would have no impacts on elk or big game winter range because there would be no new management activities that could cause disturbance or displacement of elk. Alternative 1 does represent about a 7 mile decrease in drivable miles of road and trails and a slight decrease in road density over the pre-flood condition, which corresponds to increased security of elk habitat within the project area. Since Alternative 1 would have no impact on elk or their habitat, there would be no cumulative effects (Wildlife Report, p. 67).

Direct and Indirect Effects Common to Alternatives 3, 4A and 4B

Although there is potential for the disturbance and displacement of elk during project implementation, under any of the action alternatives, the decrease in motorized road and trail miles and in road density would benefit elk in the short term (upon completion of project implementation) and long term (foreseeable future). Project design features have been developed to minimize disturbance and displacement of wildlife during the life of the project (see Appendix B). Timing restrictions combined with a spatial arrangement of activities in different subdrainages would decrease the amount of disturbance to elk across the landscape and retain the ability of adjacent areas to support elk displaced from areas with active project activities. Alternative 4B represents the largest decrease in motorized routes and road density and therefore the greatest benefit to elk in terms of habitat security (Table 10). Alternative 4A would result in a slightly higher amount of motorized routes and road density than Alternative 4B, but still represents a substantial increase in habitat security for elk. Alternative 3 would result in a slight increase in motorized routes and road density over the exiting condition, but it does represent a decrease when compared to the pre-flood condition (Wildlife Report, pp. 68-70).

Cumulative Effects Common to Alternatives 3, 4A and 4B

Because the implementation of any of the action alternative would ultimately improve the security of elk and big game habitat, cumulative impacts from this project would be negligible (Wildlife Report, pp. 69-70).

Determination

Due to the potential for disturbance and displacement of elk, the implementation of any of action alternatives ***may impact individuals or habitat, but would not indicate a local or regional change in habitat quality or population status*** (Wildlife Report, p. 70).

Roads and Recreation

Prior to the 2006 flood event, roads in the Lightning Creek drainage provided motorized access to all the major tributaries in the area such as Rattle Creek, Porcupine Creek, Mud Creek, East Fork of Lightning Creek, and Wellington Creek (see map 1 in map packet for access before the flood). Lightning Creek road 419 was the main access road in the drainage and provided a creekside setting for almost its entire length with unlimited recreation opportunities. Places and outdoor settings that most people value were made accessible by the road system. Established trailheads were located on roads designated for all motorized uses.

Given the dynamic nature of the drainage as it relates to its infrastructure and recreational use, there is a strong correlation between past flood events and the resulting effects on the drainage infrastructure, the road and recreation access prior to the 2006 flood event, and the existing access after the 2006 flood (Road Access and Recreation Report, p. 4). The transportation infrastructure of the drainage has continually been compromised by flood events and each event has affected the type and variety of recreational pursuits available to forest users. The earliest documented flood event occurred in 1894, and since that time numerous flood events have been recorded (1974, 1980, 1986, 1990-1991, 1996, 2003-2004) along with the most recent November 2006 flood (Road Access and Recreation Report, pp. 5-7). Road damage from the 2006 flood was extensive, forcing a temporary closure of motorized use on many roads in the Lightning Creek drainage due to public safety concerns. Because of the magnitude of the flood, damage occurred on numerous sections of open system road that were previously accessible to passenger cars (Road Access and Recreation Report, pp. 13-14). Access to the drainage was cut off at Fall Creek via Trestle Creek road 275, at Clatter Creek via Rattle/Keeler road 473 from Montana, and at the 5-mile marker via Lightning Creek road 419 from Clark Fork[3] (see map 2 in map packet for access after the flood).

Although access into Lightning Creek drainage is still available from Trestle Creek road 275 in the warm and dry seasons, much of the Lightning Creek drainage (31.5 miles) has been restricted by Forest Service special order to nonmotorized and OHV use only, due to undrivable conditions by larger four-wheeled vehicles on road 419. Tributary roads also restricted to OHV and nonmotorized travel include East Fork road 1184, Porcupine road 642, and Auxor road 489 (Road Access and Recreation Report, pp. 13-14).

There are 23 system trails in the project area totaling about 71 miles. Very few of these trails were affected by the flood directly; however, access to some was cut off. All of the trails are non-motorized with the exception of Lake Darling trail 52 (Road Access and Recreation Report, p. 11).

Direct and Indirect Effects

Effects Common to All Alternatives

All alternatives would permanently eliminate access into the Rattle Creek drainage from Lightning Creek road 419 to just below the bridge in Section 5. Access to the rock quarry on Rattle Creek road near the Idaho-Montana border would now be from the Kootenai National Forest and Keeler Creek road. The closing and decommissioning of road 473 would result in permanent displacement of motorized recreation access in the Rattle Creek drainage. Displaced visitors would need to find other areas in the Lightning Creek drainage or on the Idaho Panhandle or Kootenai National Forest to meet their recreation needs.

The Recreation Opportunity Spectrum (ROS) designation for this area would change from roaded natural to semi-primitive non-motorized. This change in ROS would enhance the recreation experience for visitors who seek out nonmotorized areas without roads or trails (Road Access and Recreation Report, pp. 14-15)

[3] After a portion of road 419 was washed away, a gate with a closure to all motorized vehicles was placed at the 5-mile marker for public safety and to prevent access across private land where the Forest Service did not have access rights. In July of 2008, access across the private land was granted, so the gate was moved to the ford at East Fork Creek, where OHVs were allowed beyond that point.

Effects Common to Alternatives 1 and 3

Access management would not change on Lake Darling trail 52. With the motorized use of Lake Darling trail, the semiprimitive recreation opportunity setting of Lake Darling and the surrounding area is compromised. (Road Access and Recreation Report, p.15)

Effects Common to Alternatives 3 and 4

Access on Lightning Creek road 419 during road work is expected to be limited during the first summer of road construction, which would cause recreationists to go elsewhere for forest recreation activities. Access would be closed for most of the length of road 419 between mile marker 3 and Quartz Creek for an extended period of time.

Mud Creek road 340 would be converted to a nonmotorized trail increasing its total length to almost 6 miles. A trailhead would be established and would be one of the primary access points for Rattle Ridge Trail 134. A short section of Rattle Ridge trail 134 between road 473A and the intersection of Mud creek trail 559 would be abandoned due to lack of access. Nonmotorized use is expected to increase on Trail 559 (Road Access and Recreation Report, p.15).

Alternative 1

This alternative would result in no change to the current road system and public access (see Table 14) because roads would not be repaired or decommissioned. Recreationists would continue to be displaced and would likely go to other areas of the Sandpoint Ranger district or adjoining Kootenai National Forest for their recreational experience. The recreation opportunity setting would not be compliant with the ROS designations for roaded natural and roaded modified settings in the Forest Plan (Road Access and Recreation Report, pp. 15-16).

Table 14. Alternative 1 - Road and trail management status compared to pre-flood conditions

Road and Trail Management Status	Pre Flood Conditions (miles)	No Action Existing Condition (miles)	Difference from pre-flood condition (miles)
Open, drivable roads	60.9	22	- 38.9
Seasonally restricted*, drivable roads	9.4	3.4	- 6
Open road closed with this alternative		0	No change
Motorized single-track trails	2.1	2.1	No change
Motorized vehicles <50 in.	0	31.5	+31.5 Due to closure of Lightning Creek road 419
Restricted* road, motorized vehicles <50 in.	0	6	+ 6
Non-motorized trails	71	71	No change

* Seasonally restricted from April 1- November 15

Alternative 3

Open road access would be reduced from pre-flood conditions due to the decommissioning of Rattle Creek road 473, the conversion of a portion of the road to nonmotorized trail, and the reconstruction of the road from Button Creek to the Montana border (see Table 15 and map 3 and map 4 in map packet). Lightning Creek road 419 would be restored to pre-flood conditions. Day use in the drainage would mostly return to the pre-flood levels of moderate to high use. During

road and bridge construction, Lightning Creek road 419 would be temporarily closed to public access, which would shift access to Trestle Creek road 275 and affect the amount of vehicle use in the drainage (Road Access and Recreation Report p. 16). A low water ford would be maintained at the East Fork Creek crossing limiting access to high-clearance vehicles. All other vehicles would still need to detour around to Trestle Creek to access the upper Lighting Creek drainage. Seasonally restricted drivable roads (open from April 1- November 15) would not change from pre-flood conditions.

The construction of a bridge[4] over Lightning Creek to Porcupine Lake road 642 would restore access to Porcupine Lake. It is expected that day use and camping in this area would return to pre-flood levels once the bridge is constructed. Until funding is secured for bridge construction, access would be restricted to OHVs less than 50 inches in width fording the creek during low water flows. During this time, there could be a slight increase in OHV use on the Porcupine Lake road as compared to pre-flood conditions, since they would not have to compete with larger sized vehicles.

Nonmotorized use in the drainage would increase by about 5 miles over the existing and pre-flood conditions. This increase could create a change in the amount of trail use in the drainage; especially in the Rattle Creek drainage (Road Access and Recreation Report p. 17).

Alternative 4

This alternative would result in the loss of recreation opportunities for automobiles and high-clearance vehicles that drive to Porcupine Lake. Porcupine Lake road would be converted to an OHV trail. With the conversion of this road to a designated OHV trail, it is likely that OHV use to Porcupine Lake would increase considerably from existing and pre-flood conditions. This trail would be the only motorized trail within the drainage (Road Access and Recreation Report, pp. 18-19). Open drivable roads in the drainage would decrease from pre-flood conditions due to tributary roads being closed to motorized vehicles larger than 50 inches, decommissioned, or converted to nonmotorized trail (see Table 15). Motorized vehicle access for OHVs less than 50 inches would increase slightly (2.5 miles) more for Option A than Option B (refer to map 5 and map 6 in map packet). Rattle Creek road 473 would be accessible only from the Montana border down to Clatter Creek.

Reconstruction of Lightning Creek road 419 and construction of a bridge over East Fork Creek would restore vehicle access for all types of vehicles. With a new bridge, more people would likely pursue recreational opportunities in the drainage earlier in the season as compared to pre-flood conditions because access from Clark Fork would no longer be restricted by the ford crossing at East Fork Creek, and people would not have to wait for the Trestle Creek road access to melt out. The bridge would also provide a new winter access route from Clark Fork for activities such as cross-country skiing and snowmobiling. Road 419, already a designated groomed snowmobile route, would likely be groomed on a more regular basis. Snowmobile use in the drainage may change, with the primary effect being a redistribution of use between Trestle Creek road 275 and road 419 from Clark Fork (Road Access and Recreation Report, pp. 18-19).

Lake Darling trail 52 would change from single-track motorized to nonmotorized. This change in management would reduce motorized opportunities for users of Lake Darling, but create a nonmotorized, more primitive setting for those that seek such a backcountry experience and would be more compatible with the surrounding areas that are designated as semi-primitive.

[4] Dependent on availability of funding

Displaced users could shift to the newly converted Porcupine Lake motorized trail 642 (Road Access and Recreation Report, p. 19).

Table 15. Alternatives 3 and 4 - Road and trail management status compared to pre-flood conditions

Road and Trail Management Status	Pre Flood Conditions (miles)	Alternative 3 (miles)	Difference from pre-flood condition (miles)
Open, drivable roads	60.9	55.4	- 5.5
Restricted*, drivable roads	9.4	9.4	No change
Open roads closed with this alternative		4.8	- 4.8
Seasonally restricted roads closed with this alternative		0	No change
Motorized single-track trails	2.1	2.1	No change
Motorized vehicles < 50 in.	0	5.0 Temporary until Porcupine bridge built	+ 5.0 Temporary until Porcupine bridge built
Restricted* road, motorized vehicles < 50 in.	0	0	No change
Non-motorized trails	71	76	+ 5.0

Road and Trail Management Status	Pre Flood Conditions (miles)	Alternative 4 (miles)		Difference between pre-flood condition (miles)	
		Option A	Option B	Option A	Option B
Open, drivable roads	60.9	42.9	42.9	-18	-18
Restricted*, drivable roads	9.4	0	0	-9.4	-9.4
Open roads closed with this alternative		14	16.5	-14	-16.5
Seasonally restricted roads closed with this alternative		9.4	9.4	-9.4	-9.4
Motorized single-track trails	2.1	0	0	-2.1	-2.1
Motorized vehicles < 50 in.	0	7.5	5.0	+7.5	+5.0
Restricted* road, motorized vehicles < 50 in.	0	0	0	No change	No change
Non-motorized trails	71	89.5	89.5	+18.5	+18.5

* Seasonally restricted from April 1- November 15

Nonmotorized trails and trailheads, primarily located on the east side of the drainage, would increase with this alternative. This is expected to draw more nonmotorized recreational users than pre-flood conditions. Trail 134 has the potential to become one of the longest nonmotorized trails on the Sandpoint Ranger District with multiple trailheads. With the changed access into the drainage from Clark Fork and the newly created nonmotorized trail system, it is expected that use will increase on these trails (Road Access and Recreation Report, p. 19).

Cumulative Effects of All Alternatives

Cumulative effects for recreation and roads are considered as the additive effects displaced forest users would have on other areas of the National Forest. Since the flood, limited access has decreased the amount of use in the drainage, which is likely causing a cumulative effect on other areas, in the form of increased use of roads and trails. These effects are expected to extend outside the project area to forest settings similar to Lightning Creek. Predicting how far from the drainage people would go is difficult, but it is likely that they would choose areas within the north Idaho

panhandle, and the west side of the Cabinet Ranger District in the Kootenai National Forest. In all alternatives, people wanting rock from the Rattle Creek quarry would have to access it from the Montana side of the Cabinet Mountains, as they do now. This may have a cumulative effect of increased use of the Keeler Creek road.

Alternative 1 would maintain the current condition and likely have the most cumulative effects on other area roads and trails. Alternative 3, which restores as much pre-flood access as possible, probably has the least cumulative effect on other areas of the forest as users would return to recreating in the Lightning Creek drainage. Although Alternative 4 has less standard motorized vehicle access than Alternative 3, the construction of a bridge at the East Fork of Lightning Creek would provide more convenient access to road 419, and therefore would also likely have less of a cumulative effect on other areas of the Forest, as use of the main Lightning Creek road becomes available to all types of vehicles (Road Access and Recreation Report, p. 20).

Rare Plants

No federally listed endangered or threatened plant species are suspected to occur in the project area (TES Plants Report, p. 1). Effects to rare plants and suitable rare plant habitat were analyzed based on the relative amount of new ground disturbance in and adjacent to documented rare plant occurrences and/or suitable rare plant habitat (TES Plants Report, pp. 3-4).

Direct and Indirect Effects

Alternative 1

Under this alternative, no direct effects to rare plants or suitable rare plant habitat would occur. Indirectly, the road prisms affected by the 2006 flood events would be more vulnerable to further damage if left unrepaired (see Aquatics Report). Future mass wasting could result in the loss of more old growth forests adjacent to streams in the project area, thus impacting suitable moist and wet forest guild habitat and the documented occurrences of deerfern, northern beechfern and triangle moonwort. However, the future occurrence of flood events and the extent of their impact to rare plant populations and suitable rare plant habitat cannot be predicted with certainty (TES Plants Report, p. 6).

Effects Common to Alternatives 3 and 4

While the action alternatives would restore road and trail access to the Lightning Creek drainage to differing degrees, the effect to rare plants and suitable rare plants habitat is predicted to be essentially the same under either action alternative.

Given the current distribution of rare plants in the project area and the design features described in Appendix B, no direct impacts to any documented rare plant occurrences would be expected to occur from restoration activities as proposed under either action alternative. Most of the proposed activities would occur in areas with low potential to support rare plants - either because of natural habitat characteristics or severe disturbance from the 2006 flood event (TES Plants Report, p. 6).

No direct or indirect impacts to documented occurrences of deerfern, northern beechfern or triangle moonwort would occur, since no activities are proposed in or near those occurrences. The proposed restoration activities may impact undetected individuals or marginally suitable habitat for rare moonworts, but this is unlikely, given the high level of soil disturbance in proposed activity areas that serves as the baseline for this analysis. Proposed decommissioning of

roads that have been closed for a number of years may also impact undetected individual rare moonworts (TES Plants Report, p. 6).

Cumulative Effects

Effects to rare plant species and suitable habitat from proposed activities are generally described as very low, low, moderate, or high with the following definitions (TES Plants Report, p. 4):

- very low = no measurable effect on individuals, populations or habitat
- low = individuals, populations and/or habitat not likely affected
- moderate = individuals and/or habitat may be affected, but populations would not be affected, and habitat capability would not over the long term be reduced below a level which could support sensitive plant species
- high = populations would likely be affected and/or habitat capability may over the long term be reduced below a level which could support sensitive plant species

Cumulative Effects of Alternative 1

When combined with the above listed past, current, ongoing and reasonably foreseeable actions, implementation of no action could result in a low, moderate or high level of cumulative effects to rare plants and suitable moist and wet forest guild habitat, depending on the occurrence, location and extent of damage from future flood events (TES Plants Report, p. 6).

Cumulative Effects Common to Alternatives 3 and 4

Past timber harvest, road construction, road decommissioning, development on private lands and periodic flood events in the Lightning Creek drainage have very likely impacted rare plant populations and suitable rare plant habitat. The extent of those impacts is unknown, however, because most of those disturbances occurred before the IPNF began to survey for and manage rare plant populations. Current and ongoing road, trail and helispot maintenance on NFS lands have been reviewed for their effects to rare plants and would not be expected to contribute cumulative effects to rare plants or suitable rare plant habitat when combined with either action alternative.

Reasonably foreseeable noxious weeds monitoring and treatment, Silver Button mining exploration, Mortensen Small Tract Act, Hope Sagle Land Exchange, and Forest road 1022A Bridge Removal either have been or will be evaluated for their impacts to rare plants and/or suitable rare plants habitat. None of these projects would impact documented rare plant occurrences.

Given the above analysis, and in consideration of design features described in Appendix B and the above past, current, ongoing and reasonably foreseeable events and actions, cumulative effects from implementation of either action alternative would be very low (no measurable effects) to low (effects not likely) for most rare plants. Cumulative effects to undetected rare moonworts and marginally suitable moist and wet forest habitat would be moderate (individuals and/or habitat may be affected, with no loss of population or species viability or trend to federal listing expected) (TES Plants Report, p. 7).

Noxious Weeds

Spotted knapweed and goatweed are considered naturalized in northern Idaho and, at least to some extent, in the project area. Meadow and orange hawkweed, oxeye daisy, sulfur cinquefoil

and Canada thistle are currently established but are not considered naturalized in the project area. They are largely confined to Forest roads in the project area (Weeds Report, p. 2).

Direct effects relate to the amount of new disturbance from project activities and the resulting risk of weed introduction and spread expected under each alternative. Indirectly, the miles of open road, motorized trail and non-motorized trail resulting from implementation of the different alternatives would result in varying degrees in the risk of weed spread and the cost efficiency of future weed treatment activities (Weeds Report, p. 3).

Direct and Indirect Effects

Effects Common to All Alternatives

With implementation of any alternative, seeds from any weeds on private and National Forest roads in the project area may still be transported within and out of the area by OHVs, passenger vehicles, people, birds, and wildlife.

Untreated weed infestations on private lands in the project area could spread to public lands. Soil and vegetation disturbance related to the flood event of November 2006 but not within areas proposed for restoration under the action alternatives would remain vulnerable to weed infestation under all alternatives (Weeds Report, p. 6).

Alternative 1

Because there would be no road reconstruction under this alternative, the risk of weed spread would not change from current levels. Indirectly, continued restricted access to much of the drainage would make further weed treatment more difficult and more expensive than under the action alternatives and thus less likely to occur. In the absence of further weed treatment, existing weed infestations would be expected to spread unchecked. The high amount of motorized trail would increase the risk of weed spread by OHVs more than either Alternative 3 or 4. However, overall recreational use of the drainage may be less with this alternative than with one of the action alternatives (Weeds Report, p. 6).

Effects Common to Alternatives 3 and 4

Under both action alternatives, noxious weeds monitoring and treatment would occur as needed to reduce the risk of weed spread in the project area. Weed treatment would occur under the Sandpoint Noxious Weed Control FEIS. Most restoration activities would occur in areas disturbed by the 2006 flood event, so little new disturbance would occur.

The risk of introduction and establishment of new weed invaders to the project area is expected to be low with implementation of the required design features (see Appendix B). Preventive seeding of native and desired nonnative species in areas of new disturbance would reduce the risk of weed spread. Contract requirements to clean off-road equipment prior to entry into NFS lands would further reduce the risk of introduction of weeds. Therefore, except for road decommissioning, the proposed activities would have little direct effect on the spread of weeds in the project area.

Pre-treatment of existing infestations on roads and road segments proposed for decommissioning followed by preventive seeding would reduce the risk of further spread over time to current levels. In addition, newly decommissioned roads would be monitored to detect new weed invaders and to assess the success of preventive measures. With increasing canopy coverage of desired species, risk of weed spread on the decommissioned roads would decline to below the level for open or gated roads (Weeds Report, p. 6).

Alternative 3

Approximately 50 miles of road would be decommissioned under this alternative. While road decommissioning could initially increase the risk of weed spread due to ground disturbance, successful implementation of design features described in Appendix B would reduce the risk over time. Restoring access to much of the drainage as proposed would increase use by vehicles and may also increase the risk of weed introduction and spread. However, weed treatment and monitoring would be less difficult and less expensive than under Alternative 1 (Weeds Report, p. 7).

Effects of Alternative 4

Under this alternative, Forest road 642 would be converted from open road to OHV trail; as a result, follow-up weed treatments on this road would be more labor-intensive and, therefore, more expensive. There would also be a risk of weed introduction and spread from OHV traffic on this road. Construction of a new OHV trail to allow administrative access the Bear Mountain SNOTEL site would create disturbance conducive to weed spread. Implementation of design features described in Appendix B would reduce but would not eliminate the risk of weed spread on this new trail.

Approximately 53 miles (Option A) or 57 miles (Option B) of road would be decommissioned under this alternative. While road decommissioning could initially increase the risk of weed spread due to ground disturbance, with successful implementation of design features described in Appendix B the risk would decrease over time.

Restoring access to the drainage as proposed would increase use by vehicles and may also increase the risk of weed introduction and spread. However, weed treatment and monitoring would be less difficult and less expensive than under Alternative 1 (Weeds Report, p. 7).

Cumulative Effects

Cumulative effects with regard to noxious weeds from proposed activities are generally described as very low, low, moderate or high, with the following definitions (Weeds Report, p. 3):

- *very low* = no measurable effect on existing weed infestations or susceptible habitat
- *low* = existing weed infestations and/or susceptible habitat not likely affected
- *moderate* = existing weed infestations or susceptible habitat affected, with the potential for expansion into uninfested areas and/or establishment of new invaders
- *high* = weed infestations and/or susceptible habitat affected, with a high likelihood of expansion into uninfested areas and/or establishment of new invaders.

Effects Common to All Alternatives

Past disturbances, both human caused and natural, have provided soil and vegetation disturbance conducive to invasion of noxious weeds. Past timber harvest, road construction and development on private lands often employed inadequate weed prevention measures. As a result, the project area currently supports infestations of spotted knapweed, goatweed, oxeye daisy, hawkweeds and common tansy.

Current, ongoing and reasonably foreseeable actions on NFS lands that include soil or vegetation disturbance require implementation of weed prevention practices such as those described in

Appendix B; therefore, the risk of spread of existing infestations from the above-listed actions is considered to be low.

Under all alternatives, weed infestations may expand to inaccessible areas that were affected by the 2006 flood event; these would provide a long-term seed source for expansion elsewhere in the project area. The risk of expansion of these infestations would be low to high, depending on the location and extent of future disturbances and their proximity to existing untreated infestations (Weeds Report, p. 7).

Alternative 1

Because future access to the Lightning Creek drainage would be limited under this alternative (see Direct and Indirect Effects of Alternative 1 above), further weed treatment in the project area would be less likely to occur than under the action alternatives. Untreated existing weed infestations would be expected to expand unchecked to many areas disturbed by the 2006 flood event. With restricted access to the drainage, detection and eradication of any new invaders would also be more difficult and more expensive. The risk of new invaders becoming established would therefore be higher than with either action alternative. The **risk of spread of existing infestations would be moderate to high** (Weeds Report, p. 8).

Effects Common to Alternatives 3 and 4

While soil and vegetation disturbance related to the flood event of November 2006 but not within areas proposed for restoration under the action alternatives would be vulnerable to weed infestation (see Cumulative Effects Common to All Alternatives above), implementation of either action alternative would improve the ability to treat and monitor existing infestations, thus reducing the risk of their expansion. Improved vehicle access would allow for more cost effective weed treatment and monitoring than under the no action alternative. Given the above analysis and the design features described in Appendix B, **the risk of new invaders becoming established would be low** under either action alternative (Weeds Report, p. 8).

Alternative 3

Because this alternative would restore the highest amount of road to passenger vehicle traffic, the risk of weed spread from vehicles would be higher than under Alternative 4. Because of the increased access, the cost of monitoring and treating weeds in the project area would be expected to be lower than under Alternative 4. However, the higher risk of weed spread predicted under this alternative may negate the benefits of lower treatment costs. Given the above analysis and the design features described in Appendix B, **the long-term risk of spread of existing infestations would be low to moderate** under this alternative (Weeds Report, p. 8).

Alternative 4

Restoration of access to Porcupine Lake road (Forest road 642) that is restricted to motorized vehicles 50 inches wide or less would increase the cost of monitoring and treating weeds along that road and increase the risk of weed introduction and spread by OHVs. Following completion of restoration activities, any herbicide weed treatment along road 642 would be by ATV and/or backpack sprayer. However, under this alternative, Lake Darling trail would be closed to all motorized vehicles, thus reducing the risk of weed introduction and spread along that trail. Given the above analysis and the design features described in Appendix B, the l**ong-term risk of spread of existing infestations would be low to moderate** under this alternative (Weeds Report, p. 8).

Consultation and Coordination

The Forest Service consulted the following individuals, tribes, and Federal, State, and local agencies during the development of this environmental assessment:

Interdisciplinary Team Members

The following individuals were responsible for the planning, analysis and preparation of this document.

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Federal, State, and Local Agencies:

- Bonner County Commissioners
- Idaho Department of Environmental Quality
- Idaho Fish and Game Department
- U.S. Fish and Wildlife Service
- U.S. Army Corps of Engineers
- U.S. Department of Transportation, Federal Highway Administration

Tribes:

- Coeur d'Alene Tribe
- Kalispel Tribe of Indians
- Confederated Salish and Kootenai Tribes
- Kootenai Tribe of Idaho

Others:

- Avista Utilities, Environmental Affairs Division

Appendices

Appendix A - Summary of Recommendations from the Roads Analysis Process

The following table is a summary of information from spreadsheets for the Lightning Creek watershed roads analysis process. A roads analysis was completed in 2005, and then was revised following the 2006 flood. To arrive at recommendations for each road, a ranking system was used to rank low, moderate, and high needs or concerns for each road according to resource issues and level of use. This table shows rankings for recreation use, wildlife security, aquatic concerns, and engineering concerns. Other, lower priority factors that were used in the ranking system in the spreadsheets are not included here due to limited space. Those factors included access needs for lands and special uses, vegetation treatment, and fire suppression. Because public input has expressed a desire to restore as much of the previous road access as possible, the recreation use level ranking was done in consideration of use before the flood. The column titled "Need for Removing Road from System" corresponds to the overall numerical ranking used in the spreadsheets. The detailed spreadsheets are located in the project file.

Table 16. Summary table of recommendations from the roads analysis process

Road	Objective Maintenance Level (before flood)	Management/ road status before flood	Management / road status since flood	Engineer-ing Concerns	Recreation Use Level (before flood)	Current Grizzly Bear and Other Wildlife Security Needs	Current Aquatic Concerns		Need for Removing Road from System	Recommended Management
							Hydro	Fish		
East Fork 1184	ML-2 High Clearance	Open, classified road	Restricted to vehicles < 50 in. due to flood damage	High	Moderate	High	High	High	High	**Convert 1.3 Miles to Nonmotorized Trail** – Maintain 0.6 mile from junction with 419 as open road. Create trailhead and convert remainder of road to a nonmotorized trail. Fully or partially recontour unstable portions of road prism. Remove bridge at Char Creek.
Char 1030	ML-2 High Clearance	Classified, restricted with gate in Sec 28.	6 miles restricted to vehicles < 50 in. due to flood damage	High	Moderate	High	Mod	Mod	High	**Convert to Nonmotorized Trail** – Convert to nonmotorized trail. Obstruct road entrance to prohibit motorized use. Fully or partially recontour unstable portions of road prism.
Char 1030UA	NA	Unclassified road not maintained	No change	High	Low	High	Low	Low	Moderate	**Decommission** - Fully or partially recontour unstable portions of road prism. Obstruct road entrance to prohibit motorized use. Remove from transportation system.

Road	Objective Maintenance Level (before flood)	Management/ road status before flood	Management / road status since flood	Engineer-ing Concerns	Recreation Use Level (before flood)	Current Grizzly Bear and Other Wildlife Security Needs	Current Aquatic Concerns		Need for Removing Road from System	Recommended Management
							Hydro	Fish		
Char 1030UB	NA	Unclassified road not maintained	No change	High	Low	High	Low	Low	Moderate	**Decommission** - Fully or partially recontour unstable portions of road prism. Obstruct road entrance to prohibit motorized use. Remove from transportation system.
Char 1030UC	NA	Unclassified road not maintained	No change	High	Low	High	Low	Low	Moderate	**Decommission** - Fully or partially recontour unstable portions of road prism. Obstruct road entrance to prohibit motorized use. Remove from transportation system.
Char 1030UD	NA	Unclassified road not maintained	No change	High	Low	High	Low	Low	Moderate	**Decommission** - Fully or partially recontour unstable portions of road prism. Obstruct road entrance to prohibit motorized use. Remove from transportation system.
Porcupine (Still Lake) 399	ML-2 High Clearance	Closed by brush, classified road, not maintained or drivable	No change	High	Low	High	High	High	High	**Decommission** - Full and partial recontouring back to junction with 642. Remove from transportation system.
Porcupine (main) 642	ML-2 High Clearance	Open, classified road	Restricted to vehicles < 50 in. due to flood damage	High	High	Moderate	High	Mod	Moderate	**Convert to OHV Trail** - Maintain low water ford for crossing at Lightning Creek. Remove bridge span. Convert road to OHV trail.
Porcupine Section 26 roads	ML-1 Closed	Closed by brush, classified road, not maintained or drivable	No change	High	Low	High	High	High	High	**Decommission** - Fully or partially recontour unstable portions of road prism. Obstruct road entrance to prohibit motorized use. Remove from transportation system.

Road	Objective Maintenance Level (before flood)	Management/ road status before flood	Management / road status since flood	Engineer-ing Concerns	Recreation Use Level (before flood)	Current Grizzly Bear and Other Wildlife Security Needs	Current Aquatic Concerns		Need for Removing Road from System	Recommended Management
							Hydro	Fish		
Rattle (main) 473	ML-3 Passenger Cars	Open, classified road	Closed to all motorized vehicles due to flood damage	High	High	High	High	High	High	**Decommission, Convert to Nonmotorized Trail, and Maintain Upper Segment** - Full obliteration on hydrologically unstable portions from junction with 419 to below bridge in section 5. Remove from transportation system. From there to Clatter Creek, convert 3.8 miles to nonmotorized trail. Maintain as open to motorized from Clatter Creek crossing to boundary with Kootenai NF.
Rattle Section 36 roads	ML-1 Closed	Closed by brush, classified road, not maintained or drivable	No change	High	Low	High	High	High	High	**Decommission** - Fully or partially recontour unstable portions of road prism. Obstruct road entrance to prohibit motorized use. Remove from transportation system.
Rattle 473A	ML-1 Closed	Closed by brush, classified road, not maintained or drivable	No change	High	Low	High	High	High	High	**Decommission** - Fully or partially recontour unstable portions of road prism. Obstruct road entrance to prohibit motorized use. Remove from transportation system.
Steep 1016	ML-1 Closed	Closed by brush, classified road, not maintained or drivable	No change	High	Low	High	High	Mod	High	**Decommission** - Full obliteration on unstable portions. Leave bridge abutments to restrict motorized access. Remove from transportation system from Wellington Creek to the end.
Steep 1016UA	NA	Unclassified road not maintained	No change	High	Low	High	High	Mod	High	**Decommission** - Fully or partially recontour unstable portions of road prism. Obstruct road entrance to prohibit motorized use. Remove from transportation system.

Road	Objective Maintenance Level (before flood)	Management/ road status before flood	Management / road status since flood	Engineer-ing Concerns	Recreation Use Level (before flood)	Current Grizzly Bear and Other Wildlife Security Needs	Current Aquatic Concerns		Need for Removing Road from System	Recommended Management
							Hydro	Fish		
Steep 1016UB	NA	Unclassified road not maintained	No change	High	Low	High	Mod	Mod	High	**Decommission** - Fully or partially recontour unstable portions of road prism. Obstruct road entrance to prohibit motorized use. Remove from transportation system.
Steep 1016UC	NA	Unclassified road not maintained	No change	High	Low	High	Mod	Mod	High	**Decommission** - Fully or partially recontour unstable portions of road prism. Obstruct road entrance to prohibit motorized use. Remove from transportation system.
Steep 1016UD	NA	Unclassified road not maintained	No change	High	Low	High	Mod	Mod	High	**Decommission** - Fully or partially recontour unstable portions of road prism. Obstruct road entrance to prohibit motorized use. Remove from transportation system.
Steep 1016UE	NA	Closed classified road, not maintained	No change	High	Low	High	Mod	Mod	High	**Decommission** - Fully or partially recontour unstable portions of road prism. Obstruct road entrance to prohibit motorized use. Remove from transportation system.
Auxor (main) 489	ML-3 Passenger Cars	Open, classified road	Restricted to vehicles < 50 in. due to flood damage	Mod	High	Moderate	Mod	Mod	Moderate	**Maintain as a system road**, and convert use to maintenance level 2. Improve drainage control on entire road and mitigate risk of severe erosion and sediment delivery to streams at identified problem sites.
Wellington 1006	ML-1 Closed	Closed classified road in Sec 16. Not maintained.	No change	High	Moderate	High	Mod	High	High	**Decommission** - Fully or partially recontour unstable portions of road prism. Obstruct road entrance to prohibit motorized use. Remove from transportation system.

Road	Objective Maintenance Level (before flood)	Management/ road status before flood	Management / road status since flood	Engineer-ing Concerns	Recreation Use Level (before flood)	Current Grizzly Bear and Other Wildlife Security Needs	Current Aquatic Concerns		Need for Removing Road from System	Recommended Management
							Hydro	Fish		
Wellington 1006A	ML-1 Closed	Closed classified road in Sec 16. Not maintained	No change	High	Low	High	Mod	High	High	**Decommission** - Fully or partially recontour unstable portions of road prism. Obstruct road entrance to prohibit motorized use. Remove from transportation system.
Wellington 1053	ML-1 Closed	Closed classified road in Sec 15. Not maintained.	No change	High	Low	High	Mod	Low	High	**Decommission** - Fully or partially recontour unstable portions of road prism. Obstruct road entrance to prohibit motorized use. Remove from transportation system.
Wellington Falls 631	ML-1 Closed	Open classified road	No change	Mod	Moderate	High	Mod	Mod	Moderate	**Maintain Campsite Access** - Full obliteration on unstable portions of road beyond dispersed camp and maintain access to dispersed campsite.
Auxor Basin 2240	ML-2 High Clearance	Open classified road	Restricted to vehicles < 50 in. due to flood damage	Low	Moderate	High	Low	Low	Low	**Convert to OHV trail or decommission.** Improve drainage.
Lightning (main) 419	ML 3 Passenger cars (with some ML 2 segments)	Open classified road	Restricted to vehicles < 50 in. Access from Trestle Creek Rd only	High	High	Low	High	High	Moderate	**Maintain as a system road**, maintenance level 2 and 3. Reconstruct/reroute flood damaged sections. Improve drainage control on entire road and mitigate risk of severe erosion and sediment delivery to streams at identified problem sites. Construct bridge at East Fork crossing to withstand movement of bedload and large woody debris from extreme hydrologic events.

Road	Objective Maintenance Level (before flood)	Management/ road status before flood	Management / road status since flood	Engineer-ing Concerns	Recreation Use Level (before flood)	Current Grizzly Bear and Other Wildlife Security Needs	Current Aquatic Concerns		Need for Removing Road from System	Recommended Management
							Hydro	Fish		
Lightning 419A	ML-1 Closed	Closed classified road not maintained	No change	High	Moderate	High	Mod	Mod	High	**Maintain 0.4 mile, decommission remainder** – Maintain first portion of open road to retain dispersed campsite. On remainder, fully or partially recontour unstable portions of road prism. Obstruct road entrance to prohibit motorized use. Remove from transportation system.
Lightning 419D	ML-1 Closed	Classified road, not maintained, not drivable	No change	High	Low	High	Mod	Mod	High	**Decommission** – Fully or partially recontour unstable portions of road prism. Obstruct road entrance to prohibit motorized use. Remove from transportation system.
Char Falls 2758	ML-2 High Clearance	Classified road	No change	Mod	Mod	High	Low	Low	Moderate	**Maintain as a system road,** maintenance level 2.
Bear 1054	ML-1 Closed	Classified road, not drivable, closed with gate in Sec 11	No change	High	Low	High	Mod	Mod	Moderate	**Decommission** - Fully or partially recontour unstable portions of road prism. Obstruct road entrance to prohibit motorized use. Remove from transportation system.
Bear 1054A	ML-1 Closed	Classified road, not drivable, closed with gate in Sec 11	No change	High	Low	High	High	High	High	**Decommission** - Fully or partially recontour unstable portions of road prism. Obstruct road entrance to prohibit motorized use. Remove from transportation system.
Bear 1054B	ML-1 Closed	Classified road, not drivable, closed with gate in Sec 11	No change	High	Low	High	High	High	High	**Decommission** - Fully or partially recontour unstable portions of road prism. Obstruct road entrance to prohibit motorized use. Remove from transportation system.

Road	Objective Maintenance Level (before flood)	Management/ road status before flood	Management / road status since flood	Engineer-ing Concerns	Recreation Use Level (before flood)	Current Grizzly Bear and Other Wildlife Security Needs	Current Aquatic Concerns		Need for Removing Road from System	Recommended Management
							Hydro	Fish		
Mud 340	ML-2 High Clearance	Classified road, not drivable closed by berm in Sec 2, not maintained	No change	High	Moderate	High	High	High	Moderate	**Convert to Nonmotorized Trail** - Full obliteration on unstable portions. Convert road to nonmotorized trail.
Trestle (main) 275	ML-3 Passenger cars	Classified open road	No change	Low	High	Low	Mod	Mod	Moderate	**Maintain as a system road,** maintenance level 2. Improve drainage control on entire road and mitigate risk of severe erosion and sediment delivery to streams at identified problem sites.
Quartz 419H	ML-2 High Clearance	Open, classified road, unmaintained but drivable	No change	Low	Low	High	Low	Low	Moderate	**Maintain as a system road,** maintenance level 2. Improve drainage control on entire road and mitigate risk of severe erosion and sediment delivery to streams at identified problem sites.
Gordon 1025	ML-1 Closed	Not drivable. Decomm. in 2000	No change	Low	Low	High	Low	Low	Moderate	**Decommission** - Remove from transportation system.
Gordon 1025A	ML-1 Closed	Not drivable. Decomm. in 2000	No change	Low	Low	High	Low	Low	Moderate	**Decommission** - Remove from transportation system.
Gordon 1025B	ML-1 Closed	Not drivable. Decomm. in 2000	No change	Low	Low	High	Low	Low	Moderate	**Decommission** - Remove from transportation system.
Gordon 1025C	ML-1 Closed	Not drivable. Decomm. in 2000	No change	Low	Low	High	Low	Low	Moderate	**Decommission** - Remove from transportation system.
Moose (main) 1022	ML-2 High Clearance	Open classified road	No change	Low	High	Moderate	Low	Low	Low	**Maintain as a system road,** maintenance level 2. Improve drainage control on entire road and mitigate risk of severe erosion and sediment delivery to streams at identified problem sites.

Road	Objective Maintenance Level (before flood)	Management/ road status before flood	Management / road status since flood	Engineer-ing Concerns	Recreation Use Level (before flood)	Current Grizzly Bear and Other Wildlife Security Needs	Current Aquatic Concerns		Need for Removing Road from System	Recommended Management
							Hydro	Fish		
Moose 1022A	ML-2 High Clearance	Open, classified road not maintained. Not drivable past bridge.	No change	Low	Moderate	High	Low	Low	Moderate	**Decommission from end of road in section 24 to 1022A crossing of Moose Cr. Maintain 1022A as system road,** maintenance level 2, from dispersed campsite near Moose Cr. to junction with 1022. Improve drainage control on entire road and mitigate risk of severe erosion and sediment delivery to streams at identified problem sites. Remove bridge.
Lunch 1091	ML-2 High Clearance	Open classified road	No change	Low	High	Moderate	Low	Low	Low	**Maintain as a system road**, maintenance level 2. Improve drainage control on entire road and mitigate risk of severe erosion and sediment delivery to streams at identified problem sites.
Lunch 1091A	ML-1 Closed	Classified road seasonally closed by gate in sec 20 & 29	No change	Low	Moderate	High	Mod	Mod	Moderate	**Convert beginning portions to a system trail.** Decommission beyond where road intersects trail in section 20 and 29.
Lunch 1091B	ML-1 Closed	Classified road seasonally closed by gate in sec 21	No change	Low	Low	High	Low	Low	Moderate	**Decommission** - Fully or partially recontour unstable portions of road prism. Obstruct road entrance to prohibit motorized use. Remove from transportation system.
Lunch 1091C	ML-1 Closed	Classified road seasonally closed by gate in sec 21	No change	Low	Low	High	Low	Low	Moderate	**Decommission** - Fully or partially recontour unstable portions of road prism. Obstruct road entrance to prohibit motorized use. Remove from transportation system.
Lunch 1091UB	NA	Unclassified road	No change	Low	Low	High	Low	Low	Moderate	**Decommission** – Rehabilitate road prism.

Appendix B – Design Features and Mitigation Measures

The following measures are applicable to Alternatives 3, 4A and 4B, unless otherwise specified.
Design features are measures that tend to be routine elements of project design.
Mitigation measures are prescribed to prevent or reduce adverse effects to the environment and forest visitor experiences during project implementation. See individual specialist reports for detailed rationale regarding effectiveness.

Design Features

Features Related to Threatened, Endangered, Sensitive and Rare Species Management

Wildlife Species – If any threatened, endangered, or sensitive species were located during project implementation, management activities would be altered, if necessary, so that proper protection measures could be taken. Protection of threatened, endangered, and sensitive species would be included in any contract.

Rare Plant Species

- No restoration activities would occur in or near any currently documented rare plant occurrences.
- A qualified botanist would assist with identification of the proposed NRCS administrative OHV access route (Alternative 4 only) to ensure protection of rare plant populations.
- If proposed ground-disturbance locations change during project implementation, a qualified botanist would review final activity locations as needed and work with other project specialists to reduce or eliminate risks to any newly documented rare plant occurrences or suitable rare plant habitat.
- If additional areas are proposed for new ground disturbance, rare plant surveys would be conducted, with additional mitigation measures designed as needed to reduce or eliminate risks to newly documented rare plant occurrences or suitable rare plant habitat.

Features Related to Engineering and Public Safety

Transportation and Safety on Roads –Lightning Creek road 419 would be used for hauling of rock, transportation of bridge structures, and general contractor use. During this time, the following would be used depending on the situation:

- Signs warning of heavy truck traffic would be posted at the portal and north end of Lightning Creek.
- Dust abatement would be used as needed on National Forest roads to control dust and maintain driver safety.
- Flaggers would be used when needed to direct traffic.
- Lightning Creek road 419 would be closed to public access the first construction season for public safety. A gate would be placed at mile marker 3 on Lightning Creek and one half mile above Fall Creek to prevent public access. All road reconstruction and bridge work would be completed during this time period. During road closure, signs would be posted at the entrance of both Lightning and Trestle Creek roads.
- Sections of Lightning Creek road 419 could be closed for periods of time during road decommissioning. During road closure, signs would be posted at the entrance of both Lightning and Trestle Creek roads.

- A news release would be placed in the Bonner Daily Bee indicating the dates and potential delays related to the road work on Lightning Creek.

Drainage Structures – Concrete grated open top drainage structures would be installed along Lightning Creek road 419. They would be used in areas where bedload and debris periodically are deposited from drainage ways onto the roadway.

Raising Road Grade – In areas prone to flooding on Lightning Creek road 419, the road grade would be raised. Rock, riprap and large woody debris would be used to raise the grade, providing resistance to damage from floodwaters and keeping the road surface from being washed away during flooding.

Culvert Installation and Stabilization - Oversized culverts would be installed along Lightning Creek road 419 in order to accommodate excess flows and reduce blockage of culvert by bedload or debris. See mitigation measures related to culvert installation, below.

East Fork Bridge Construction (Alternative 4 only) – Bridge design would include the follow design criteria:

- High vertical distance would be created between the bottom of the girders and the elevation of water flow under the bridge during high water events.
- A span of 100 to 150 feet would be used to allow room for the active channel to flow in an impeded manner under the bridge.
- Steel H pile construction would be driven a significant distance below the streambed to eliminate undercutting of the bridge foundation.
- Relief channels would be constructed to accommodate excess flows.
- Mafic rock riprap would be used to give the riprap a higher degree of integrity due to the increased rock weight.
- Grouted riprap would be used to reduce the chance of individual riprap fragments coming loose.
- Integrated log structures and riprap would be used to channelize flow and protect the streambank approaches to the bridge.
- Instream equipment operation would occur after July 15 during low-flow conditions to protect habitat for spawning westslope cutthroat trout
- In stream work would be halted on September 1 to protect bull trout redds.
- Riparian areas would be seeded and/or planted as needed to help restore disturbed sites.

East Fork Bridge – A temporary bridge would be placed over the East Fork crossing to facilitate road reconstruction and associated vehicles to access sites above the crossing. The temporary bridge would be removed after access for reconstruction work is no longer needed.

Porcupine Bridge Removal (Alternative 4 only) - Removal of the Porcupine Bridge would include the following:

- To minimize sediment from bridge removal activities, instream equipment operation would occur during low-flow conditions to protect bull trout and westslope cutthroat trout.
- To achieve the maximum sediment delivery reductions in the shortest timeframe, work adjacent to live stream channels would be permitted after the usual September 15 date,

subject to review by the fisheries biologist or hydrologist. Work may be halted in the event of heavy fall rains or early snow.

- Additional mitigation features, such as silt fencing may be required at those locations.
- In channel work would be halted on September 1 to protect bull trout redds.
- Sediment barriers would be installed along Lightning Creek during bridge removal operations in order to capture sediment entering Lightning Creek
- Riparian areas would be seeded and/or planted as needed to help restore disturbed sites.

Features Related to Explosives and Public Safety

All roads requiring the use of explosives are either brushed in or physically closed (gated or bermed). Blasting work would be done in accordance with Federal, State and local guidelines, as well as within the parameters of the Forest Service Health and Safety Code Handbook's *Guide for Using, Storing, and Transporting Explosives and Blasting Materials* (FSH 6700).

Mitigation Measures

Research supporting effectiveness of mitigation measures is located in the project file.

Measures Designed to Protect Water Quality and Aquatic Habitat and Species

Best Management Practices – All activities would be designed to protect water quality and fisheries habitat. Best Management Practices (BMPs) are the primary mechanism to enable the achievement of water quality standards. The Forest Service Handbook 2509.22 (Soil and Water Conservation Handbook) outlines BMPs that meet the intent of the water quality protection elements of the Idaho Forest Practices Act. Site-specific best management practices that have been designed for these alternatives and are part of the design criteria are described more fully in the Aquatics Report, Appendix A. *Estimated Effectiveness:* Moderate to high.

Road Decommissioning – All road decommissioning would be accomplished with techniques appropriate to site-specific conditions. This may include full and partial recontouring; surface ripping or subsoiling for decompaction, removing all culverts; stabilizing fill slopes and restoring stream channel crossings back to natural grade. Seeding, fertilizing, mulching and/or placement of woody debris would follow to prevent erosion, establish desired vegetation and prevent noxious weed spread. Some road segments that are stable, hydrologically inert, and well vegetated may need no treatment. Decommissioned roads would be recontoured for one sight distance from the beginning of the road and a permanent closure structure, such as large boulders, would be put in place to eliminate the unauthorized, motorized use of the road. *Estimated Effectiveness:* High.

Hydro-mulching – Various sites of soil disturbance associated with road reconstruction and/or decommissioning would require hydro-mulching within critical areas such as wet areas. Mulching would occur immediately following road reconstruction/decommissioning activities are complete. *Estimated Effectiveness:* Moderate to High.

Spot Gravelling – To help reduce sediment delivery to streams, spot gravelling with approximately 6 inches of gravel would be required on high traffic roads at stream crossings, perennial wet areas, and other sensitive areas as needed. *Estimated Effectiveness:* High.

Inland Native Fish Strategy Requirements – All activities would be designed to reduce impacts to aquatic habitats. A description of each applicable INFS standard and guideline and details regarding its estimated effectiveness can be found in the Aquatics Report Appendix B.

Road Surface and Stream Crossing Maintenance to Improve Aquatic Habitat – The main source of erosion and sediment delivery from roads is usually from the road surface. Road maintenance activities that focus on reducing sediment delivery are blading along the road prism; spot surfacing at stream crossings; installing relief culverts where ditch lengths are too long; cleaning and improving ditches; cleaning the inlet and outlets of culverts; and installing rolling dips and outlet ditches. These activities would help improve road surface drainage and decrease sediment delivery to stream channels.

Road/stream crossings that pose a hazard and risk to aquatic species and their habitat from potential culvert failure, chronic sediment delivery, or a barrier to fish passage have been evaluated throughout the project area. Recommendations for each crossing may include replacing, redesigning or upgrading crossings as needed. *Estimated Effectiveness:* High.

Sediment Reduction during Culvert Installation - Specific mitigation features to control sediment delivery during culvert installation and maintenance consist of the following:

- Standard erosion control measures such as temporarily diverting flow into a culvert, a plastic or rock-lined channel, pumping water below the site, or use of silt fences or hay bales would be used to minimize sediment transport downstream.
- Ditch relief pipes would be installed at a skew of 3% off of the road grade and have a minimum of a 5% grade. Installing relief pipes at an angle allows the pipe to be somewhat self-maintaining.
- Pipe locations would be marked with a flexible plastic marker to ease finding the pipes for future monitoring and maintenance. Clearly marking the location of the relief pipes and stream crossings would allow individuals assigned to regular maintenance to more easily locate pipes and track maintenance needs.

Estimated Effectiveness: High.

Rootwads and Large Woody Debris (LWD) to Stabilize Road Fill and Mitigate Bank Erosion – Rootwads (LWD with rootwad attached) and LWD would be utilized for toe slope protection of road fills, structures built within the floodplain, and unprotected banks adjacent to flowing water. Rootwads and LWD would be incorporated into the fill material on road reconstruction sites to serve as flow deflectors and armoring against high velocity turbulent flows where shear stress rates and erosion in the near bank region are much higher. Rootwads and LWD would also be used in the channel at specific sites to deflect high velocity erosive flow and/or serve a multiple purpose as fish habitat creators. One particular site where this would be utilized is at the toe of the large mass failure above the bridge construction site at the East Fork of Lightning Creek. *Estimated Effectiveness:* High.

Measures Designed to Protect Wildlife and Habitat

Preventing Public Use of Closed Roads During the Project – To prevent establishment of motorized public use patterns on currently undrivable roads that are opened for project activities, the roads would be managed as follows:

- If roads are reopened prior to use for the project, they would be closed to public motorized use with a gate or other effective closure device.
- Once project activities start, the roads would remain closed to public use with a gate. Gates would be closed behind project vehicles and would remain closed during periods of inactivity.

- After completion of project activities, the roads would remain closed to public motorized use with a gate or other effective closure device until the road is decommissioned or put into storage.
- Decommissioning or storage activities would occur as soon as possible after completion of project activities.

Estimated Effectiveness: High.

Preventing Public Use of Restricted Roads During the Project – To prevent the unauthorized motorized use of roads that are currently managed as restricted, gates would be closed behind project vehicles and would remain closed during periods of inactivity. *Estimated Effectiveness*: High.

Reducing Disturbance from Explosives – Explosives would be used wherever feasible, particularly on currently impassible roads, to reduce or eliminate the need for opening up these roads to motorized vehicles and potential unauthorized motorized use. The number of explosions per site would be kept to the minimal amount necessary and methods of reducing the noise level during explosions would be incorporated on a site-by-site basis to achieve the lowest level of noise possible while accomplishing the objective. Specific measures include:

- Explosives would not be used between two hours before sunset and two hours after sunrise.
- Limit the use of surface shots. Confine shots to augered holes, where feasible.
- Use the nonel system whenever possible. The nonel system is a non-electronic system, which is the most versatile and safest way to detonate explosives. The advantage from a noise perspective is that it allows for millisecond delays between multiple shots, thereby reducing the peak noise level and debris thrown by the explosion.
- All holes would be individually primed with a nonel cap.
- Ensure the proper loading and stemming of augered holes. Proper loading means that the correct type of explosives for the site characteristics (e.g. type of rock, depth of culvert) would be used without overloading with too much explosives and creating more noise. Stemming of the hole refers to placing the explosives in a hole or culvert and then filling in the hole or culvert with dirt or sandbags. It allows for more effective denotations with less explosives and less noise because the energy of the shot is absorbed by the dirt or sandbags and not transferred directly to the air.
- For sites requiring multiple shots, utilize the nonel system to detonate the shots with millisecond delays.

Explosives Terms and Definitions

The **nonel system** is a non-electronic system, which is the most versatile and safest way to detonate explosives. It allows for millisecond delays between multiple shots, thereby reducing the peak noise level and debris thrown by the explosion.

Proper loading is using the correct type of explosives for the site characteristics (e.g. type of rock, depth of culvert) without overloading with too much explosives - creating more noise.

Stemming of the holes refers to placing the explosives in a hole or culvert and then filling the hole or culvert with dirt or sandbags. This allows for a more effective denotation with less explosives and less noise because the energy of the shot is absorbed by the dirt or sandbags and not transferred directly to the air.

Estimated Effectiveness: High.

Wildlife Habitat Security Measures – Equipment, including explosives, needed for project activities on currently impassible roads would be packed in by project personnel or pack animals, wherever feasible, to reduce or eliminate the need for helicopter flights or motorized vehicle transportation of equipment. *Estimated Effectiveness*: Moderate to High.

Helicopter Use – The use of helicopters would be kept to a minimum and would only be used for tasks requiring their use or when their use poses a lower level of disturbance to wildlife than alternative methods of accomplishing the same task, such as opening up a currently undrivable road to motorized use. For example, whenever possible, multiple culverts would be flown out simultaneously to reduce the number of trips and all helicopter flights within each subdrainage would be conducted over as short a time period as possible. Whenever possible, helicopters would remain a minimum of 500 meters above ground level and follow a flight path that stays directly above open or restricted roads, in that order. All helicopter landings should be placed along open roads. Bears observed from helicopters would not be approached and the flight path would be altered to either gain an altitude of at least 500 meters above ground level or go around the bear by at least a half a mile. In order to reduce or eliminate disturbance to grizzly bears during the den emergence period, there would be no helicopter flights for project purposes from April 1 to May 15. *Estimated Effectiveness*: Moderate.

Grizzly Bear Protection – Project activities within the Scotchman BMU (Bear Management Unit) and North Lightning BMU would be designed to reduce or eliminate the impact of activities on grizzly bears. *Estimated Effectiveness*: High.

- No project activities would occur in core habitat within spring habitat in the Scotchman or North Lightning BMUs during the spring bear season, April 1 to June 15.
- Project activities requiring the use of motorized equipment (e.g., excavators, chainsaws, helicopters) or explosives within core habitat would only take place in one subwatershed per year and would move systematically throughout the Lightning Creek watershed.
- The following chart represents a likely scenario on the timing of how project activities would be implemented:

Year of Project	Subdrainage (6th code HUC)	Activities within Core Habitat?	Roads/Trails with Ground Disturbance Activities
1	- Lightning Creek below East Fork Creek - Middle Lightning Creek - Lightning Creek above Rattle Creek	No	419, 419B, 642
1	- Middle Lightning Creek (Porcupine Creek)	Partially	642, 2759, 399, Section 26 Roads
2	- Middle Lightning Creek (Rattle Creek)	Partially	473, 473A, 473UA, 473UB, Section 36 Roads
3	- East Fork Creek	Partially	1030, 1184, Trail 61, Trail 212
4	- Middle Lightning Creek (Wellington Creek)	Partially	1006, 1016, 1053
5	- Middle Lightning Creek (Mud Creek)	Partially	340
5	- Middle Lightning Creek	No	1054A, 1054B
6	- Lightning Creek above Rattle Creek	Partially	1022A, 1091A, 1091UB, 419A, 419H

Food and Garbage Storage - The Grizzly Bear Management Protection Plan (see Wildlife Specialist Report, Attachment A) would be included in all contracts and would be adhered to by all Forest Service employees, contractors, and subcontractors. *Estimated Effectiveness*: High.

Gray Wolf Protection – To limit disturbance to wolves during denning, there would be no project activities within one mile of an active den site or rendezvous site between April 15 and June 30. *Estimated Effectiveness*: High.

Measures Designed to Reduce the Spread of Noxious Weeds

- Noxious weed treatment would be conducted according to guidelines and priorities established in the Sandpoint Noxious Weed Control Project FEIS. Methods of control may include biological, chemical, mechanical and cultural. Follow-up treatments and monitoring would be conducted as needed.
- Gravel or borrow pits to be used during road construction or reconstruction would be free of new weed invader species (as defined by the IPNF Weed Specialist). A list of weed species considered potential new invaders is included in the project file.
- Any priority weed species (as defined by the IPNF Weed Specialist) identified during road maintenance would be reported to the District Weed Specialist. A list of priority weed species is included in the project file.
- Cleaning of off-road equipment would be required prior to entry onto National Forest lands. If operations occur in areas infested with new invaders (as defined by the IPNF Weed Specialist), all equipment would be cleaned prior to leaving the site.
- All new (relocated) road segments, reconstructed roads, new trailheads and new parking areas would be seeded with a weed-free native and desired non-native seed mix and fertilized as necessary.
- All straw or hay used for mulching or watershed restoration activities would be certified weed-free.
- Road segments identified for weed treatment and proposed for decommissioning would be treated prior to decommissioning.

Estimated Effectiveness: High for new weed invaders; moderate for existing infestations.

Measures Designed to Protect Heritage and Cultural Resources

No cultural resources would be affected by this project. In the event that heritage resources are encountered during road reconstruction or decommissioning activities, the Idaho Panhandle National Forests has the authority to modify or stop road work. The contractor would notify the Idaho Panhandle National Forests engineering representative regarding such discoveries. Mitigation of impacts can include but are not limited to:

- Establishing buffer zones
- Directional falling of trees removed in work zones
- Changing road locations
- Designating trails away from historic properties
- Allowing only seasonal activities
- Locating slash disposal activities away from discovered sites

Appendix C - Alternatives Considered but Eliminated From Detailed Study

Original Proposed Action (Alternative 2)

The original proposed action has evolved since we first sent our proposal out in December of 2007. After additional field reconnaissance in 2008, interdisciplinary team discussions and discoveries, public comment, and changes in funding opportunities from the Federal Highways Administration, the original proposed action changed considerably. A new alternative (Alternative 4) was developed to address these changes, and the team then decided to eliminate Alternative 2. Two of the major factors that led to the elimination of Alternative 2 consisted of changes to the proposed actions at the East Fork crossing on Lightning Creek and the Porcupine Bridge.

Porcupine Bridge Repair – After additional field reconnaissance in the summer of 2008, it was determined that an in-kind replacement of this bridge was not a viable option for the following reasons:

- The earthen approach to the bridge across Lightning Creek that leads to the Porcupine Lake Road 642, was constructed in 1980. It was built in a primary flood plain of Lightning Creek. The stream morphology at the bridge site is flashy and is not conducive to keeping the stream under the bridge, or keeping flood events away from the earthen approach.
- The need to reroute Lightning creek to get the creek flowing under the bridge would create unacceptable resource damage to fisheries. The crossing is on a meander bend and to put the channel back under the bridge would force us to straighten it, which would make it more likely to blow out again. Thousands of cubic yards of bedload would need to be excavated in order to move the creek back under the bridge.
- In order for the bridge to withstand the flashy conditions of the watershed, it would need to be replaced with a three span bridge. The Federal Highways Administration will not approve the funding needed to create a bridge of this size, due to the service level of the road it provides access to.

With the inability to repair the bridge at the Porcupine Crossing, the project team decided to propose converting the Porcupine road to an OHV trail.

East Fork Creek Crossing – Federal Highway's initial funding approval for this crossing only allowed us to repair the previous low-water ford across East Fork Creek. Through negotiations, Federal Highways has agreed to approve funding to build a new bridge over East Fork Creek with the contingency that we decommission several lower level secondary roads that pose risk of structural and resource damage associated with large runoff events in the future.

There were other changes in the proposed action, including the addition of roads proposed for conversion to non-motorized trail, that were not in the original proposed action. With all these changes, Alternative 2 was eliminated from further consideration, and Alternative 4 became the modified proposed action. A map of Alternative 2 can be found in the project file.

Restore Access in the Watershed to Pre-Flood Conditions

Alternative 3 was designed to restore as much of the pre-flood access in the watershed as is reasonable given constraints related to budgets and compliance with environmental laws and

regulations. The interdisciplinary team examined each road in the watershed in the context of its past condition and management, and its current condition. After going through this process, the team determined that there are certain roads and types of access that cannot be restored in the Lightning Creek drainage under any alternative, given funding sources, the unstable geology, and the hydrologic and climatic conditions of the area.

Reconstruction or Rerouting of Rattle Creek Road (473)

Several people commenting on the proposed action requested that the Rattle Creek road be reconstructed to its pre-flood management objective. Prior to the flood of 2006, the Sandpoint District staff was evaluating a proposal to decommission closed roads in the Lightning Creek watershed, and to reroute the lower two miles of Rattle Creek road out of the riparian areas and floodplain, where it was at high risk of failure. Three different routes were being considered, in addition to leaving the road in its current location (see project files). None of the three routes being evaluated were considered viable, as each one had at least one or more of the following problems: sections where there was potential for mass failures, difficulty engineering the route without enormous construction costs, impacts to old growth forest, and equal or greater impacts to grizzly bears. Keeping the Rattle Creek road in its current location with improved drainage structures and surfacing was beginning to look like the best option.

Prior to finalizing a proposal that included improving the Rattle Creek road, the 2006 flood occurred, wiping out much of the original road prism from its junction with the Lightning Creek road, to just below the bridge half-way up the Rattle Creek drainage. The flood damage confirmed not only that the Rattle Creek road was vulnerable to extreme failures where it was located, but also that the alternate routes being considered were unstable, because many areas in these locations were affected during the flood event as well. Due to the hydrology, geology, topography, and precipitation events typical of the Rattle Creek drainage and its inherent high risk of landslides and failures (see watershed and hydrology section), it is impractical and cost prohibitive to reconstruct or reroute the Rattle Creek Road (see project files). For these reasons, this alternative was eliminated from further consideration.

Consider Closing East Side of Watershed to Snowmobile Use

We received a comment suggesting closing the east side to “over-snow” vehicles to protect lynx, wolverine, marten, and other winter wildlife that migrate along the Idaho Cabinet Mountain Crest. However, the scope of the project is not to provide a travel management plan—it is focused on protecting the aquatic and terrestrial resources in the watershed, and providing a safe and effective transportation system that is at a reduced risk for flood damage. For these reasons, this alternative was eliminated from detailed study.

Conversion of Nonmotorized Trails to Motorized

We received comments from the public that wanted us to convert nonmotorized trails to motorized within the project area. The nonmotorized trails in the area would need to be widened in order to accommodate motorized travel. Some trails would require extensive work at water crossings and in flat areas to reduce trail rutting and resource damage. The current district trail budget cannot fund the work that would be needed to convert some or all of these trails to motorized.

The project area also lies within portions of the Scotchman and North Lightning Grizzly Bear Management Units (BMUs). Based on requirements set forth by the U.S. Fish and Wildlife Service, the Forest Service must reach certain levels of secure grizzly bear habitat by reducing the

amount and density of motorized roads and trails within BMUs that are not meeting the standards for secure habitat. Currently, neither of the two bear management units within the project area are meeting the required level of secure habitat for grizzly bears due to the number of open motorized roads and trails. According to the grizzly bear recovery plan, roads pose an imminent threat to grizzly bears and controlling motorized access in grizzly bear habitat is one of the most important tools to manage for grizzly bear recovery (USDI Fish and Wildlife Service 1993). Given the deficient status of secure grizzly bear habitat within these two BMUs, if some or all of the nonmotorized trails within the project area were to be converted to motorized trails, the ability to provide secure habitat for grizzly bears would be greatly diminished. In addition, to meet the required standards, additional roads would need to be closed to motorized access in order to balance the increase in motorized trail use. For these reasons, this alternative was eliminated from detailed study.

Four-wheel ATV Use on Motorized Trails

We received comments requesting we consider four-wheel ATV access on motorized trails. The only motorized trail within the project area is Trail 52, which is open to single-track motorized vehicles and snowmobiles. To accommodate ATV traffic, the single-track trail would need to be made wider. Trail 52 was recently reconstructed with bridges and boardwalks through wet areas. These structures cannot handle the additional weight of an ATV. Going around these structures on the fragile soils and wet areas could create rutting and resource damage if ATV travel was allowed. For these reasons, this alternative was eliminated from detailed study.

Convert Forest Road 419D to a Trail

We received a comment requesting we consider converting road 419D to a loop trail. This road is currently closed to motorized use. The assumption is that this trail system would be non-motorized. There appears to be a short loop option with this road, by tying the road into the main Lightning road 419. This short loop would not tie into any other trails.

Another option might to be to tie the road in with existing trails located to the north and east of this road. This option would require extensive trail building on highly erosive soils with multiple wet area crossings. The current district trail budget cannot fund the work and maintenance that would be needed to tie this road into the existing trails in the area. For these reasons, this alternative was eliminated from detailed study.

Non-motorized Access only in the Lightning Creek Watershed

Some members of the public requested that the entire Lightning Creek watershed be changed to nonmotorized access. Part of the purpose of the proposed project is to provide a diversity of recreational opportunities. In addition, the Forest Plan objectives for recreation are to provide a variety of recreation opportunities and settings. If only nonmotorized use is allowed within the drainage, this would not fulfill the purpose and need or Forest Plan direction. For these reasons, this alternative was eliminated from detailed study.