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Region

Caribou - Targhee  
National Forest

Soda Springs  
Ranger District

# Squaw Creek Watershed Improvement Project

## Environmental Assessment

March 2013  
Bonneville County, Idaho



*\*On the Cover- Existing ford crossing Squaw Creek within the project area, showing degraded condition and adverse impacts to the riparian area (located ~0.9 miles above the corrals,)*

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# CHAPTER 1: PURPOSE AND NEED

## INTRODUCTION

The Forest Service has prepared this Environmental Assessment in compliance with the National Environmental Policy Act (NEPA) and other relevant Federal and State laws and regulations. This Environmental Assessment (EA) discloses the direct, indirect, and cumulative environmental impacts that would result from the proposed action and alternatives. This EA is prepared according to the format established by Council on Environmental Quality (CEQ) regulations implementing NEPA (40 CFR 1500-1508). The document is organized into four parts:

- **Chapter 1 Purpose and Need:** In addition to explaining the purpose and need for the proposed action, discusses how the Squaw Creek Watershed Improvement Project relates to the Caribou Revised Forest Plan (USDA FS 2003), and identifies the issues driving the environmental analysis.
- **Chapter 2 Alternatives:** Describes and compares the project alternatives and summarizes the environmental consequences by issue.
- **Chapter 3 Affected Environment and Environmental Consequences:** Describes the natural and human environments potentially affected by the proposed action and alternatives, and discloses what potential effects are anticipated.
- **Chapter 4 Other Information:** Contains the list of preparers, list of agencies consulted, scoping information, permitting information and literature cited. This EA incorporates documented analyses by summarization and reference where appropriate.

The interdisciplinary team (IDT) used a systematic approach for analyzing the proposal and the alternatives to it, estimating the environmental effects, and preparing this EA. The planning process complies with NEPA and the CEQ regulations.

Additional documentation, including more detailed analyses of project-area resources, may be found in the project planning record located at the Caribou-Targhee National Forest, Soda Springs Ranger District, 410 E. Hooper Avenue, Soda Springs, ID 83276. These records are available for public review.

## PROJECT AREA

The project area is located in the Jackknife Creek subwatershed in Bonneville County, Idaho. Squaw Creek is a tributary to Jackknife Creek, which then flows to the east into

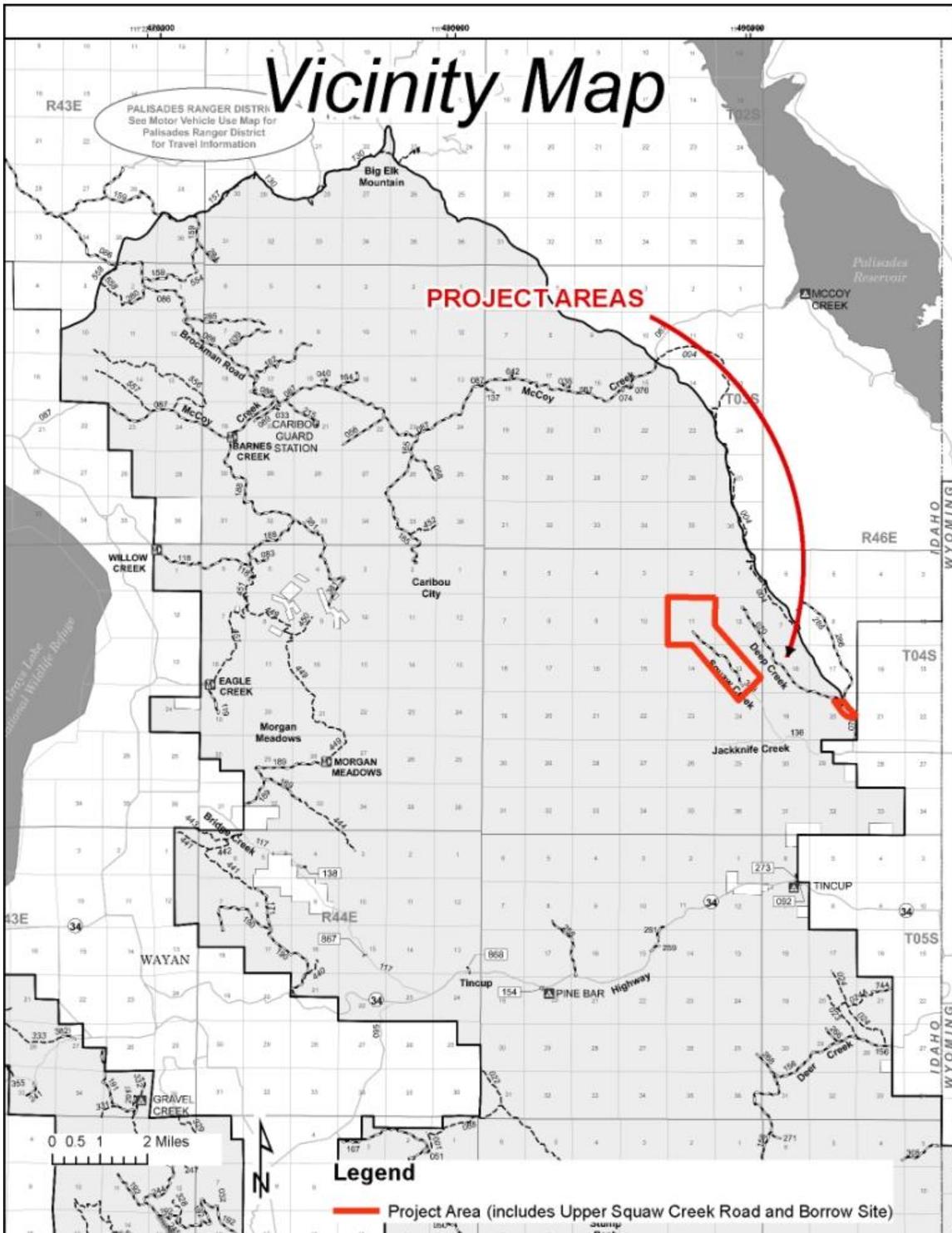
the Salt River. Potential project activities will be occurring on the Soda Springs Ranger District of the Caribou-Targhee National Forest (see Figure 1.1 *Vicinity Map*). The legal location is Township 04S Range 45E Sections 11, 13, and NE ¼ of 14; the potential borrow pit is located in T04S R46E NE ¼ of Section 20. The project area can be accessed by driving approximately nine miles south of Alpine, WY on Highway 89 towards Etna, WY. Turn right one mile before Etna on Creamery Road (County Rd 111). Continue heading west five miles as Creamery Road becomes Jackknife Road and then Forest Service Road (FSR) #136. The project area encompasses the upper 1.8 miles of FSR #389 and the initial portions of the non-motorized trails, #456 and #454. Etna, Wyoming is the closest community to the project area. The potential borrow pit is located in the Deep Creek drainage, near Deep Creek/Pat Canyon confluence. The entire project is located on public lands administered by the Forest Service.

The project is within the Caribou Range Overthrust Mountains Ecological Subsection (M331Di) as described in the Caribou Revised Forest Plan. Management emphasis (relevant to this proposed project) within this subsection includes:

- Retention of primitive and semi-primitive recreation opportunities,
- Wildlife security areas and back country hunting experiences, and
- Restoration and protection of Yellowstone cutthroat trout strongholds.

Squaw Creek is known to provide habitat for Yellowstone cutthroat, which is a Forest Service Sensitive species. As previously mentioned Squaw Creek is a tributary to Jackknife Creek, which supports a robust population of Yellowstone cutthroat trout and is an important spawning stream associated with the Salt River. Further, Jackknife Creek and its tributaries, including Squaw Creek, contain the only known reproducing population of northern leatherside chub in the Salt River drainage. Northern leathersides are also a Forest Service Sensitive Species and distribution is tied to complex slow water habitat including active beaver dam complexes, which are prevalent within the Squaw Creek drainage.

Figure 1.1: Squaw Creek Watershed Restoration Project Vicinity Map



\*Note: With regards to the Upper Squaw Creek Road (FSR #389), this road begins at the corrals and extends approximately 1.8 miles north to the Trail #456 and #454 trailheads. The Squaw Creek Road from the corrals south to the junction with the Jackknife Creek road is a county road.

## BACKGROUND

Currently access to upper Squaw Creek (north of the corrals) is restricted<sup>1</sup> due to a washed out stream crossing and plugged or otherwise improperly functioning culverts. The first 0.9 mile of the road past the corrals is built at the base of a steep, unstable mountain slope. Slumps of upslope material onto the road bed have occurred several times in the past ten years, each contributing to stream sediment delivery and resulting in costly road maintenance to maintain a safe travel way for full sized vehicles. The second 0.9 mile, which ends at the trailhead for the #456 and #454 trails, contains a washed out stream crossing and improperly functioning culvert. This, combined with the location of the road adjacent to the stream caused the stream to be routed down a portion of the road during a high flow event in 2011. Natural beaver activity has also caused water to backup and flood the roadway and trails. These road and stream interactions result in significant impacts to the riparian area and sediment delivery to the stream channel, both adversely impacting aquatic habitat within Squaw Creek. The need for road maintenance such as elevating the road bed along the lower portions of FSR #389 (south of the corrals), improvements to stream crossings (north of the corrals), and providing appropriate drainage features throughout the length of the roadway have been identified. To complete this maintenance, which will provide proper road drainage and therefore help alleviate resource impacts, borrow pits to obtain fill material are needed.



*Road # 389 within the project area, showing degraded condition and adverse impacts to the riparian area (located ~1.3 miles above the corrals, Red line is the approximate centerline of existing road #389)*

## PURPOSE AND NEED

Given the current resource concerns caused by FSR #389 within the Squaw Creek watershed and the current access restrictions due to the unsafe condition of the road, the purpose of this project is to:

- Improve hydrological function and aquatic habitat within the upper Squaw Creek watershed and,
- Determine designated uses on Road #389 north of the corrals

To accomplish the purpose and need, this project will address the current access restrictions on the upper Squaw Creek road (FSR #389) through the consideration of options to upgrade the current road, replacement of the road with a motorized (ATV) or

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<sup>1</sup> Due to safety and resource concerns with the current condition of the road, on June 19<sup>th</sup>, 2012 Special Order #04-15-127 was signed by C-TNF Forest Supervisor Brent Larson, which temporarily closed the Upper Squaw Creek road to all motorized travel.

non-motorized trail, or a combination thereof. Other project activities such as improving stream crossings and the re-routing of short trail segments are also considered to reduce impacts to aquatic habitat, which in some cases will also reduce the amount of required maintenance associated with the road or trail.

## **PROPOSED ACTION**

The Proposed action for the Squaw Creek Watershed Restoration Project is Alternative 1 (ATV trail). Reference Chapter 2: Alternatives, for a full description of Alternative 1. In short, under the proposed action, the following project activities would occur:

- Forest Road #389 would be closed to full size vehicles just north of the corrals. Road #389 would be converted to an ATV trail, generally following the existing roadbed but with re-alignments where necessary to improve the placement of stream crossings. The Caribou Travel Plan (USDA-FS 2005) would be amended to incorporate this change.
- Re-alignment of non-motorized trail #456 would occur to avoid a problematic stream crossing, but will remain non-motorized.
- ATV bridges would be installed on the crossings of Squaw Creek to resolve fisheries and hydrology issues created by the current crossings.

The proposed action is expected to improve soils, hydrological, and aquatic conditions (*see Chapter 3 Environmental Consequences*) within the watershed, while maintaining motorized access to the trailheads of trails #454 and #456. It is important to note that this is not creating a “new” ATV trail, the road is currently open to all motorized vehicles, and ATVs currently use the road. This action will convert the existing road to an ATV trail, restricting full size vehicles. Maintaining ATV’s access north of the corrals will allow hunters and other users to access the non-motorized trailheads for camping and allow hunters the ability to use the trail for big game retrieval. This will also maintain a level of motorized use for livestock permittees using the area, potentially allowing for easier resupply of sheep herders in the upper Squaw Creek drainage.

## **DECISIONS TO BE MADE**

Given the purpose and need, the Soda Springs District Ranger reviews the Environmental Analysis, the proposed action, and the other alternatives in order to make the following decisions:

- Whether or not to implement all or part of the proposed action (or any of the other alternatives) within the project area?
- Decide what recommended design features are appropriate and under what conditions?
- The decision may include minor modification (if any) or a combination of alternatives.

## **RELATIONSHIP TO CARIBOU REVISED FOREST PLAN**

National Forest planning takes place at several levels: national, regional, forest, and project levels. The Squaw Creek Watershed Improvement Project EA is a project-level analysis; its scope is confined to addressing the key issues and possible environmental consequences of the project. It does not attempt to address decisions made at higher levels. It does, however, implement direction provided at those higher levels.

The Revised Forest Plan embodies the provisions of the National Forest Management Act, its implementing regulations, and other guiding documents. The Revised Forest Plan sets forth in detail the direction for managing the land and resources of the Caribou National Forest. Where appropriate, the Squaw Creek Watershed Improvement Project EA tiers to the Forest Plan FEIS (USDA-FS 2003a), as encouraged by 40 CFR 1502.20.

The Revised Forest Plan includes both forest-wide goals and objectives, and management area specific goals, objectives, and desired future conditions. The purpose and need of the Squaw Creek Watershed Improvement Project is supported by direction in the Caribou Revised Forest Plan to restore water quality and aquatic habitat. Acting in concert with the direction to restore water quality and aquatic habitat, are the forest-wide Desired Future Conditions relating to the transportation system which directs the Caribou National Forest to work towards providing a safe, environmentally sound transportation system that is responsive to public needs and is affordable to manage and maintain.

### ***Revised Forest Plan Management Areas***

The Caribou Revised Forest Plan uses ecological subsections and management areas to guide management of the National Forest lands. Each ecological subsection and management area provides for a unique combination of activities, practices and uses.

The project area is within the Caribou Range Overthrust Mountains Subsection (M331Di) which includes direction for the retention of primitive and semi-primitive recreation opportunities, wildlife security areas and primitive backcountry hunting experiences, and restoration and protection of Yellowstone cutthroat trout strongholds.

The Squaw Creek Watershed Restoration Project occurs within 2 primary management areas; 3.3(b) Semi-Primitive Restoration and 2.8.3 Aquatic Influence Zone. The Semi-Primitive Restoration prescription emphasizes ecological restoration to improve resource conditions that are not functioning properly. Goals within this prescription include direction to; provide distribution, diversity, and complexity of watershed and landscape-scale processes to restore and maintain aquatic and riparian systems and species, populations, and communities and maintain or enhance semi-primitive motorized and dispersed recreation opportunities. Aquatic Influence Zones (AIZs) are managed to restore and maintain riparian and aquatic health. Within AIZ's, riparian-dependent resources receive primary emphasis and management activities are subject to specific standards and guidelines.

### ***Project Area Desired Future Condition***

The desired future conditions described for Forest Plan management areas provide the parameters for identifying and defining the desired future conditions within the project area. It is expected that following prescription area management direction, as summarized above, will result in progress towards the desired future conditions. The majority of proposed activities will be occurring in Aquatic Influence Zones (2.8.3), the desired future conditions for this area include:

- Riparian areas filter sediments, protect streambanks, improve water quality, reduce flooding, recharge groundwater and maintain stream flow. Riparian areas are covered by deep-rooted and other desirable, productive vegetation which provides adequate summer and winter thermal regulation. Generally riparian areas are connected with aquatic and upland components. They provide food, water, cover, nesting areas, and protected pathways for aquatic and wildlife species.
- Stream channels and floodplains are functioning properly relative to the landform (gradient, size, shape, roughness, confinement, and sinuosity) and climate.
- Riparian areas identified as being in properly functioning condition are managed to maintain at least that condition with no downward trends. Areas identified as functioning-at-risk or non-functioning show an upward trend toward proper functioning condition.
- Public waters are restored where water quality does not support beneficial uses and otherwise are maintained or improved.
- Roads in riparian areas are few and stable. Roads exist in riparian areas only where there are no practical alternatives. Some road corridors are apparent, but roads in sensitive landscapes are few and stable.
- Native aquatic and riparian-dependent species population strongholds are increasing and well distributed within historic ranges. Improved aquatic and riparian habitat conditions contribute to the recovery of federally listed aquatic and riparian-dependent species, and keep species-at-risk from becoming listed, allowing them to expand into previously occupied habitat. Fragmentation is reduced as connectivity between streams and rivers improves.

## **RELATIONSHIP TO CARIBOU TRAVEL PLAN**

The Caribou Travel Plan (USDA-FS 2005) designates the motorized road and trail system for the Caribou planning unit of the Caribou-Targhee National Forest. Alternatives 1 through 4 of this project would amend the Caribou Travel Plan. These alternatives and the proposed changes to the Caribou Travel Plan are discussed in detail in Chapter 2.

### ***Minimization Criteria and the Department of Agriculture's 2005 Travel Rule***

Effective December 9<sup>th</sup> 2005, the Department of Agriculture revised regulations regarding travel management on National Forest System lands to clarify policy related to motor vehicle use, including the use of off-highway vehicles. The final rule (USDA-FS

2005a) implementing the revised regulations required designation of roads, trails, and areas that are open to motorized vehicle use. The final rule prohibits the use of motor vehicles off the designated system. The final rule is consistent with provisions of Executive Order #11644 and Executive Order #11989 regarding off-road use of motor vehicles on Federal lands. Section 212.55 of the final rule sets general and specific criteria for the designation of roads, trails, and areas on National Forest System lands. 212.55(b) gives specific criteria the responsible official must consider when designating trails, specifically the rule states “the responsible official shall consider effects on the following, with the objective of minimizing: (1) Damage to soil, watershed, vegetation, and other forest resources; (2) Harassment of wildlife and significant disruption of wildlife habitats; (3) Conflicts between motor vehicle use and existing or proposed recreational uses of National Forest System lands or neighboring Federal lands; and (4) Conflicts among different classes of motor vehicle uses of National Forest System lands or neighboring Federal lands, and (5) Compatibility of motor vehicle use with existing conditions in populated areas, taking into account sound, emissions, and other factors.” These 5 criteria are commonly referred to as the “Minimization Criteria.” Section 212.55(c) is generally not applicable to this project, as no roads are being designated (this project deals with the future management of a currently designated road). Further, the proposed action and alternatives are meant to alleviate current impacts to soil, watershed, vegetation, and other forest resources as described in the table below. Section 212.55(d) is not applicable to this project because there are no valid existing rights or rights-of-way associated with the upper Squaw Creek road, and 212.55(e) is not applicable because the project is not within a wilderness or primitive area. The table 1.1 below further addresses each of the five minimization criteria.

**Table 1.1 Minimization Criteria**

(1) Damage to soil, watershed, vegetation, and other forest resources.	A description of existing conditions as well as the effects of the No Action Alternative and all action alternatives on forest resources is found in Chapter 3 of this EA. In general, the impetus for this project was the damage to forest resources resulting from poor condition of the existing forest road. Based on information in Chapter 3, especially with regards to soils, hydrology, and fisheries, all action alternatives would be beneficial to these resources, although to varying degrees.
(2) Harassment of wildlife and significant disruption of wildlife habitats.	Reference Chapter 3 for a discussion of effects to the wildlife resource. In general, since the project focuses on the future management of a road that is currently open, the No Action alternative would maintain the current condition with regards to harassment and disruption of wildlife. Alternatives 1, 3, and 4 (various combinations of motorized and non-

	motorized routes) would incrementally decrease displacement and harassment with Alternative 2 (non-motorized trail) having the most beneficial effect on wildlife.
(3) Conflicts between motor vehicle use and existing or proposed recreational uses of National Forest System lands or neighboring Federal lands.	The potential for conflicts between user groups is considered a key issue as described in Chapter 2. The varying potential for and the types of potential user conflicts is also described in the recreation section of Chapter 3.
(4) Conflicts among different classes of motor vehicle uses of National Forest System lands or neighboring Federal lands.	The potential for conflicts between user groups is considered a key issue as described in chapter 2. The varying potential for and the types of potential user conflicts is also described in the recreation section of Chapter 3.
(5) Compatibility of motor vehicle use with existing conditions in populated areas, taking into account sound, emissions, and other factors.	There are no “populated areas” (such as designated campgrounds, scenic areas, etc.) within the project area. Also, since the road is currently open to all motorized vehicles, the No Action alternative would maintain existing conditions. Alternatives 1 through 4 would restrict use to less than a road open to all motorized traffic (or shorten the length of the road open to all motorized traffic), therefore reducing factors such as noise within the project area.

## **PUBLIC INVOLVEMENT**

### ***Scoping***

The Council on Environmental Quality (CEQ) defines scoping as “...an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action” (40 CFR 1501.7). Among other things, the scoping process is used to invite public participation, to help identify public issues, and to obtain public comment at various stages of the EA development process.

Although scoping is to begin early, it is really an iterative process that continues until a decision is made. In addition to the following specific activities, the Squaw Creek Watershed Improvement Project has been listed on the Caribou-Targhee National Forest Schedule of Proposed Actions since April 2012. To date, the public has been invited to participate in the project through public mailings, public meetings and email. Potential project activities have been shared with the public, agencies, and organizations in several forums, including:

- March 2<sup>nd</sup>, 2012: Mailed scoping letters to individuals and organizations on the Soda Springs Ranger District NEPA scoping mailing list. 25 comments were received on the project. The comments, as well as a spreadsheet summarizing those comments, are included in the project record. Responses to comments are attached to this document as Appendix A.
- March 13<sup>th</sup>, 2012: The Caribou County Sun, published in Soda Springs, Idaho ran a front page article that included background information on the project, a summary of potential project alternatives, and solicitation of project comments.
- March 8<sup>th</sup>, 2012: The Star Valley Independent, published in Star Valley, Wyoming ran an article that included background information on the project, a summary of potential project alternatives, and solicitation of project comments.
- March 5<sup>th</sup>, 2012 Idaho Fish and Game Big Game Seasons meeting. The Squaw Creek project was presented to the public in conjunction with the IDF&G public meeting to convey proposed changes to the Big Game seasons. This meeting was held at the Senior Center in Soda Springs, Idaho
- March 6<sup>th</sup> 2012 Idaho Fish and Game Big Game Seasons meeting. The Squaw Creek project was presented to the public in conjunction with the IDF&G public meeting to convey proposed changes to the Big Game seasons. This meeting was held at the Senior Center in Montpelier, Idaho

## KEY ISSUES

Key issues for the Squaw Creek Watershed Improvement Project were identified through public and internal scoping. Similar issues were combined into one statement where appropriate. The following issues were determined to be important and within the scope of the project decision. These issues are addressed through the proposed action and alternatives, along with the relevant mitigation measures and /or BMP's.

### *Watershed Health*

This issue addresses internal and public concerns regarding:

- ***Erosion and sedimentation*** resulting from access routes near Squaw Creek on unstable landforms reducing water quality and adversely impacting habitat for aquatic sensitive species (Yellowstone cutthroat trout and northern leatherside chub).
- ***Channel stability and function*** altered by fords, roads, and other management activities that have lead to unstable conditions, impacting aquatic and riparian habitat and water quality.

### *Forest User Access*

This issue addresses internal and public concerns regarding:

- ***User Experience*** changes with the type of access (full size vehicle, non-motorized trail and motorized trail) permitted and could result in user conflicts.

### ***Range***

This issue addresses internal and public concerns regarding:

- How the selected alternative would impact permittee access to the area. Closing the road at the corrals could result in conflicts with users and limited space. The area may need to be regulated during shipping season so sheep can be moved out by semi-trucks.

### ***Noxious Weeds***

- How the selected alternative would impact the spread of noxious weeds within the area. Soil disturbances increase the potential for the spread of noxious weeds. Post-project follow up noxious weed control on impacted areas will be necessary regardless of the alternative selected.

### ***Wildlife Security Areas***

- The amount of Big Game Security area (in acres) would remain the same or increase based on the selected alternative and any corresponding changes in the Open Motorized Route Density (OMRD) (expressed in mi/mi<sup>2</sup>).

## **CHAPTER 2: ALTERNATIVES**

### **INTRODUCTION**

This chapter describes and compares the alternatives considered by the Forest Service for the Squaw Creek Watershed Improvement Project. It includes a discussion of how alternatives were developed, an overview of mitigation measures, and other features common to all alternatives. A description of each alternative considered in detail, and a comparison of these alternatives focusing on the key issues is also included. Alternative 1 is the proposed action. Chapter 2 is intended to present the alternatives in comparative form, sharply defining the issues and providing a clear basis for choice among options by the decision maker and the public (40 CFR 1502.14).

Information used to compare alternatives in Chapter 2 is summarized from Chapter 3, "Affected Environment and Environmental Consequences." Chapter 3 contains the scientific basis for establishing baselines and measuring the potential environmental consequences of each of the alternatives. For a better understanding of the effects of the alternatives, readers will need to consult Chapter 3.

### **ALTERNATIVE DEVELOPMENT**

The Interdisciplinary team (IDT) used information from public scoping, including the key issues identified for the project (see Chapter 1), in conjunction with field-related resource information, to formulate project alternatives. The four alternatives presented in this EA provide different responses to the key issues.

The No Action Alternative restores full size motorized vehicle access as identified in the Caribou Travel Plan. This would require major road reconstruction and stabilization across unstable landforms and improvements to existing stream crossings. This alternative is described in depth later in this chapter.

Alternatives 1 through 4 are designed to address the environmental impacts of the road within the Aquatic Influence Zone (AIZ) of Squaw Creek, while providing various levels of access into upper Squaw Creek. Environmental impacts would be reduced by constructing a motorized or non-motorized trail (or a combination thereof); all action alternatives generally follow the existing roadbed. These action alternatives provide contrast to the No Action alternative, focusing on opportunities to improve resource conditions while providing safer and more sustainable user access. Further, they provide a travel route that would be easier to maintain than the no action alternative would provide. Alternatives 3 and 4 were specifically developed based on internal and public comments concerning potential issues with concentrating recreation and range use at the corrals. These alternatives analyze the possibility of leaving portion of the road open and constructing a small parking area to help alleviate these concerns. A selection of alternative 1, 2, 3, or 4 would require amending the Caribou Travel Plan. Additional alternatives were initially considered with the action alternatives but were subsequently dropped from further consideration. These alternatives are briefly described below.

***Alternatives Considered but Eliminated from Detailed Study***

Additional alternatives were considered during the planning process, but have not been included in the EA for detailed study. They are described briefly below, along with the rationale for not considering them further. Maps showing the location of the alternatives described below are located in the Project Record. Generally, alternatives that involved construction of a trail in a new location (off of the existing roadbed) were dropped from further analysis based on comments received from the public.

**Table 2.1: Alternative Considered but eliminated from further analysis**

<b>Brief Alternative Description</b>	<b>Rationale for considering but eliminating from further analysis</b>
Build non-motorized trail along ridgeline to the west of Squaw Creek, reclaim (close and obliterate) FSR #389 north of corrals.	Disturbance to the west, off of existing road prism and outside the Squaw Creek drainage, actions which are not generally supported by the public.
Build motorized (ATV) trail along ridgeline to the west, reclaim FSR #389 north of corrals.	Disturbance to the west, off of existing road prism and outside the Squaw Creek drainage, actions which are not generally supported by the public.
Build non-motorized trail along old Jeep trail that starts at the corrals; reclaim FSR #389 north of corrals.	Disturbance to the west, off of existing road prism and outside the Squaw Creek drainage, actions which are not generally supported by the public.
Build motorized (ATV) trail along old Jeep trail that starts at corrals; reclaim FSR #389 north of corrals.	Although this alignment is not as steep and probably relatively stable, will result in building ~ 0.8 miles of ATV trail in

	AIZ (assuming alignment as shown on topographical map is correct). Also results in disturbance to the west, off of existing road prism and outside the Squaw Creek drainage which is not generally supported by the public.
Build non-motorized trail east of Squaw Creek. Close and reclaim FSR #389 north of the corrals.	Would have to be built on steep, unstable slopes well to east of Squaw Creek. Disturbance off existing road prism not generally supported by the public.
Build an ATV trail along the existing roadbed, eliminate the upper Squaw Creek crossing entirely, with a new portion of ATV trail constructed from west of the upper crossing, tying in with non-motorized trail #456 (the proposed ATV trail would have roughly followed the proposed non-motorized route relocation for Trail # 456, as displayed in the alternative maps below).	Based on field reviews, ATV trail construction in this area is not feasible. Also this option would leave no motorized access to the popular dispersed camping area at the current end of Road #389, and construct an ATV trail with that would end at no particular destination.

***Alternatives Considered in Detail***

There are 5 alternatives (No Action and 4 action alternatives) considered in detail:

- Re-establishment of full size vehicle access on Road #389 north of the corrals to non-motorized trails # 456 and #454 (No Action Alternative),
- A permanent closure of FSR #389 and the construction of a motorized trail from the “corrals” north to the beginning of non-motorized trails # 456 and #454 to accommodate foot, horse, bicycle, motorcycle, and ATV traffic and grazing access general following the existing FSR #389 (Alternative 1-proposed Action),
- The permanent closure of FSR #389 and the construction of a non-motorized trail from the “corrals” north to accommodate foot, horse, bicycle traffic and grazing access (Alternative 2),
- Keeping FSR #389 open to the lower crossing, constructing a small parking area, and building a motorized trail along the remainder of the road north to the beginning of non-motorized trails #456 and #454 to accommodate foot, horse, bicycle, motorcycle, and ATV traffic and grazing access (Alternative 3), and
- Keeping FSR #389 open to the lower crossing, constructing a small parking area, and building a non-motorized trail along the remainder of the road north to the beginning of non-motorized trails #456 and #454 to accommodate foot, horse, and bicycle traffic as well as grazing access (Alternative 4).

### **No Action Alternative (Re-Establish Full Size Vehicle Access)**

This alternative would re-establish the Squaw Creek Road (FSR #389) from the corrals north to the beginning of non-motorized trails #454 and #456, as currently identified in the Caribou Travel Plan. This segment of road is approximately 1.8 miles in length. Several maintenance activities would be needed to bring the road up to current standards including the installation of road drainage structures (such as ditch relief culverts), road surface reshaping (to improve drainage), damage repair and resurfacing (graveling) and improvement to stream crossing structures. The two Squaw Creek crossings would be improved to provide for aquatic organism passage, peak flows, and stream channel stability. This alternative would not involve an amendment to the Caribou Travel Plan.

The No Action Alternative would not specifically address impacts to AIZ's and aquatic habitat caused by the location of the existing road and stream crossings, although the stream crossing structures themselves would be upgraded. Maintenance of the FSR #389 travel corridor would be consistent with direction provided by the Caribou Travel Plan and the Revised Forest Plan. Road and bridge improvements at this site could be conducted without further NEPA analysis. However, the Council on Environmental Quality (CEQ) regulations (40 CFR 1502.14d) requires that a "no action" alternative be analyzed in every EA. This alternative represents the existing condition against which the other alternatives are compared.

Under this alternative, the road would be maintained at its current width (or wider since bringing the road up to standard may involve road widening in some areas) and in its current location within the AIZ. Natural beaver activity would be expected to continue flooding roads and trails. The 0.9 miles of road from the corrals to the ford would continue to require annual maintenance and ground disturbance due to unstable landforms associated with the road corridor. Borrow pits would not be developed under this alternative, and therefore fill material for road maintenance activities would remain difficult to obtain unless or until authorized in a separate decision.

It is important to note that construction activities occurring to improve the road must bring the traveled way up to current road standards and comply with Forest Plan direction. Partial fixes, or leaving a segment below standard following reconstruction and monitoring for several years, is not feasible for a variety of reasons. These include public safety concerns (road is currently closed due in part to public safety concerns), resource concerns, and given the amount of roads managed, the Forest's inability to intensively monitor short segments of road. The future management and/or repair of this segment of road needs to be decided in one NEPA process and implemented during one construction phase, both to limit resource impacts and to minimize cost.

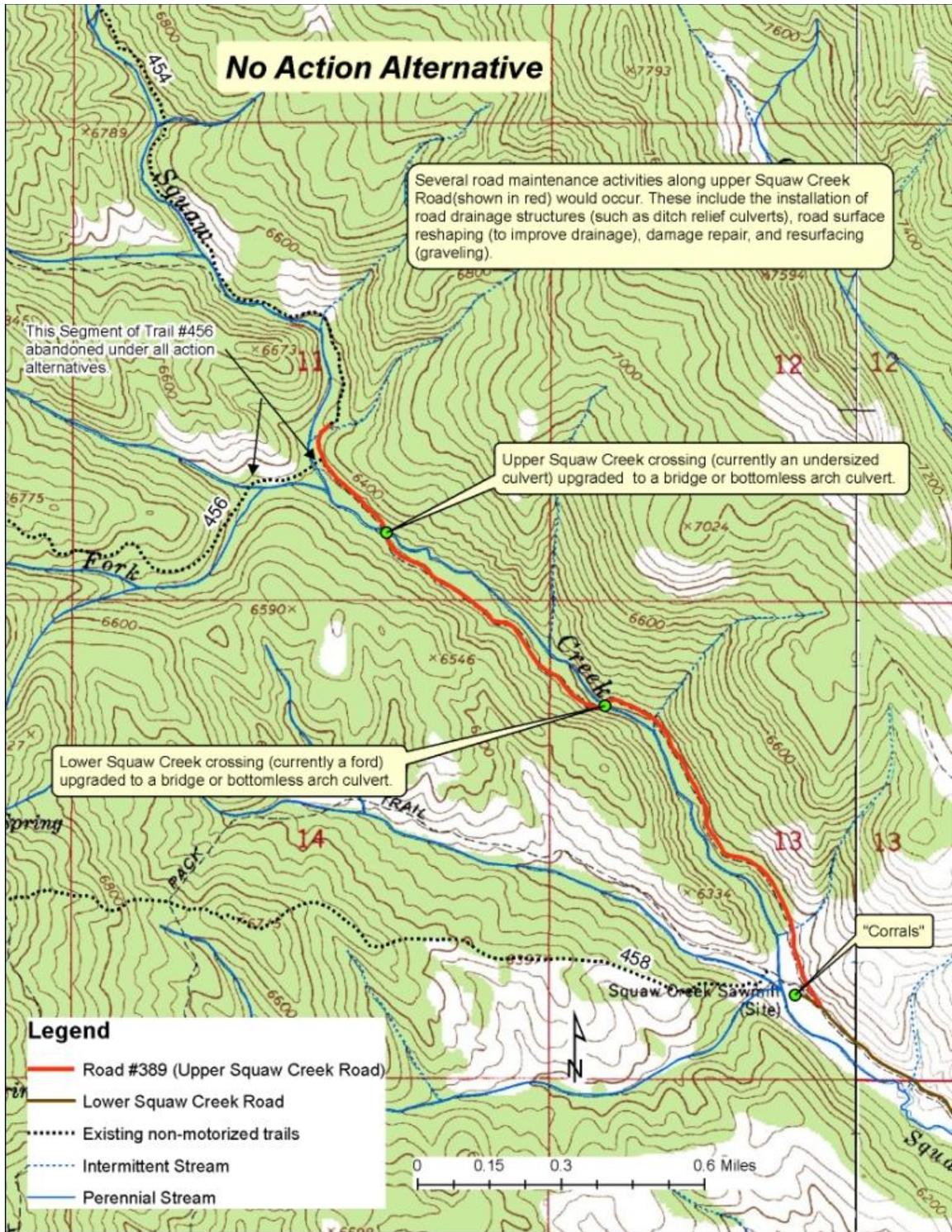


Figure 2.1: No Action Alternative

## **Proposals common to all Alternatives**

Under all action alternatives the following activities would occur:

- As shown on the map below (Figure 2.2), the trailhead for non-motorized Trail #456, would be relocated to remain on the west side of the main-stem of Squaw Creek, eliminating the existing non-motorized stream crossing (which is often inundated by water resulting from beaver dams). The change in location of this trailhead would eliminate the need to maintain the non-motorized stream crossing (which generally consists of annually removing the beaver dam). To complete the relocation of the #456 trailhead, 0.3 miles of replacement non-motorized trail would need to be constructed to tie in with the existing trail. This relocation would result in the abandonment of the existing initial 0.2 miles of Trail #456 (as shown in the No Action alternative map). The existing trail #456 crossing of the main stem of Squaw Creek would be abandoned (no longer maintained).
- To obtain fill material for road maintenance, the development of a borrow pit ( $\leq 1.0$  acre) in lower Deep Creek (along FSR #070) would occur (See Figure 2.6 for the location of the proposed borrow pit).

### **Alternative 1 - Proposed Action (ATV Trail)**

Close FSR #389 at the corrals to full size vehicles and convert the existing road to an ATV trail. The ATV trail<sup>2</sup> would generally follow the existing roadbed with two short relocations, the lower crossings would be moved slightly upstream to cross a narrower segment of the stream, and the upper crossing would be moved to a more stable location. To complete the conversion, the existing road bed would be reduced to an average tread width of 60" wide (width of an ATV trail per Forest Service trail standards). The reduction in road width would be completed through a partial obliteration of the roadbed (consisting of ripping, scarifying, seeding, etc). Select locations (less than 500' along the length of the existing road) may be left at the current width to provide passing areas for ATV users, and to reduce the potential for conflicts between motorized and non-motorized users.

Under this alternative, an ATV bridge would be installed at the lower crossing of Squaw Creek, which would be relocated approximately 50 feet upstream of the current ford to a narrower reach of Squaw Creek. The bridge would provide for aquatic organism passage, peak flows, and stream channel stability, with gradient control structures placed upstream and downstream to prevent stream cutting. The upper culvert would also be removed and replaced with an ATV bridge, this crossing would also be relocated, 50 to 100 feet upstream is expected depending on final hydrologist recommendations. The existing crossing locations would be rehabilitated to improve hydrological function with activities such as, reshaping, bank stabilization, willow planting, etc. As proposed, the ATV trail from the corrals to the beginning of Trail #454 would be approximately 1.8 miles in length.

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<sup>2</sup> The ATV trail would be open only to vehicles 50" or less in width.

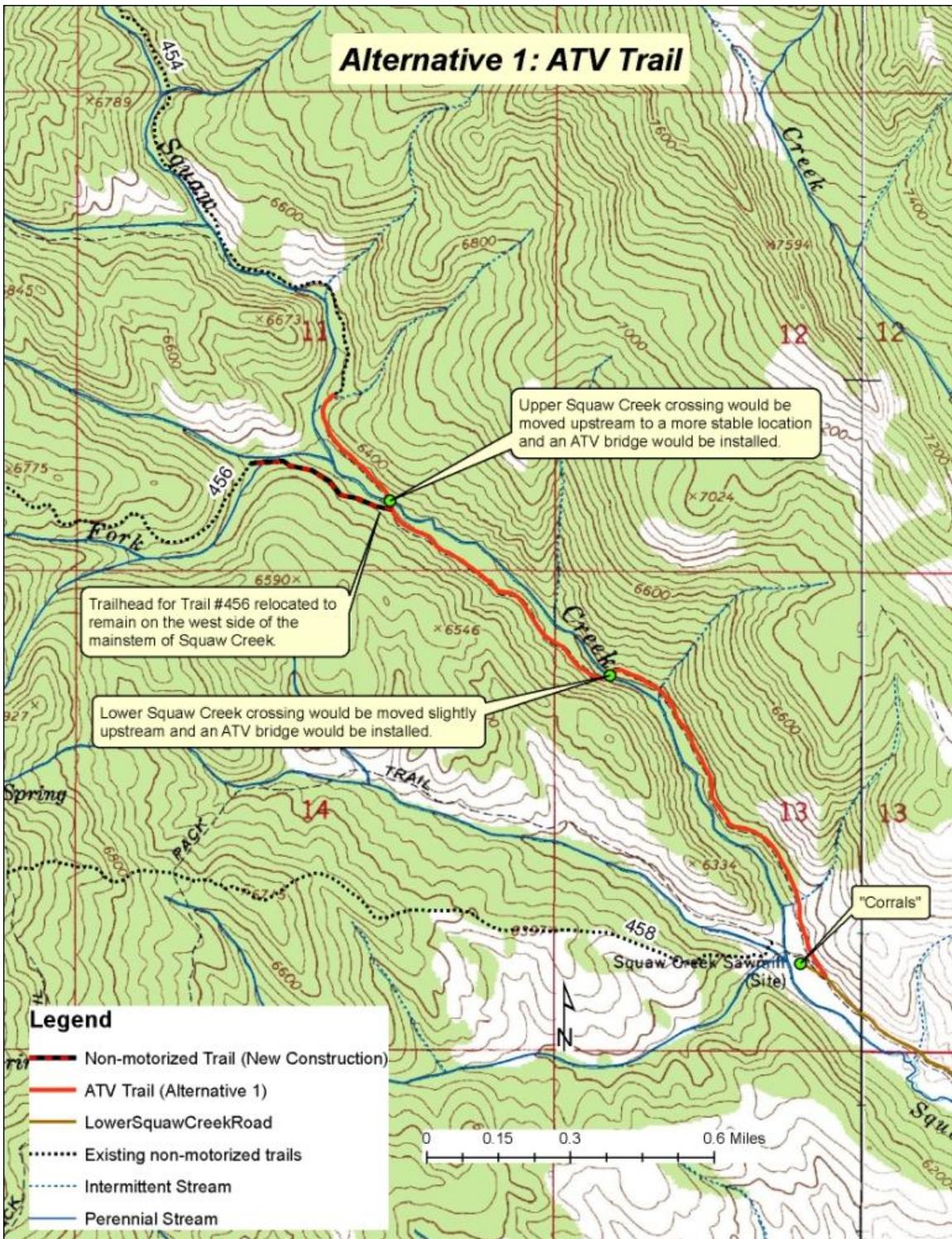


Figure 2.2: Alternative 1 Proposed Action

## **Alternative 2 (Non-motorized Trail)**

Close FSR #389 at the corrals to full size vehicles and convert the existing road to a non-motorized trail. The non-motorized trail would generally follow the existing roadbed with two short relocations, the lower crossings would be placed on a narrower segment of the stream, and the upper crossing would be moved to a more stable location. To complete the conversion, the existing road bed would be reduced to an average tread width of 18-24” (width of a non-motorized trail per Forest Service trail standards). The reduction in road width would be completed by obliterating the majority of the existing roadbed (consisting of ripping, scarifying, seeding, etc).

Under this alternative, a foot bridge would be installed at the lower crossing of Squaw Creek, which would be relocated approximately 50 feet upstream of the current ford to a narrower reach of Squaw Creek. The bridge would provide for aquatic organism passage, peak flows, and stream channel stability, with gradient control structures placed upstream and downstream to prevent stream cutting. The upper culvert would also be removed and replaced with a footbridge, this crossing would also be relocated, 50 to 100 feet upstream is expected depending on final hydrologist recommendations. The existing crossing locations would be rehabilitated to improve hydrological function with activities such as, reshaping, bank stabilization, willow planting, etc. To prohibit motorized traffic from accessing the non-motorized trail, a gate, boulders, or other obstacles will be placed at the beginning of the non-motorized trail.

As proposed, the non-motorized trail from the corrals to the beginning of Trail #454 would be approximately 1.8 miles in length.

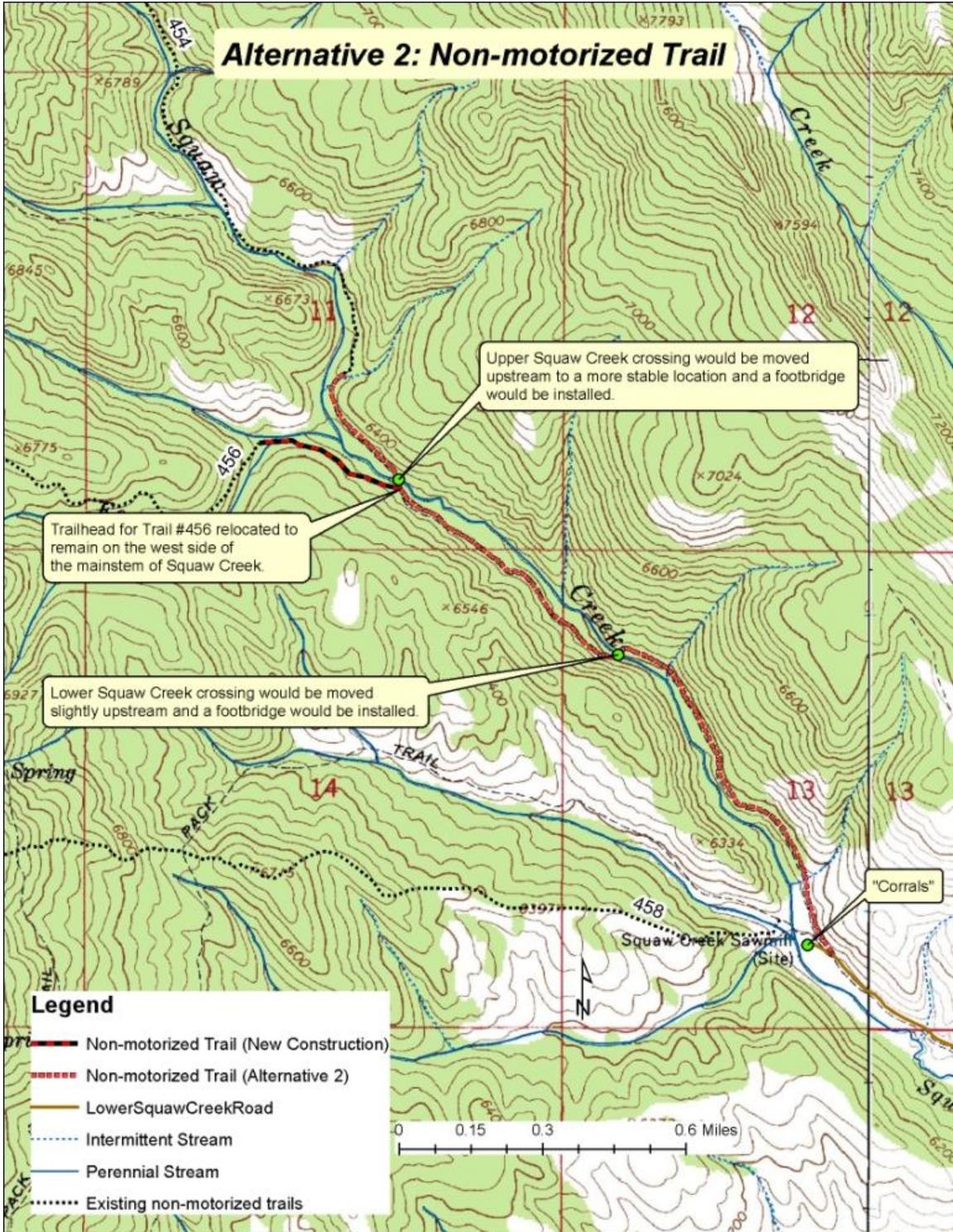


Figure 2.3: Alternative 2

### **Alternative 3 (Road/ATV Trail)**

Under Alternative 3, FSR #389 would remain open to full size vehicles to the lower Squaw Creek crossing, with a small parking area (approximately 0.1 acre) constructed at the end of the road on the east side of the main stem Squaw Creek. The parking area would be constructed by leveling the site, graveling, and delineating the designated parking area with boulders, logs, or other obstructions.

From the parking area north, the existing roadbed (0.9 mile) would be converted to an ATV trail. The ATV trail would generally follow the existing roadbed with two short relocations, the lower crossings would be placed on a narrower segment of the stream, and the upper crossing would be moved to a more stable location. To complete the conversion, the existing road bed would be reduced to an average tread width of 60" wide (width of an ATV trail per Forest Service trail standards). The reduction in road width would be completed through a partial obliteration of the roadbed (consisting of ripping, scarifying, seeding, etc). Select locations (less than 250' along the length of the existing road) may be left at the current width to provide passing areas for ATV users, and to reduce the potential for conflicts between motorized and non-motorized users.

Under this alternative, an ATV bridge would be installed at the lower crossing of Squaw Creek, which would be relocated approximately 50 feet upstream of the current ford to a narrower reach of Squaw Creek. The bridge would provide for aquatic organism passage, peak flows, and stream channel stability, with gradient control structures placed upstream and downstream to prevent stream cutting. The upper culvert would also be removed and replaced with an ATV bridge, this crossing would also be relocated, 50 to 100 feet upstream is expected depending on final hydrologist recommendations. The existing crossing locations would be rehabilitated to improve hydrological function with activities such as, reshaping, bank stabilization, willow planting, etc.

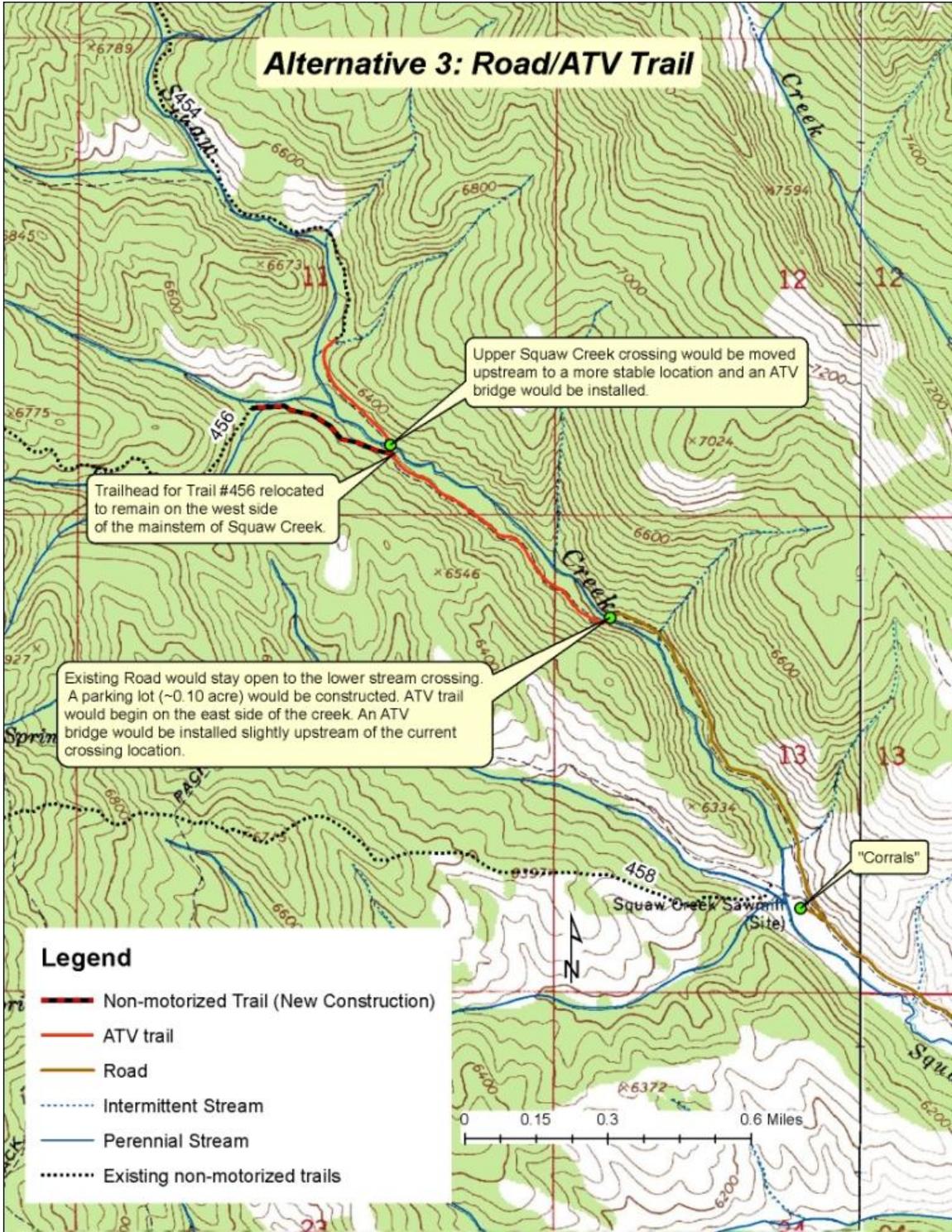


Figure 2.4: Alternative 3

#### **Alternative 4 (Road/Non-motorized Trail)**

Under Alternative 4, FSR #389 would remain open to full size vehicles to the lower Squaw Creek crossing, with a small parking area (approximately 0.1 acre) constructed at the end of the road on the east side of the main stem Squaw Creek. The parking area would be constructed by leveling the site, graveling, and delineating the designated parking area with boulders, logs, or other obstructions. From the parking area north, the existing roadbed (0.9 mile) would be converted to a non-motorized trail. The non-motorized trail would generally follow the existing roadbed with two short relocations, the lower crossings would be placed on a narrower segment of the stream, and the upper crossing would be moved to a more stable location. To complete the conversion, the existing road bed would be reduced to an average tread width of 18-24" (width of a non-motorized trail per Forest Service trail standards). The reduction in road width would be completed by obliterating the majority of the existing roadbed (consisting of ripping, scarifying, seeding, etc).

Under this alternative, a footbridge would be installed at the lower crossing of Squaw Creek, which would be relocated approximately 50 feet upstream of the current ford to a narrower reach of Squaw Creek. The bridge would provide for aquatic organism passage, peak flows, and stream channel stability, with gradient control structures placed upstream and downstream to prevent stream cutting. The upper culvert would also be removed and replaced with a footbridge, this crossing would also be relocated, 50 to 100 feet upstream is expected depending on final hydrologist recommendations. The existing crossing locations would be rehabilitated to improve hydrological function with activities such as, reshaping, bank stabilization, willow planting, etc.

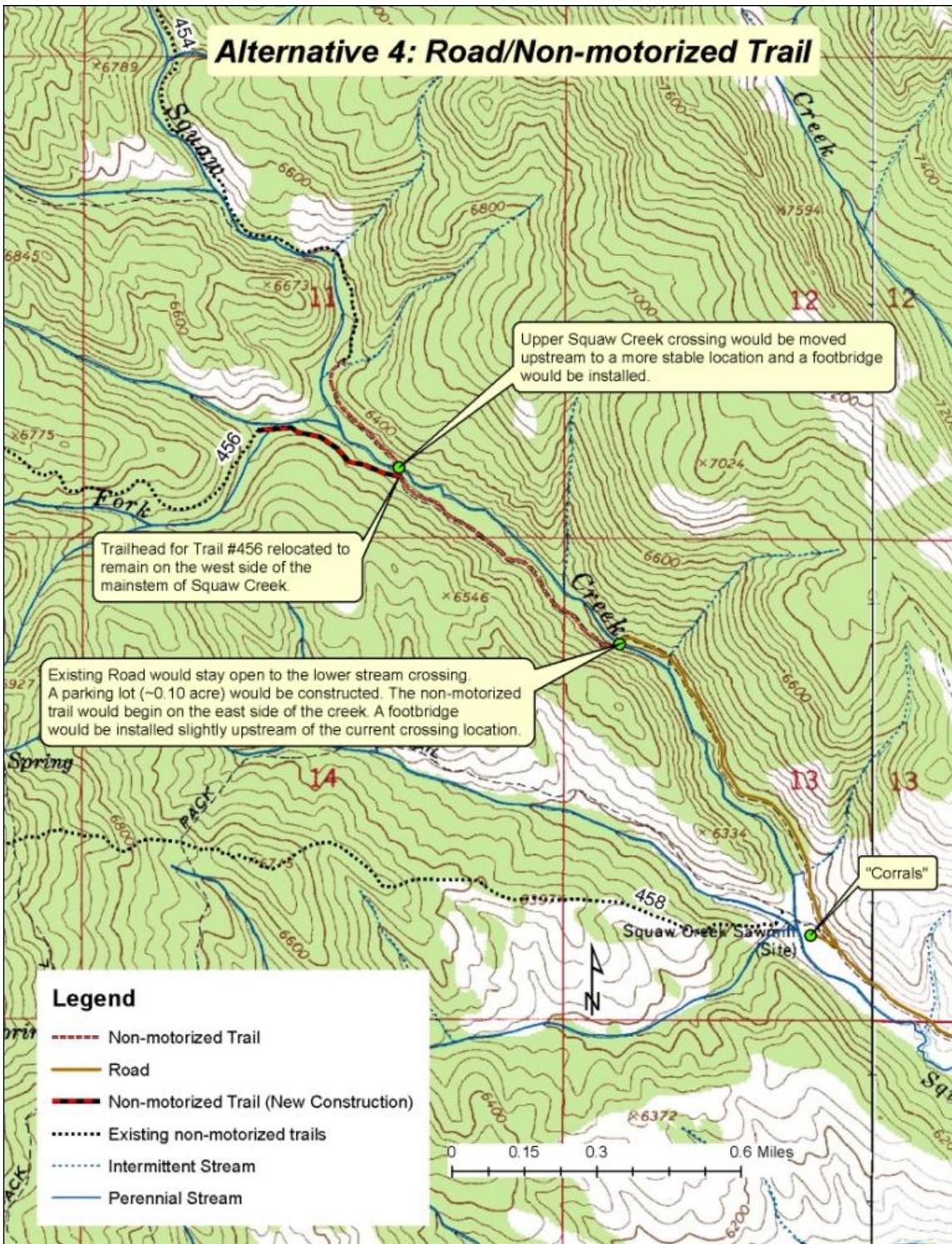


Figure 2.5: Alternative 4

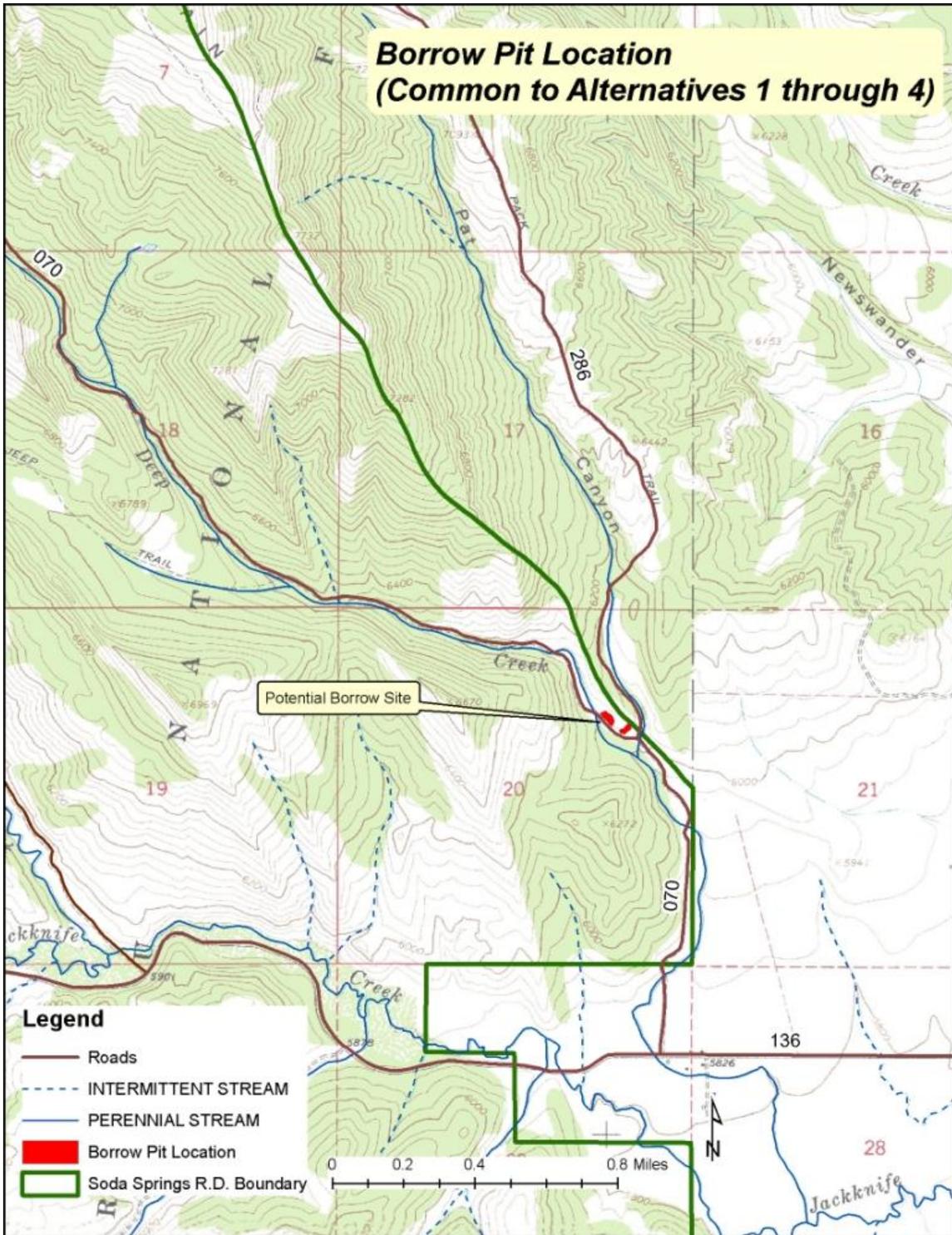


Figure 2.6: Borrow Pit location

## **BMPS AND RECOMMENDED DESIGN FEATURES**

In response to public comments on the proposal and as result of internal analysis, Best Management Practices (BMPs) and Design Features were developed to ease or eliminate potential impacts the various alternatives may cause. In addition to the BMPs the Caribou Revised Forest Plan standards and guidelines and Forest Service Handbook Direction will be applied under all alternatives. Project specific BMPs and Design Features are as follows but not limited to:

### ***Hydrology, Fisheries, and Soils***

#### **BMPS Common to All Alternatives**

*Stream Crossing Design Guidelines* (Guidance for Aquatic Organism Passage Design Dec 4, 2003 Regional Direction letter and the attached Guidance for Aquatic Species Passage Design, Forest Service Northern Region & Intermountain Region). All new or existing road and trail crossings within the project area will need to be improved to Forest Service standards in order to meet RFP direction and improve AIZ conditions. Improvement measures may include relocating crossings to more suitable areas and upgrading structures. If FSR #389 is reopened (No Action Alternative) incorporating stream simulation design crossings in areas with low diversion potential would be preferable.

- The natural stream gradient and substrate material, above and below the structure, should be simulated through the structure. Instream structures should not be relied upon to modify stream elevations for new or replacement installations.
- All fish-bearing stream crossings, regardless of the design option used, shall be designed to withstand the 100-year return frequency peak flood flow plus debris and bedload without structural damage to the crossing. Hydraulic capacity must compensate for expected deposition in the culvert bottom.
- Structure opening width should not constrict the stream or accelerate velocity at 2-year return frequency high flow (bankfull width).
- When using embedded culverts, stream form and substrate within the structure should provide a thalweg for low flow conditions to avoid continuous stream flow along the culvert wall.
- Bottomless structures should be evaluated for appropriate regrading and grade control measures to avoid headcutting conditions through the structure.
- Hydraulic analysis designs should ensure bed and bedform stability. It should also evaluate ecological process (large woody debris transport) and associated failure risk (flood history).
- Baffles, weirs, and other mechanical devices inside the culvert should only be employed when the stream channel simulation or use of natural stream bottom is not physically possible or practical.

### BMPs No Action

- Road Reconstruction to follow FS Standards and Specification for Construction of Roads and Bridges. Several maintenance activities would be needed to bring the road up to current standards including the installation of road drainage structures (such as ditch relief culverts), road surface reshaping (to improve drainage), damage repair and resurfacing (graveling).
- Spring and seep crossing sized appropriately to handle water and prevent road erosion.
- The two Squaw Creek road crossings would be improved to provide for aquatic organism passage, peak flows, and stream channel stability. These two should follow stream crossing design guidelines.

### BMPs for Alternative 1- 4

- Road and trail obliteration will consist of a full re-contour (minus the width of a motorized or non-motorized trail). When full re-contour is not possible due to a loss of material from slumps or slides, drainage swales shall be constructed to naturally drain water down the hillslope rather than down the old road template.
- Disturbed ground shall be covered to around 50-70% with slash and other woody debris for erosion control.
- Disturbed ground next to live water or have a direct connection streams shall have a temporary erosion barrier such a straw bales, silt fence, straw wattles installed or ground cover of debris of 70-90%.
- Disturbed ground shall be seeded with a natural seed mix or as advised by the Forest Botanist.
- The approach to bridges through the riparian area shall be armored to provide a stable and firm tread that will match the surround floodplain elevation. This will require excavation and placement of rock and/or a geotextile sub layer as directed by Forest Engineers. Trail thread will be constructed not to impede flood flows across the floodplain.
- Crossing rehabilitation should incorporate the transplanting of riparian vegetation away from the stream to the stream edge to mimic upstream stream bank configuration and vegetative composition. This will create an immediate vegetative buffer and start to restore stream function.

### Borrow Pit (Alternatives 1-4)

- Salvage top soil and reapply after site is re-contoured.
- During use, runoff water should be dispersed into adjacent vegetation and not allowed to travel onto the Deep Creek road. If necessary temporary erosion barriers such a straw bales, silt fence, straw wattles should be used to prevent erosion from leaving the site.
- Disturbed ground shall be covered to around 50-70% with slash and other woody debris for erosion control.
- Drainage on cut slope of road shall be improved to redirect drainage away from live water. Install temporary erosion barriers such a straw bales, silt fence, straw wattles or ground cover of debris of 70-90%.

- Disturbed ground shall be seeded with a natural seed mix or as advised by the Forest Botanist.

### ***Wildlife***

- While no known Northern Goshawk, Flammulated Owl, Great Gray Owl, Boreal Owl, or Three-toed Woodpecker nests are known to occur within the analysis area, any activities occurring in forested habitats (and off the existing roadbed on new trail construction) will be surveyed for nests prior to project implementation. If any nests and/or territories are found that could be impacted by trail construction, the district wildlife biologist will work with the project leader to determine the appropriate mitigation necessary to avoid impacts to these species. Mitigation measures could include delayed project implementation, trail reroutes, etc.
- To ensure compliance with the Migratory Bird treaty Act and Executive Order #13186, surveys will be conducted within the nesting timeframe when any proposed activities could potentially impact migratory bird nests. If nests are located, the district biologist will work with the project leader to determine the appropriate mitigation necessary to avoid impacts to Migratory Birds. Mitigation measures could include delayed project implementation, trail reroutes, etc. Vegetation occurring within the areas selected to be developed for borrow pits will be surveyed for migratory birds, unless development of the borrow pits is conducted outside of the nesting time frame for migratory birds (approximately May 15th-August 15th) in which case surveys would not be necessary.
- During construction of the trail #456 re-route, all snags will be retained during trail construction except for those that present potential hazards to the public or workforce.

### ***Recreation***

#### *Common to all Alternatives*

- Caribou Revised Forest Plan (2003) standards and guidelines, National Best Management Practices (BMPs), and Region 4 Soil and Water Conservation Practices Handbook FSH 2509.22 Direction will be applied.

#### *Trail Construction - Design Features (the following will be applied as applicable to the selected alternative)*

If the road is converted to a motorized or non-motorized trail, they will be managed as Class Two Trails (Low Development scale).

Trail design will adhere to guidelines in FSH 2309.18 (Design Parameters) and FSH 2509.22.

- Tread widths would be the minimum required to accommodate the specific trail use.
- Proper drainage is a critical need within the project area. Periodic grade reversals are recommended for trail drainage, as they are more durable and require less

maintenance than dips, water bars or other structures. Where practical, grade reversals should be incorporated into the non-motorized trail construction if an action alternative is selected.

- Out-sloping of the trail surface helps shed water quickly as dispersed sheet flow. Water that is shed quickly helps reduce trail erosion. Where practical, out-sloping should be incorporated into the non-motorized trail construction if an action alternative is selected.
- Trail bridge approaches would drain away from the stream (with an elevated bridge deck). When crossing streams, the location and alignment would be chosen to minimize stream impacts and the approaches properly armored if necessary.
- Clearing would only remove the trees and vegetation necessary for proper clearing widths and trail construction. Along the existing roadbed, which would be converted to a motorized or non-motorized trail under an action alternative, it is expected that very minimal, if any, vegetation removal would be necessary.
- To minimize erosion, trail reconstruction will occur during minimal runoff periods.

#### ATV/Motorcycle Trail Standards – Class Two Trail (Low Development)

- Trail tread shall be single lane, with an average width of 48”-60” Allowance for passing will be constructed as necessary, as previously described in the alternative descriptions.
- If the road is converted to an ATV trail, it is expected that the primary drainage structures would be culverts and drainage dips. (In this case “engineering” out-sloping or grade reversals into the existing roadbed would require excessive excavation)

(Trails Mgmt Handbook FSH 2309.18, Chapter 20, USDA Forest Service, 2008).

#### Non-Motorized Trail Standards - Class Two Trail (Low Development)

- Pedestrian/horse/bicycle use shall be single lane with a tread width of an average 18-24 inches. Sustained trail grade can be 10% - 20% for Class Two trails, however, based upon features in the project area, the Design Grade will be 10% - 12%.
- If the road is converted to a non-motorized trail, it is expected that the primary drainage structures would be culverts and drainage dips. (In this case “engineering” out-sloping or grade reversals into the existing roadbed would require excessive excavation)

(Trails Mgmt Handbook FSH 2309.18, Chapter 20, USDA Forest Service, 2008)

#### Trail Stream Crossings

- All stream crossings would be designed to minimize impacts and to meet all applicable guidance, regulations and BMPs as described in the Fisheries, Hydrology, and Soils BMP section above.

## ***Range Management/Noxious Weeds***

### Grazing Management

- If an action alternative is chosen, signs should be posted in the corral area before and during livestock shipping operations to inform the public of the presence of tractor trailers, and the need to park or camp in a manner that allows sufficient room for the tractor trailers to turn around in the corral area.
- If an action alternative is chosen consider allowing sheep camps past the corral location for administrative purposes. This would reduce the potential conflict between varied users and cut down on the concentration of sheep camps in one location.
- The parking area adjacent to the corrals should be monitored, and if vehicle traffic increases to the point that it creates excessive bare ground; graveling or otherwise improving the parking area to handle the increased traffic should be considered.

### Noxious Weeds and Invasive Species

- Any soil disturbance activities should be re-seeded and monitored for noxious weeds. Monitoring/treatment should follow any soil disturbance for at least five years.
- The borrow pit will be inspected for the presence of noxious weeds prior to development, if found, any noxious weeds would be treated prior to ground disturbing activities.  
Any equipment used on the project area should be cleaned prior to accessing the forest.
- If noxious weeds are found following the project, treatment should occur prior to plants reaching seed set.

### ***Cultural Resources***

- No cultural sites are known to exist within the project's area of potential effects. Any National Register of Historic Places (NRHP) eligible sites located during field surveys will be avoided by all ground-disturbing activities in order to achieve a "no effect" determination for the project. If any cultural resources are encountered during the course of the project, the Forest Archaeologist will be notified immediately and all ground disturbing activities will cease in that area until the Forest Archaeologist takes appropriate action in consultation with the Idaho State Historic Preservation Officer (SHPO).

## COMPARISON OF ALTERNATIVES

This section briefly compares effects of the alternatives in terms of the key issues for the Squaw Creek Watershed Improvement Project. The discussions of effects are summarized from Chapter 3, which should be consulted for a full understanding of these and other environmental consequences.

**Table 2.2: General comparison of Alternatives based on key issues.**

<i>Key Issue: Sedimentation And Stream Channel Stability and Function</i>	
No Action	The two road stream crossings on main stem Squaw Creek would be upgraded to bridges or open bottom arch culverts replacing the existing eroding non-functional ford stream crossing and replacing the undersized culvert at the upper stream crossing. This would be expected to restore some stream function, stability and water quality. The beaver dam problems of inundating the ford crossing of trail #456 on Squaw Creek would continue to occur whereby removal would be necessary to provide user access almost on an annual basis. The regular removal of this beaver dam decreases aquatic habitat complexity reducing stream complexity and hindering natural stream processes.
Alternative 1	Alternative 1 would improve AIZ condition by converting FSR #389 to a motorized ATV route narrowing the disturbance width from 12 feet to 5 feet within the AIZ corridor. The converted road and relocated segment of trail #454 out of the AIZ would reduce AIZ disturbance by 61 percent from existing condition. Reducing the width of the maintained traveled way on first 0.9 miles (beyond the corral) would reduce the impact to the travel route and reduce stream impacts. The rerouted trail network will meet trail design standards, have improved drainage, and will relocate problem stream crossings to more suitable areas. These actions will reduce sediment delivery to Squaw Creek, improve water quality, allow natural beaver activity to occur, and begin to restore stream channel function.
Alternative 2	Alternative 2 would further improve AIZ condition beyond the No Action Alternative and Alternative 1 by converting FSR #389 to a non-motorized route narrowing the disturbance width from 12 feet to 2 feet within the AIZ corridor. The converted road and relocated segment of trail #454 out of the AIZ would reduce AIZ disturbance by 83 percent from existing condition. The narrow tread on first 0.9 miles (beyond the corral) would reduce the impact to the travel route and reduce stream impacts. The rerouted trail network will meet trail design standards, have improved drainage, and will relocate problem stream crossings to more suitable areas. These actions will reduce sediment delivery to Squaw Creek, improve water quality, allow natural beaver activity to occur, and begin to restore stream channel function.

<p>Alternatives 3 and 4</p>	<p>Maintenance activities would occur along the 0.9 miles of FSR #389 beyond the corrals as that segment would remain open to full sized vehicles. Maintenance would consist of the installation of road drainage structures, road surface reshaping, damage repair, and resurfacing. The initial maintenance activity would increase erosion over the short-term, but then drop below existing levels with the incorporation of the appropriate road BMP's. However, given the unstable nature of this road, maintenance of the first 0.9 miles will likely have to continue at current levels, with similar impacts of sediment delivery to the stream and corresponding impacts to water quality and aquatic habitat. The new parking area would occur within the AIZ, potentially resulting in sediment delivery to Squaw Creek. Incorporating the other actions in these alternatives (motorized or non-motorized trail), there would be a 24% (Alt 3) and a 36% (Alt 4) reduction in AIZ disturbance compared to existing conditions. The reduction in AIZ disturbance and incorporated BMPs would improve water quality, stream functions and aquatic habitat.</p>
<p><b><i>Key Issue: Forest User Access/User Conflicts</i></b></p>	
<p>No Action</p>	<p>If FSR #389 is reconstructed as a single lane road there may be direct effects to recreational visitors. The existing parking area at the end of the Squaw creek road (the trailhead for Trails #454 and #456) would not accommodate many vehicles with horse trailers. There is space for some dispersed camping here. However, along the road between the corrals and this trailhead there is little opportunity for camping due to terrain features. If restored as a single lane road, there would still be recreationists camping or parking near the sheep corrals and there could be conflicts and hazards associated with mixed use on the restored road north of the corrals.</p>
<p>Alternative 1</p>	<p>Starting at the corrals, 1.8 miles of motorized trail would be constructed, generally following the existing roadbed, and provide access to ATV's and motorcycles as well as non-motorized traffic. This alternative would amend the Caribou Travel Plan. There are potential hazards associated with ATVs and Motorcycles sharing the trail with pack and saddle stock. The Squaw Creek and Bald Mountain area receives high use by hunters using pack and saddle stock, particularly during the September and October hunting seasons. If FSR #389 is designated as ATV trail, there may be more recreationists camping and parking near the sheep corrals, and conflicts associated with mixed use on the ATV trail.</p>
<p>Alternative 2</p>	<p>Starting at the corrals, 1.8 miles of non-motorized trail would be constructed, generally following the existing roadbed, and provide access to non-motorized traffic, including horse, mountain bike, and foot traffic. The trail route would result in less ground disturbance and would require less annual maintenance than the No Action alternative and Alternative 1. This alternative would amend the Caribou Travel Plan and would slightly increase non-motorized recreational opportunities in the Jackknife basin. The primary user conflicts would involve horses and mountain bikes. Bicycle use is currently low in this area, however there is</p>

	potential for more use with the Star Valley population increasing. Generally, this alternative would have fewer user conflicts than the other alternatives.
Alternative 3	The first 0.9 mile of the upper Squaw Creek road would be left open to full size vehicles and a small parking lot constructed. The small parking area to be constructed at the lower Squaw creek crossing would only accommodate a few vehicles, particularly with trailers. If the road is one lane, two-way traffic over the 0.9 mile between the parking area and corrals would result in conflicts with opposing traffic. There may also be conflicts between full-sized vehicles and other travelers (OHVs and horse pack and saddle stock). Many trail users would be forced to park at the corrals because of the lack of parking space at the lower crossing. The ATV trail north of the corrals would experience mixed use conflicts similar to those described in Alternative One. Alternative Three would have the greatest potential for user conflicts of all the alternatives.
Alternative 4	The first 0.9 mile of the Squaw Creek road north of the corrals would be left open to full size vehicles and a small parking lot constructed. The small parking area to be constructed at the lower Squaw creek crossing would only accommodate a few vehicles, particularly with trailers. If the road is one lane, two-way traffic over the 0.9 miles to here from the corrals would result in conflicts with opposing traffic. There may also be conflicts between full-sized vehicles and other travelers (OHVs and horse pack and saddle stock). On the non-motorized portion of the trail, potential user conflicts would be similar to those described under Alternative 2.
<b><i>Key Issue: Range</i></b>	
No Action	This alternative would allow the permittees to haul their camps to the end of the existing road and would eliminate the concern of several camps being located at the corrals. It would also reduce the effects associated with concentrated use and would reduce the possibility of user conflicts. This alternative reduces travel time and improves efficiency while tending backcountry camps in allotments adjacent to the project area.
Alternatives 1 and 2	Since the road would no longer be open to full size vehicles, sheep herder camp trailers would no longer be able to be parked at the end of the existing road, and instead would need to be located at the corrals. Therefore, this alternative would potentially result in concentrated impacts associated with several sheep camps being located at the corrals and would increase the possibility of user conflicts. The alternative limits access to sheep bands and camps and reduces efficiency of the permittees by increasing travel by foot or horse during the summer months.
Alternatives 3 and 4	Leaving the road open to full size vehicles for the first 0.9 mile and constructing a small parking area would improve access beyond that in Alternatives 1 and 2, and would provide an alternate option for sheep camp locations. However, during shipping, the corral location would still likely have to be managed for large truck access, and user conflicts are possible even with the increase in camping and parking options.

<b>Key Issue: Noxious Weeds</b>	
No Action	Any soil disturbance activities will need to be seeded following work and monitored for noxious weeds. Monitoring should occur for at least five years following soil disturbance activities. Equipment used in the area should be cleaned prior to accessing the forest.
Alternatives 1 - 4	Any soil disturbance activities will need to be seeded following work and monitored for noxious weeds. Monitoring should occur for at least five years following soil disturbance activities. Equipment used in the area should be cleaned prior to accessing the forest. The borrow site should be inspected for weeds prior to development, and if present, any weeds in or adjacent to the proposed borrow site will be treated.
<b>Key Issue: Wildlife Security Areas</b> (See Appendix B of the Wildlife Specialist Report in the project record for the Open Motorized Route Density (OMRD) calculations used in this report)	
No Action	The existing OMRD (0.42 mi/mi <sup>2</sup> ) would not change with selection of this alternative and therefore the adjacent acres of big game security area would remain unchanged.
Alternative 1	The existing 1.8 miles of road north of the corrals would be closed and replaced with 1.8 miles of ATV trail, the current OMRDs within the prescription area would remain 0.42 mi/mi <sup>2</sup> , and the surrounding big game security area would also remain generally unchanged.
Alternative 2	Due to the closing of 1.8 miles of road, and the subsequent construction of a non-motorized trail, OMRD's within the prescription area would be reduced from 0.42 mi/mi <sup>2</sup> to 0.34 mi/mi <sup>2</sup> , and the amount of mapped big game security areas would increase by approximately 700 acres from 54,325 acres to 55,025 acres.
Alternative 3	Given that the initial 0.9 miles of road would remain open to full size vehicles, and that second 0.9 miles would be converted to an ATV trail, 1.8 miles of motorized access would remain and therefore the 0.42 mi/mi <sup>2</sup> OMRD would not change.
Alternative 4	Under Alternative 4, the first 0.9 mile of road would remain open to full size vehicles and the second 0.9 mile would be converted to a non-motorized trail. Conversion of the upper 0.9 mile of the Squaw Creek road to a non-motorized trail would reduce the existing OMRD to 0.38 mi/mi <sup>2</sup> and increase the size of the adjacent security area by approximately 460 acres from 54,325 acres to 54,785 acres.

## **ECONOMIC COMPARISON OF ALTERNATIVES**

In response to internal and public comments on the proposal we compiled current road maintenance costs, and estimated project costs per alternative.

While this information is supplemental to the EA process and will not be carried through the environmental effects analysis, given declining budgets for road maintenance, cost to implement the alternatives and subsequent annual maintenance costs will be a factor in the decision making process. Original cost estimates and spreadsheets are located in the project record.

### ***Current Road Maintenance Costs***

Road maintenance costs were calculated by reviewing the past five years of road maintenance and repair work performed on the segment of road between the corrals and trailhead on the Squaw Creek road. The cost estimates are broken out as general maintenance and road repair. In the past, the use of explosives has been required to remove beaver dams flooding the road and trail, specifically the trail #456 crossing of Squaw Creek.

General Maintenance: General maintenance cost for the 1.8 miles of road averages \$875 per year. Proper maintenance requires scarification and heavy blading to repair the road surface. Since ditches fill with sediment, annual clearing of sediment and debris is required to ensure road drainage is reestablished and functioning properly.

Road Repairs: Over the past five years, the costs for repairs have ranged from \$1,400 to \$4,100. Repeated road failures and landslides often make the road unsafe and impassable. These repairs need to be performed prior to the road being opened to the public and before general maintenance can be performed.

With regards to the estimates of “General Maintenance” and “Road Repairs” above, these represent the cost of the minimum measures that were needed to keep the road passable, as well as what the Forest Service had the time and funding to accomplish. The road is temporarily closed, because these “stopgap” measures were no longer enough to keep the road passable. At this point if the road were to be re-opened to full sized vehicles it would need to be reconstructed, and as shown in the table below, reconstructing the road properly would cost approximately \$271,100 plus the cost of new crossing structures.

Blasting Operations: Over the five years reviewed, blasting operations have been performed in three separate instances. Beaver activity in the adjacent stream causes water to encroach on the road and trail. Beaver dams have been removed where trail #456 crosses Squaw Creek. Beaver dams were also removed in two separate instances along the FSR #389 road south of the corrals. The average cost for each separate blasting operation was \$1,200.

Considering the above, maintenance costs for the Squaw creek road and trails above the corrals ranges from about \$2300/year to \$5000/year, and is more if blasting is required to remove beaver dams. While the monetary cost to remove beaver dams is important and often necessary to protect existing infrastructure, the removal of beaver dams also has resource implications that must be considered, such as the impacts to natural stream processes and effects to northern leatherside chubs.

**Alternative Costs**

**Table 2.3: Comparison of cost estimates for each Alternative.**

Alternative	Cost Estimates by Alternative				
	No Action	Alt. 1	Alt. 2	Alt. 3	Alt. 4
Road Reconstruction	\$271,100**	*NA	NA	\$29,300	\$29,300
Non-motorized Trail Construction	NA	\$8,950	\$8,950	\$8,950	\$8,950
Convert road to Motorized or Non-Motorized Trail	NA	\$16,540	14,070	\$8,300	\$7,000
Stream Crossing Structure(s)***	\$36,500(Fords) to \$117,000 (Bottomless Culverts)	\$23,000 (2 ATV bridges)	\$23,000 (2 non-motorized bridges)	\$23,000 (2 ATV bridges)	\$23,000 (2 non-motorized bridges)
Parking Area Construction	NA	NA	NA	\$10,500	\$10,500
<b>Total</b>	<b>\$307,600 - \$388,100</b>	<b>\$48,490</b>	<b>\$46,020</b>	<b>\$80,050</b>	<b>\$78,750</b>

\*NA=Not Applicable to Alternative

\*\* High Cost of road reconstruction under the No Action, relative to Alternatives 3 and 4, due to the fact that all road gravel and pit run material would have to come from an off-forest source, since an on-forest borrow pit would not be developed. Estimates based on contract cost going to Thayne, WY. Contract cost could be reduced if the Forest Service Road Crew was used for the haul and placement of material. Additionally, Alternatives 3 and 4 only reconstruct half as much road.

\*\*\* Under all alternatives, to avoid channel constriction, stream crossing structures are expected to be approximately 30 feet in length. The widths of an ATV bridge and a non-motorized bridge are both approximately 6.5 feet; simply because they both need to be wide enough to accommodate pack stock. Therefore, there is no cost difference between the bridges since they have the same length/width and load bearing requirements.

**Subsequent Maintenance Costs**

No Action- Stream crossings would be improved to provide for aquatic organism passage, pass peak flows, and increase stream channel stability. Since there would be improvements to the crossings some reduction in annual maintenance costs could occur. However, since the road bed would remain in its original location and be maintained at its current width, and therefore still prone to road cut failures and flooding, it is expected that maintenance cost would be similar to the existing cost of about \$2,300/year to \$5,000/year.

Alternative 1- Annual maintenance cost for a motorized (ATV) trail are estimated to be approximately \$1,000/year (Recreation Specialist Report, Project Record)

Alternative 2- Annual maintenance cost for a non- motorized trail are estimated to be approximately \$750/year (Recreation Specialist Report, Project Record)

Alternatives 3 and 4- the major maintenance cost of this alternative would be the maintenance of the first 0.9 miles of road. Improvement to drainage would occur and

flooding would no longer be an issue, however, given that this would keep the most unstable portions of the road open (which is the segment of the road most costly to maintain) it is expected that road maintenance cost would not be significantly reduced, still costing a minimum of about \$2,300 a year (or more). While the length of the motorized or non-motorized portions would be less, costs to maintain these trail segments would remain similar, given that costs (such as mobilization to and from the trails) would remain constant.

## **CHAPTER 3: AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES**

### **INTRODUCTION**

This section summarizes the physical, biological and social environments of the affected project area and the potential changes to those environments due to implementation of the alternatives. Following each resource description is a discussion of the potential effects (environmental consequences) to the resource associated with the implementation of each alternative, including the Proposed Action. All effects, including direct, indirect and cumulative effects, are disclosed. Information herein is summarized from the Hydrology, Soils, Fisheries, Wildlife, Recreation, and Range specialist reports located in the project record. Reference those documents for additional information on the specific resource area of concern.

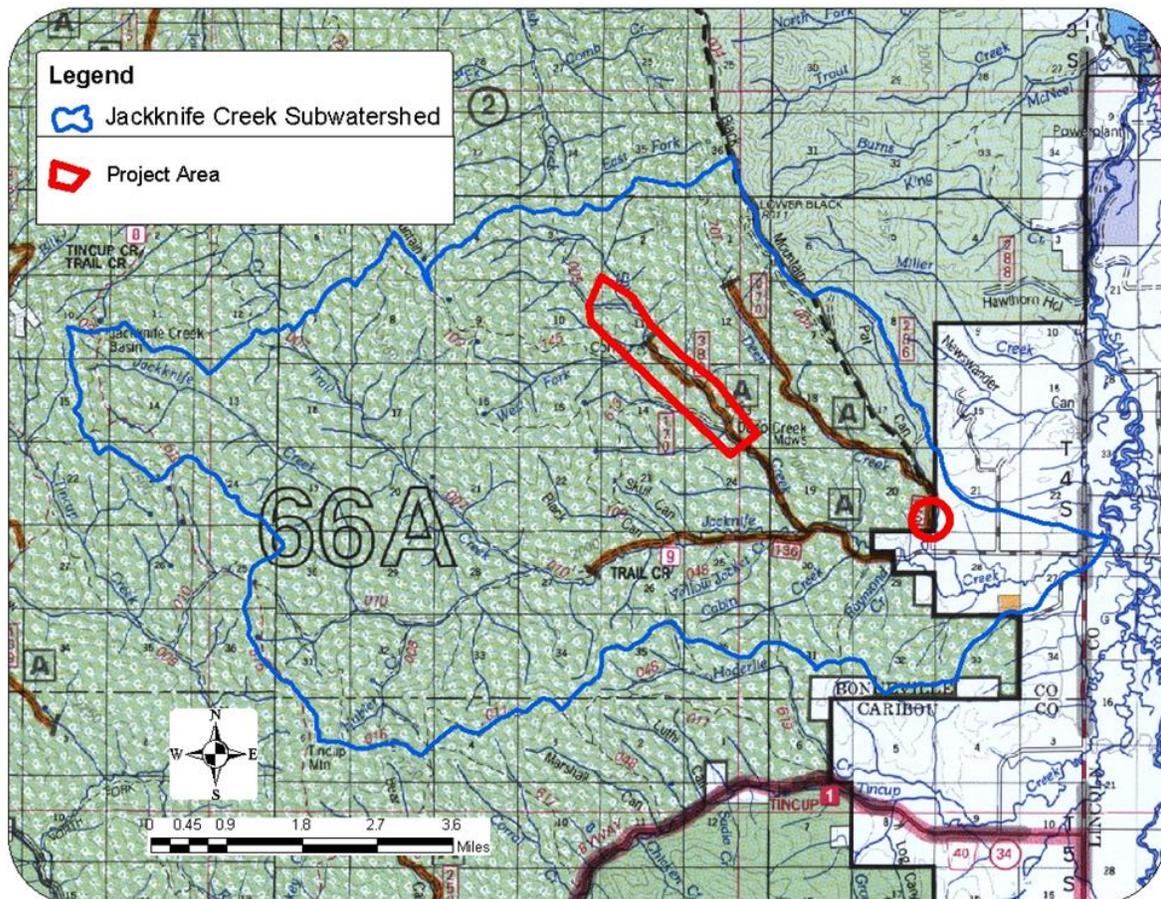
### **HYDROLOGY AND FISHERIES**

#### ***Scope***

**Aerial Scope:** Figure 3.1 illustrates the location of the project area in relationship to the Jackknife Creek subwatershed. The analysis area falls predominantly in the project area however; impacts of the five alternatives will also be assessed at the subwatershed scale. The subwatershed scale will represent the cumulative effects analysis area. The project area extends from the Squaw Creek corrals (located about 1.6 miles upstream of the Squaw Creek road (#389)/Jackknife road (#136) intersection) and extending about one mile beyond the existing trailheads of trail #454 and #456, covering approximately 3 linear miles. The project area also includes a borrow pit ( $\leq 1.0$  acre) in lower Deep Creek (along FSR #070) to obtain fill material for road maintenance on Squaw Creek Road (#389). The Jackknife Creek subwatershed contains 30,425 acres with 95% Forest Service ownership. Some discussion of water quality limited streams (303(d) listed) located downstream of the Forest boundary and outside of the analysis area will also occur.

Technical Scope: The objectives of the following analysis are to:

- Ensure that the project complies with the applicable direction and standards and guidelines of the Caribou NF Revised Forest Plan (RFP) and other pertinent policy, regulations, and law.
- Recommend project design features to advance project benefits and minimize impacts.
- Evaluate the project in regards to the hydrologic and watershed resources.
- Evaluate the project in regards to fisheries and aquatic resources
- Analyze the effects of all alternatives.



*Figure 3.1: Project Area Vicinity Map and the Jackknife Creek Subwatershed (HUC6) Boundary*

### ***Relevant Management Direction***

Revised Caribou Forest Plan: The Caribou RFP (USDA FS 2003) contains fisheries and hydrology related management direction and is incorporated into this report by reference. Relevant direction from the RFP includes the desired future condition (DFC) for watershed and riparian resources (pg 3-16 & 4-47), relevant Forest-wide direction and standards and guidelines (Chapter 3), and the aquatic influence zone (AIZ) direction

(pg 3-45 to 3-53). Refer to appendix A of both the Fisheries and Hydrology Specialist Reports for more details.

Other Law, Regulations, Directive and Agreements: The Forest must comply with applicable State and Federal laws and regulations. These include, but are not limited to, the Code of Federal Regulations (CFR), the Clean Water Act (CWA), Executive Orders 11988 and 11990 (Floodplain Management and Protection of Wetlands, respectively), the Multiple Use Sustained Yield Act, and the Idaho Water Quality Standards.

Yellowstone Cutthroat Trout Memorandum of Agreement: The Memorandum of Agreement for Conservation and Management of Yellowstone Cutthroat Trout (Montana FW&P 2009) has a goal to ensure the persistence of Yellowstone cutthroat trout within its historic range and to manage them to provide adequate numbers and populations. The interagency agreement includes objectives to secure and enhance conservation populations and restore populations. This agreement, signed by the Regional Forester, directs the agency to restore Yellowstone cutthroat trout populations and habitat.

Rangewide Conservation Agreement and Strategy for Northern Leatherside: The Rangewide Conservation Agreement and Strategy for northern leatherside (Utah DNR 2009) has a goal to ensure the long-term persistence of northern leatherside within its historic range and support development of multi-state conservation efforts. The interagency agreement includes objectives to maintain and monitor existing self-sustaining populations and their habitat. This agreement, signed by the Regional Forester, directs the agency to restore northern leatherside populations and habitat.

### ***Key Issue***

As described in Chapter 2 and Table 2.2 “Sediment and Stream Channel Stability and Function” is a key issue for this project. Road and trails within the riparian corridor or in close proximity can lead to elevated erosion and increase in-stream sedimentation reducing water quality, fish habitat, and channel function. On steep, unstable mountain slopes, roads open to full size vehicles require more extensive cut-and-fill than narrower trails. Cut slopes can reduce slope stability and result in slumps, and fill can move downslope (Intermountain Region Soil Criteria and Rating Guide, 2010 p. 196). When roads and trails occur in AIZs, the slumps of upslope material and downslope movement of fill slopes can result in sediment delivery to the stream channel. Large unnatural pulses of sediment can cause channels to change course which then have channel changing impacts upstream and downstream. Accelerated bank erosion, reduced water quality, impacted fish habitat are some of the results which can be long lasting.

### ***Indicators***

AIZ Disturbance and Stream Channel Stability: Roads and trails within the riparian corridor or in close proximity can lead to elevated erosion and increase in-stream sedimentation impacting channel stability. Channel stability has a direct link to a multitude of resources values that include but are not limited to fish habitat, water quality, riparian health, stream health, floodplain function and wildlife habitat. Decreases in channel stability lead to degradation or loss of these resources values. RFP directions

have been specifically established to protect and/or improve these resource values centered on channel stability.

Sedimentation: Streams naturally process sediment normally as bedload (material on the stream bed or suspended in the water column). Excessive sedimentation from un-natural process such as erosion from roads and trails next to stream channels and at crossing are viewed as above normal erosion that can enter a stream channel reducing water quality, fish habitat, and impacting channel function and stability. Various RFP directives (appendix A of both the Fisheries and Hydrology specialist reports) are designed to improve these conditions and protect these resources values.

Number of and (Changes to) Perennial Stream Crossings: Undersized or unimproved road and trail stream crossings can lead to changes in channel hydraulics, increase stream power at larger flood events, and degrade channel stability and function. Increased stream power can cause channels to downcut reducing floodplain connectivity. Disconnecting the floodplain typically leads to an increase in bank erosion and channel movement. This then leads to a reduction in water quality, fish habitat, and stream stability.

Road and trail crossings on perennial streams can also fragment habitat for aquatic species. Channel scour can be prevalent on the downstream side of a culvert causing the outlet to become perched above the stream bed. Perched culverts in addition to accelerated velocities inside the culvert can block fish movement and fragment habitat for fish. Unimproved fords can result in an over widening of the stream channel, resulting in a decrease of the thalweg depth. At base flow conditions these locations can limit fish movement and fragment fish habitat.

### ***Existing Conditions***

State Water Quality Standards and Best Management Practices (BMPs): The Idaho Department of Environmental Quality (IDEQ) identifies surface water use designations (i.e. beneficial uses) and water quality standards (IDEQ 2011). Through a Memorandum of Understanding (MOU) with the State of Idaho, the Forest is responsible for implementing nonpoint source pollution control measures during all management activities (USDA FS 2008). The Idaho anti-degradation policy pronounces that the designated uses and the level of water quality necessary to protect those uses shall be maintained and protected. It is also Forest Service Policy to maintain or improve water quality (Caribou NF RFP and FSM 2500<sup>3</sup> (2520.3)). The State recognizes BMPs as an effective process for protecting beneficial uses and ambient water quality.

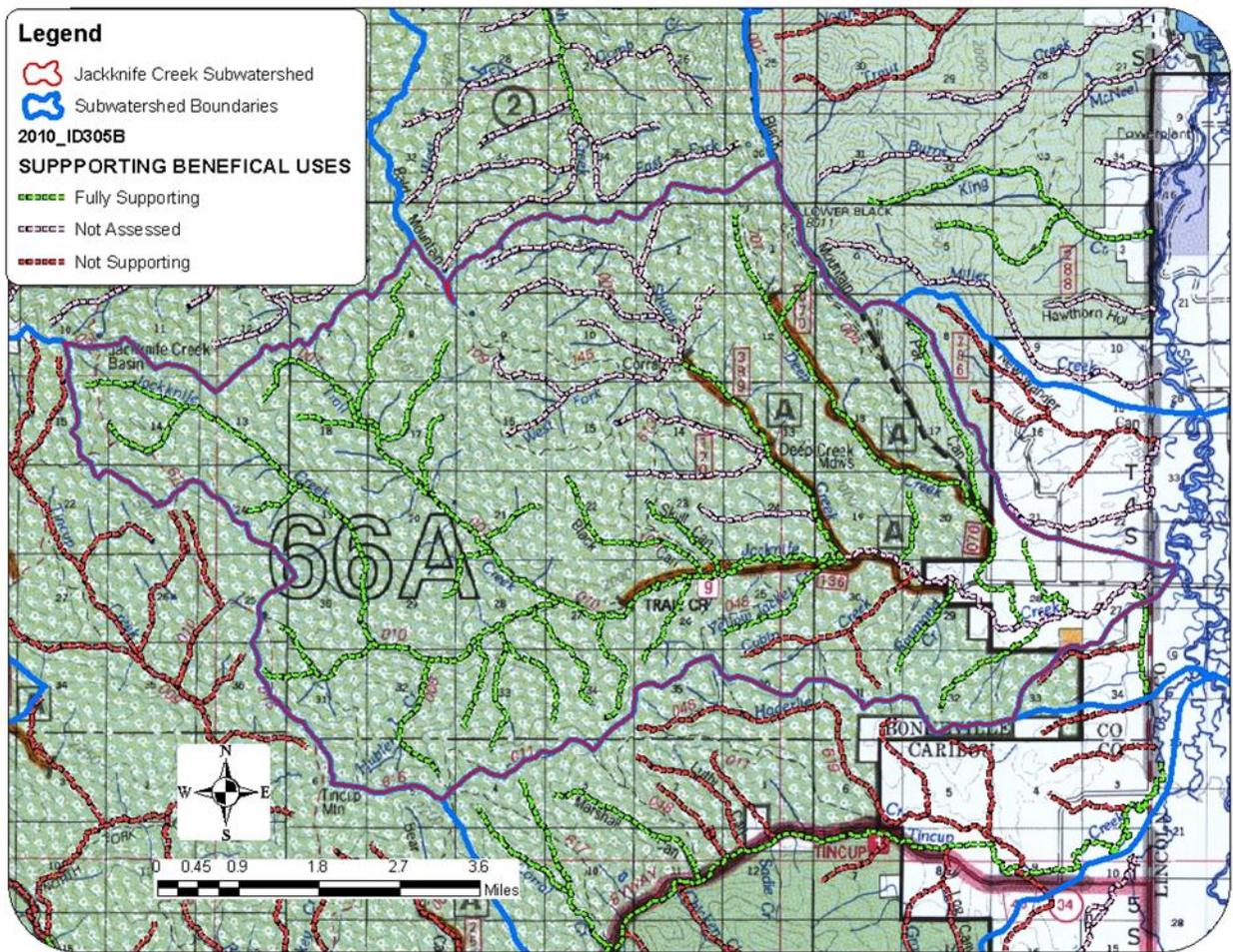
Impaired Waters 303(d) Listed: IDEQ develops Integrated (303[d]/305[b]) Report to identify water quality status for stream and lakes based on assigned beneficial uses. This report is then approved by EPA to comply with the federal Clean Water Act. Impaired waters are identified as 303(d) which have pollutants exceeding water quality standards for designated beneficial uses. Figure 3.2 shows those stream not supporting beneficial

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<sup>3</sup> Section 2520.3 of FSM 2500 states: “Apply management practices that meet requirements for protecting, maintaining, restoring, or improving watershed conditions.”

uses for the state of Idaho from the 2010 Integrated (303[d]/305[b]) Report (IDEQ 2011). The 2010 Integrated Report was completed and submitted and approved by EPA in September 2011. Squaw Creek and Jackknife Creek are meeting or have not been assessed in the support of beneficial uses.

Jackknife Creek flows into Wyoming before entering the Salt River. In 2002, a lower reach of the Salt River was placed on the 303(d) List as threatened for not supporting its contact recreation use. E. coli sampling by Star Valley Conservation District (SVCD) has since indicated that contact recreation uses are not fully supported. The lower reach of the Salt extends upstream and downstream of the Jackknife confluence. SVCD has collected data that indicate the Salt River has exceeded the recreational use criterion multiple times between 2008 and 2010. As a result the 2012 Wyoming Integrated Report (WDEQ 2012) kept the lower reach of the Salt River as impaired.



*Figure 3.2: Idaho water quality status as it relates to the support of designated beneficial uses.*

Section 303(d) of the federal Clean Water Act requires states and tribes to develop Total Maximum Daily Loads (TMDLs) for impaired waters. A TMDL identifies pollutant level limitations with the goal of improving water quality in order for waterbodies to once again support beneficial uses. No TMDLs have been developed within this subwatershed.

National Watershed Condition Framework<sup>4</sup>: The Caribou-Targhee NF completed Step 1-Watershed Condition Classification and Step 2-Prioritization of the National Watershed Condition Framework in March, 2011. As part of this effort, the Caribou-Targhee NF classified 260 subwatersheds for resulting in 122 (47%) Good, 130 (50%) Fair, and 8 (3%) Poor. The Jackknife subwatershed was rated fair and was also identified as one of the Forest priority watersheds whereby a Watershed Action Plan was developed as step 3 of the National Watershed Condition Framework.

The Jackknife Watershed Action Plan identified projects (action items) to address the attributes and move Jackknife from a Fair to a Good Watershed Condition Class. Below is a summary of the attribute and current conditions impacting those attributes as identified in the Jackknife Watershed Action Plan:

1.1 Impaired Waters & 1.2 Water Quality Problems *Road sedimentation and channel instability: Project level analysis and Project NEPA has identified sediment from roads in or near Aquatic Influence Zones, active bank eroding and channel downcutting as leading causing impacting water quality.*

3.1 Habitat Fragmentation *Road stream crossings are currently impacting aquatic passage to some life stages of the YCT and are negatively impacting hydrologic function and channel stability.*

3.3 Channel Shape and Function *Channel downcutting, meander cutoffs (channel straightening), and excessive bank erosion on Jackknife and Squaw Creeks are the leading causes for the lower rating. Channel instability is associated with undersized road-stream crossing, historic grazing, beaver removal, poor road locations, and heavy recreational uses are main factors effecting channel conditions.*

6.2 Road Maintenance & 6.4 Mass Wasting *Road sedimentation, poor road drainage, undersized road-stream crossing and road failures on unstable hillslope are the main reasons for a lower rating in this watershed.*

***Existing In-Stream Conditions:***

Proper Functioning Condition (PFC) Assessments: PFC is a qualitative interdisciplinary assessment and a relatively quick determination of condition. This assessment is viewed as a larger scale planning tool that should be refined by specific detail at the project level. Possible PFC ratings include, PFC, functioning at risk (FAR), and non-functioning (USDI BLM et al. 1998 & 2003). In 2002 a PFC assessment covered this area where the functioning at risk was further divided into three subcategories:

- *“Functional at Risk-High” indicates that the stream is nearly functioning properly, but that minor problems or risk factors are present that make the stream susceptible to further degradation.*

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<sup>4</sup> Reference the Hydrology Specialist report and/or <http://www.fs.fed.us/publications/watershed/> for detailed information regarding the National Watershed Condition Framework

- “Functional at Risk-Moderate” indicates that the stream is mid-scale, having substantial problems or risk factors, but still providing a moderate level of functionality relative to the natural potential.
- “Functioning at Risk-Low” indicates a stream has a relatively low level of functionality and/or serious risk factors or problems that could easily cause degradation to a Non-functional state.

The minimum goal is for stream channels to be PFC. Figure 3.3 shows the PFC data within the analysis area.

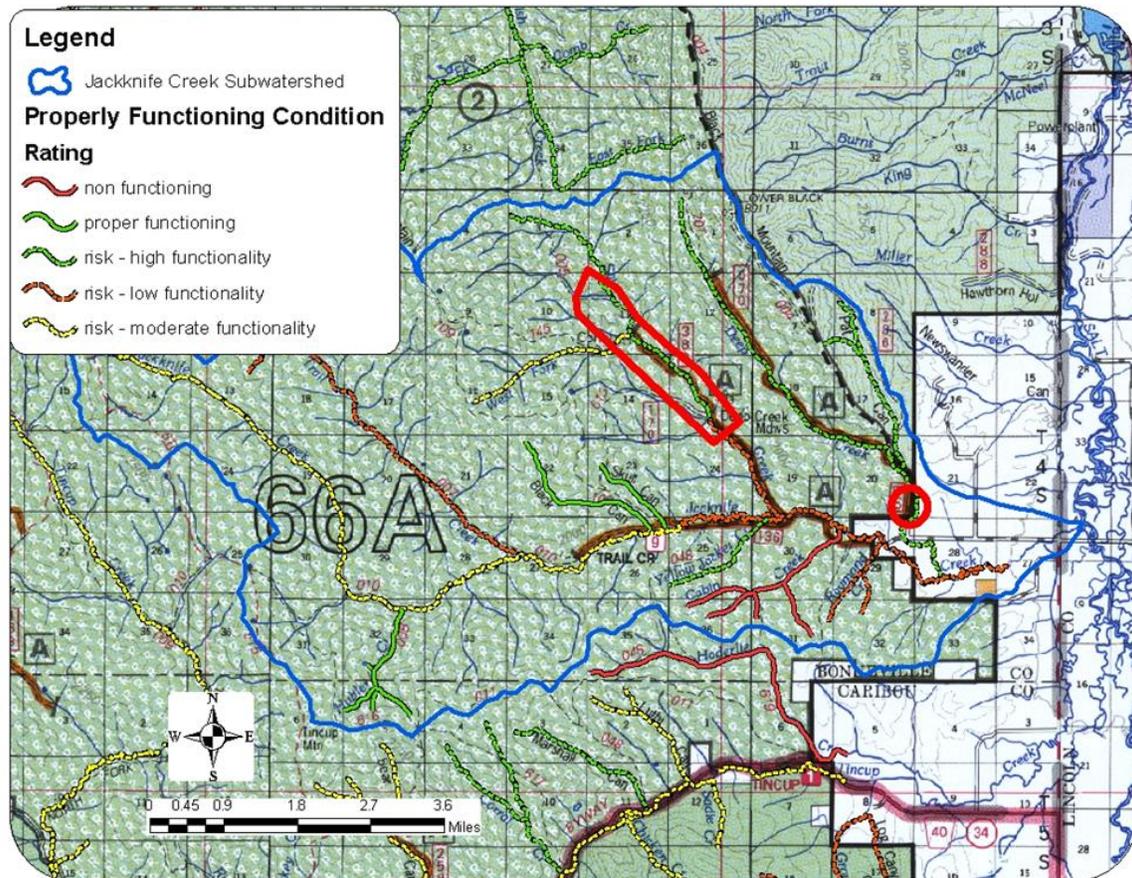


Figure 3.3: PFC ratings within the Jackknife Creek subwatershed

Stream habitat quantity and quality within the project area is currently impacted by road crossings (fords and undersized culverts), roads located within the AIZ, and livestock grazing which are reflected in the PFC ratings. The PFC ratings on Squaw Creek below the corrals have been rated as Functioning at Risk with Low functionality and Functioning at Risk with high functionality above the corrals. The West Fork Squaw Creek was rated as Functioning at Risk with moderate functionality.

PFC conditions within Squaw Creek can then impact downstream PFC rating found in Jackknife Creek. The confluence of Squaw Creek into Jackknife occurs just upstream of the Squaw Creek Road Bridge over Jackknife Creek (approximately 0.1 miles down the

Squaw Creek Rd (#389)). Jackknife Creek at this point and downstream is rated as Functioning at Risk with Low functionality. In addition to the effects of Squaw Creek, Jackknife stream channel and floodplain constriction resulting from an undersized bridge both on the Squaw Creek Rd (#389) and the upstream Jackknife bridge addressed in the 2011 Jackknife Trail and Stream Enhancement Project EA (USDA Forest Service, 2011) have increased stream velocities within Jackknife Creek resulting in increased bank erosion, loss of stream meanders and stream channel downcutting.

Deep Creek PFC ratings were recorded as Functioning at Risk with high functionality. These impacts affecting the rating are mainly brought about by roads in the AIZ, grazing, and undersized stream crossing.

#### Pfankuch Stream Stability Assessments:

*Squaw Creek:* During fish distribution surveys Pfankuch Stream Stability Assessments were conducted at the reach level and habitat surveys were conducted at the unit scale. In 2001 and 2011 Reaches 1 and 2 of Squaw Creek had a Pfankuch stability rating of fair (scale of excellent, good, fair, and poor). Fair ratings in 2011 were associated with bank slope gradient (steep banks), infrequent to moderate mass wasting, and moderate deposition of gravel and sand. Reach 1 begins at the Jackknife Creek/Squaw Creek confluence extending to the north and ending at the existing ford north of the corrals. Reach 2 begins at the end of Reach 1 and extends to the north, ending at the Squaw Creek/West Fork Squaw Creek confluence.

The 2011 fisheries habitat surveys noted that bank stability was estimated at 65-85% in Reach 1 and 85-90% in Reach 2. High levels of bed load deposition (new point bars) were noted in Unit 4 of Reach 1 and were likely attributed to roadway erosion that occurred at the road crossing upstream. Unit 1 of Reach 1 was noted as entrenched with signs of beaver dams that had been blown out. A beaver was living in the bank and small check dams were in place above and below the unit. A large beaver dam was identified above Reach 2 Unit 1 at the confluence of the West Fork (location of the #454 trail crossing). Aquatic habitat in Reach 2 Unit 1 was noted as low gradient with low sinuosity, heavily vegetated banks, steep banks, and shallow pools. While Unit 4 was noted as more confined but having moderate sinuosity with good amounts of woody debris.

Fisheries habitat surveys were not conducted in 2001 on Squaw Creek but general habitat notes were recorded in the Fish Distribution Survey Report and on the field datasheets (located in the project record). Some of the general concerns brought up in these notes include stream sedimentation from the road, proximity of the road to the stream, and riparian and streambank disturbance from sheep grazing.

*Deep Creek:* During fish distribution surveys Pfankuch Stream Stability Assessments were conducted at the reach level and habitat surveys were conducted at the unit scale. Reach 1 begins at the Forest boundary extending upstream and ending at the Deep Creek/Pat Canyon confluence. Reach 2 begins at the end of reach 1, extending upstream approximately 1.5 miles). In 2001 Reaches 1 and 2 of Deep Creek had a Pfankuch

stability rating of good (scale of excellent, good, fair, and poor). In 2011 Reach 2 was the only section assessed and had a Pfankuch stability rating of good.

The 2011 fisheries habitat surveys noted that, bank stability was estimated at 85-90% in Reach 1, 90-95% in Reach 2, and 85% in Reach 3. All reaches of Deep Creek were well vegetated, banks were stable, large woody debris (LWD) was present, and aquatic habitat was in good condition. In Reach 1 Unit 2 the habitat was described as in excellent condition and likely in reference condition.

Fisheries habitat surveys were not conducted in 2001 on Deep Creek but general habitat notes were recorded in the Fish Distribution Survey Report and on the field datasheets (located in the project record). Some of the concerns brought up in these notes included fish passage barriers below the Forest boundary and riparian and streambank disturbance from sheep grazing. In 2008, the Deep Creek crossing on Jackknife Road was replaced and stream restoration was implemented on the ½ mile of stream located below this crossing.

### ***Fish Populations***

Squaw and Deep creeks are considered Yellowstone cutthroat trout stronghold streams on the Caribou-Targhee National Forest that support both resident and migratory life histories. Stronghold stream status is assigned to streams that contain 50% or greater salmonid composition of native cutthroat trout. In addition the Jackknife subwatershed also supports a metapopulation of northern leatherside chub. Forest fish distribution surveys were initially conducted throughout the Jackknife drainage in 2001 and then repeated in 2011. Northern leatherside surveys were conducted in Salt Subbasin in 2010 by ISU. While cutthroat telemetry surveys were conducted on the Salt River by University of Wyoming in 2005 and 2006. Information from these surveys are summarized below.

### **Partner Fisheries Surveys**

In 2005-06 Travis Sanderson from the University of Wyoming conducted telemetry studies on cutthroat trout within the Salt River and identified Jackknife as one of five drainages that support fluvial cutthroat trout from the Salt River (Sanderson 2007). Four of the five mountain spawning tributaries were located in Idaho and have headwater stream segments located on Forest lands.

In 2010 Idaho State University (ISU) graduate student Jason Blakney initiated sampling of tributaries of the Salt River to define the current distribution of northern leatherside chub (NLC) and confirmed the presence of populations in the Jackknife, Tincup, and Stump Subwatersheds. In this pursuit he visited sites where NLC were previously identified such as Trail Creek (USFS 2001) within the Jackknife Subwatershed. In addition to sampling Trail Creek, Blakney also sampled Jackknife and Squaw creeks and identified a metapopulation of NLC in the Jackknife drainage. Multiple size classes of NLC were present confirming that these populations are reproducing (personal communication with J. Blakney ISU graduate student on January 19, 2012). Genetics work is underway to identify the relatedness of this population to others in the Snake and

Bear River basins. At this time, Jackknife and tributaries Squaw and Trail creeks have been identified by Idaho State University as the only known reproducing population of this species in the Salt River Subbasin.

In Squaw Creek, Blakney spot shocked the first ½ mile located below the project area and found 24 NLC (Blakney 2010). The NLC were found in complex habitat with slow water (deep pools), undercut banks, overhanging vegetation, and instream cover (root wads and submerged vegetation). Much of this habitat was associated with active beaver complexes in this lower reach. Blakney noted that NLC were found in stream sections where there was discernible flow and a stream channel present (side channels) within the large beaver complexes. NLC were also observed in the beaver dams but were not effectively sampled with an electrofisher due to pool depths and habitat complexity. Blakney noted that beaver ponds are likely important for overwintering, rearing, and spawning of NLC. He also noted that the distribution of NLC was tied to beaver complexes and that upstream distribution in Squaw Creek ended where beaver dams were not present.

Northern leatherside chubs have not been documented in Deep Creek. Much of the lower part of this system is off Forest and beaver presence is limited and colonization is discouraged. Further surveys should be conducted in lower Deep Creek to determine if NLC are present.

### **USFS Fisheries Surveys**

Squaw and Deep creeks were sampled by the USFS Fish Distribution Survey crew in 2001 (USFS 2001) and 2011 (USFS 2011) and summarized in Tables 3.1 and 3.2. Sampling reaches and units were established in 2001 and a subset of these sites were resampled in 2011. Multiple pass depletion units (100 meter length) were repeated when available and used for calculating and comparing population estimates and densities for salmonids (trout species) within a reach. Only trout  $\geq 10\text{cm}$  were included in population estimates and density estimates.

Squaw Creek: Fish Distribution surveys on Squaw Creek documented a diverse native fish community that included Yellowstone cutthroat trout, mountain whitefish, mountain suckers, longnose dace, speckled dace, redbelt shiners, and sculpin (Table 3.1). In addition to these native species, one juvenile brown was also documented in 2011 in Reach 1. The majority of species diversity in Squaw Creek was encountered in 2011 within Reach 1 where stream gradients are low, beaver are common, and slow water habitat or ponded habitats exist. This native species diversity was likely present in 2001, and was not represented in the catch because the 40 meter unit length (first three units near the confluence) limited the amount of sampling of diverse habitat. Reach 2 supports only YCT and sculpin and is characterized as having sections of higher stream gradients in areas where the valley bottom narrows. These areas contain less diversity of slow water or ponded habitats that support many non-game species. Beaver ponds are common in the upper parts of this reach, especially in areas where the valley widens (near the upper road crossing).

Comparisons of trout population densities in Table 3.1 portray that populations of trout, in this case YCT, have declined between the two sampling events and indicate that channel shape at these locations may have adjusted, as shown by the change in sampling area (the only variable that changed was average stream width). Fish populations naturally fluctuate over time and can be associated with both physical and biological variables that cannot be accounted for within this ten year comparison. For example physical variables such as stream flow (hydrology) vary from year to year and may limit or alter aquatic habitat quantity and quality. Recorded peak flows at the Etna Gage (USGS Salt River Gage 13027500) show that high flow stage in the Salt River was the lowest in 2001 (672 cfs on April 29, 2001) recorded in a 59 year time span and significantly higher in 2011 (4,420 cfs on May 5, 2011). The 2011 event equaled a fifteen year return interval for the Salt River and flooded the valley bottom. In Squaw Creek in 2011, spring flows impacted the drainage physically (beaver complexes blew out and road crossings plugged or scoured) and may have contributed to a biological response (fluctuation in fisheries populations) that was documented that year. Overall, population density trends depicted in Table 3.1 warrant additional fish sampling and habitat surveys to better understand the fluctuations of YCT populations in this drainage.

**Table 3.1: Summary of USFS Fish Distribution Surveys conducted on Squaw Creek.**

<b>Stream</b>	<b>Year</b>	<b>Reach</b>	<b>Number of Sampling Units</b>	<b>Species Present (total catch each species/reach)</b>	<b>Population Density (trout/100m<sup>2</sup>)</b>
Squaw Creek (Tributary of Jackknife Creek)	2001	Reach 1 Confluence to First Road Crossing	4 – 40 and 1 – 100 meter long sampling units	YCT: 155 juvenile (<100mm), 75 adult (≥100mm) speckled dace: 28 sculpin: 123	29.2/100m <sup>2</sup> Site: R1U4 Total Catch: 32 Pop Estimate: 35 Area: 120m <sup>2</sup>
	2011	Reach 1 Confluence to First Road Crossing	2 – 100 meter long sampling units	YCT: 60 juvenile (<100mm), 23 adult (≥100mm) brown trout: 1 juvenile (<100mm) mountain whitefish: 1 mountain sucker: 10 longnose dace: 39 speckled dace: 42 reidside shiner: 3 sculpin: 252	5.2/100m <sup>2</sup> Site: R1U4 Total Catch: 15 Pop Estimate: 15 Area: 289m <sup>2</sup>
	2001	Reach 2 Above first crossing and above West Fork confluence	4 – 40 and 1 – 100 meter long sampling units	YCT: 341 juvenile (<100mm), 23 adult (≥100mm) sculpin: 28	6.7/100m <sup>2</sup> Site: R2U4 Total Catch: 10 Pop Estimate: 10 Area: 150m <sup>2</sup>
	2011	Reach 2 Above first crossing and above West Fork confluence	2 – 100 meter long sampling units	YCT: 66 juvenile (<100mm), 15 adult (≥100mm) sculpin: 50	2.1/100m <sup>2</sup> Site: R2U4 Total Catch: 6 Pop Estimate: 6 Area: 284m <sup>2</sup>

Outside of the trends mentioned above it should be noted that this data also shows that Squaw Creek contains important habitat for a diversity of native fishes. For example, the presence of juvenile Yellowstone cutthroat trout indicates that this stream contains suitable spawning habitat and is a source of native fish for the Jackknife Subbasin as well as the Salt Basin. This data also portrays that non-native brown trout, which have moved into the lower reaches of Jackknife are also starting to invade Squaw Creek and use this drainage for spawning. Northern leatherside chubs were not documented in Squaw Creek during USFS surveys. However these species are often not observed during routine fisheries surveys that have limited sampling scale (100 meters of stream surveyed) and effort. In the future additional more intensive surveys (spot sampling of key complex aquatic habitats) will be needed in lower Squaw Creek to monitor NLC populations in this drainage.

Deep Creek: Fish Distribution surveys on Deep Creek documented a native fish community that included Yellowstone cutthroat trout and sculpin (Table 3.2). In addition to these native species, very low numbers of brown and rainbow trout were been documented in Reach 1. Brown trout were documented in 2001 and since that time a major fish barrier crossing on the Jackknife Road was replaced by the USFS and Trout Unlimited in 2008. The majority (approximately 1.75 miles) of the low gradient and meandering sections of Deep Creek are located on private land, with higher gradient and less sinuous sections located on Forest. These lower reaches may contain a higher diversity of fish species and are also more susceptible to invasion by non-native trout. Invasions by non-native species will need to be investigated over the next couple of years.

Comparisons of trout population densities in Deep Creek (Table 3.2) portray that populations of trout, in this case mostly YCT, are similar to levels found within Squaw Creek in 2011 (Table 3.1). Population density trends within Deep Creek could not be developed for Reaches 1 and 3 due to differences in the level of sampling (location and amount of multiple pass depletion units) between years. Reach 2 was the only reach that could be compared and showed an increase in the population estimate and density of YCT. However the increase was not significant and was similar to the lower population estimates and densities found in Reach 2 of Squaw Creek in 2011. Stream channel widths at sampling locations may also have adjusted, as shown by the change in sampling area (the only variable that changed was average stream width). Overall, population density trends depicted in Table 3.2 warrant additional fish sampling and habitat surveys to better understand the fluctuations of YCT populations in this drainage.

**Table 3.2: Summary of USFS Fish Distribution Surveys conducted on Deep Creek.**

<b>Stream</b>	<b>Year</b>	<b>Reach</b>	<b>Number of Sampling Units</b>	<b>Species Present (total catch each species/reach)</b>	<b>Population Density (trout/100m<sup>2</sup>)</b>
Deep Creek (Tributary of Jackknife Creek)	2001	Reach 1 USFS boundary to Pat Canyon confluence	2 – 40 meter long sampling units	YCT:120 juvenile (<100mm), 27 adult (≥100mm) brown trout: 1 adult (≥100mm) sculpin: 90	NA – No Depletion
	2011	Reach 1 USFS boundary to Pat Canyon confluence	2 – 100 meter long sampling units	YCT: 41 juvenile (<100mm), 35 adult (≥100mm) brown trout: 1 adult (≥100mm) rainbow trout: 1 adult (≥100mm) sculpin: 16	9.1/100m <sup>2</sup> Site: R1U2 Total Catch: 20 Pop Estimate: 22 Area: 241m <sup>2</sup>
	2001	Reach 2 Pat Canyon confluence north to unnamed tributary (approximately 1.5 miles)	4 – 40 and 1 – 100 meter long sampling units	YCT: 108 juvenile (<100mm), 14 adult (≥100mm)	0/100m <sup>2</sup> Site: R2U4 Total Catch: 0 Area: 120m <sup>2</sup>
	2011	Reach 2 Pat Canyon confluence north to unnamed tributary (approximately 1.5 miles)	2 – 100 meter long sampling units	YCT: 27 juvenile (<100mm), 18 adult (≥100mm)	3.7/100m <sup>2</sup> Site: R2U4 Total Catch: 7 Pop Estimate: 7 Area: 189m <sup>2</sup>
	2001	Reach 3 Upstream of Reach 2, north of the unnamed tributary	2 – 40 meter long sampling units	YCT: 12 juvenile (<100mm)	NA – No Depletion
	2011	Reach 3 Upstream of Reach 2, north of the unnamed tributary	1 – 100 meter long sampling unit	YCT:13 juvenile (<100mm)	0/100m <sup>2</sup> Site: R3U1 Total Catch: 0 Area: 232m <sup>2</sup>

The fish distribution data presented in Table 3.2 also provides a snap shot of species composition across a ten year period. As shown above, Deep Creek continues to support a native fisheries community including YCT and sculpin. The presence of juvenile YCT indicates that this stream contains suitable spawning habitat and is a source of native fish for the Jackknife Subbasin as well as the Salt Subbasin. This data also portrays that non-

native brown and rainbow trout are also starting to invade Deep Creek and use this drainage for spawning.

### **Existing Road and Trail Conditions at the Reach Scale:**

Squaw Creek Road (FSR #389): The Squaw Creek Road (FSR #389) is 3.65 miles long, is located entirely within the AIZ of Squaw Creek, has varying maintenance levels (2-3) and is rated as a High AIZ Risk and Moderate to High Unstable Soils Risk (USDA FS 2005). This route currently dead ends at a trailhead that is located above the West Fork of Squaw Creek and provides the primary access to non-motorized trails #454, #456, and #458.

Within the project area, the 1.8 miles of the currently administratively closed FSR #389 extending north of the corrals parallels Squaw Creek and is with the AIZ for 100% of its length. This portion of the road contains a 12 ft. width surface which equates to 2.62 acres of disturbance within the AIZ and crosses Squaw Creek in two locations.

The first 0.9 mile of FSR #389 past the corrals is built at the base of a steep, unstable mountain slope. Slumps of upslope material onto the road bed have occurred several times in the past ten years (personal communication with Blake Dory; Road Crew Foreman), each contributing to stream sediment delivery and resulting in costly road maintenance to maintain a safe travel way for full sized vehicles.

The road leaves the side hill and transitions into the floodplain (last 0.3 miles of this section) and includes an unimproved ford (Crossing #1 in Figure 3.8) that is located on a bend of Squaw Creek. The placement of this crossing on a bend, where stream velocities are greatest, has contributed to over widening of the channel and bank erosion on the upstream approach (Figure 3.4). During the spring of 2011 high flows eroded the toe of the streambank and part of the roads travel width. This crossing continues to impact aquatic and riparian resources by funneling sediment to the stream via the road (note riling in Figure 3.4), decreasing riparian cover, and increasing localized streambank erosion. This site is a point source of stream sediment (from bank erosion and delivery of sediment from the road) and may inhibit fish passage at low flows.



**Figure 3.4:** Photographs of the lower ford stream crossing (Crossing #1 on Figure 7) of Squaw Creek on FSR #389.

The last 0.9 miles of FSR #389 (from the ford to the end of the road) is located mostly in the active floodplain and all within the AIZ of Squaw Creek. In some places the road has been eroded away (Figure 3.5) and directly contributing sediment into the stream system adversely effecting stream cover, stream bank stability, and stream channel function. These areas also present concerns for managing the long-term persistence of this route at its current width, as stream migration may cause additional cutting and erosion of the road prism.



**Figure 3.5:** Photographs of FSR #389 located below the upper road crossing (downstream of Crossing 2 in Figure 7) showing the proximity of the road to the Squaw Creek

The last 0.9 miles of FSR #389 also contains the second of the two stream/road crossing within the project area. This road crossing consists of an undersized 6 ft. round CMP pipe on a stream that has a bankfull width of 15.4 feet. This structure is undersized and poorly placed (high stream capture potential via the roadway) and has resulted in impacts

to the riparian area and sediment delivery to the stream channel. This culvert plugged in 2011 and caused the road to capture the stream and route it back down the road toward the corrals for 300 ft. The scoured out roadway resulted in approximately 150 cubic yards of road material and sediment delivery to Squaw Creek (Figures 3.6 and 3.7). This resulted in impacts to the riparian area and sediment delivery to the stream channel, both adversely impacting aquatic habitat and water quality within Squaw Creek. Undersized crossings can also contribute to channel scour and instability further reducing water quality and channel function. The channel scour at undersized crossings can result in the culvert becoming a barrier to fish passage. However, a fish passage analysis has not been conducted at this location.



**Figure 3.6:** Photograph of the upper road culvert crossing (Crossing #2 on Figure 7) of Squaw Creek on FSR #389. The culvert is located in the middle (to the right of the firs in the foreground) of the picture with solid blue arrows indicating the stream channel and flow direction and the dashed blue arrows indicating where the stream was captured and diverted on the roadway in 2011.



**Figure 3.7: Photographs of the Squaw Creek Road (FSR #389) damage and erosion that resulted from the culvert plugging and stream capture by the road.**

**Trails:** Within the project area, the trailhead at the end of FSR #389 provides the primary access to an extensive non-motorized trail system. These trails often parallel streams and are located within the AIZ. Within the project area 0.7 miles of non-motorized trail (all of the non-motorized trail in the project area) is located in the AIZ. These trails typically have a 2 foot surface width which equates to 0.17 acres of disturbance within the AIZ. The location of these trails within the AIZ may contribute sediment to streams where they intersect on the landscape. Often times these trails have stream crossings that are not improved, typically fords, causing bank instability and the trails themselves often serve as conduits to overland flows that contribute to trail erosion and funnel sediment to the stream.

Beaver activity is also common in this segment of Squaw Creek and has resulted in flooding of the roadways and trails. One specific area of concern resulting from beaver dam establishment is the non-motorized trail #456 ford crossing of Squaw Creek. This trail crossing is located in an area that is ponded by beavers and contributes to livestock permittee and recreational access issues. These management issues are often solved by

removing the beaver dams which in turn decreases aquatic habitat complexity at these locations reducing stream complexity and natural stream processes. Further, removing beaver dams can flush captured sediment which can decrease stream productivity and fish spawning habitat availability if done outside of high flow periods.

In summary, aquatic habitat quantity and quality within the project area is currently impacted by road and trail crossings (fords and undersized culverts), roads located within the AIZ, beaver removal and loss of beaver dam complexes, and livestock grazing. Fish passage and stream habitat restoration projects have been completed on lower Deep Creek and were started in Jackknife in 2012.

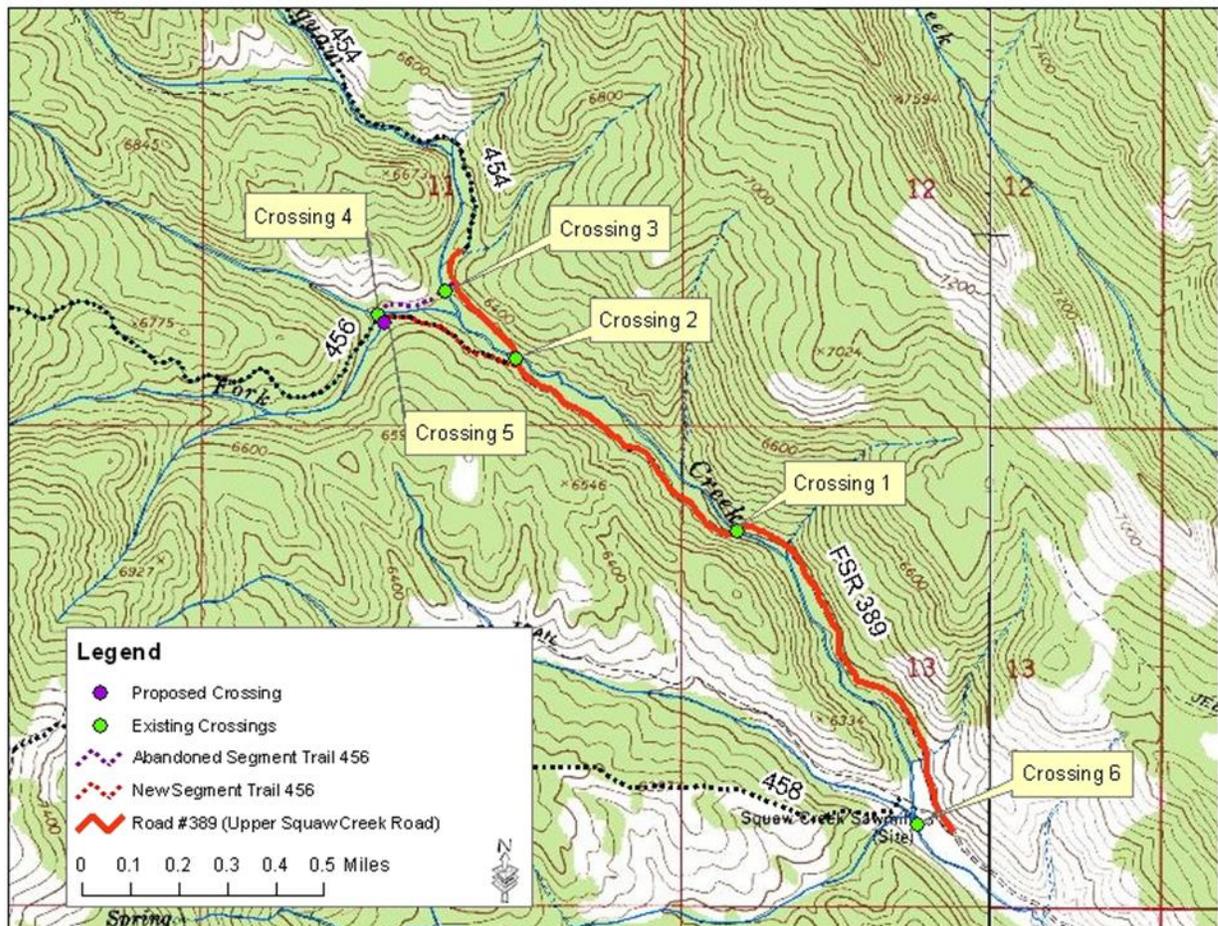


Figure 3.8: Map showing the locations of existing and proposed stream crossings within the project area.

### *Compliance with Forest Standards and Guidelines*

Reducing and/or improving the condition of travel networks (roads and trails) located within the AIZ can lead to improvements in riparian and aquatic habitat condition. All action alternatives within this analysis aim to improve the travel network within the Squaw Creek watershed to a degree that will reduce impacts to AIZs and aquatic habitat. Alternatives 1 and 2 of this project will reduce the amount of road across unstable terrain

and within the AIZ and will improve stream crossing structures. Alternatives 3 and 4 will reduce the amount of roads within the AIZ and also improve stream crossing structures. These actions are consistent with Revised Forest Plan direction for AIZs.

### ***Recommended BMPs and Design Features***

A complete list of Fisheries and Hydrology related BMPs and design features is located in Chapter 2. Compliance with the Clean Water Act is achieved through the proper site-specific design, implementation, and monitoring of Best Management Practices (BMPs)<sup>5</sup>. BMP effectiveness is dependent on proper and consistent implementation and maintenance of the measures (Mosley, et al.1999). BMPs have been found effective at protecting water quality and minimizing erosion on this Forest (Leffert 2004) and other areas as well (NCASI 1999, Heffner 1999, & Seyedbagheri 1996).

The Forest's BMPs include RFP direction (USDA FS 2003), Forest Service Handbooks (FSH) 2509.22 and 2209.13 (USDA FS 1988 & 2005). The BMPs listed for Hydrology and Fisheries in Chapter 2 emphasize applicable direction and also provide project-specific information that expands on the RFP or FSH direction.

### ***Effects Analysis***

Comparison of Alternative Effects: In all alternatives the existing road and trail network in the project area are the main components that will change as shown in Figure 3.9 and compared in Table 3.3. Road and trail lengths in Table 3.3 are best estimates and refer only to the segments highlighted in Figure 3.9. Additional adjacent trail and road miles that exist in the Squaw Creek AIZ are not assessed or quantified in this disturbance analysis because no changes are being proposed under this project and would stay the same under each alternative. The current road width is estimated at 12 feet wide, but may have sections in constricted areas that are narrower, and would be maintained to this standard. Non-motorized trail widths are estimated at two feet and motorized trail widths are estimated at five feet. Widths of the existing trail network may exceed these widths within the project area. The differences in AIZ disturbance correspond to the design width of the access routes and the relocation of the start of Trail #456. The least amount of impact in the AIZ would also correspond to the lowest level of impact to the water resource including stream channel function and stability and sedimentation brought about by erosion of that disturbance in the AIZ.

Changes to existing stream crossings for all alternatives are compared in Table 3.3 and Table 3.4; these display the varying impacts to the number and type of perennial stream crossings, which has effects to sediment and stream channel stability and function. Undersized or unimproved road and trail crossings on perennial streams can also fragment habitat for aquatic species.

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<sup>5</sup> 40CFR130.2(m): Methods, measures, or practices selected by an agency to meet its nonpoint source control needs. BMPs include, but are not limited to, structural & nonstructural controls & operation & maintenance procedures. BMPs can be applied before, during, & after activities to reduce or eliminate the introduction of pollutants into receiving waters

Table 3.3: Comparison of access route disturbance length and acres for each alternative.

Alternative Route Comparison										
Access Route	No-Action		Alt 1		Alt 2	Alt 3			Alt 4	
	Trail	Road	Trail	ATV	Trail	Trail	ATV	Road	Trail	Road
Width (ft)	2.0	12.0	2.0	5.0	2.0	2.0	5.0	12.0	2.0	12.0
Length In AIZ (miles)	0.2	1.8	0.3	1.8	2.1	0.3	0.9	0.9	1.2	0.9
Acres in AIZ	0.05	2.62	0.07	1.09	0.51	0.07	0.55	1.31	0.29	1.31
Total Acres in AIZ	2.67		1.16		0.51	1.93			1.60	
Trailhead	No-Action		Alt 1		Alt 2	Alt 3			Alt 4	
Acres in AIZ	0		0		0	0.1			0.1	
Total Acres in AIZ	2.67		1.16		0.51	2.03			1.70	

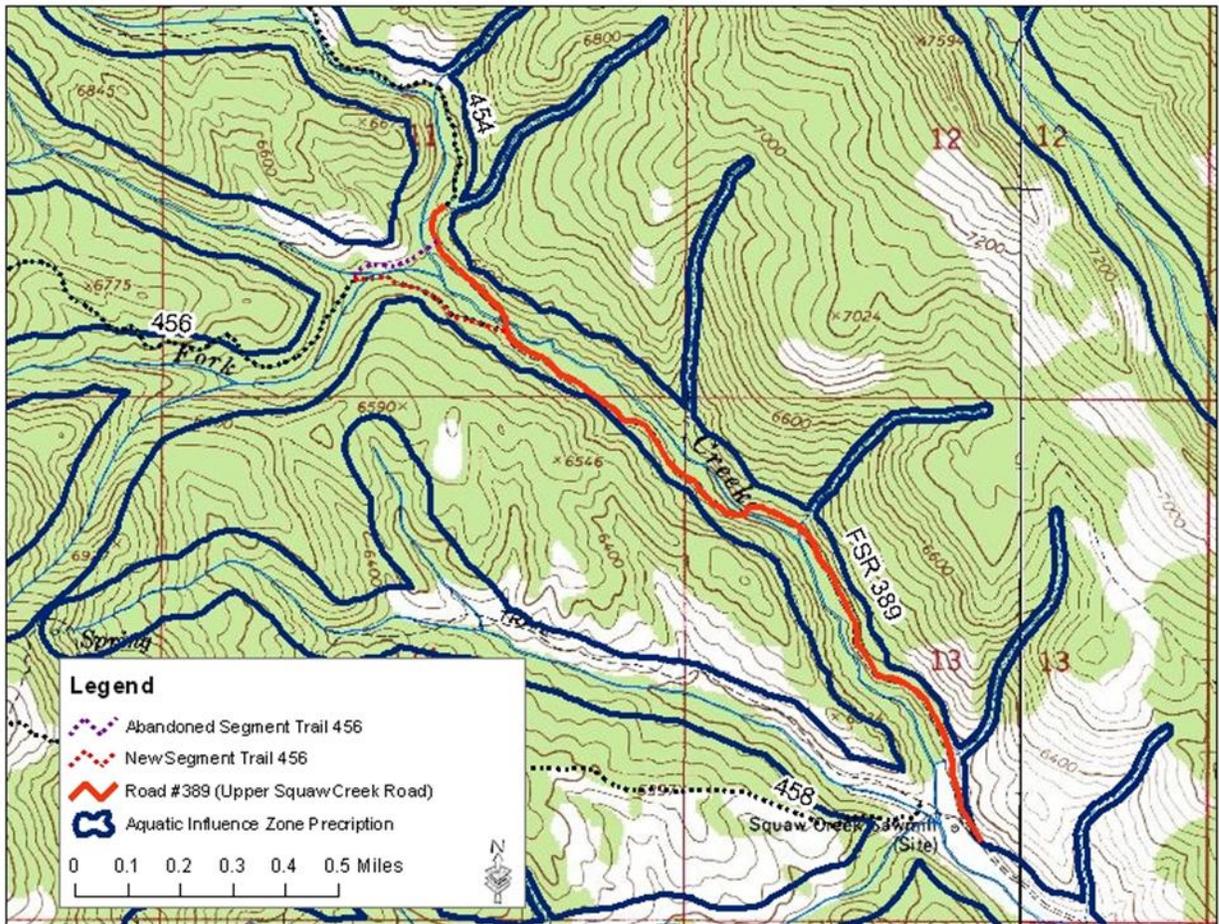


Figure 3.9: Map showing routes by Alternative overlaid by the Aquatic Influence Zone (AIZ) prescription.

In the No Action Alternative, 1.8 miles of road (FSR #389) and 0.2 miles of non-motorized trail (trails #454 and #456) would be maintained within the AIZ of Squaw Creek (Figure 3.9). The five crossings in the project area (Table 3.4 and Figure 3.8), most of which are undersized and/or unimproved and currently impacting aquatic habitat, would be maintained and improved in the same location. Maintaining existing routes on unstable landforms and within the AIZ of Squaw Creek will result in the largest amount of disturbance acres (Table 3.3) and would not address resource and maintenance concerns.

**Table 3.4: Summary of stream crossings and site prescriptions for each alternative.**

<b>Crossing Prescription Comparison</b>					
<b>Crossing</b>	<b>No Action</b>	<b>Alt 1</b>	<b>Alt 2</b>	<b>Alt 3</b>	<b>Alt 4</b>
Crossing #1 Squaw Creek FSR #389 Ford	Upgrade to a crossing structure	Install ATV Bridge New Location	Install Trail Bridge New Location	Install ATV Bridge New Location	Install Trail Bridge New Location
Crossing #2 Squaw Creek FSR #389 Culvert	Upgrade to a crossing structure	Install ATV Bridge New Location	Install Trail Bridge New Location	Install ATV Bridge New Location	Install Trail Bridge New Location
Crossing #3 Squaw Creek Trail #456 Ford	No Change	Obliterate			
Crossing #4 WF Squaw Creek Trib Trail #456 Ford	No Change	Abandoned Segment <sup>6</sup>			
Crossing #5 WF Squaw Creek Proposed Trail #456 Crossing	NA	New Crossing No Prescription <sup>7</sup>			
Crossing #6 Squaw Creek Trail #458 Ford	No Change <sup>8</sup>				
<b>Total Crossings in Project Area</b>	<b>5</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>

In Alternatives 1 and 2 approximately 1.8 miles of the existing road (FSR #389) template would be converted to a trail route, an additional 0.3 miles of new trail (#456) would be constructed, and 0.2 miles of existing trail (#456) would be abandoned (Figure 3.9). All of these actions will occur within the AIZ. With these trail alternatives, the narrowing of the existing road prism would decrease the overall disturbance acres within the AIZ (Table 3.3). The 1.8 miles of the closed road would be narrowed to the corresponding

<sup>6</sup> The 0.2 miles of trail is proposed to be abandoned as no erosional concerns have been identified and natural vegetation is expected to re-establish to protect this site. However if erosional concern are identified during implementation then BMPS should be implemented as direct by the hydrologist.

<sup>7</sup> Prior to implementation an engineer, hydrologist and/or recreation special should identify a prescription to maximize protect of the stream crossing.

<sup>8</sup>Improvements to the trail #458 crossing of Squaw Creek (Crossing #6 in Figure 3.8) within the project area is not included in any of the project alternatives, improvements to this crossing will likely occur in the future as part of routine trail maintenance.

trail width requirement (Alt 1 – 5ft and Alt 2 – 2ft). The remainder of the road would be fully re-contoured, slashed, and seeded to restore stability, restore riparian areas, and reduce erosion. Re-contouring impacts would be reduced to a minimum with the implementation of the proper BMPs installed.

With these alternatives the 0.3 miles of newly constructed trail (#456) would be an added disturbance to the AIZ but will also eliminate a problematic trail crossing of Squaw Creek and result in the abandonment of 0.2 miles of existing non-motorized trail. Overall, three of the four<sup>9</sup> problematic crossings on Squaw Creek (only fish bearing stream) would be addressed by relocating crossings to more suitable areas to reduce existing resource impacts and recreational access issues. These alternatives would decrease the number of crossings within the project area and would reduce the number of crossings (from four to three) on fish bearing reaches of Squaw Creek. Under alternatives 1 and 2, relocating the trailhead would not result in new AIZ disturbance, as the corral site is already used for stock shipment and dispersed camping.

When comparing the trail alternatives, Alternative 1 would have more AIZ disturbance than Alternative 2 due to the increase in trail width (Table 3.3). Overall, these alternatives would significantly reduce AIZ disturbance in the project area when compared to existing conditions. Alternative 1 would have a 57% reduction in the AIZ disturbance and Alternative 2 would have an 81% reduction in AIZ disturbance.

In Alternatives 3 and 4 approximately 0.9 miles of the existing road (FSR #389) template would be maintained to standard, 0.9 miles of the existing road would be converted to a trail route, an additional 0.3 miles of new trail would be constructed, 0.2 miles of existing trail would be abandoned (Figure 3.9), and a new 0.1 acre trailhead would be installed at the end of the road. All of these actions will occur within the AIZ. With these road and trail alternatives, the narrowing of part of the existing road prism would also decrease the overall disturbance acres within the AIZ (Table 3.3). The last 0.9 miles of the closed road would be narrowed to the corresponding trail width requirement (Alt 3 – 5<sup>ft</sup> and Alt 4 – 2<sup>ft</sup>). The remainder of the road would be fully re-contoured, slashed, and seeded to restore stability, restore riparian areas, and reduce erosion. Re-contouring impacts would be reduced to a minimum with the implementation of the proper BMPs installed.

With these alternatives adding 0.3 miles of newly constructed trail and relocating the trailhead would be an added disturbance to the AIZ in the project area. However, these improvements will allow for travel management flexibility while also eliminating a problematic trail crossing of Squaw Creek. Overall, three of the four problematic crossings on Squaw Creek (only fish bearing stream) would be addressed by relocating crossings to more suitable areas to reduce existing resource impacts and recreational access issues. These alternatives would decrease the number of crossings within the project area and would reduce the number of crossings (from four to three) on fish bearing reaches of Squaw Creek.

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<sup>9</sup> It should be noted that the fourth problematic stream crossing (Crossing #6 on Figure 3.8) will likely be repaired in the future. See footnote 7 above.

When comparing the road/trail alternatives, Alternative 3 would have more AIZ disturbance than Alternative 4 due to the increase in trail width (Table 3.3). Overall, these alternatives would also reduce AIZ disturbance in the project area when compared to existing conditions. Alternative 3 would have a 24% reduction in the AIZ disturbance and Alternative 4 would have a 36% reduction in AIZ disturbance.

### *Direct and Indirect Effects by Alternative*

#### No Action (Re-Establish Full Size Vehicle Access)

The No Action Alternative would maintain the Squaw Creek road (1.8 miles) and the 0.2 miles of trail #456 which include a stream crossing on the main stem of Squaw Creek. All 2.0 miles of access routes would be within the AIZ and equate to a 2.67 acre disturbance in the AIZ. Major maintenance activities of the 1.8 miles of the FSR #389 road would be needed to bring the road up to current standards including the installation of road drainage structures (such as ditch relief culverts), road surface reshaping (to improve drainage), damage repair and resurfacing (graveling) and improvement of two crossing structures to occur to lift the administrative closure and provide an adequate travel route. Site adjustments to trail locations and trail crossings identified in the other alternatives would not be implemented.

The initial maintenance activity would increase erosion over the short-term (1-2 years) but then drop below existing levels with the use of appropriate road BMPs such as graveling and road drainage improvement. However, the first 0.9 mile of the road past the corrals is built at the base of a steep mountain slope. Slumps of upslope material onto the road bed have occurred several times in the past ten years, each contributing to stream sediment delivery and resulting in costly road maintenance to maintain a safe travel way for full sized vehicles. The same level of maintenance on this section of road is likely to continue with similar impact of sediment delivery, reducing water quality, aquatic habitat and stream function. Any road widening occurring as part of bringing the road up to standard would increase AIZ disturbance and would likely exacerbate problems with sediment delivery, stream function, etc. in the long term.

The two problematic road stream crossings on fish bearing reaches of Squaw Creek would be improved during future road maintenance with open bottom arch culverts or bridges, replacing the existing eroding non-functional ford stream crossing (crossing 1 in Figure 3.8) and replacing the undersized 6<sup>ft</sup> diameter culvert stream crossing (crossing 2 in Figure 3.8) restoring some stream function, stability and water quality. However, beaver issues and diversion potential will likely remain if the crossings are improved in place.

Trail #456 and the stream crossing near the end of the road would stay the same. Trail ford stream crossings at the beginning of trail #456 (crossing 3 in Figure 3.8) would continue to added elevated sediment into Squaw Creek and continue to reduce water quality, aquatic habitat, and stream stability/function. The beaver dam problems of inundating the ford crossing of trail #456 on Squaw Creek would continue to occur whereby removal would be necessary to provide user access almost on an annual basis.

The annual removal decreases aquatic habitat complexity at this location by reducing stream complexity and impacting natural stream processes.

Under this action a borrow pit would not be developed in the Deep Creek watershed. Road base material needed for road improvements (such elevating the FSR #389 road south of the corrals) would need to be sourced at a different location outside the project area.

In summary, the No Action alternative would not improve the long-term stability or suitability of the existing travel routes located within the AIZ. The location of road and trails within the AIZ of Squaw Creek, problem stream crossings, route diversion potential, and road segments on unstable landforms have all been identified as resource concerns that impact AIZs and aquatic habitat. Combined the existing attributes of the travel network disrupt AIZ buffers and contribute to sediment delivery to Squaw Creek. Maintaining these routes would not significantly address resource concerns, such as problematic road and trail crossings, or improve AIZ conditions.

#### Effects Common to all action alternatives

All action alternatives include the development of a borrow pit in the Deep Creek watershed. Less than 1 acre of AIZ disturbance will occur on the outer limits of the AIZ and be located whereby the Deep Creek Road FSR #070 would be between the pit and the stream. The road and designed BMPs would reduce or eliminate sediment from entering Deep Creek. Material sourced at this location would be used as road base to improve FSR #389 below the project area. BMP's have been identified in this report to maintain and improve AIZ attributes at this location. It is expected that ground disturbance during project implementation would have short term increases of erosion and sedimentation into Deep Creek but sedimentation would be decreased through the use of BMPs and is not expected to contribute to long term impacts to the AIZ or Deep Creek.

The reroute of the beginning of the non-motorized trail #456 would increase trail length from 0.2 miles to 0.3 miles but would eliminate problem ford stream crossing 3 (Figure 3.8) and the smaller stream crossing 4 (Figure 3.8). These two stream crossings (3&4) would be replaced by crossing 5 (Figure 3.8) that occurs on a smaller tributary not occupied by beaver reducing stream crossing impacts and improving water quality and stream function. These actions will reduce sediment delivery to Squaw Creek, improve water quality, allow natural beaver activity to occur, and begin to restore stream channel function.

Further, all of the action alternatives would improve AIZ condition by relocating stream crossings to more suitable areas. All alternatives would improve existing road and trail crossings conditions and would reduce the number of crossings on fish bearing reaches of Squaw Creek (from four to three). Two of the three remaining crossings (Crossing #1 and 2 in Figure 308) would be relocated and upgraded to bridges, benefiting stream function and aquatic habitat connectivity.

#### Alternative 1 (Motorized ATV Trail) and Alternative 2 (Non-Motorized Trail)

Alternative 1 would improve AIZ function by converting FSR #389 to a motorized ATV route narrowing the disturbance width from 12 feet to 5 feet within the AIZ. The converted road to an ATV trail and rerouting the beginning of trail #456 would reduce AIZ disturbance by 57 percent from existing condition. The narrow tread on the first 0.9 miles (beyond the corral) across unstable landform would reduce the impact to the travel route and reduce stream impacts.

Alternative 2 would further improve AIZ condition beyond the No Action Alternative and Alternative 1 by converting FSR #389 to a non-motorized route narrowing the disturbance with from 12 feet to 2 feet within the AIZ corridor. The converted road and relocation of the beginning of trail #456 would reduce AIZ disturbance by 81 percent from existing condition. The narrow tread on first 0.9 miles (beyond the corral) across unstable landform would reduce the impact to the travel route and reduce stream impacts.

Alternatives 1 and 2 would upgrade two road stream crossing with bridges, replacing the existing eroding non-functional ford stream crossing (crossing 1 in Figure 3.8) and replacing the undersized 6<sup>ft</sup> diameter culvert stream crossing (crossing 2 in Figure 3.8) restoring some stream function, stability and water quality.

It is expected that ground disturbance during project implementation would have short term increases of erosion and sedimentation into Squaw Creek but these actions would significantly improve current conditions in the project area for the long term. Replacing FSR #389 with an improved and rerouted trail network would reduce erosion and sedimentation to Squaw Creek and therefore improve water quality and stream stability/function. This would benefit fisheries and aquatic habitat and is consistent with Revised Forest Plan direction.

#### Alternative 3 (Road / ATV Trail) and Alternative 4 (Road / Non-motorized Trail)

Alternatives 3 and 4 keep the first 0.9 miles of FSR #389 north of the corrals in place and converts the last 0.9 either to a ATV trail (Alt 3) or a non-motorized trail (Alt 4). A small 0.1 acre parking area would also be constructed at the end of the road to accommodate user access. Alternative 3 would reduce the tread width of the last 0.9 miles from 12 feet to 5 feet and Alternative 4 would reduce the tread width from 12 feet to 2 feet on the last 0.9 miles. Both alternatives would relocate the beginning of trail #456. Alternatives 3 and 4 equate to a 24% and 36% reductions in AIZ disturbance, respectively, compared to the No Action Alternative.

Heavy maintenance activities would occur on the first 0.9 miles of the FSR #389 road would be needed to bring the road up to current standards including the installation of road drainage structures (such as ditch relief culverts), road surface reshaping (to improve drainage), damage repair and resurfacing (graveling). The initial maintenance activity would increase erosion over the short-term (1-2 years) but then drop below existing levels with the use of appropriate road BMPs such as graveling and road drainage improvement. However, the first 0.9 mile of the road past the corrals is built at the base of a steep, unstable mountain slope. Slumps of upslope material onto the road bed have occurred several times in the past ten years, each contributing to stream sediment delivery

and resulting in costly road maintenance to maintain a safe travel way for full sized vehicles. The same level of maintenance on this section of road is likely to continue with similar impact of sediment delivery, reducing water quality, aquatic habitat and stream function.

Under Alternatives 3 and 4, a small parking area (approximately 0.1 acre) would be constructed at the end of the road (0.9 miles beyond the corrals) on the east side of the main stem Squaw Creek. The parking area would be constructed by leveling the site, graveling, and delineating the designated parking area with boulders, logs, or other obstructions. This new disturbance would occur in the AIZ and would increase sediment delivery to Squaw Creek. However, incorporating the other actions in these alternatives and the implementation of BMPs there would be a 24% (Alt 3) and a 36% (Alt 4) reduction in AIZ disturbance compared to existing conditions. The reduction in AIZ disturbance and incorporated BMPs would improve water quality, stream functions and aquatic habitat.

In addition the two road stream crossing would be upgraded to bridges, replacing the existing eroding non-functional ford stream crossing (crossing 1 in Figure 3.8) and replacing the undersized 6<sup>ft</sup> diameter culvert stream crossing (crossing 2 in Figure 3.8) restoring some stream function, stability and water quality.

It is expected that ground disturbance during project implementation would have short term increases of erosion and sedimentation into Squaw Creek but these actions would significantly improve current conditions in the project area for the long term. Replacing FSR #389 with an improved and rerouted trail network would reduce erosion and sedimentation to Squaw Creek therefore improving water quality and stream stability/function. This would benefit fisheries and aquatic habitat and is consistent with Revised Forest Plan direction.

### ***Cumulative Effects***

#### Hydrology Cumulative Effects

The cumulative effects for water resource as it relates to the stream channel stability and sedimentation issues within the Jackknife subwatershed include livestock grazing, recreational activities, road and trail maintenance/improvements, other stream restoration projects, and water diversion upgrades. These impacts of past, present and foreseeable activities could have direct and indirect impacts to these issues.

The Jackknife subwatershed was rated fair and was also identified as one of the Forest priority watersheds whereby a Watershed Action Plan was developed as step 3 of the National Watershed Condition Framework (<http://www.fs.fed.us/publications/watershed/>). This project, past projects and future projects have been completed or are being planned to improve the watershed condition class by addressing the following identified concerns:

- Water Quality Problems *Road sedimentation and channel instability*
- Habitat Fragmentation *Road stream crossings*

- Channel Shape and Function Channel downcutting, meander cutoffs (channel straightening), and excessive bank erosion
- Road Maintenance & Mass Wasting Road sedimentation, poor road drainage, undersized road-stream crossing and road failures on unstable hillslope

A majority of these activities look to improve water and aquatic resource condition as directed by the Caribou RFP (USDA Forest Service 2003). Past and present activities include, but not limited to, the restoration of Deep Creek Restoration Project (2008), the proposed improvement of the Jackknife diversion (scheduled for 2011-2013) just below the forest boundary, the Jackknife Trail and Stream Enhancement Project (USDA Forest Service 2011). Stream crossing improvements and road improvement on Deep Creek road are aimed at improving watershed health and resource conditions and changing watershed condition class.

These two activities occur on private ground but are collaborative efforts by state and federal agencies, private landowners and other interest groups (Trout Unlimited). Other disturbance activities such as recreation use and grazing are minimized by the used of appropriate BMPs which would include grazing to standard and maintaining appropriate trail drainage to mention a few. The utilization of BMPs would minimize the overall direct and indirect effects of these activities as well as the action alternatives.

Considering the cumulative effects the No Action (Re-Establish Full Size Vehicle Access) would create or maintain the largest amount of impact to the water resource, now and into the future, as similarly stated in the discussion above. All action alternatives (1-4) would improve riparian conditions, water resources and aquatic habitat. Alternative 3 would have the next largest impact followed by Alternative 4, 1, then 2 which would have the least amount of impact.

#### Fisheries Cumulative Effects

The cumulative effects for the fisheries resource focuses on aquatic Sensitive Species and AIZ function within the Jackknife subwatershed. Past and present activities within the Jackknife watershed include, but are not limited to wildfire, livestock grazing, recreational activities, road and trail maintenance/improvements, other stream restoration projects, and water diversions. These impacts of past, present and foreseeable activities could have direct and indirect impacts to AIZ function and sensitive species including Yellowstone cutthroat trout and northern leatherside chub and their habitat. It is not anticipated that short term sediment inputs to Squaw Creek, associated with this project, will contribute to cumulative impacts to the Yellowstone cutthroat trout and northern leatherside populations or aquatic habitat within the project area. Impacts to aquatic resources associated with the project will vary in quantity and intensity depending on the alternative selected and can be addressed by implementing BMPs and adhering to Revised Forest Plan guidance.

Considering cumulative effects the No Action (Re-Establish FSR#389) Alternative would have the largest amount of impact to AIZs and Sensitive Species, now and into the future, as similarly stated in the discussion above. Alternatives 4 and 3 would be the next largest

impact followed by Alternatives 2 and 1 which would have the least amount of impact. All action alternatives would contribute to improved AIZ conditions and aquatic habitat for Sensitive Species within the Jackknife Creek subwatershed and are compliant with Forest Plan Direction. Further these actions would not contribute to cumulative impacts to Yellowstone cutthroat trout and northern leatherside chub or aquatic habitat within the project area.

Irretrievable and Irreversible Effects: None of the Action alternatives would result in irretrievable or irreversible impacts to the Hydrology or Fisheries resources. As described in the analysis above, while some short term delivery of sediment to project area streams may occur, long term improvements such as reductions in sediment delivery and improvements to stream channel function are expected under all action alternatives in the long term. Implementation of the BMPs outlined in the report will further ensure minimal short term impacts and compliance with Forest Plan direction. Further, roads and trails can be closed and reclaimed if they are causing unforeseen resource damage.

## **SOILS**

### ***Existing Conditions***

The road/ trail alternatives are located in the Squaw Creek drainage. The proposed borrow site is in the Deep Creek drainage. A portion of the borrow pit and the Squaw Creek road are in the aquatic influence zone management prescription. The trail proposals are mainly within the aquatic influence zone prescription, with some proposed trail segments in the semi-primitive management prescription. Landforms in the area include landslides on mountain slopes, mountain slopes, and perennial drainages. The soils are a mix of silt loam, loam, and clay loam soils on the mountain slopes, and cryaquolls in the Squaw Creek drainage. Appendix A of the Soils Specialist report includes maps and landtype information specific to the project area.

### ***Analysis Area***

The analysis area encompasses the soil resources affected by this proposal, which includes the existing FSR #389 segment north of the corrals, the proposed non-motorized trail and trailhead re-alignment, segment of Squaw Creek proposed for restoration, proposed trail corridors (including about a 0.5 mile buffer), and the proposed borrow site. These areas drain into the Salt River via Jackknife Creek.

### ***Capability/ Suitability***

Soil descriptions and field notes previously collected in the project vicinity were reviewed to verify the major landtypes (see Soils field notes in the project record). The major landtypes mapped on the mountain slopes in the Squaw creek drainage developed in the naturally unstable Wayan geologic formation and are rated marginally unstable or unstable, with a moderate or high hazard for road cut slope failure (Soil Survey of the CNF, 1990). This hazard rating is confirmed by the road cut-slope failures in Section 13 T4S R45E. The area is not well suited to maintaining the current road segment north of the corrals as an open road to Forest Service standard due to the past landslide activity that has repeatedly narrowed/blocked the road. This segment of the road is not unique, however; there are several Forest roads that are cut into steep, unstable mountain slopes formed in the Wayan or

similar formations such as portions of the McCoy Creek road, Morgan Meadows road, and the closed portion of the Jackknife road. The area is also limited for both motorized and non-motorized trail construction, especially along the existing road prism where the small landslides have occurred. The proposed motorized and non-motorized trail locations were selected based on desirable stream crossing locations and to limit the amount of road or trail cut that will need to be maintained in the unstable mountain slopes. Recommended design features to limit soil erosion are identified in Chapter 2.

### ***Analysis Methods and Indicators***

The unstable nature of many of the mountain slopes in this analysis area is limiting for roads and trails that require a full bench design with cut and fill. On steep, unstable mountain slopes, roads open to full size vehicles require more extensive cut-and-fill than narrower trails. Cut slopes can reduce slope stability and result in slumps, and fill can move downslope (Intermountain Region Soil Criteria and Rating Guide, 2010 p. 196). The width of the road/trail prism proposed will be the indicator used to compare alternatives.

### ***Environmental Effects***

#### **No Action Alternative**

##### ***Direct and Indirect Effects***

Re-opening the road will require repair to FS standards. This is likely to be only a temporary fix, considering the recent history of slumps in Section 13 T4S R45E (Road Maintenance Cost Estimates; Dory, 2012). The existing road segment undermines the toe slope support of a steep, unstable mountain slope (Soil Survey, 1990). The road cuts and fills on this road segment have a moderate to high hazard of mass failure or sloughing, and a moderate to high erosion hazard (Soil Survey, 1990). The ongoing maintenance needed to keep the road open and safe for the public may trigger additional slumps. The effects of maintaining this road segment are similar to other open Forest roads that cross similar landforms developed in similar geologic formations.

##### ***Cumulative Effects***

Past, present, and reasonably foreseeable future actions in the activity area include the past wildfires (including one in 2010), ongoing sheep grazing and use of sheep corral facilities located in the Squaw Creek drainage, increasing recreation pressure on the existing trail network, and occasional illegal off-route travel and the spread and control of noxious weeds that have contributed to the existing condition. Reasonably foreseeable future actions within the activity area include heavy maintenance and replacement/up-grade of multiple stream crossings on the Jackknife Road, Squaw Creek Road south of the corrals and the Deep Creek Road. The Jackknife Road west of the parking area has been closed and a non-motorized trail constructed. This maintenance and trail construction is expected to result in a medium- to long-term reduction in erosion over the existing condition. Repairing and re-opening the road segment north of the corrals will likely continue to trigger mass failures, as has happened in the past. Although this is a naturally unstable area prone to landslides, the slides on the road are most likely management-induced (ie, they would not have occurred if the cut and fill necessary for a full size road had not been built across the slope). This means that the erosion and sediment pulses associated with slumps and their removal, in addition to normal road sediment production, are above natural sedimentation rates for Squaw Creek.

### Effects Common to all action alternatives

The proposal to develop a borrow site for fill/gravel material for road maintenance is common to all action alternatives. The proposed borrow site was identified and evaluated on the ground by an engineer and a soil scientist (ProposedBorrowDeepCrk07202012). This site is located T04S R46E NE ¼ of Section 20 and is approximately 1 acre in size. The proposed borrow site is in rocky soils on a mountain slope along the Deep Creek road. The site is within an area mapped in the Caribou Soil Survey as landtype 456, which is identified as marginally unstable. This site was evaluated on the ground and determined to be stable. Topsoil would be salvaged, and the site reclaimed. The reclaimed area will be of lower quality as compared to the undisturbed soil due to mixing, displacement, loss of soil structure, and altering the vegetation. It is expected that ground disturbance during project implementation would have short term increases of erosion and sedimentation into Deep Creek but sedimentation would be decreased through the use of BMPs (such as silt fences or similar sediment trapping devices) and is not expected to contribute to long term impacts to the AIZ or Deep Creek.



*Figure 3.10 Photos of the proposed borrow source.*

Another proposal common to all action alternatives is relocating the trailhead for non-motorized Trail #456 to the other side of the creek. This will involve construction of non-motorized trail along the west side of the creek, and obliteration of the old non-motorized connector. Where the re-route is proposed, the trail would avoid recent mass failures and result in minimal disturbance to the unstable landform. Building trails requires soil disturbances such as displacement and compaction. Trail use causes additional compaction and displacement which leads to erosion (Marion and Wimpey, 1997). Trail grade and orientation to the fall line are major design features that influence the amount of soil erosion (Quinn and Chernoff, 2010 p.15). Trails built and maintained to Forest Service standards should have a low erosion rate.

Trail obliteration is likely to have a short-term (2-year) increase in potential erosion and sediment delivery followed by an overall reduction in potential erosion as vegetation establishes.

Stream channel restoration work and road/trail crossing work utilizing Best Management Practices is also common to both action alternatives. The effect of this proposed work on the soil resource is minor, short-term erosion during construction disturbance.

### Alternative 1

#### *Direct and Indirect Effects*

The existing road prism would be narrowed to 60 inches, except for passing areas, which would reduce the amount of cut into the unstable mountain slope in Section 13 T4S R45E. Slumps may still occur and continue to block the trail periodically, requiring maintenance to re-open the trail. Erosion will occur on the tread, but would be minimized with implementation of the proposed BMPs.

#### *Cumulative Effects*

Past, present, and reasonably foreseeable future actions in the activity area include the past wildfires (including one in 2010), ongoing sheep grazing, increasing recreation pressure on the existing trail network, and occasional illegal off-route travel and the spread and control of noxious weeds that have contributed to the existing condition. Reasonably foreseeable future actions within the activity area include heavy maintenance and replacement/up-grade of multiple stream crossings on the Jackknife Road, Squaw Creek Road south of the corrals and the Deep Creek Road. The Jackknife Road west of the parking area has been closed and a non-motorized trail constructed. This maintenance and trail construction is expected to result in a medium- to long-term reduction in erosion over the existing condition. Soil quality will be reduced in the long-term on the reclaimed 1 acre borrow pit site. Implementing alternative 1 will result in a reduction of erosion and sedimentation to Squaw Creek and a reduction in disturbance to the management-induced slumps on the closed road segment. If this small segment of motorized trail leads to the creation of new illegal routes, additional soil erosion and disturbance would be associated with this alternative. However, this is not expected since, as described in the Recreation Specialist report, no motorized user-created trails have been observed or reported along the Squaw Creek road. Much of the terrain along Squaw Creek, north of the corrals, is too rugged or forested to accommodate illegal motorized use. Therefore, overall long term soil quality will be stable in the Jackknife watershed.

### Alternative 2

#### *Direct and Indirect Effects*

The existing road prism would be narrowed to 18-24 inches, which would reduce the amount of cut into the unstable mountain slope in Section 13 T4S R45E. Erosion will occur on the tread, but would be minimized with proper drainage and maintenance.

### *Cumulative Effects*

Past, present, and reasonably foreseeable future actions in the activity area include the past wildfires (including one in 2010), ongoing sheep grazing, increasing recreation pressure on the existing trail network, and occasional illegal off-route travel and the spread and control of noxious weeds that have contributed to the existing condition. Reasonably foreseeable future actions within the activity area include heavy maintenance and replacement/up-grade of multiple stream crossings on the Jackknife Road, Squaw Creek Road south of the corrals and the Deep Creek Road. The Jackknife Road west of the parking area has been closed and a non-motorized trail constructed. This maintenance and trail construction is expected to result in a medium- to long-term reduction in erosion over the existing condition. Implementing alternative 2 will result in a reduction of erosion and sedimentation to Squaw Creek and a reduction in the disturbance of the management-induced slumps on the closed road segment. Soil quality will be reduced in the long-term on the reclaimed 1 acre borrow pit site. Overall, soil quality will be stable in the Jackknife watershed.

### Alternative 3

#### *Direct and Indirect Effects*

Re-opening the road will require repair to FS standards. This is likely to be only a temporary fix, considering the recent history of slumps in Section 13 T4S R45E (Road Maintenance Cost Estimates; Dory, 2012). The existing road segment undermines the toe slope support of a steep, unstable mountain slope (Soil Survey, 1990). The road cuts and fills on this road segment have a moderate to high hazard of mass failure or sloughing, and a moderate to high erosion hazard (Soil Survey, 1990). The ongoing maintenance needed to keep the road open and safe for the public will likely trigger additional slumps. The effects of maintaining this road segment are similar to other open Forest roads that cross similar landforms developed in similar geologic formations.

Where the motorized trail is proposed, the existing road prism would be narrowed to 60 inches, except for passing areas, which would reduce the amount of cut into a potentially unstable mountain slope. Slumps may still occur which may partially block the trail periodically. Erosion will occur on the tread, but would be minimized with proper drainage and maintenance. The new trailhead would result in compaction and a reduction in soil quality on the 0.1 acres affected.

#### *Cumulative Effects*

Past, present, and reasonably foreseeable future actions in the activity area include the past wildfires (including one in 2010), ongoing sheep grazing, increasing recreation pressure on the existing trail network, and occasional illegal off-route travel and the spread and control of noxious weeds that have contributed to the existing condition. Reasonably foreseeable future actions within the activity area include heavy maintenance and replacement/up-grade of multiple stream crossings on the Jackknife Road, Squaw Creek Road south of the corrals and the Deep Creek Road. The Jackknife Road west of the parking area has been closed and a non-motorized trail constructed. This maintenance and trail construction is expected to result in a medium- to long-term reduction in erosion

over the existing condition. Soil quality will be reduced in the long-term on the reclaimed 1 acre borrow pit site.

Repairing and re-opening the road segment north of the corrals to the lower crossing will likely continue to trigger small mass failures, as has happened in the past. Although this is a naturally unstable area prone to slumps and landslides, the slides on the road are most likely a result of the road cut. This means that the erosion and sediment pulses associated with slumps and their removal, in addition to normal road sediment production, are above natural sedimentation rates for Squaw Creek. If the new motorized trail north of the crossing leads to the creation of new illegal routes, additional soil erosion and disturbance would be associated with this alternative. However, this is not expected since, as described in the Recreation Specialist report, no motorized, no user-created trails have been observed or reported along the Squaw Creek road. Much of the terrain along Squaw Creek, north of the corrals, is too rugged or forested to accommodate illegal motorized use. Therefore overall long term soil quality will be stable in the Jackknife watershed.

#### Alternative 4

##### *Direct and Indirect Effects*

Re-opening the road will require repair to FS standards. This is likely to be only a temporary fix, considering the recent history of slumps in Section 13 T4S R45E (Road Maintenance Cost Estimates; Dory, 2012). The existing road segment undermines the toe slope support of a steep, unstable mountain slope (Soil Survey, 1990). The road cuts and fills on this road segment have a moderate to high hazard of mass failure or sloughing, and a moderate to high erosion hazard (Soil Survey, 1990). The ongoing maintenance needed to keep the road open and safe for the public will likely trigger additional slumps. The effects of maintaining this road segment are similar to other open Forest roads that cross similar landforms developed in similar geologic formations.

Where the non-motorized trail is proposed, the existing road prism would be narrowed to 18-24 inches which would minimize the amount of cut into a potentially unstable mountain slope. Erosion will occur on the tread, but would be minimized with proper drainage and maintenance. The new trailhead would result in compaction and a reduction in soil quality on the 0.1 acres affected.

##### *Cumulative Effects*

Past, present, and reasonably foreseeable future actions in the activity area include the past wildfires (including one in 2010), ongoing sheep grazing, increasing recreation pressure on the existing trail network, and occasional illegal off-route travel and the spread and control of noxious weeds that have contributed to the existing condition. Reasonably foreseeable future actions within the activity area include heavy maintenance and replacement/up-grade of multiple stream crossings on the Jackknife Road, Squaw Creek Road south of the corrals and the Deep Creek Road. The Jackknife Road west of the parking area has been closed and a non-motorized trail constructed. This maintenance and trail construction is expected to result in a medium- to long-term reduction in erosion

over the existing condition. Soil quality will be reduced in the long-term on the reclaimed 1 acre borrow pit site.

Repairing and re-opening the road segment north of the corrals to the lower crossing will likely continue to trigger small mass failures, as has happened in the past. Although this is a naturally unstable area prone to slumps and landslides, the slides on the road are most likely due to the road cut. This means that the erosion and sediment pulses associated with slumps and their removal, in addition to normal road sediment production, are above natural sedimentation rates for Squaw Creek. Overall, soil quality will be stable in the Jackknife watershed.

### ***Conclusions***

This analysis utilized the best available science to reach the following conclusions and recommendations. The existing road #389 is cut into the side of a steep, unstable mountain slope that has slumped repeatedly in the past in Section 13 T4S R45E. This road segment is not unique in the Forest road system; there are several Forest roads that are cut into steep, unstable mountain slopes formed in the Wayan or similar formations such as portions of the McCoy Creek road, Morgan Meadows road, and the recently closed portion of the Jackknife road. Alternative 2 is recommended to best protect soil resources by reducing the need to frequently clear cut-slope slumping on the road south of the lower crossing. Alternative 1 would result in maintaining a 60" cut (wider in a few places), which is more disturbance than a non-motorized trail. If one of the other alternatives (3 or 4), or the no-action alternative is chosen, the segment of road prone to repeat cut-slope failures will need to be repaired and maintained. All alternatives comply with Forest Plan guidance.

***Irretrievable Commitment:*** Building a new trail(s) disturbs soils, removes vegetation, and is a dedicated use of the soil resources, which is an irretrievable commitment of resources. Each of the action alternatives propose to build a new non-motorized trail and trailhead, which would dedicate about 1 acre to the transportation system. The borrow/fill source site will be reclaimed with topsoil salvaged from the site, but the disturbed soil and vegetation is an irretrievable commitment of resources.

***Irreversible Commitment:*** No irreversible resource commitments will result from this proposal.

## **RECREATION**

### ***Existing Conditions***

The Squaw Creek road (FSR #389) directly accesses a non-motorized area of approximately 20 square miles. It is bounded by Black Mountain to the east and Bald Mountain to the west. The area is within the largest tract of remote forest area on the Soda Springs Ranger District. The project area is within or adjacent to the 81,000 acre Caribou City Roadless Area (IRA). There are no designated motorized trails within the project area. FSR #389 provides access to 3 non-motorized system trails. This large area

is important for wildlife security, watershed protection and unique recreational opportunities.

### ***Social Environment***

“The population in southeast Idaho is growing more rapidly than in the nation as a whole. Bannock, Bonneville and Cache are the most urban counties,” and “Shifts in populations to the west are increasing demands on the Forest for a broader mix of uses. The Forest is becoming more important to people for its recreational opportunities, scenery, aesthetics, wildlife habitat, etc.” (RFP, 2-7 & 2-8).

The Star Valley in nearby Wyoming has increased in population significantly in recent years, creating higher visitation to the Caribou-Targhee, particularly on the Soda Springs and Palisades Ranger Districts. Higher visitation may result in increased user conflicts and more impacts to roads, trails and natural resources. Demand for non-motorized recreation here continues to increase due to the exceptional trail riding, hunting, and fishing opportunities. The area is very popular with elk hunters during September and October, including nonresidents from several states. Local residents from Idaho and Wyoming enjoy hunting, fishing, hiking, horseback riding and snowmobiling within the Jackknife and Squaw Creek drainages.

### ***Analysis Area***

The immediate project area extends from the sheep corrals on the Squaw Creek Road #389 north to its end. Two trailheads are located within this area, providing direct access to the 3 non-motorized trails (open to horse, foot and mountain bike travel).

The greater area being analyzed for direct or indirect effects to recreation is primarily to the west and north of Road #389. It includes the project area, portions of the 4 trails listed below and the acreage within ½ mile of the road and trails.

Trails #456 and #458 also connect to the Bald Mountain Trail #453 to the west. Bald Mountain is a popular backcountry recreation area, including snowmobiling during the winter months.

Popular summer recreation includes hiking, fishing and horseback riding, particularly by Idaho and Wyoming residents. The immediate Bald Mountain area may see indirect effects from the project. The overall analysis area includes about 10 linear miles of non-motorized system trails connected to FS Road #389.

Portions of these four trails are within the analysis area:

- **Trail #453** - The Bald Mountain trail connects FSR 136 on Jackknife Creek with FSR #087 at McCoy Creek and is 12.4 miles in length (about 10.5 miles is directly accessed from FSR #389).
- **Trail #458** - (2.2 miles long) begins at the sheep corrals, crosses Squaw creek and connects to the Bald Mountain Trail to the west.
- **Trail #456** - (2.6 miles long) begins at the end of FSR #389, also crosses Squaw Creek and connects to the Bald Mountain Trail.

- **Trail #454** - (6.3 miles long) begins at the end of FSR #389, travels north along Squaw Creek and Fish Creek, eventually connecting to McCoy Creek on FS Road #087.

Direct Effects on recreation would apply to the project area itself.

Indirect effects may occur over approximately 5 square miles north and west of the project area, particularly adjacent to trails.

### *Information about the Analysis Area*

Motorized Access: The Jackknife Road (#136) beginning in Wyoming to the east, concentrates full-sized vehicle travel into this large non-motorized area, which includes the Jackknife and Squaw Creek drainages. Prior to 2011 full-sized vehicles were able to travel to the end of the Squaw Creek road (FSR #389) where a trailhead is located. This trailhead provided some parking and direct access to non-motorized Trails #454 and #456. Since 2011 vehicle access into the upper Squaw Creek drainage via FSR #389 has been restricted due to a washout that blocked vehicle traffic. In June 2012, beginning at the sheep corrals, approximately 1.8 miles of roadway was signed as temporarily closed to vehicles for safety and resource reasons (*see footnote bottom of page 8*).

All travel routes in the project area are open to non-motorized uses.

- Mountain bikes (bicycles) are restricted to the system trails (cross-country mountain bike travel has been restricted on the Caribou since the 1980s. This was reaffirmed in the 2005 Travel Plan decision).
- There are currently no designated motorized trails in the analysis area.
- OHV riding commonly occurs along Forest Roads #136, 389, 070 and 286.
- There are no snowmobile restrictions within the analysis area.

Informal Visitor Survey: Several visits to the Squaw Creek and Jackknife area were conducted in September, 2010 on weekends and weekdays (by Glenn Lackey, Recreation Manager) to observe recreational use. 40 individuals were interviewed in casual conversations. In addition to Idaho residents there were non-resident hunters from 10 other states camping and elk hunting during the archery season. Some states were represented by more than one camp. While horse and pack stock represented high use on the trails, there were also hunters backpacking and using mountain bikes. There was also recreational use by non-hunters, including fishing, hiking, sight-seeing and photography.

## *Analysis Criteria*

Effects to recreation are analyzed under the following criteria for each alternative:

- *Caribou Revised Forest Plan - Prescription 3.3 (b) Semi-Primitive Restoration.*
- *Recreation Opportunity Spectrum (ROS)*
- *Open Motorized Route Density (OMRD)*
- *Travel Plan Enforcement*
- *Mixed Road or Trail Use*
- *Inventoried Roadless Area (IRA)*
- *Visual Quality Objective (VQO)*

Caribou Revised Forest Plan (RFP) Direction: The project area is managed according to Prescription 3.3 (b) Semi-Primitive Restoration. The proposed alternatives are all within this prescription area. The Caribou Revised Forest Plan (RFP-2003) states that the roads and trails of the forest transportation system that are needed for long-term objectives are maintained in a manner that provides for user safety and minimize impacts to forest resources.

*Prescription 3.3 (b) Semi-Primitive Restoration. (RFP 4-59)*

“This management prescription emphasizes ecological restoration to improve conditions that are not functioning properly. This management prescription identifies areas with a semi-primitive, backcountry recreation experience, associated with some motorized vehicle use. These areas are generally accessible by roads and trails. Cross-country motorized vehicle use is not allowed in the snow-free season. Roads and trails are designed and maintained to allow easy passage.” Recreation goals and guidelines for this prescription area are as follows:

*Prescription Goal #5:*

“Maintain or enhance semi-primitive motorized, dispersed recreation opportunities.” The “Standard” (RFP 4-60, Table (b)) allows for motorized use only on designated roads and trails during the snow free season. Cross-country motorized use is allowed during the snow season.

*Recreation Guideline (RFP 4-61)*

“Limited facilities may be provided to reduce adverse resource impacts at heavily used dispersed recreation sites”.

Recreation Opportunity Spectrum (ROS): Recreation settings are categorized by the amount of development and other attributes using a planning tool called Recreation Opportunity Spectrum (ROS). ROS category in the project area is Road Modified. In short, this means that “Opportunities for both motorized and non-motorized forms of recreation are possible” and “Conventional motorized use is provided for in construction standards and design of facilities.”

Open Motorized Route Density (OMRD): Each forest plan management prescription sets a ceiling OMRD, or allowable miles of motorized routes per square mile. The OMRD

ceiling for the project area is 1.0 miles/square mile. The current density (including FSR 389 prior to closure) is 0.42 mi/mi<sup>2</sup>.(Wildlife Specialist report Appendix B)

Mixed Road or Trail Use: "Mixed use" means different types of vehicles traveling the same route, or motorized and non-motorized users on the same road or trail. Addressing conflicting use between recreational visitors is an important consideration when analyzing effects to recreation.

Caribou City Inventoried Roadless Area (IRA): A portion of the project area is within the Caribou City IRA. A large block of National Forest immediately west of Squaw Creek is excluded from Roadless Area designation. The first mile of the Squaw creek road north of the corrals borders the IRA on the east side. Much of the immediate project area is not included within the IRA, however Road #389, south of the sheep corrals, travels through the IRA. (see also page 4 of the Recreation Specialist Report)

This Roadless Area is the second largest in the Caribou portion of the Caribou-Targhee National Forest at approximately 93,300 acres. 81,500 acres are managed under the Caribou Forest Plan and 11,800 acres are managed under the Targhee Forest Plan.

The Forest Service is currently under the direction of the August 2008 Idaho Roadless Rule. This Rule manages the Caribou City IRA under similar direction as the 2003 Caribou Revised Forest Plan (RFP). This IRA is managed for both semi-primitive motorized and non-motorized settings, including trail travel, hunting, fishing and sight-seeing. Approximately 58,000 acres (or 71% of the Caribou portion of the IRA) are managed for the non-motorized setting. These acres lay a minimum of ½ mile from a designated road or motorized trail (the "buffer").

Roadless Areas are managed using Management Themes:

- The Management Theme for the greater Squaw Creek area that is within the IRA is Backcountry/Restoration.

Roadless area criteria state that a Roadless Area does not "...contain improved roads for travel by standard passenger-type vehicles." However, many of the Caribou Forests IRAs have unimproved and historic roads.

Roadless areas have significant ecological and social values, beyond their wilderness consideration. These areas generally:

- Provide sources of clean drinking water.
- Function as biological strongholds for Threatened and Endangered species.
- Provide large, relatively undisturbed landscapes important for biological diversity and long-term survival of many species.
- Could also have reference value as a wildlife security area (over 50,000 acres in size).
- Offer primitive and semi-primitive non-motorized and motorized recreation.
- Provide reference areas for study and research, and can serve as barriers against the spread of non-native invasive plant species.

Motorized Trail Construction within IRAs: The Idaho Roadless Rule states under (§ 294.26 - Other activities in Idaho Roadless Areas);

“(a) *Motorized travel.* Nothing in this subpart shall be construed as affecting existing roads or trails in Idaho Roadless Areas.

Decisions concerning the future management of existing roads or trails in Idaho Roadless Areas shall be made during the applicable travel management process”. The Rule also states “Forest Service responsible officials are already directed to coordinate with counties when engaged in travel management decision making regarding designation or revision of NFS roads, trails, and areas on NFS land as directed in 36 CFR 212.53. No additional regulatory direction is needed”.

Visual Quality Objectives (VQO): The VQO for the area is “Modification” and “Partial Retention.” Forest Plan direction is to meet or exceed the given VQO for the project area. “which allows management activities that remain visually subordinate to the characteristic landscape. Activities may also introduce form, line, color or textures that are found infrequently or not at all in the characteristic landscape, but they should remain subordinate to the visual strength of the characteristic landscape”.

***Effects common to all alternatives:***

Caribou Revised Forest Plan (RFP) Direction: The Alternatives proposing motorized use would be consistent with the (RFP) ***Prescription 3.3 (b) Semi-Primitive Restoration*** (areas identified as semi-primitive, backcountry recreation experience, associated with some motorized vehicle use. These areas are generally accessible by roads and trails).

Recreational Opportunity Spectrum (ROS):

*No Action Alternative:* Forest Road #389 already exists on the landscape, if reconstructed as single lane road there would be no changes or significant adverse effects on the natural setting.

*Alternatives One - Four:* All or a portion of Road #389 would be converted to a trail, which would provide for a more natural setting than a road. The non-motorized trail alternatives (*Two and Four*) would provide a more natural setting than the ATV trail alternatives (*One and Three*).

*Trail #456 Relocation:* All of the action alternatives propose to construct approximately 0.3 mile of new non-motorized trail to realign the beginning of trail #456. This new construction would result in the elimination of 0.2 mile of the existing trail #456, which contains a problematic crossing of Squaw Creek. This problematic Squaw Creek crossing is a result of beaver flooding the trail causing problems for hikers and horse riders. Some short term negative effects may occur from the construction. With proper trail design parameters and construction techniques these effects will be minimal.

Further, new trail construction could change the natural setting of the landscape. However, trails generally do not lower scenic integrity if they are designed to follow existing terrain and do not create a straight corridor through continuous vegetative cover. With the proper design as described below, there would be no significant adverse effects to the natural setting as it relates to the construction of the trail #456 reroute.

- Clearing would only remove the trees and vegetation necessary for appropriate trail widths, visibility and tread construction.
- Cut and fill slopes would be excavated to the minimum necessary for soil stabilization and finished so as to encourage natural re-vegetation.

Visual Quality Objectives (VQO): Forest Plan direction is to meet or exceed the given VQO for the project area. The VQO for the area is *Modification and Partial Retention* – “which allows management activities that remain visually subordinate to the characteristic landscape. Activities may also introduce form, line, color or textures that are found infrequently or not at all in the characteristic landscape, but they should remain subordinate to the visual strength of the characteristic landscape”.

- Converting all or a portion of Road #389 to a trail would improve the visual quality and natural setting over the existing condition.

Caribou City Inventoried Roadless Area (IRA): A portion of the project area is within the Caribou City IRA. A large block of National Forest immediately west of Squaw Creek is excluded from Roadless Area designation. The first mile of the Squaw creek road north of the corrals borders the IRA on the east side.

Much of the immediate project area is not included within the IRA, however FS Road #389, south of the sheep corrals, travels through the IRA.

However, the Analysis Area for recreation includes portions of the IRA.

- Motorized use in all of the alternatives is not within the IRA.
- Non-motorized trails are not addressed in the Idaho Roadless Rule.
- Under all of the alternatives there would be no adverse effects to the Roadless Area values of the Caribou City IRA.

### ***No Action Alternative***

#### Direct Effects

Vehicle access to trails and the area along Squaw Creek would be restored as it existed prior to the temporary road closure. The road north of the corrals would be improved to the appropriate standard with needed maintenance. Prior to 2011, the damaged (lower) stream crossing discouraged some visitors from driving the road for a year or two. With the road improved, recreational traffic would increase over pre-2011 levels, particularly during the hunting season.

- Full-sized vehicles would have road access to the trailhead for Trails #454 and #456.

- All OHV types (ATVs, Motorcycles and UTVs) would have road access to the trailhead.
- With greater vehicle access there is more potential for illegal travel off designated routes.
- Hunters could legally use OHVs to actively hunt along FSR #389 (see Rule below).
- There would be camping with RV trailers at the trailhead.
- Horse users would pull stock trailers to the trailhead for Trails #454 and #456.
- Motorized access can adversely affect the experiences of non-motorized visitors.

*Idaho Fish & Game ATV Hunting Rule:* During hunting season, there is currently an Idaho Fish & Game Dept. motorized hunting restriction in Game Management Unit 66 (includes project area). This rule prohibits the use of motorized vehicles including ATVs, motorcycles, etc. on trails as an aid to hunting (however, it is legal under this rule to transport a camp or retrieve game on trails, provided they are designated as open to OHV use by the managing agency).

This rule does not apply to roads open to full size vehicles, therefore hunters could legally use OHVs to actively hunt along FSR #389 if it is restored to road open to full size vehicles.

*Mixed Road or Trail Use:* If FSR #389 is reconstructed as a single lane road there may be direct effects to recreational visitors. The existing parking area at the end of the Squaw creek road (the trailhead for Trails #454 and #456) would not accommodate many vehicles with horse trailers. There is space for some dispersed camping here. However, along the road between the corrals and this trailhead there is little opportunity for camping due to terrain features. If restored as a single lane road, there would still be recreationists camping or parking near the sheep corrals and there could be conflicts and hazards associated with mixed use on the restored road north of the corrals.

Visitors parking horse trailers at the corral area may be riding horses and leading pack stock up the road to access the non-motorized trails. Particularly with the high use during hunting season, they may encounter traffic by full-sized vehicles, some of which could be towing trailers.

Recreational use is expected to continue increasing over time. There will be more travel by full-sized vehicles along FSR #389. Travel is popular for sight-seeing and driving for pleasure as well as hunting and accessing the trail system. If full-sized vehicle use is restored to one lane, adequate passing areas may need to be constructed and the parking area at the trailhead improved.

#### Indirect Effects

Restoring full-sized vehicle travel and increased motorized access may result in greater impacts to the backcountry trail system over time. With motorized access closer to the greater non-motorized area, it is reasonable to assume there will be more trail use along #454 and #456.

Effects may include greater trail impacts, additional maintenance costs and potential for illegal travel off designated routes. OHVs would also have additional road access to the trailheads. This would be a benefit to motorized users, however, adverse effects on the recreational experience of non-motorized users is likely.

Recreational OHV use is increasing (particularly ATVs and UTVs on roads). It is reasonable to assume this trend will continue and may result in greater effects over time.

*Travel Plan Enforcement:* In 2012, Soda Springs District (Forest Protection Officers) occasionally visited this area to monitor compliance with all Forest regulations. No illegal motorized use was observed on these visits. Motorized vehicle use is restricted to Forest roads in this area. The only designated motorized trail is on Black Mountain (#004), which is shared with the Palisades Ranger District. There is no trail system to attract high numbers of OHV users. However, it is not unusual to see ATV and UTV riders on the forest roads, primarily riding for pleasure as opposed to hunting. Along the Squaw Creek road no motorized, user-created trails have been observed or reported. Much of the terrain along Squaw Creek, north of the corrals, is too rugged or forested to accommodate illegal motorized use.

*Open Motorized Route Density (OMRD):* There would be no change to the Open Motorized Route Density (OMRD) as originally described in the RFP Management Prescription and there would be no change to the Caribou Travel Plan (2005).

Cumulative Effects: Cumulative effects consider past, present and future actions and activities. In this analysis the greater emphasis is placed upon the existing conditions and foreseeable activities within the Analysis Area. The future (foreseeable activities) is a projection over the next 15 years.

The reconstruction of roads has the potential to create cumulative effects on recreation. Recreational use in this area is increasing, it is expected that this trend will continue. The Star Valley area in Wyoming is only six miles away from FSR #389. The valley has experienced significant population growth in recent years, putting greater demands on roads and trails within the Caribou-Targhee National Forest in Idaho. Restoring full-sized vehicle travel and increased motorized access may result in greater impacts to the adjacent trail system over time. With vehicle access closer to the non-motorized area, it is reasonable to assume that there will be more trail use along the Squaw Creek drainage.

Cumulative effects from increased use may include:

- Increased trail impacts (tread damage and erosion).
- Additional maintenance costs.
- Greater potential for illegal travel off designated routes.
- Adverse effects on the backcountry recreational experience.

OHVs would also have additional road access to the trailheads. This would be a benefit to those motorized users, however, adverse effects on the recreational experience of non-motorized users is likely.

Recreational OHV use on the Caribou-Targhee is increasing. UTVs (OHVs over 50 inches in width) are legal on roads but not trails. Use of these vehicles has increased dramatically in recent years. They are regularly observed riding roads #389, #136, #070 and #286 near the project area. It is reasonable to assume this trend will continue and result in greater effects to recreation over time.

*Irretrievable and Irreversible Effects:* Road construction is more likely to result in irretrievable and irreversible effects than trail construction due to a greater degree of disturbance. Trails are more easily reclaimed than roads.

### ***Alternative One***

Alternative One would close FS Road #389 at the corrals to full-sized vehicles and convert the existing road to an ATV trail. The existing road bed would be reduced to an average trail width of 60" (or 5') wide (standard Forest Service ATV tread width).

### **Direct Effects**

*Mixed Road and Trail Use:* There are potential effects to recreation from mixed trail use. There are potential hazards associated with ATVs and Motorcycles sharing the trail with pack and saddle stock. The Squaw Creek and Bald Mountain area receives high use by hunters using pack and saddle stock, particularly during the September and October hunting seasons. If FSR #389 is designated as ATV trail, there may be more recreationists camping and parking near the sheep corrals, and conflicts associated with mixed use on this trail.

- Visitors parking horse trailers at the corral area would be riding horses and leading pack stock up the trail to access Trails #454 and #456. ATVs and motorcyclists would also be using the trail.
- The trail would be a dead end, creating two-way (opposing) traffic. Some ATVs and motorcyclists, particularly recreational riders who are not hunting, arriving at the end of this motorized section, will turn around and head back down it. This may increase user conflicts, not only between OHV riders, but between OHVs and horse users.
- During hunting season, as the Fish & Game rule now stands, hunters can only use OHVs on a trail to pack in camping gear, or retrieve game. Some of this will occur, plus the F&G rule does not apply to non-hunters on ATVs and Motorcycles. The result is that more user conflicts are likely.
- There would be greater adverse effects on the recreational experiences of non-motorized users.
- Motorized trails generally require more tread maintenance and higher annual costs than non-motorized trails.

With the implementation of appropriate trail design standards and recommended BMPs, the overall potential for adverse direct and indirect effects is low.

*Travel Plan Enforcement:* In 2012, Soda Springs District (Forest Protection Officers) occasionally visited this area to monitor compliance with all Forest regulations. No illegal motorized use was observed on these visits. Motorized vehicle use is restricted to Forest roads in this area. The only designated motorized trail is on Black Mountain (#004), which is shared with the Palisades Ranger District. There is no trail system to attract high numbers of OHV users. However, it is not unusual to see ATV and UTV riders on the forest roads, primarily riding for pleasure as opposed to hunting. Along the Squaw Creek road no motorized, user-created trails have been observed or reported. Much of the terrain along Squaw Creek, north of the corrals, is too rugged or forested to accommodate illegal motorized use.

*Open Motorized Route Density (OMRD):* The OMRD would remain the same. This alternative would require amending the Caribou Travel Plan (2005), which manages motorized use. The 1.8 miles of FSR #389 north of the sheep corrals currently exists in the Travel Plan as a motorized route open to full size vehicles. While the upper 1.8 miles would remain motorized, travel would be limited to vehicles 50" or less. Since the length of the motorized route would not change, there would be no change to existing OMRDs.

*Mixed Trail Use and User Conflicts:* The primary user conflict on non-motorized routes occurs between horse riders and mountain bikes.

- Bicycle use is currently low in this area, however there is potential for more conflicts with the Star Valley population increasing.
- Some archery hunters are currently using mountain bikes.
- Designing trails with adequate line-of-sight and visibility reduces this conflict.
- In situations where bicycle use is popular, posting cautionary signs is advised.

This action would enhance the non-motorized recreational experience within the project and analysis areas.

#### Indirect Effects

Designating Road #389 for OHV travel may result in greater impacts to the backcountry trail system over time. With motorized access closer to the trailhead, it is reasonable to assume there will be more trail use along #454 and #456.

Recreational OHV use is increasing (particularly ATVs and UTVs on roads). It is reasonable to assume this trend will continue and may result in greater effects over time.

Effects may include greater trail impacts, additional maintenance costs and some potential for illegal travel off the designated route. This access would be a benefit to motorized users, however some adverse effects on the recreational experience of non-motorized users is expected.

## Cumulative Effects

The cumulative effects area is the same as the Analysis Area.

Cumulative effects consider past, present and future actions and activities. In this analysis greater emphasis is placed upon the existing conditions and foreseeable (future) activities. “Foreseeable activities” is a projection over the next 15 years.

*ATV Trail Section (converting Road 389 to ATV):* More user conflicts will result with increased numbers of recreationists, particularly horses versus motorized (OHV) users.

- Recreational trail use is expected to continue increasing over time. More use results in more effects to the trail system, such as tread deterioration.

*Non-Motorized Trail Section:* 0.3 miles of new trail would be constructed. The construction of non-motorized trails has the potential to create cumulative effects.

- Recreational trail use is expected to continue increasing over time. More use results in more effects to the trail system, such as tread deterioration.
- This alternative adds non-motorized trail to the current system, to be maintained accordingly.
- More user conflicts may result with increased numbers of recreationists (particularly horses versus mountain bikes).

### ***Alternative Two***

Alternative Two would close FS Road #389 at the corrals to full-sized vehicles and convert the existing road to a non-motorized trail. The trail would generally follow the existing roadbed, which would be reduced to an average trail width of 18-24 inches (standard FS tread width).

## Direct Effects

- This alternative would reduce access to motorized users by 1.8 miles in Squaw Creek. Eliminating 1.8 miles to motorized users reduces riding opportunities in the area. Recreational OHV use is increasing, particularly ATVs and UTVs. It is reasonable to assume this trend will continue.
- There would be no game retrieval option with OHVs.
- This alternative would likely be a benefit to the recreational experiences of non-motorized visitors.
- If Road #389 is designated as a non-motorized trail, there may be more recreationists camping and parking near the sheep corrals. There would be fewer opportunities for dispersed camping in Squaw Creek, which already has few good camping spots. As a result, vehicles and campers would be less dispersed within the Squaw Creek drainage, and more use would be concentrated at the corrals area. There would be more adverse effects and resource impacts to the area around the corrals.

- There would be no motorized camping opportunities at the trailhead for #454 and #456.
- Visitors parking horse trailers at the corral area would be riding horses and leading pack stock up the trail to access Trails #454 and #456.

*Mixed Road and Trail Use:* Under Alternative Two, the primary user conflicts would involve horses and mountain bikes. Bicycle use is currently low in this area, however there is potential for more use with the Star Valley population increasing. Some archery hunters are currently using mountain bikes.

- There are potential hazards associated with mountain bikes (bicycles) sharing the trail with horse pack and saddle stock. This situation exists on all trails, however, there tends to be more mountain bike use on non-motorized routes. Trails in other areas, popular with both bikers and horse traffic have experienced serious conflicts. Bikers often approach suddenly, without warning, at high (downhill) speeds and panic horses, potentially resulting in injuries to horseback riders. Designing trails with adequate line-of-sight and visibility reduces this conflict. In situations where bicycle use is popular, posting cautionary signs is advised.
- Generally, this alternative would have fewer user conflicts than the other alternatives.
- Non-motorized trails generally require less tread maintenance and lower annual costs than motorized trails.
- Construction of non-motorized trail results in less adverse resource impacts than motorized trails due to narrower tread width and less slope excavation. Adequate spacing intervals between drainage structures (water bars) determined by trail grade are required.
- Effects to soil and water resources would be minimized by implementing Forest Plan requirements, trail construction design standards and the Best Management Practices.

*Open Motorized Route Density (OMRD):* This alternative replaces motorized vehicle road with approximately 1.8 miles of non-motorized trail, the resulting decrease of 1.8 miles of motorized route within the prescription area would result in an OMRD of 0.34 mi/mi<sup>2</sup> (Appendix B of the Wildlife Specialist Report)

*Caribou Travel Plan (2005):* This alternative would require amending the Caribou Travel Plan (2005), which manages motorized and non-motorized use. FSR 389 would be designated as non-motorized system trail.

#### Indirect Effects

Designating Road #389 for non-motorized use may result in fewer impacts to the backcountry trail system over time. Without motorized access to the trailhead, there may be less trail use along #454 and #456.

- If there are fewer visitors because motorized access to the trailhead is restricted, the opportunity for solitude in the project area may be improved.

## Cumulative Effects

The cumulative effects area is the same as Part I (the Analysis Area).

Cumulative effects consider past, present and future actions and activities. In this analysis greater emphasis is placed upon the existing conditions and foreseeable (future) activities. “Foreseeable activities” is a projection over the next 15 years.

- The construction of non-motorized trails has the potential to create cumulative effects.
- There may be cumulative effects to the non-motorized trail system. These effects would involve greater tread surface impacts and potential user conflicts.
- With the appropriate maintenance and monitoring, most effects from trail construction are anticipated to recover in two years or less.

### ***Alternative 3***

Under Alternative Three, FS Road #389 would remain open to full-sized vehicles north to the lower Squaw Creek crossing and the existing roadbed (0.9 mile) north of the lower crossing would be converted to an ATV trail. A small parking area (approximately 0.1 acre) would be constructed at this location on the east side of Squaw Creek. The parking area would be constructed by leveling the site, graveling, and delineating the designated parking area with boulders, logs, or other obstructions.

## Direct Effects

*Mixed Road and Trail Use:* There are potential effects to recreation from mixed trail use. There are potential hazards associated with ATVs and Motorcycles sharing the trail with pack and saddle stock. The Squaw Creek and Bald Mountain area receives high use by hunters using pack and saddle stock, particularly during the September and October hunting seasons.

If FSR #389 is designated as ATV trail, there may be more recreationists camping and parking near the sheep corrals, and conflicts associated with mixed use on this trail.

- The small parking area to be constructed at the lower Squaw creek crossing would only accommodate a few vehicles, particularly with trailers. If the road is one lane, two-way traffic over the 0.9 miles to here from the corrals would result in conflicts with opposing traffic. There may also be conflicts between full-sized vehicles and other travelers (OHVs and horse pack and saddle stock). Many trail users would be forced to park at the corrals because of the lack of parking space at the lower crossing. During the hunting season, congestion at the 0.1 acre parking area would likely be an issue, since there would be recreationists arriving at the small parking area, some towing trailers, only to find the parking area full and perhaps no room to turn around.
- Visitors parking horse trailers at the corrals or lower crossing would be riding horses and leading pack stock up the trail to access Trails #454 and #456. ATVs and motorcyclists would also be using the trail.

- The trail would be a dead end, creating two-way (opposing) traffic. Some ATVs and motorcyclists, particularly recreational riders who are not hunting, arriving at the end of this motorized section, will turn around and head back down it. This may increase user conflicts, not only between OHV riders, but between OHVs and horse users.
- During hunting season, as the Fish & Game rule now stands, hunters can only use OHVs on a trail to pack in camping gear, or retrieve game. Some of this will occur, plus the F&G rule does not apply to non-hunters on ATVs and Motorcycles. The result is that more user conflicts are likely.
- Alternative Three would have the greatest potential for user conflicts of all the alternatives.
- Alternative Three may have greater adverse effects on the recreational experiences of non-motorized users than Alternatives Two and Four.

*Travel Plan Enforcement:* In 2012, Soda Springs District (Forest Protection Officers) occasionally visited this area to monitor compliance with all Forest regulations. No illegal motorized use was observed on these visits. Motorized vehicle use is restricted to Forest roads in this area. The only designated motorized trail is on Black Mountain (#004), which is shared with the Palisades Ranger District. There is no trail system to attract high numbers of OHV users. However, it is not unusual to see ATV and UTV riders on the forest roads, primarily riding for pleasure as opposed to hunting. Along the Squaw Creek road no motorized, user-created trails have been observed or reported. Much of the terrain along Squaw Creek, north of the corrals, is too rugged or forested to accommodate illegal motorized use.

*Open Motorized Route Density (OMRD):* Since the overall length of the motorized route would not change and the OMRD would remain the same.

*Caribou Travel Plan (2005):* This alternative would require amending the Caribou Travel Plan (2005). FSR #389 north of the corrals would be designated as road for 0.9 miles and then ATV trail for 0.9 miles.

#### Indirect Effects

Motorized (OHV) access north of the corrals on Road #389 may result in greater impacts to the backcountry trail system over time. With motorized access to the trailhead it is reasonable to assume there will be more trail use along #454 and #456. Effects may include greater trail impacts and additional maintenance costs. Recreational OHV use is increasing (particularly ATVs and UTVs on roads). It is reasonable to assume this trend will continue and may result in greater effects over time.

Cumulative Effects: The cumulative effects area is the same as the Analysis Area.

Cumulative effects consider past, present and future actions and activities. In this analysis greater emphasis is placed upon the existing conditions and foreseeable (future) activities. “Foreseeable activities” is a projection over the next 15 years.

- The construction of trails has the potential to create cumulative effects.

- There may be cumulative effects to the non-motorized trail system. These effects would involve greater tread surface impacts and potential user conflicts.
- With the appropriate maintenance and monitoring, most effects from trail construction are anticipated to recover in two years or less.

#### *Alternative 4*

Under Alternative Four, FS Road #389 would remain open to full-sized vehicles as far as the lower Squaw Creek crossing. The existing roadbed (0.9 mile) north of there would be converted to a non-motorized trail. A small parking area (approximately 0.1 acre) would be constructed at this location on the east side of Squaw Creek. The parking area would be constructed by leveling the site, graveling, and delineating the designated parking area with boulders, logs, or other obstructions. The existing road bed would be reduced to an average trail width of 18-24 inches (standard FS tread width).

Direct Effects: The Squaw Creek and Bald Mountain area receives high use by hunters using pack and saddle stock, particularly during the September and October hunting seasons.

If 0.9 miles of FSR #389 is designated as non-motorized trail, there may be more recreationists camping and parking near the sheep corrals, and conflicts associated with mixed use on this trail.

- The small parking area to be constructed at the lower Squaw creek crossing would only accommodate a few vehicles, particularly with trailers. If the road is one lane, two-way traffic over the 0.9 miles to here from the corrals would result in conflicts with opposing traffic. There may also be conflicts between full-sized vehicles and other travelers (OHVs and horse pack and saddle stock). Many trail users would be forced to park at the corrals because of the lack of parking space at the lower crossing. During the hunting season, congestion at the 0.1 acre parking area would likely be an issue, since there would be recreationists arriving at the small parking area, some towing trailers, only to find the parking area full and perhaps no room to turn around.
- This alternative would reduce access to motorized users by 0.9 miles in upper Squaw Creek. Eliminating miles to motorized users reduces riding opportunities in the area. Recreational OHV use is increasing, particularly ATVs and UTVs. It is reasonable to assume this trend will continue.
- Opportunity to retrieve game animals with an ATV would be reduced.
- This alternative would likely be a benefit to the recreational experiences of non-motorized visitors, adding trail miles to the system can have the positive effects of dispersing users.
- There would be fewer opportunities for dispersed camping in Squaw Creek, which already has few good camping spots.
- As a result, vehicles and campers would be less dispersed within the Squaw Creek drainage, and more use would be concentrated at the corrals area. There would be more adverse effects and resource impacts to the area around the corrals.
- There would be no motorized camping opportunities at the trailhead for #454 and #456.

- Visitors parking horse trailers at the corral area would be riding horses and leading pack stock up the trail to access Trails #454 and #456.
- Alternative Four may have less adverse effects on the recreational experiences of non-motorized users than Alternatives One and Three.

*Mixed Road and Trail Use:* In Alternative Four, the primary user conflicts on the trail portion of Road #389 would involve horses and mountain bikes. Bicycle use is currently low in this area, however there is potential for more use with the Star Valley population increasing. Some archery hunters are currently using mountain bikes.

- There are potential hazards associated with mountain bikes (bicycles) sharing the trail with horse pack and saddle stock. This situation exists on all trails, however, there tends to be more mountain bike use on non-motorized routes. Trails in other areas, popular with both bikers and horse traffic have experienced serious conflicts. Bikers often approach suddenly, without warning, at high (downhill) speeds and panic horses, resulting in injuries to horseback riders. Designing trails with adequate line-of-sight and visibility reduces this conflict. In situations where bicycle use is popular, posting cautionary signs is advised.
- Non-motorized trails generally require less tread maintenance and lower annual costs than motorized trails.
- Generally, this alternative would have fewer user conflicts on the trail portion than the motorized alternatives but there would be conflicts on the road portion between all users.

*Open Motorized Route Density (OMRD):* By converting a portion of FS Road #389 to a non-motorized trail, the OMRD in the management prescription area would be reduced to 0.38 mi/mi<sup>2</sup>.

*Caribou Travel Plan (2005):* This alternative would require amending the Caribou Travel Plan (2005), which manages motorized and non-motorized use. 0.9 miles would be removed from motorized designation and added to non-motorized system trails.

Indirect Effects: Designating 0.9 miles of Road #389 for non-motorized use may result in fewer impacts to the backcountry trail system over time. Without motorized access to the trailhead, there may be less trail use along #454 and #456.

- If there are fewer visitors because motorized access to the trailhead is restricted, the opportunity for solitude in the project area may be improved.

Cumulative Effects: The cumulative effects area is the same the Analysis Area.

Cumulative effects consider past, present and future actions and activities. In this analysis greater emphasis is placed upon the existing conditions and foreseeable (future) activities. “Foreseeable activities” is a projection over the next 15 years.

- The construction of trails has the potential to create cumulative effects. There may be adverse effects if a new or improved trail results in higher visitation and use.

However, Adding trail miles to the system can also have the positive effect of dispersing users.

- There may be cumulative effects to the non-motorized trail system. These effects would involve greater tread surface impacts and potential user conflicts.
- With the appropriate maintenance and monitoring, most effects from trail construction are anticipated to recover in two years or less.

## *Conclusions*

### All of the Alternatives:

- Meet the purpose and need to provide sustainable recreation access to the upper Squaw Creek drainage and non-motorized trails #454 and 456.
- Are consistent with the Forest Plan (RFP) *Prescription 3.3 (b) Semi-Primitive Restoration* (areas identified as semi-primitive, backcountry recreation experience, associated with some motorized vehicle use. These areas are generally accessible by roads and trails).
- Meet Forest Plan standards and guidelines along with federal laws, regulations, and policies for resource protection. The Forest Plan does not prohibit constructing new system trail, however, it states the Forest should minimize the trail system and rehabilitate existing trail as a priority over new construction.
- Conform to the ROS category of Roaded Modified.
- The existing landscape character of the area will not change under all alternatives.
- Comply with the 2008 Idaho Roadless Rule, which does not prohibit roads and motorized trails in Roadless areas. Approximately one mile of the upper Squaw Creek road is adjacent to the Caribou City IRA, the rest of the road is outside the IRA.
- Do not exceed the OMRD ceilings for the prescription area as directed by the Forest Plan.
- Meet the requirements for VQO's that "Activities may also introduce form, line, color or textures that are found infrequently or not at all in the characteristic landscape, but they should remain subordinate to the visual strength of the characteristic landscape."
- Would in no way impact the Caribou City Recommended Wilderness Area. (see map of project area and the Recommended Wilderness in the project record).

### Irretrievable and Irreversible Effects (all action alternatives):

Recreation trails (motorized or non-motorized) do not have the same dimensions and do not involve the same degree of disturbance as constructed roads. Trails are more easily reclaimed than roads. With implementation of the appropriate BMPs and compliance with forest directives and the trail design recommendations outlined in this report it is reasonable to conclude that these alternatives do not represent an irretrievable and irreversible commitment of resources.

Direct, indirect and cumulative effects can be minimized to an acceptable level with the appropriate road or trail design and by implementing Best Management Practices, maintenance and monitoring.

## **WILDLIFE AND RARE PLANTS**

### ***Analysis Area and Methods***

The analysis area for impacts to wildlife is focused within the Jackknife 6th HU. The proposed project impacts a relatively small area and, regardless of the alternative selected, the vast majority of project activities would be occurring along an existing roadbed, therefore no direct or indirect effects to wildlife are expected to occur outside of the drainage. Potential impacts to wildlife from the proposed action are primarily limited to temporary displacement during the conversion of the existing roadbed to a motorized or non-motorized trail, and during the construction of the 0.3 miles of non-motorized trail. Further, the majority of actions will be occurring on or immediately adjacent to the existing roadbed, areas which site specifically have minimal value to wildlife. Impacts to wildlife from motorized travel and route closures will tier to the analysis in the Caribou Travel Plan Revision (2005). CNF Wildlife White Papers (USDA-FS 2010), survey data, aerial photos, known habitat types, information from outside sources (such as Idaho Fish and Game databases) and field visits have been used to determine the existing condition. Reference Appendix A of the Wildlife Specialist Report for locations of known wildlife attributes adjacent to the project area.

### ***ESA listed Wildlife and Plants***

According to Species List last updated on November 28th , 2012, (USFWS 2012) from the US Fish and Wildlife Service (USFWS), the following ESA listed wildlife species may occur in Bonneville County, Idaho: Canada Lynx (*Lynx canadensis*) (Threatened Species), Grizzly Bear (*Ursus arctos horribilis*) (Threatened Species), Wolverine (*Gulo gulo*)(Candidate Species), Yellow-Billed Cuckoo (*Coccyzus americanus*) (Candidate Species), Greater Sage Grouse (*Centrocercus urophasianus*) (Candidate Species), Ute ladies'-tresses (*Spiranthes diluvialis*) (Threatened plant species), and Whitebark Pine (*Pinus albicaulis*) (Candidate plant species). The no effect determinations for these species (as shown in Table 1 below), were acknowledged by the USFWS at the March 13th, 2012 streamlining meeting (see consultation meeting notes project record). Since ESA listed species are not expected within the project area, the selection of any alternative would result in the same effects determination. These species will not be discussed further.

Table 3.5: ESA listed Species status and Effects Determination (All Alternatives)

Wildlife Species:	Status:	Determination
Canada Lynx ( <i>Lynx canadensis</i> )	Threatened	NE*
North American Wolverine ( <i>Gulo Gulo</i> )	Candidate	NE
Grizzly Bear ( <i>Ursus arctos horribilis</i> )	Threatened	NE
Yellow-Billed Cuckoo ( <i>Coccyzus americanus</i> )	Candidate	NE
Greater Sage Grouse ( <i>Centrocercus urophasianus</i> )	Candidate	NE
Plant Species:	Status:	Determination:
Ute ladies'-tresses ( <i>Spiranthes diluvialis</i> )	Threatened	NE
Whitebark Pine ( <i>Pinus albicaulis</i> )	Candidate	NE

\*NE=No Effect

### **Rare Plants**

Currently, Ute ladies'-tresses (*Spiranthes diluvialis*) are the only ESA listed plant species occurring within Bonneville County. However, no suitable habitat occurs within the project area. Ute ladies'-tresses is only known (and expected) to occur within the South Fork of the Snake River floodplain in Bonneville, Jefferson and Madison County. (Lehman personal communication Oct 2010. Since there will be *No Effect* to Ute ladies-tresses, they will not be discussed further. In addition to Ute ladies'-tresses, there are three plant species on the Caribou National Forest that are listed as sensitive by the Regional Forester for the Intermountain Region(USDA-FS 2011), Starveling milkvetch, Cache Beardtongue, and Payson's Bladderpod. None of the three sensitive plant species are expected to occur in the project area, therefore their will be no impact to these species or their habitat under any alternative. These species will not be discussed further. Additional information can be found in the project record.

### **Sensitive Species and Management Indicator Species (MIS)**

The Regional Forester identifies Sensitive Species when population viability is a concern (USDA-FS. 2011). In addition, the Northern Goshawk, Columbian sharp-tailed grouse, and Greater sage grouse are the MIS species for the Caribou National Forest as described in the 2003 Revised Forest Plan. The narratives below discuss the sensitive species on the Caribou National Forest and their presence within the project area:

*Spotted Bat*- This bat is found in southwest Idaho and not expected to occur in Southeast Idaho. (Miller et al. 2005, page 45 and WBWG 2005b). Further, several suitable habitat types (such as xeric shrublands, lava, and vegetated lava cover types) (Miller et al. 2005, page 45) do not exist within the project area. Since presence of spotted bat is not expected there will be No Impact to Spotted Bats under either alternative. This species will not be discussed further.

*Townsend's Big-eared Bat*- Past surveys have documented presence of Townsend's big-eared Bat on the Caribou National Forest. Hibernacula for these bats occur primarily on

the south end of the Bear River Range (USDA-FS 2010, 20). However, suitable roosting and foraging habitat (riparian and forested areas) occurs in the project area. Townsend's big-eared bats forage on insects that use riparian and upland vegetation, particularly moths.

*Gray Wolf*- Gray wolves were removed from the Endangered Species list on May 11, 2011 (USFWS 2011a). There are no known established packs within or adjacent to the project area. The nearest known pack, the “Dog Creek Pack” occurs well to the northwest of the project area, south of Jackson, Wyoming. However, observations of wolves are regularly reported throughout Southeast Idaho, and wolves are likely to occur within the analysis area.

*Pygmy Rabbit* – No suitable habitat (tall sagebrush on flat or gentle slopes with deep loose soils) is found within the project area. Since presence within the project area is not expected, there will be No Impact to this species under any alternative. Since there will be no impacts to Pygmy Rabbits, there will be no cumulative effects. This species will not be discussed further.

*North American Wolverine* – Annual winter track surveys by the USFS and IDF&G, and WCS (USDA-FS 2010, 21) have confirmed the presence of wolverines on the Caribou National Forest. While suitable denning habitat may be present on the CNF (RFP FEIS D-139), there are no known/expected den locations in the analysis area. Project activities would occur at elevations between 6100’-6400’, well below the 8200’ elevation which is considered the minimum elevation for Wolverine denning in Idaho (USFWS 2010). Potential foraging habitat exists within the analysis area and movement through the area is possible. In 2001, an observation of a single wolverine was recorded in the southwestern portion of the analysis area (IFWIS 2012).

*Trumpeter Swan* – Trumpeter Swans utilize larger bodies of water for nesting habitat including Palisades Reservoir, Salt River, Grays Lake, and Bear Lake NWR (Groves et al. 1997, 52) (USFWS 2009). Smaller bodies of water may be used for foraging habitat. Squaw Creek lacks the water depth and area to provide suitable Trumpeter Swan habitat. Since Trumpeter Swans are not expected to be present due to a lack of suitable habitat, No Impacts will occur under any alternative. Since there will be no impacts to Trumpeter Swans, there will be no cumulative effects. This species will not be discussed further.

*Harlequin duck* - Suitable habitat for Harlequin ducks include relatively undisturbed, low gradient (< 3°), mountain streams with dense shrubby riparian areas & woody debris for nesting. On the Caribou National Forest, McCoy Creek and Jackknife Creek on the north end of the Soda Springs Ranger District (near Palisades Reservoir) appear to be the most likely areas where Harlequin Ducks may occur. However, surveys of McCoy Creek and Jackknife Creeks were conducted from 2003 – 2005, and no harlequin ducks were seen. According to survey data, habitat on these streams does not appear adequate to attract or maintain breeding harlequin ducks due to marginal stream bank cover, and no (or very limited) loafing sites. Loafing sites may be the most limiting factor. (USDA 2010, 16). As previously mentioned Squaw Creek is a tributary to Jackknife Creek, and while

smaller in size, is similar to Jackknife Creek with regards to gradient and streambank cover and is not expected to provide habitat for Harlequin ducks. There are no documented observations of Harlequin Ducks within the project area. Since presence within the project area is not expected, there will be No Impact to this species under any alternative. Since there will be no impacts to Harlequin ducks, there will be no cumulative effects. This species will not be discussed further.

*Peregrine Falcon* - While Peregrine Falcons are known to occur within and adjacent to the Caribou National Forest, there are no known eyries near the project area, nor are there any suitable nesting cliffs that have the potential to serve as eyries. Known eyries are located near Grays Lake, Grays Ridge, Soda Springs, and Last Chance Canal (Moulton 2008). Suitable habitat (ie large water bodies such as Grays Lake) does not occur in the project area. Since Peregrine Falcons are not expected to be present due to a lack of suitable habitat, *No Impacts* to Peregrine Falcon will occur under any alternative. Since there will be no impacts to Peregrine Falcon, there will be no cumulative effects. This species will not be discussed further.

*Bald Eagle* – Although no known Bald Eagle nests are located in the Squaw Creek drainage, nests are known to occur along the Salt River to the east of the project area. The Squaw Creek drainage may provide foraging habitat for Bald Eagles.

*Northern Goshawk* – No known Goshawk nests or territories occur within the analysis area. However, mature forest stands are found within the Squaw Creek drainage. Northern Goshawks could potentially utilize areas within the Squaw Creek drainage as foraging habitat.

*Columbian sharp-tailed grouse* – No known sharp-tail nesting, lekking, or winter forage habitat occurs within the analysis area. Although presence has not been documented, areas west of Star Valley, Wyoming have been identified as needing additional surveys (USDA-FS 2010, 10). Areas of the Jackknife and Squaw creek drainage may serve as summer/brood rearing habitat and large areas of the Jackknife and Squaw Creek drainages have been mapped as potential Sharp-tailed grouse habitat (Colt and Green 2012).

*Greater Sage Grouse* –No impact to Greater Sage Grouse or their habitat will occur under any alternative. In Idaho, the nearest known leks are approximately 20 miles to the south (IFWIS 2012). Wyoming Game and Fish has two recorded sage grouse observation sets, both approximately 13 miles to the south-south east (south of Thayne) one in 1988 of 8 individuals, one in 2005 of 16 individuals (WYF&G 2011). Since sagebrush habitats within the project area are minimal and the project area is not within 10 miles of active leks (areas within 10 miles of active leks may provide summer nesting, brood rearing and winter habitat for sage grouse (FEIS D-145)), sage grouse habitat or presence is not expected within the project area. There is no Preliminary Priority Habitat (PPH) or Preliminary General Habitat (PGH) within or adjacent to the project area (IDF&G and BLM 2012). Since presence within the area is not expected there will be *No Impact* to

Greater Sage Grouse. Since there will be no impacts to Greater Sage Grouse, there will be no Cumulative effects. This species will not be discussed further.

*Great Gray Owl* – Suitable Great Gray Owl habitat (Mature lodgepole pine or subalpine fir stands bordering small openings or meadows) occurs within the analysis area. While there are no documented occurrences within the analysis area, presence within the analysis area is expected.

*Flammulated Owl* – Suitable habitat (Large snags in mature Douglas-fir or aspen forests with open canopies) occurs in the analysis area. While there are no documented occurrences within the analysis area, presence within the analysis area is expected.

*Boreal Owl* - Suitable habitat (tree cavities in mature fir or spruce forests with a high density of large trees) occurs in the analysis area. While there are no documented occurrences within the analysis area, presence within the analysis area is expected.

*Three-toed Woodpecker* – Suitable habitat (recently killed trees) occurs within and adjacent to the analysis area. While there are no documented occurrences within the analysis area, presence within the analysis area is expected.

*Columbia Spotted Frog* – This frog is not expected to occur in southeast Idaho, therefore there will be *no impact* to this species or their habitat under any alternative (USDA-FS, 03). This species will not be discussed further.

*Boreal Toad* – While there are no documented occurrences of Boreal Toads within the Jackknife drainage(which Squaw Creek flows into), they have been documented in nearby drainages including Tincup Creek, McCoy Creek, and Lanes Creek and at the south end of Palisades Reservoir (USDA-FS 2010 02, 17) (NatureServe 2012)

#### Amphibians Migratory Landbirds, and Big Game

*Northern Leopard Frog*- Suitable habitat (ponds) occurs within the project area.

*Migratory Landbirds* – Riparian areas are “priority A” and conifer forested habitats are “Priority Band C” habitats important for nesting birds (IWJV 2005). Project activities will take place in riparian areas.

*Mule Deer and Elk* – The analysis area contains winter range and spring, summer, and fall foraging habitat for mule deer and elk. Winter range is mapped in the lower portions of Jackknife Creek (downstream of confluence with Cabin Creek), and drainages to the south (including Cabin Creek, Haderlie Creek, etc) and extending north into the Deep Creek and Pat Canyon drainages (see map in Appendix A of the Wildlife Specialist Report). This area has been further identified as *critical* winter range area (reference the Forest Plan for the definition of *critical* winter range). Security areas, defined as an area of cover (vegetative or topographic) over 0.5 miles from an open motorized route and over 250 acres, are important for limiting disturbance and hunting vulnerability to big game animals. A large security area of approximately 54,325 acres surrounds the upper Squaw Creek Road (see map Appendix A of the Wildlife Specialist Report). Open

Motorized Route Density (OMRD) includes all open roads and motorized trails in a prescription area polygon, and is expressed in  $\text{mi}/\text{mi}^2$ . OMRD “ceilings were set for management areas in the Caribou Travel Plan Revision (USDA-FS 2005), and were intended to achieve a desired recreation setting while minimizing wildlife disturbance. The current OMRD for the Prescription Area where proposed road management activities will take place is  $0.42 \text{ mi}/\text{mi}^2$ , with a ceiling of  $1.0 \text{ mi}/\text{mi}^2$  (USDA-FS 2005). See Appendix B of the Wildlife Specialist Report for the OMRD calculations used in this report, as the numbers in the 2005 Caribou Travel Plan Revision have been updated to reflect current conditions.

### ***Environmental Effects***

The following narratives summarize the effects to Forest Service Sensitive species expected to occur in the analysis area, by alternative. All action alternatives are compliant with Forest Plan direction with regards to wildlife. Alternatives 1-4 occur primarily on an existing roadbed, and under any alternative, the reduction in the amount of AIZ disturbance (as described in the Fisheries and Hydrology Specialist reports) would be beneficial in the long term for all special status wildlife species present in the project area.

#### No Action Alternative

##### *Direct and Indirect and Cumulative Effects*

No road closure or trail building would occur under this alternative. The existing condition for upland wildlife and habitat would continue current trends. The development of borrow sites to obtain fill material for road maintenance would not occur. While improvements to stream crossings would occur, potentially improving aquatic conditions at a very site specific scale (ie within the confines of the new crossing), overall the re-occurring maintenance, sediment delivery, and chronic flooding of the road/trails due to beaver dams would likely continue to be issues. Because the road would simply be improved along its current location, there would be no change to existing OMRD's or to the amount of mapped big game security area. Changes to big game populations and survival are not expected under this alternative. Since no disturbance will be occurring outside of the existing road template, effects to wildlife species would minimal, generally limited to temporary displacement from the area during maintenance activities.

#### Alternative 1

##### *Direct and Indirect Effects*

Under Alternative 1, the existing road would be closed to full size vehicles from the corrals north to the junction with non-motorized trails # 456 and #454. An ATV trail would then be established, generally following the existing roadbed, but with short relocations at the stream crossing locations. Since the majority of the project would occur along the existing roadbed effects to wildlife would be minimal, generally expected to consist of temporary displacement from the project area.

*Townsend's big-eared bat* – The primary mechanism of direct effect to bats would be displacement during construction of the trail #456 reroute. No impacts to Townsend's big-eared bat would be expected from activities occurring along the existing roadbed. While the construction of the trail #456 reroute may remove some suitable roosting habitat (ie trees, snags), alternate roosting sites are available in the project area. This is expected to be very minimal given the short length of the reroute (0.3 mile). No indirect effects or effects to prey species are expected. In the long term, restoration of riparian habitat may provide additional habitat for insects, potentially resulting in an increase in prey species, which would be beneficial to Townsend's big-eared bats. No impacts to winter hibernacula will occur.

*Gray Wolf*-. The primary mechanism of direct effect to wolves would be displacement during construction of the trail #456 reroute. There are no known wolf dens or rendezvous sites within the analysis area. Movement through the area is not expected to be impacted, as the closure of the road to full size vehicles and replacement with an ATV trail would generally be expected to result in maintenance of existing conditions for wolves. Disturbances from project activities would be localized and short duration (1-2 months), and could easily be avoided by wolves. No impacts to prey species or reduction in carrion availability are expected.

*North American Wolverine* – Disturbances along the existing road bed would not be expected to impact wolverines, due primarily to the existing disturbance and wolverines avoiding the area. Movement through the area is not expected to be impacted, as the closure of the road to full size vehicles and replacement with an ATV trail would generally be expected to result in maintenance of existing conditions for wolverines. Disturbances from project activities would be localized and short duration (1-2 months), and could easily be avoided by wolverines. No impacts to prey species or reduction in carrion availability are expected.

*Bald Eagle* –Bald Eagles may potentially be present or “fly over” the analysis area during the summer, however, human disturbances from all activities would be localized and short duration (1-2 months), and could easily be avoided by Bald Eagles. Project activities will not be taking place in suitable nesting habitat or defined “home ranges”, nearest known nesting locations are near the Salt River approximately 5 miles to the east and southeast. No impacts to prey species or reduction in carrion availability would be expected.

*Northern Goshawk* – Similar to Bald Eagles, while there are no known Northern Goshawk nests or territories near the analysis area, Northern Goshawk may be present incidentally in the area. However, disturbances from project activities would be localized and short duration (1-2 months), and could easily be avoided by Northern Goshawks. No impacts to Goshawk are expected from the project activities occurring along the existing roadbed, mitigations incorporated in to the project as described above, would result in surveys being conducted along the length of the trail #456 re-route, and if any nests are found, appropriate mitigations would be incorporated to minimize or eliminate potential impacts of the new trail construction. Riparian areas are important habitat components

for Goshawks as well as many of their prey species (Reynolds et. al. 1992), a reduction in the amount of AIZ disturbance would be beneficial to goshawks and their prey species.

*Columbian sharp-tailed grouse* – There are no known lekking areas or documented presence in the analysis area. Disturbances from project activities would be localized and short duration (1-2 months), and could easily be avoided by sharp-tailed grouse. There would be no disturbance to Leks or nesting habitat. Improvements to Aquatic Influence Zones (AIZs) resulting from improved stream crossings and the reduction in the amount of AIZ disturbance would likely result in improvements to potential sharp-tailed grouse habitat.

*Great Gray Owl, Flammulated Owl, Boreal Owl, and Three toed Woodpecker* – The mature forested stand conditions would not be altered in the analysis area, as the proposed trail occurs primarily along an existing roadbed. While no known nests occur in the project area, the short segment of new non-motorized trail will be surveyed prior to project implementation to ensure no nests will be impacted. If nest are discovered, appropriate mitigations will be incorporated into the project to avoid impacts to the nests). Some trees and snags (hazard trees) would be removed along the trail #456 re-route, however, the few trees that would be removed to clear a small (18”-24” tread) non-motorized trail would not be expected to significantly reduce potential habitat. Any active nests discovered during pre-project surveys would be avoided as described in the mitigation measures. No impacts to prey species (insects or small mammals) are expected under this alternative.

*Boreal Toads and Northern Leopard Frog*– Although neither species has been documented in the analysis area, closure of NFSR #389 and replacement with an ATV trail, would be expected to incrementally improve habitat for amphibians. This improvement would be expected to occur primarily from the reduced width of the traveled way, and the replacement of the lower and upper crossings with an ATV bridge, all of which reduce stream channel disturbance and the potential for collisions between motorized vehicles and amphibians. Stream restoration activities such as bank stabilization, further restoring proper hydrological function and improving AIZ’s would be expected to benefit all amphibians. Moving the #456 trailhead to the west side of Squaw Creek, and eliminating the existing non-motorized crossing is expected to be beneficial to amphibians, since maintenance of this crossing (including blasting) will no longer be required. Borrow pits would be constructed away from aquatic habitat (not within flood plains or adjacent to stream channels or side channels) and would not be expected to impact potential habitat for Boreal Toads or Northern Leopard Frogs.

*Migratory Birds* – Mitigation measures as described in Chapter 2 would reduce the risk of direct effects to migratory birds. Improvements to AIZs, primarily from the reduction in the width of the traveled way, would result in positive impacts to migratory bird habitat. Mitigation measures as described above would reduce the risk of direct effects to migratory birds.

*Big Game* – Given the existing 1.8 miles of road north of the corrals would be closed and replaced with 1.8 miles of ATV trail, the current OMRDs within the prescription area would remain 0.42 mi/mi<sup>2</sup> (See Appendix B of the Wildlife Specialist Report), and the surrounding big game security area would also remain generally unchanged. Big game hunting vulnerability would likely be reduced to a certain extent, given the current Idaho State law prohibiting the use of ATV's as an aid to hunting big game (IDF&G 2012). However, per the same law, hunters would still be able to use their ATV's to pack in camps and to retrieve big game animals. While the borrow pit location occurs in critical winter range for big game, due to the small area of disturbance, its location immediately adjacent to an existing open road, and the mitigations requiring reclamation (which will reestablish vegetation), no measurable adverse impacts to winter range are expected.

## Alternative 2

### *Direct and Indirect Effects*

The effects of this alternative are generally the same as Alternative 1, with the following exceptions as described below. Under this alternative, tread width would decrease from 60" (for ATV's) to 18-24" (for non-motorized traffic), therefore there would be less remaining ground disturbance and a lack of motorized disturbance along upper Squaw Creek. A non-motorized trail within the analysis area would have less impact on wildlife than a motorized trail, and subsequently Alternative 2 would be more beneficial to wildlife species than Alternative 1.

*Northern Goshawk*- In the long term, although sensitivity to disturbances varies by individual, potential improvements to habitat may occur, primarily due to the lack of motorized disturbance resulting from the road closure and conversion to a non-motorized trail further reducing AIZ disturbance.

*North American Wolverine*- A non-motorized trail would be beneficial for wolverines, relating directly to strategies for wolverine habitat management, which includes providing large areas with low road densities and minimal human disturbance (RFP FEIS D-139). Alternative 2 would reduce road density within the prescription area (as described below), increase the size of the adjacent security area, and reduce human disturbance. Benefits to big game populations may also indirectly benefit wolverines.

*Big Game*- Due to the closing of 1.9 miles of road, and the subsequent construction of non-motorized trail, OMRD's within the prescription area would be reduced from 0.42 mi/mi<sup>2</sup> to 0.34 mi/mi<sup>2</sup>, and the amount of mapped big game security areas would increase by approximately 770 acres from 54,325 acres to 55,095 acres. The reduction in the OMRD and the increase in the amount of big game security area would be expected to benefit big game species within the analysis area, primarily due to the lack of motorized disturbance and the decrease in vulnerability during the hunting seasons.

*Boreal Toads and Northern Leopard Frog* – The risk of collisions between amphibians and motorized vehicles would be eliminated. Along the existing roadbed, the reduction in the width of the traveled way from 60" to 18-24" would reduce AIZ disturbance, resulting in improvements to the AIZ beyond those of Alternative 1.

*Migratory Birds* – Improvements to AIZ habitat, resulting primarily from the reduction in the width of the traveled way, would result in positive impacts to migratory bird habitat.

### Alternative 3

#### *Direct and Indirect Effects*

Alternative 3 blends elements of the No Action alternative and Alternative 1, in that the first 0.9 miles of road will remain open to full size vehicles, while the second 0.9 mile of road will be converted to an ATV trail. As described under the No Action alternative, existing conditions for upland wildlife and habitat would continue current trends along the first 0.9 mile of the road. Since the entire 1.8 miles will remain motorized, there will be no change to OMRD's or the adjacent big game security area. Along the 2<sup>nd</sup> 0.9 mile of ATV trail, the effects of this alternative would be similar to the effects as described under Alternative 1, with the exception as described below:

**Parking Area:** Under this alternative, the construction of a small parking area (approximately 0.1 acre) would occur within the AIZ. While the conversion of the 2<sup>nd</sup> 0.9 mile of road to an ATV trail would improve AIZ habitat for migratory birds, this improvement would be partially offset by the construction of the parking area which would make this area unsuitable for migratory bird nesting.

### Alternative 4

#### *Direct and Indirect Effects*

Alternative 4 blends elements of the No Action alternative and Alternative 2, in that the first 0.9 miles of road will remain open to full size vehicles, and the second 0.9 mile of road will be converted to a non-motorized trail. Therefore along the first 0.9 miles, there will be no impact to wildlife species (since activities will simply consist of maintenance activities to bring the road up to standard). As described under the No Action alternative, existing conditions for upland wildlife and habitat would continue current trends along this portion of the road. Since only the first 0.9 mile will remain motorized, OMRD's will be reduced from 0.42 mi/mi<sup>2</sup> to 0.38 mi/mi<sup>2</sup> and the adjacent big game security area would be increased 460 acres from 54,325 to 54,785 acres. Along the 2<sup>nd</sup> 0.9 mile which will be non-motorized, the effects of this alternative would be similar to the effects as described under Alternative 2, with the exceptions as described below:

**Parking Area:** Under this alternative, the construction of a small parking area (approximately 0.1 acre) would occur within the AIZ. While the conversion of the 2<sup>nd</sup> 0.9 mile of road to a non-motorized trail would improve AIZ habitat for migratory birds, this improvement would be partially offset by the construction of the parking area which would make the area unsuitable for migratory bird nesting.

## Cumulative Effects

Activities within the Jackknife watershed include livestock grazing, recreational activities, road and trail maintenance/improvements, stream restoration projects and water diversion upgrades.

### *Alternative 1 Cumulative Effects*

Since the alternative is restorative in nature, no adverse cumulative effects are expected to any species. Big game vulnerability during the hunting seasons would be less than the No Action alternative, given the current Idaho State law prohibiting the use of ATV's as an aid to hunting big game (IDF&G 2012).

### *Alternative 2 Cumulative Effects*

No adverse cumulative effects would be expected from this alternative. Stream restoration activities and the removal of a motorized route from within the AIZ, would be expected to improve AIZ conditions, resulting in benefits to wildlife including amphibians and migratory birds utilizing AIZ habitat. The reduction in OMRD and the corresponding increase in the size of the adjacent security area would be expected to benefit big game populations, however, the benefits at the population level would be difficult to quantify.

### *Alternative 3 Cumulative Effects*

No adverse cumulative effects would be expected from this alternative. Reducing the width of the traveled way along the 2<sup>nd</sup> 0.9 mile of road would be beneficial to wildlife, as described under Alternative 1. Further, the existing stream crossings would be converted to ATV bridges which would also result in beneficial impacts to amphibians as described under Alternative 1. However, considering the first 0.9 of road would remain at its current width, and that some of the benefits of this alternative would be offset by the construction of a small parking area, this alternative would be less beneficial than Alternative 2.

### *Alternative 4 Cumulative Effects*

No adverse cumulative effects would be expected from this alternative. Reducing the width of the traveled way along the 2<sup>nd</sup> 0.9 mile of road would be beneficial to wildlife, as described under Alternative 2. Further, the existing stream crossings would be converted to footbridges which would also result in beneficial impacts to amphibians as described under Alternative 2. However, considering the first 0.9 of road would remain at its current width, and that some of the benefits of this alternative would be offset by the construction of a small parking area, this alternative would be less beneficial than Alternative 2, (but more beneficial than Alternative 3 given the decrease in OMRD and increase in the security area).

### *Irretrievable and Irreversible Commitment of Resources*

None of the Action alternatives would result in Irretrievable or Irreversible impacts to wildlife or rare plants. Direct, indirect, and cumulative impacts to wildlife from road maintenance or closure, trail construction (non-motorized or motorized), would not be an irretrievable or irreversible commitment of resources. Roads and trails can be closed and reclaimed if they are causing unforeseen resource damage.

## **RANGE MANAGEMENT/NOXIOUS WEEDS**

### ***Existing Conditions***

The Deep Creek, Squaw Creek and Black Canyon sheep allotments (reference Figure 2 in the Range Specialist Report, Project Record) use the project area at varying times from 6/26 to 9/10. Season of use can vary based on current years weather conditions and forage variability. Livestock and allotment use activities within the project area consists of access for sheep herds, herders, their camps and shipping of lamb and ewes near the end of the grazing season. Approximately 3,000 ewes with lambs will be in or around the project area for some period of time.

Noxious weeds are present in the project area however they have not become a significant resource issue. The Forest Service has been chemically treating noxious weeds within the project area and current infestations are at a manageable level. The project area has Canada thistle, hounds tongue and musk thistle. Spotted knapweed has been found in the project area in the past, however within the last several years no spotted knapweed plants have been found.

### ***Environmental Effects***

In the no action alternative there would be no effects associated with the desired future conditions, goals, standards or guides set forth within the Revised Forest Plan relative to Grazing Management. The no action alternative would have no impact on current livestock movement, herding or exiting the Forest.

The upper Squaw Creek road is used by permittees to access the three allotments adjacent to the upper Squaw Creek road (Figure 2 Range Specialist Report). Currently, permittees use the road to supply herders and pull camp trailers for the herders to the end of the road, near the trail #454 trailhead. In alternatives 1 and 2, Forest Road #389 would be closed and converted to a motorized or non-motorized trail. Since the upper portions of the Squaw Creek road will be closed, sheep camps (up to 4) will have to be stationed at the corrals. The concentration of sheep camps may result in issues relative to pack stock and possible conflicts between users. User conflicts will peak during the September archery elk season and more than likely there will be parking/camping space issues at the corrals. Further, within the confines of the parking area, the combined range/recreation use may affect vegetation (primarily grasses) in the parking area adjacent to the corrals. This would be primarily due to the increased vehicle traffic, but also due to additional utilization by recreational pack stock. Alternatives 3 and 4 involve leaving the first 0.9 mile of the road open and creating a small (0.1 acre) parking area just prior to the first

crossing. These alternatives would reduce the potential for user conflicts however they still limit access and concentrate uses within the general corral area (reference the Recreation section above for a full discussion on user conflicts). Per the recommendations in Chapter 2, if the parking area adjacent to the corrals should be monitored, and if in fact vehicle traffic does increase to the point that it creates excessive bare ground; graveling or otherwise improving the parking area to handle the increased traffic will be considered.

If the no action alternative is selected there will be impacts associated with noxious weeds and invasive species, because soil disturbance activities will be occurring. Any time soils are disturbed the probability of noxious weeds occurring is increased. The amount of soil disturbance activities associated with the no action alternative will be less than the action alternatives so the probability of noxious weed establishment would be less. It should be noted that the selection of a motorized alternative also increases the potential spread of noxious weeds from outside areas and increases the potential for soil disturbing activities compared to a non-motorized alternative. The potential for the establishment of noxious weeds can be mitigated through the BMP/ Recommended Design Features as described in Chapter 2. If soil disturbances take place it will be important to make sure these areas are reseeded and monitored for establishment of noxious weeds.

***Irretrievable and Irreversible Effects:***

No Irretrievable or Irreversible Effects are expected from any of the action alternatives. The selection of an action alternative has the potential for ground disturbance, and any time there is ground disturbance the potential for the establishment of noxious weeds is increased. While No Action alternative does involve ground disturbing activities (associated with road maintenance, stream crossing structure replacement, etc), the action alternatives have more ground disturbing activities proposed and therefore the potential for noxious weed establishment is greater than the No Action alternative. However, as mentioned the potential for the establishment of noxious weeds with an action alternative can be mitigated through the BMP/ Recommended Design Features as described in Chapter 2.

**CLIMATE CHANGE**

In a 2008 letter to the Forest Service National Leadership Team, Chief Abigail R. Kimbell characterized the Agency's response to the challenges presented by climate change as "one of the most urgent tasks facing the Forest Service" and stressed that "as a science-based organization, we need to be aware of this information and to consider it any time we make a decision regarding resource management, technical assistance, business operations, or any other aspect of our mission." Addressing and analyzing climate change at the project level is now a national requirement.

Ongoing climate change research has found that climate is already changing; that the change will accelerate, and that human greenhouse gas (GHG) emissions, primarily carbon dioxide emissions (CO<sub>2</sub>), are the main source of accelerated climate change.

Projected climate change impacts include air temperature increases; sea level rise; changes in the timing, location, and quantity of precipitation; and increased frequency of extreme weather events such as heat waves, droughts, and floods. These changes will vary regionally and affect renewable resources, aquatic and terrestrial ecosystems, and agriculture. While uncertainties will remain regarding the timing, extent and magnitude of climate change impacts, the scientific evidence predicts that continued increases in GHG emissions will lead to increased climate change.

Within the context of the Squaw Creek Watershed Improvement Project, climate change impacts have the potential to alter aquatic ecosystems through changes in timing, amount and type of precipitation as well as changes in stream temperatures. These changes could result in increased spring flooding, decreased base flows, and higher stream temperatures.

One way to reduce the impacts of climate change to aquatic ecosystems is by maintaining the resiliency of these systems through active management. The action alternatives for this project would involve structure improvement, and reductions in the amount of existing AIZ disturbance. These actions would promote the recovery and resiliency of Squaw Creek by improving the Aquatic Influence Zone, stream channel, and floodplain conditions with the project area. The No-Action alternative would not address Aquatic Influence Zone, stream channel, and floodplain conditions in the project area and would not improve the resiliency of Squaw Creek to impacts associated with climate change. All action alternatives directly relate to the USDA's Strategic Plan for FY 2010-2015 to *"Protect water resources on National Forest System lands by planning for watershed health and working to restore degraded watersheds, reduce erosion, reclaim and restore abandoned mine lands, reduce the threat of watershed damage from catastrophic wildfires, and reduce the impact of the road system on watershed health."* (page 19).

With regards to this projects potential impact on climate change, all of the alternatives, including the No Action, would involve the operation of vehicles and a variety of heavy equipment, and would contribute to Greenhouse Gas (GHG) emissions. However, given the relatively small scale of the project, (as opposed to large scale oil field development, etc) no meaningful contribution to climate change would be expected. Currently, a large amount of uncertainty exists with regards to small scale projects and their potential impacts on climate change. "Because greenhouse gases mix readily into the global pool of greenhouse gases, it is not currently possible to ascertain the indirect effects of emissions from single or multiple sources. Also, because the large majority of Forest Service projects are extremely small in the global atmospheric CO<sub>2</sub> context, it is not presently possible to conduct quantitative analysis of actual climate change effects based on individual or multiple projects, and "Uncertainty in climate change effects is expected because it is not possible to meaningfully link individual project actions to quantitative effects on climatic patterns." (USDA 2009).

# CHAPTER 4: CONSULTATION AND COORDINATION

## INTERDISCIPLINARY TEAM MEMBERS

Document Writer, Zone Wildlife Biologist: Devon Green  
Forest Hydrologist: Louis Wasniewski  
Soil Scientist: Kara Green  
Fisheries Biologist: Corey Lyman  
Forest Engineer: Thomas Brown  
South Zone Recreation Specialist: Glenn Lackey  
Range Specialist: Kevin Parker  
Forest Archaeologist: Ali Abusaidi

## FEDERAL, STATE, AND LOCAL AGENCIES

*the following agencies have or will be consulted, primarily through scoping and/or through project permitting after a decision is signed*

- Idaho Department Parks and Recreation
- Idaho Department of Water Resources
- Idaho Department of Fish and Game
- Idaho Department of Environmental Quality
- Idaho State Historic Preservation Officer (SHPO)
- US Army Corps of Engineers
- US Fish and Wildlife Service

### **Others**

Project proposal was sent to the Soda Springs Ranger District mailing list.

## FEDERAL AND STATE PERMITS, LICENSES, AND CERTIFICATIONS

Approval of discharge of dredged or fill material into waters of the United States (Section 404 of the Clean Water Act of 1977, as amended) requires a joint Army Corps of Engineers and Idaho Department of Water Resources application for instream work. This project was scoped at the annual Caribou-Targhee Stream Permitting MOU meeting in April of 2012. Permits will be obtained before starting project implementation.

Consultation with the USFWS on this project was completed in March of 2012 during the annual Streamlining Coordination Meeting held in Pocatello, ID. A Biological Assessment (BA) will be written for the project and incorporated into the project record.

A cultural resources survey of the project's area of potential effects will be conducted and any discovered sites will be recorded and evaluated for their National Register of Historic Places (NRHP) eligibility status. NRHP eligible cultural resource sites will be avoided by all project related activities, hence, there will be "no effect" on any historic properties. Under mitigation common to all alternatives any unanticipated discovery of cultural sites during project implementation would require halting of the project in that area until the Forest Archaeologist takes appropriate action in consultation with the Idaho SHPO.

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**APPENDIX A: RESPONSE TO COMMENTS**

<b>Respondent</b>	<b>Supports closure of NFSR #389 above corrals (Yes /No)</b>	<b>Trail</b>	<b>Comments</b>	<b>Response</b>
JP Robinson (Jackknife Association)	Yes “should not spend money on improving the existing road for truck traffic, unless there is the potential for future logging”	Supports ATV trail along existing roadbed.	Would like to see road above corrals left open to ATV access. Would allow permittes easy ability to monitor cattle drift into upper Squaw Creek Too many roads have already been closed in Jackknife, need to provide	An ATV is being considered and is described in detail in Alternative 1. Logging is not a foreseeable activity within the drainage.

			access for those unable to walk or without horses.	
Dr. Bowman	Yes	No opinion	Supported the Jackknife Project, since the closure of that road has noticed an increase in the amount of wildlife	A non-motorized trail is being considered as part of the proposal. Effects to Wildlife and Aquatic Species are documented in their respective Specialist report.
Lynn Stoller	No - should be kept open to full size vehicles so can be used by ATVs during hunting season. Wants ATV access north of the corrals.	Does not want an ATV trail on the ridge to the west.	Lynn actively hunts and recreates in the area.	The No Action alternative is considered in the EA. Proposals to relocate the trail (either motorized or non-motorized) were dropped from analysis. Effects of the no action alternative, and the effects to recreation under Alternative 1 and 2 are disclosed in the EA.
Matt Woodard (Trout Unlimited)	Yes	Concerns that a relocated ATV trail would present similar resource concerns to existing roads.	Favors actions that will protect habitat in Squaw Creek for YCT. Keeping the riparian area of Squaw Creek isolated or protected from road/trail issues is of paramount concern to TU.	Potential Effects from each of the alternatives to YCT are disclosed in the EA and in the Fisheries Specialist report. All action alternatives are designed to improve resource conditions within the Squaw Creek drainage.
Marv Hoyt (Greater Yellowstone Coalition)	Yes "Specifically, the best course of action would include closing and obliterating the approximate 1.8 miles of FSR #389 beyond the corral and implementing	Supports turning existing road bed into non-motorized trail. Has grave concerns in regards to constructing a new OHV trail between the corrals	If borrow is needed for road reconstruction or maintenance, the FS should locate borrow sources in less sensitive areas than those noted in the scoping document. Sources for borrow materials exist on nearby private land.  In light of the	-Proposals to relocate the trail (either motorized or non-motorized) off of the existing roadbed were dropped from analysis.  -Potential borrow source locations were further reviewed in the field. Note that the proposed location for the borrow pit has changed since the

	all appropriate riparian/stream restoration measures needed after road obliteration.”	and trailheads #454 and #456. Such a trail will of necessity have to be constructed on unstable soils; require one, and possibly two, new stream crossings of Squaw Creek; impact wildlife habitat that the existing road does not currently affect; and will encourage the pioneering of additional, illegal motorized routes.	likelihood that the Idaho Department of Fish and Game’s Motorized Vehicle Rule will be revoked by the Legislature, existing and new OHV routes will make it far easier for hunters to access areas, further displacing wildlife.	release of the scoping document as a result of field reviews by the Forest Service Soil Scientist and Engineers (reference project record) and is now located in a less sensitive, more stable area.  -The IDF&G Motorized vehicle rule remains in place; it was not revoked by the legislature.  -Soil stability, effects to wildlife and fisheries habitat and recreational issues are disclosed in the EA and the respective Specialist reports.
Kelly Rainey	Yes-not worth the cost to maintain	“No reason to construct ATV trail because it only goes for less than 2 miles”	Lives in Jackknife area. Uses the Squaw Creek area a lot for horse/non-motorized use.	Costs estimates to implement each alternative as well as maintenance costs are disclosed in the EA. Construction of a non-motorized trail is being considered as Alternative 2.
Nathan Stohasky	Yes	Supports a non-motorized trail from the corrals north	Closure to motorized use would create more security areas for big game during hunting season. Closure to motorized use would be an important step forward in	Changes to Big Game Security areas by alternative are disclosed in the EA and the Wildlife Specialist report. Closure to motorized use and replacement with a non-motorized

			protecting the streamside vegetation and water quality.	trail in being considered. Impacts to Aquatic Influence zones, by alternative, are disclosed in the EA.
Name Unknown 428 Hickory Circle Idaho Falls, ID 83404	Yes	Establish an ATV trail along the existing FSR 389 prism north of the corrals.	Develop borrow sites as proposed.	Establishment of an ATV trail is considered in the EA as Alternative 1. Borrow sites were relocated to occur in a less sensitive area.
Ralph Haderlie	--	Has concerns with opening up off road vehicle travel that isn't controlled which will cause a lot of destruction to the environment and grounds	Not well acquainted with the Squaw Creek area	Impact to recreation is disclosed in the EA and in the recreation Specialist report. ATV use along the existing roadbed is currently allowed, switching from an open road to an ATV trail would not be expected to increase illegal ATV use.
Matt Wilkening (EPA)	Yes	Maintain access to trail 456 and 454 via trail 458 with a junction trail in Sections 15 and 10	Remove from mailing list for this project.	Proposals to relocate the trail (either motorized or non- motorized) were dropped from analysis.
Richard Dixon	--	"the more ATV trails- the better"		Establishment of an ATV trail is considered in the EA as Alternative 1.
Jack Strum	Yes "not totally familiar with the area, but corrals seem like a logical spot to end motorized portion of trail"	--	Ending road at corrals should result in money savings, would result in additional roadless recreation area, and improved habitat for fish.	Closure of the road at the corrals would occur as part of Alternative 1 and 2. Costs estimates to implement each alternative as well as maintenance costs are disclosed in the EA.

				Effects to wildlife, fisheries and recreation are disclosed in the EA and the respective specialist reports.
Mark Steele	Yes	In favor of a non-motorized trail along the existing roadbed.	Cheapest avenue would be to use the old road bed as a non-motorized route to access the existing non-motorized trails. Would also have the least biological impact.	Proposals to relocate the trail (either motorized or non-motorized) were dropped from analysis. Costs estimates to implement each alternative as well as maintenance costs are disclosed in the EA. Effect to wildlife and fisheries by alternative are disclosed in the EA.
Joe Declark	-A count should be done to determine use by full size vehicles/ATV's, if not enough use by full size vehicles/ATVs then would not justify the expense to properly fix the road.	-- need to get a count of ATV use in the area, if enough ATVs use the area then new trail away from the creek should be considered. A replacement ATV trail would allow people who hunt a foot closer access to the non-motorized trail heads. Under current law can use ATVs for game retrieval, needs to be		Relative use of the road during the summer and hunting seasons is discussed in the Recreation Specialist Report. In depth studies to determine actual usage is outside the scope of the project.  Costs estimates to implement each alternative as well as maintenance costs are disclosed in the EA.

		considered. If little use of the area, begin non-motorized trail at the corrals		
Sara Jane Johnson	Yes	Supports a non-motorized trail in a location that will not destabilize during spring flooding.		A non-motorized trail is considered in the EA as Alternative 2. Trail locations both motorized and non-motorized and stream crossing structures will be designed and installed in coordination with the Forest hydrologist to ensure they remain stable during the spring flooding season.
LaDell Heiner	No	If cannot rebuild the road, build ATV trail along existing roadbed.		An ATV trail is considered in the EA as Alternative 1. Proposals to relocate the trail (either motorized or non-motorized) off of the existing roadbed were dropped from analysis.
Gary Miller	Yes (close above first stream crossing)	If keeping first 0.9 mile open is too expensive, closing the road at the corrals is a good option.		Costs estimates to implement each alternative as well as maintenance costs are disclosed in the EA.
Thane Winward	No: primary suggestion is: repair the road, including the washout, as inexpensively as possible without spending funds on environmental	Second suggestion (a distant second) is to close the road above the open stream crossing, but leave the road bed as the trail.	Rehab and restore stream without reducing forest access. Don't fast track project. Do not build a new trail that is in a new location that is longer or more strenuous to hike/ride. Threat of unstable slopes sediment delivery to	-Proposals to relocate the trail (either motorized or non-motorized) off of the existing roadbed were dropped from analysis. - Project follows standard timelines for NEPA analysis. Effects of the current road are documented in the EA and

	<p>studies, etc. Then watch this road and stream section for two to three years and let longer term solutions evolve without the constraints of a fast track goal in mind. Leave the existing open stream crossing as it is. It has been how it is for a very long time.</p>	<p>Repair of the washout is still necessary since it is a dangerous place to cross on a horse when it is wet, frozen, and slick. Then do not allow trailers to travel from the corrals up to the new trail head, thus reducing the need to construct a large turn around area. Possibly expand the turn around area at what would become the new trail head.</p>	<p>streams are overstated.</p>	<p>specialist reports. The road, including the open stream crossing, is currently below standard and unsafe to travel, as evidenced by the current closure of the road.</p>
Fred Mays	No		<p>Runs sheep in area. Would like to have road open for running sheep, putting in camp at end of road. ATV trail would not be useful for hauling in camp/supplies</p>	<p>Access to sheep allotments is a key issue and mitigations have been incorporated into Alternatives 1 and 2 to minimize impacts to permittees. Alternatives 3 and 4 analyze the potential for leaving a portion of the road open north of the corrals.</p>
Jeff Cook (IDPR)	--	--	<p>One advantage to either Alternative 2 or 3 is that the District could get help with IDPR Trail Cat program. The Trail Cat</p>	<p>Noted.</p>

			Program maintains and constructs motorized trails. We also decommission old routes associated with trail relocation efforts.	
Craig Shuler	No “definitely oppose making the road non-motorized”	--	Closure of road would make it more difficult to get supplies into the area during camping/hunting trips. Suggests two month postponement to allow public to review project on the ground.	Two motorized Alternatives are included in the EA, the No Action and Alternative 1. Project follows standard NEPA timelines.
Lincoln County Commissioners	No - supports reconstruction of road	--	Access to sheep allotments needs to be considered.	Access to sheep allotments is a key issue Alternatives 3 and 4 analyze the potential for leaving a portion of the road open north of the corrals to help alleviate concerns with allotment access.
James Joyner (USCOE)	--	--	Get a 404 permit	All applicable permits required will be acquired prior to project implementation, including a 404 permit.
Brett Stevenson (ICL)	Yes	Supports non-motorized trail	FSR #389 has negatively impacted the riparian area and stream channel and should be decommissioned. Its close proximity to the creek and the way in which it is situated is cause for perpetual impact to proper hydrological functions and aquatic habitat.	Analysis of a non-motorized trail is included in the EA as Alternative 2. The benefits of a non-motorized trail are disclosed in Chapter 3.

Tim Palmer	Yes	Would like to see old road bed turned into non-motorized trail for hikers and horseback riders.		Proposals to relocate the trail (either motorized or non-motorized) were dropped from analysis. A non-motorized trail is considered in the EA as Alternative 2.
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