

**CHAPTER 3 - AFFECTED ENVIRONMENT
And
ENVIRONMENTAL CONSEQUENCES**

3.1 Introduction

This chapter describes the existing conditions of the environment in and/or adjacent to the Golden Hand No. 1 and No. 2 Mining Claims Project Area that may affect or be affected by the alternatives presented in Chapter 2. The individual discussions are organized by resource.

This chapter also discloses the effects on the environment that would occur following implementation of the alternatives presented in Chapter 2. The direct and indirect; temporary (0 to 3 years), short (>3 to 15 years), and long term (>15 years), and; cumulative effects are discussed by resource area. Section 3.14 discloses the irreversible and irretrievable effects resulting from the alternatives.

Pursuant to direction found at 40 CFR 1500.1(b) and 1500.4, the discussions presented here are summaries of the completed analyses and form the scientific and analytical basis for the alternatives' comparison at the end of Chapter 2. Unless specifically stated otherwise, the project record (40 CFR 1502.21) is incorporated by reference and contains the detailed data, methodologies, analysis, references, and other technical documentation used in the assessment.

The Golden Hand No. 1 and No. 2 Mining Claims Project Area is located in the Big Creek drainage on the Payette National Forest, approximately 19 miles north of Yellow Pine, ID (Figure 1-1). The actual claims encompass approximately 20 acres each and are located near Coin Creek, a tributary of Beaver Creek, which flows into Big Creek, a tributary of the Middle Fork Salmon River. The project area includes 1,309 acres of National Forest System lands (Figure 1-2).

3.2 Minerals and Geology

This section of the document discusses the existing conditions and characteristics for minerals and geology within the project area, as well as the effects of the various alternatives on those resources. The analysis area for direct and indirect effects to the mineral resource is the project area described in Chapter 1 (Figure 1-2).

The 1872 Mining Law, as amended (30 USC 22, *et seq.*), allows U.S. citizens the right to locate, explore, and develop mining claims on federal lands that are open to mineral entry. Mining claims on lands closed to mineral entry may be developed subject to “valid existing rights”. The validity of Golden Hand No’s 3, 4 and 8 lode mining claims has been established. Golden Hand claim No’s. 1 and 2 were validly located before the withdrawal date. The discovery of a valuable mineral deposit on Golden Hand claim No’s. 1 and 2 has been challenged by the Federal government. A legal determination cannot be made until completion of the current Plan of Operation and any amendments that may result from this analysis.

Section 4 of the Multiple Use Mining Act of 1955 (69 Stat. 367) states that, prior to patent, mining claims may be used only for “...prospecting, mining or processing, and uses reasonably incident thereto.” Additionally, the Wilderness Act of 1964 provides and allows for surface disturbing activities that are reasonably incident to mining or processing operations when valid rights have been found to exist (Wilderness Act 1964, Central Idaho Wilderness Act 1980).

History of the Golden Hand Mine Site

J.M. Hand discovered the Golden Hand deposit in 1889. It is located in the Edwardsburg Mining District. The first development occurred on small veins on the north side of Coin Creek. Two short adits produced \$1,200 in gold (Shenon and Ross 1936). Sometime after 1896 the property was acquired by the Penn-Idaho Company, which developed two adits (total length of 1150 feet) on the Neversweat No.1 claim (presently Golden Hand claim No. 8) on the south side of Coin (Cache) Creek. No production figures are available for this period. By 1933, ownership had passed to Golden Hand, Inc. with the property consisting of 26 unpatented lode claims. Development at this time was focused on the Neversweat No.2 claim located approximately where the present Golden Hand No’s. 3 and 4 claims lie. Two short adits and two open cuts were mined; with most of the recorded production coming from high-grade oxidized ore in these near-surface workings. Production during the period of 1932-34 totaled 1,368 ounces of gold and 301 ounces of silver. Production decreased until 1941, after which no production or development was reported (Cater et al. 1973). The total recorded gold and silver production value was \$44,212 (*ibid*). Later exploration work was apparently unsuccessful, although some exploratory drifting in 1938 reportedly cut a vein having extremely high assay values (Lorain 1938). Claude Elliott relocated the claims in 1963. Golden Hand No’s. 1-5 lode mining claims were located by Jim Collord and American Independence Mines and Minerals, Inc. (AIMMCO) in 1979. In 1983, AIMMCO located Golden Hand No’s. 6-8. Jim Collord subsequently deeded his interest in claims No. 1-5 to AIMMCO.

After 1941, exploration and development was been limited to geologic mapping, surface and underground sampling, and construction of dozer trenches on several of the Golden Hand claims (McRae 1956). Most of this activity occurred before 1979. After the Idaho Primitive Area was established in 1931, preexisting travel routes were all considered trails. Motorized access to the Golden Hand was authorized through the issuance of Class D Road Use Permits. The Forest Service issued these permits for the purpose of conducting assessment and exploration/development work until the end of 1983, when the FC-RONR Wilderness was withdrawn from mineral entry under provisions of the Wilderness Act. For several years AIMMCO was authorized by the Forest Service to access the Golden Hand claims using motorized equipment to conduct assessment, exploration and development work. The approved activities included:

- 1980** - Clearing roads to allow vehicle access, and “recovery of gold bearing material...by means of pick and shovel and a hand operated rocker box”.
- 1981** – “Clean out caved tunnel portals & sample...drilling”. Equipment included backhoe-loader, compressor, and tractor.
- 1982** – “...similar to 1981”.
- 1983** – The “work plan for this property is identical as that filed for 1982 with no change”.

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1984- "...drilling and soil sampling...ore extracted will be hauled out of the wilderness area for mill testing and processing". *This activity was inadvertently approved after the withdrawal date in the Central Idaho Wilderness Act.*

Most of the actions listed above, including the drilling and opening closed adits, were authorized by the Forest Service without a plan of operations. An approved plan of operations became mandatory after creation of the FC-RONR Wilderness.

Administrative Record

The administrative record on the Golden Hand claim group is lengthy. The recent events leading to the preparation of this Environmental Impact Statement on AIMMCO's proposed plan of operations are briefly summarized as follows:

- The FC-RONR was withdrawn from mineral entry on December 31, 1983.
- In February, 1984 a Plan of Operations for Golden Hand claims 1 – 8 was submitted that proposed to clean the caved tunnel portal, sample and drill.
- In March, 1984, AIMMCO was advised that a field examination of the Golden Hand claims would be scheduled and that no operating plans could be approved until that examination had been completed and the basic facts of validity substantiated.
- On July 10, 1984, a field examination of Golden Hand claims 4, 5, 6 and 8 was made by Forest Service mining geologist Patrick Curtis who concluded, in a report dated August, 1984, that valid existing rights had been established on each of those claims before withdrawal. Curtis described Golden Hand claims 1-3 as "associated claims", but reported no findings concerning their validity.
- In August, 1984, the Forest Service advised AIMMCO it had received "favorable results" from its mineral examiners, requested additional information concerning the proposed Plan of Operations and authorized necessary assessment work.
- The Forest Service conducted another mineral examination of the Golden Hand claims in July 1985 to determine if any of the Golden Hand claims were valid prior to processing the plan of operations.
- The mineral report concerning the Golden Hand claims was completed in November 1986. It concluded that none of the eight claims were valid and recommended to the Department of Interior that contest be initiated against all of the claims.
- A validity contest concerning the Golden Hand claims was commenced February 25, 1987.
- AIMMCO timely responded to the BLM's contest notice and the validity contest was set for trial before Administrative Law Judge Ramon M. Child.
- In July, 1987, before trial of the validity contest, AIMMCO submitted an assessment work request to the Forest Service that included, among other things, drilling, trenching and opening a caved adit. This request was denied the same month.
- In July, 1988, AIMMCO filed a complaint in United States District Court for the District of Idaho. In that complaint, AIMMCO appealed the denial of its July, 1987 assessment work request and sought an order that it be permitted to access the Golden Hand claims with mechanized equipment to perform the described work. This complaint was stayed, by agreement, until the outcome of the validity contest was determined.
- In January, 1989, after receiving evidence at the validity contest trial, Administrative Law Judge Ramon M. Child held Golden Hand claim No.'s 1, 5, 6, and 7 to be invalid, that claims No's 2,3 4, and 8 were valid and dismissed the contest on claim No's. 2, 3, 4, and 8.
- Both parties appealed to the Interior Board of Land Appeals (IBLA). On February 10, 1992, the IBLA affirmed Judge Child's decision that claim No.'s 1, 5, 6, and 7 were invalid and that claim No.'s 3 and 4 were valid. It reversed his decision that claim No. 2 was valid and remanded claim No. 8 back to the Hearings Division for review of the historic value of silver as it bore on the validity of claim No. 8. The Forest Service later dismissed its contest against claim No. 8.
- On April, 16, 1996, AIMMCO submitted a proposed Plan of Operations for work on claims No. 3 and No. 4.
- In December, 1999 AIMMCO filed a motion to reactivate and amend the July, 1988 lawsuit in Idaho Federal District Court to appeal from the IBLA decision that Golden Hand claim No's. 1 and 2 were invalid, to obtain an order requiring the Forest Service to allow access to Golden Hand claims 1 and 2 with mechanized equipment and requiring the Forest Service to act upon its April 16, 1996 Plan of Operations.

Golden Hand No. 1 and No. 2 Lode Mining Claims Draft EIS

- On August 9, 2002, Judge B. Lynn Winmill entered Judgment reversing the decision that Golden Hand claim No's. 1 and 2 are invalid, ordering that the Forest Service allow AIMMCO access to Golden Hand claim Nos. 1 and 2 to give it a fair opportunity to prove the validity of the claims, and compelling the Forest Service to complete the EIS and its review of the 1996 plan by May 1, 2003.
- In October, 2002, the Forest Service filed a Notice of Appeal with the 9th Circuit Court of Appeals.
- On May 1, 2003 the Forest Supervisor, Payette National Forest, signed the Record of Decision for the Golden Hand claim Nos. 3 and 4 Plan of Operation and selected an alternative that required AIMMCO to amend the proposed plan of operations prior to implementation.
- In July, 2003, the Forest Service appeal to the 9th Circuit Court of Appeals was dismissed.
- On March 14, 2011, a notice withdrawing the Golden Hand No. 3 and No. 4 Lode Mining Claim Proposed Plan of Operations FEIS was published in the Federal Register. The Record of Decision was rescinded on March 14, 2011.

Management Direction

The Forest Plan (USDA 2003, 2010) and federal and state laws and regulations guide management of mineral resources on the Payette National Forest. Mineral development in Wilderness is also guided by the Wilderness Act of 1964, the Central Idaho Wilderness Act (1980) and the FC-RONR Wilderness Management Plan (USDA 2010).

Regulations defining Forest Service authority to manage locatable mineral activities were adopted in 1974 and are codified in 36 CFR 228A. In accordance with these regulations, an approved plan of operations is required for any locatable mineral activity on National Forest System land that would cause a significant disturbance of surface resources. The Forest Service responses to a proposed plan of operations are defined by regulation at 36 CFR 228.5. The overall purpose of these regulations as stated in 36 CFR 228.1, is to manage operations so as to minimize adverse environmental impacts on National Forest System surface resources.

Mining in Wilderness

The Wilderness Act allows mining development in designated Wilderness on valid claims located before December 31, 1983. In addition, Section 4 (d) (2) of the Act states:

- (2) Nothing in this Act shall prevent within national forest wilderness areas any activity, including prospecting, for the purpose of gathering information about mineral or other resources, if such activity is carried on in a manner compatible with the preservation of the wilderness environment.

Direction for managing mining activities in wilderness under Forest Service mining regulations is found at 36 CFR Section 228.15 that states, in part, at section 228.15 (c):

- Persons with valid mining claims wholly within National Forest Wilderness shall be permitted access to such surrounded claims by means consistent with the preservation of National Forest Wilderness which have been or are being customarily used with respect to other such claims surrounded by National Forest Wilderness.

Activities Reasonably Incident to Mining

The Forest Service minimizes, where feasible, adverse impacts to National Forest surface resources by ensuring that use of the surface for mining activity is reasonably incident to mining. Adverse impacts that are not acceptable are those uses of the surface that cause significant disturbance that is not reasonably incident to mining.

The authority for the Forest Service to ensure that National Forest lands, including those under mining claim locations, are used only for purposes required for and reasonably incident to mining and in a manner that minimizes adverse environmental impacts, falls under the agency's broad authorities primarily, but not limited to, the following statutes and case law:

- The Organic Act of 1897 (16 USC 478, 551)
- Multiple Use Mining Act of July 23, 1955 (30 USC 612).
- Title 36 Code of Federal Regulations, Part 228, Subpart A - Locatable Minerals
- U.S. v. Richardson, 599 F. 2d 290 (1979); Cert. denied, 444 U.S. 1014 (1980)

Access

Access to unpatented mining claims is a statutory right granted to claimants under the 1872 Mining Law, as amended. Access, however, is not uncontrolled or unconditioned even on claims having “valid existing rights”. Where access may cause significant impacts to surface resources, Forest Service mining regulations at 36 CFR 228 Part A require that a plan of operations be submitted and evaluated and that the Forest Service minimize, where feasible, adverse impacts.

The operating plan submitted by AIMMCO proposes to maintain the road between Edwardsburg and Pueblo Summit (Forest Roads (FR) #371 and #373). Beginning at Pueblo Summit, FS Trail #013 would be improved on the existing roadbed to allow drill rigs, support vehicles, and other vehicles to access the mine site. To access drill sites and pit locations, roadbeds from old exploration and mine roads would be utilized for temporary authorized roads.

Reclamation and Bonding

Forest Service mining regulations at Title 36 CFR 228.8 and 228.13 provide direction for reclamation and bonding. On all mining claims validly established on lands within the National Wilderness Preservation System, the operator shall take all reasonable measures to remove any structures, equipment and other facilities no longer needed for mining purposes in accordance with the provisions in Sec. 228.10 and restore the surface in accordance with the requirements in Sec. 228.8(g) (36 CFR 228.15(b)).

Drilling

Drilling is one of the methods proposed to collect subsurface information. Diamond core is the method of drilling proposed.

Diamond core drilling is the most versatile of all methods (Peters 1987). It is relatively expensive, but can be used at almost any location and holes can be directed at virtually any angle. Drills are commonly mounted on trucks, tracked carriages, and articulated “buggies” with large, low-pressure tires (Figure 3-1). Small, portable drills capable of drilling to depths greater than 400 meters can be transported using mules and even manually (see Photo 3-1).

Core drill rigs can be very versatile: “Diamond drill rigs can be transported, assembled, and placed on “pads” by using primitive trails and by helicopter” (Peters 1987).

In diamond core drilling, the cylindrical core is cut by a donut-shaped bit having a cutting surface (the “donut”) with embedded diamonds. The core is recovered in the inner tube of the core barrel and brought to the surface. The fluid used to lubricate the bit, carry the drill cuttings to the surface, and stabilize the hole walls is usually water with a weighting agent mud (bentonite) and sometimes other additives (cottonseed hulls, cellulose, soap, etc.) (Figure 3-1).

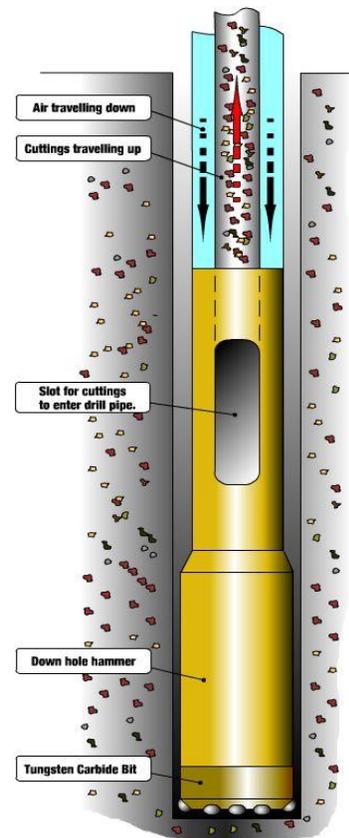


Figure 3-1 Diamond Core Drill

Site requirements for drills vary depending primarily on size and the type of carrier. Drill holes are commonly situated on roads to minimize disturbance and reduce costs.

Track and buggy-mounted drills are generally capable of operating on steeper slopes without constructing large pads (≤ 500 ft²) (Photo 3-1). Smaller level areas are still needed to locate mud tanks and provide work areas to log core and chips.



Photo 3-1 Track-Mounted Reverse-Circulation Rotary Drill

Pits

Pits may be used to collect rock chip samples of unweathered, mineralized material. Pits are generally excavated using equipment such as backhoes and tracked excavators. Pits can provide fresh exposures where vegetation or colluvium obscures lithology or geologic contacts. They can provide access to ore for sampling if they can be located accurately.

Occupancy

Occupancy, whether involving the construction or use of a permanent structure or camping beyond normal “stay limits”, must be authorized in a plan of operations under 36 CFR 228 A. Failure to do so is a violation of Forest Service regulation at 36 CFR 261.10(a) and (b). In *United States v. Burnett*, 750 F.Supp. 1029, 1035 (D. Idaho 1990), the Court held that the maintenance of structures “under the Forest Service’s current policies and the law of this circuit, is a significant surface disturbance which requires an operating plan.”

Golden Hand No’s. 1 and 2 lode mining claims are located within the congressionally designated FC-RONR Wilderness. Both the 1964 Wilderness Act (16 USC 1121, *et seq.*) and the 1980 Central Idaho Wilderness Act (P.L 96-312) provide for the exercise of valid existing rights.

36 CFR 228.15(a) states:

“The United States mining laws shall extend to each National Forest Wilderness for the period specified in the Wilderness Act and subsequent establishing legislation to the same extent they were applicable prior to the date the Wilderness was designated by Congress as a part of the National Wilderness Preservation System. Subject to valid existing rights, no person shall have any right or interest in or to any mineral deposits which may be discovered through prospecting or other information-gathering activity after the legal date on which the United States mining laws cease to apply to the specific Wilderness.”

36 CFR 228.15(b) states (in relevant part):

“Holders of unpatented mining claims validly established on any National Forest Wilderness prior to inclusion of such unit in the National Wilderness Preservation System shall be accorded the rights provided by the United States mining laws as then applicable to the National Forest land involved.”

After the withdrawal date, per the Wilderness Act, the mining laws (and attendant rights to use the surface) no longer apply to the wilderness surface where there are no valid existing rights. Golden Hand claim No's. 1 and 2 were validly located before the withdrawal date. Whether Golden Hand claim No's. 1 and 2 contain a discovery of a valuable mineral deposit has been challenged but can't be legally determined until completion of the current Plan of Operation and any amendments that may result from this analysis.

Affected Environment

Physiography

The Golden Hand Mine site is situated in the northern Rocky Mountain Physiographic Province, in the Salmon River Mountains of Central Idaho. Elevations on Golden Hand lode mining claims No.1 and No.2 are between 6,800 feet and 7,600 feet. The claims lie within the Coin Creek drainage. Coin Creek occupies a steep northeast-trending glacial valley with elevations ranging from 8,682 feet at the north end of the Pueblo Ridge to 5,800 feet at the confluence of Coin Creek and Beaver Creek. The Golden Hand Mine site lies in a transition zone where the broad upper valley narrows down to a glacial trough. Slopes are generally steep and often rocky.

Regional Geology

The oldest rocks in the area belong to the North American Continental Province and are metamorphic and igneous rocks of Mesoproterozoic age (approximately 1,500 million years ago) to Neoproterozoic age, approximately 700 million years ago (Lund, unpublished) (see Figure 3-1). During the Late Cretaceous period (95-70 million years ago) two distinct series of plutons (a body of igneous rock that has formed beneath the surface of the earth by consolidation from magma (AGI 1976) intruded the North American Continental rocks to form the Idaho Batholith. Post-Cretaceous crustal extension resulted in the eruption of the Eocene (51-39 million years ago) Challis volcanics and emplacement of associated intrusive rocks. Most of the Quaternary deposits in the area are a result of Pleistocene glaciation (15-10 thousand years ago).

Geology of Project Area

The Golden Hand Mine site is located along the northwestern boundary of a large area of North American Continental rocks known as the Big Creek roof pendant. Mesoproterozoic biotite phyllite forms the Pueblo Ridge above the mine site (Figure 3-2). Using the revised stratigraphic nomenclature of Tysdal (2000), Lund (unpublished) correlates this unit with the Apple Creek Formation from the upper Lemhi Group. Below Pueblo Ridge, quartzite and argillite outcrop immediately above the mine. These rocks (along with the biotite phyllite above) were thought to belong to the Yellowjacket Formation by early authors, but whether they strictly correlate with the Yellowjacket Formation as redefined by Tysdal (2000), is uncertain. This analysis will use the general term Yellowjacket Formation for the metamorphic rocks that outcrop in the immediate vicinity of the mine site. Cretaceous biotite-muscovite granite outcrops north of the mine. This granite is the roof of a late-series Idaho Batholith pluton that was the source of mineralization. Further to the northeast Eocene granite porphyry crops out. This belongs to the roof facies of the Chamberlain Basin pluton that intruded both the Proterozoic metasediments and Cretaceous granite. Tertiary dikes of variable composition cut both the Yellowjacket strata and the Idaho Batholith granite.

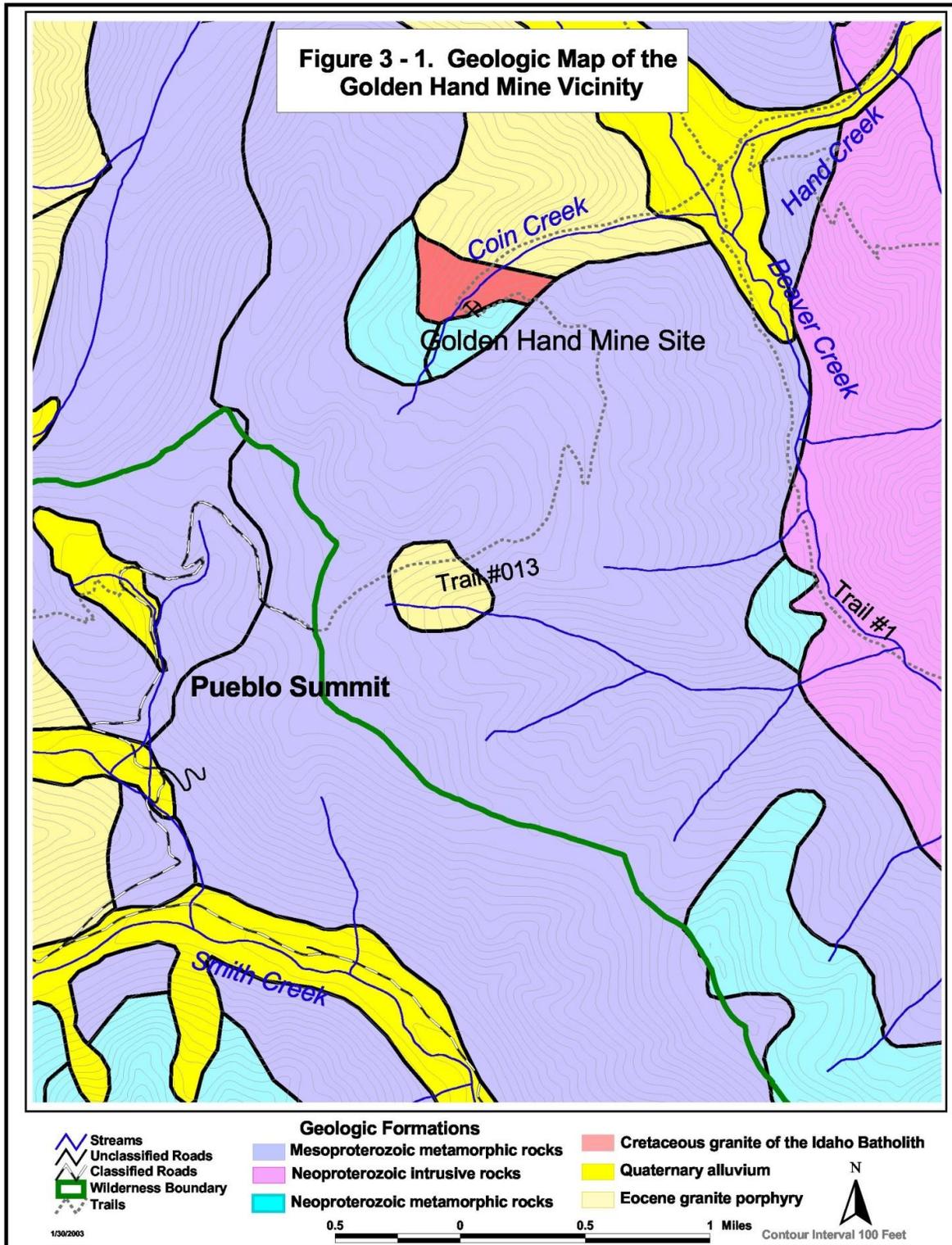


Figure 3-2 Geologic Formations in the Golden Hand Vicinity

Structure

The oldest structure in the area is a northeast-trending fault that cuts the Yellowjacket Formation approximately along the course of Coin Creek (Kirkpatrick 1974). The Golden Hand site lies near the northern end of a zone of north-northeast trending dikes, shear zones, and quartz-filled fissures referred to by Bell (1934) as the Big Creek mineral belt. This zone lies within the larger zone of mineralization known as the Thunder Mountain – Dixie belt (Bookstrom et al. 1998) which runs along the eastern margin of the Idaho Batholith. Two parallel, north-striking shear zones run through the Golden Hand claims (O’Hara 1989). The age of these shear zones is uncertain, but they either pre-date or are contemporaneous with emplacement of the Idaho Batholith. Tertiary dikes in the immediate area strike northeast on the south side of Cache Creek and northwest on the north side of the creek. The dikes may be associated with emplacement of the Chamberlain Basin pluton, and/or outliers of the Profile Gap – Smith Creek dike swarm (a set of numerous, parallel dikes). This north-northeast trending dike swarm lies a couple miles west of the mine and extends as far north as the headwaters of the West Fork of Cache Creek (as mapped by Cater and others 1973).

Mineralization

Mineralization at the Golden Hand occurs primarily near the Yellowjacket Formation – Idaho Batholith contact and is interpreted as being the depositional product of dilute mesothermal fluids related to the granite (Bookstrom et al. 1998). The shear zones (mentioned above) provided conduits of increased permeability for the fluids. O’Hara (1989) determined that the trace element content of alteration minerals in the two shear zones is distinctly different, and suggested that either two separate hydrothermal systems were present, or that two mineralization events occurred at different times in the same system. Bookstrom and others (1998) note that up to six distinct episodes of mineralization have been identified in gold-silver mixed-metal veins of the Edwardsburg district. These mineralization events occurred 79-69 million years ago.

The minerals of interest at the Golden Hand are gold (Au) and silver (Ag). Primary ore minerals are pyrite, galena, sphalerite, tetrahedrite, chalcopyrite, and free gold. Gangue (nonvaluable metalliferous or nonmetalliferous minerals in the ore) minerals include quartz, calcite, sericite, and epidote (Shannon and Ross 1936). Ore was deposited in a variety of environments. Lorain (1938) reports that the ore on the north side of Coin Creek occurs in small quartz veins formed along bedding planes in the Yellowjacket Formation. The Penn-Ida adits on the Golden Hand No. 8 claim cut two different sets of quartz veins in the Idaho Batholith granite. In addition, disseminated pyrite and tetrahedrite occur in a quartz latite porphyry dike. Most of the ore at the “Glory Hole” (an open cut and adit system) on the Golden Hand No. 3 and No. 4 claims occurs as veinlets and discontinuous stringers in the highly fractured and silicified Yellowjacket-Batholith contact zone. Some ore is disseminated in argillite of the Yellowjacket Formation. The near-surface zone of the Glory Hole had the largest historic production.

Other Mining Activity

The Edwardsburg mining district is bounded by Big Creek on the south, Beaver Creek on the east and north, and Mosquito Ridge on the west (Cater et al. 1973). Active mining in this area has been limited. Only the Fourth of July, Camp Bird, and Velvet Quartz Mine properties have seen exploratory or intermittent efforts at development in the last 15 years. AIMMCO has undertaken substantial, non-surface disturbing geophysical, geochemical and geologic work outside the wilderness during this period. Numerous lode and placer deposits in the district have been explored in the past, but the Golden Hand is one of the few lode gold deposits known to have been productive.

There are no active mining claims in the Coin Creek or Beaver Creek drainages, which were withdrawn from mineral entry in their entirety on December 31, 1983, by the Central Idaho Wilderness Act. This means no claims may be located in the future.

Numerous active mining claims (where the annual maintenance fees are current) exist in the Logan Creek, Smith Creek, Government Creek, and Big Creek drainages outside the FC-RONR Wilderness.

Golden Hand No. 1 and No. 2 Lode Mining Claims Draft EIS

The Fourth of July and Camp Bird Mines are owned by Jack Walker (operating partner of AIMMCO) and located in Government Creek and Logan Creek, respectively. The Fourth of July is on NFS land and its operation is authorized by a plan of operations approved by the Payette National Forest in 1989. The Camp Bird is on private land. The Fourth of July has operated sporadically over the last 12 years but, outside of maintenance, the Camp Bird has seen little activity for more than 30 years.

The Velvet Quartz Mine and Mill (Jerry and Lettie Tucker) are in the N. Fork of Smith Creek, about two miles southwest of the Golden Hand. The mill and mine are on NFS land, operating under a plan approved by the Forest Service in 1984. This very small one or two person operation produces at most only a few tons of ore annually.

3.2.1 Environmental Consequences Specific to Alternative A

Alternative A would not allow AIMMCO the opportunity to obtain the geologic information it has stated is necessary to prepare for a new validity determination and would not comply with the 2003 decision of the Federal District Court for Idaho.

3.2.2 Environmental Consequences Specific to Alternative B and C

Alternative B and C would allow AIMMCO the opportunity to obtain the geologic information it has stated is necessary to prepare for a new validity determination and would comply with the 2003 decision of the Federal District Court for Idaho.

3.2.3 Cumulative Effects

Cumulative effects to the mineral resource are evaluated for the Edwardsburg Mining District - bounded by Big Creek on the south, Beaver Creek on the east and north, and Mosquito Ridge on the west (Cater et al. 1973).

Effects on other existing mining properties in the Edwardsburg/Big Creek area is deemed to be negligible because AIMMCO's proposed operating plan is confirmatory in nature and not likely by itself to inordinately encourage other activity on other mining properties. Cumulative effects were tracked relative to the indicators of geologic information obtained, activities reasonably incident to mining, and compliance with PACFISH direction for minerals.

Five mining claims are located in the Beaver Creek watershed; three of which (Golden Hand No's. 3, 4, and 8) have valid existing rights. Work on claims 1 and 2 would increase the area in which AIMMCO obtained general geologic information. Reference **Appendix A** for additional project information and maps related to the cumulative effects analyses completed for this project.

The cumulative effect of Alternative A on the mineral development is limited to the level of geologic information obtained that could be obtained without a formal operating plan. There would be no cumulative effects or development work on claims 3, 4 and 8.

Alternatives B and C may be considered to have implications on the determination of future activities reasonably incident to mining on claims 1 and 2, but, in fact, any evaluation of activities reasonably incident to mining should be made separately for each proposed plan, based on the current geologic information and stage of development. Alternatives B and C in combination with other Golden Hand Claims (Golden Hand No's. 3, 4, and 8) having valid existing rights would incrementally increase the area in which AIMMCO has obtained general geologic information.

3.3 Wilderness Resource

This section of the document discusses the existing conditions and characteristics for wilderness resources within the project area, as well as the effects of the various alternatives on those resources. The Golden Hand mining development / exploration project is located within the Frank Church-River of No Return (FC-RONR) Wilderness, designated as Wilderness by the 1980 Central Idaho Wilderness Act. The Wilderness Act (1964), the Central Idaho Wilderness Act (1980), and the FC-RONR Wilderness Management Plan are the primary sources of Forest Service management direction for the Wilderness portion of the project area. The Payette National Forest Land and Resource Management Plan incorporates the direction of the FC-RONR Wilderness Management Plan by reference.

For Wilderness Character, indirect effects were analyzed for the entire FC-RONR Wilderness. For direct effects, the analysis area only the Beaver Creek and Hand Creek drainages, and the surrounding ridge tops that encompass the project area.

Background

The National Wilderness preservation system was created to “assure that an increasing population accompanied by expanding settlement and growing mechanization, does not occupy and modify all areas within the United States...” (The Wilderness Act, 1964). The incremental degradation of Wilderness throughout the country by allowing increases in mechanized and motorized uses, human habitation, and development tends to weaken the integrity of Wilderness.

The impact of the project activities on the Wilderness has been identified and is acknowledged, as a significant issue. There are several different components and aspects of the impacts to Wilderness that would occur under this proposal. Of paramount concern is the statutory and legal basis for pursuing activities and action in Wilderness that clearly, on the surface, appear to directly conflict and be inconsistent with, Wilderness designation, preservation, and management.

The 1964 Wilderness Act (also referred to as the Act) defines Wilderness as:

A Wilderness in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and community of life are untrammelled by man, where man himself is a visitor who does not remain. An area of Wilderness is further defined to mean...an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions...(Sec 2[b]).

The Wilderness Act further states: “Except as otherwise provided in this Act, each agency administering any area designated as wilderness shall be responsible for preserving the wilderness character of the area and shall so administer such area for such other purposes for which it may have been established as also to preserve its wilderness character. Except as otherwise provided in this Act, wilderness areas shall be devoted to the public purposes of recreational, scenic, scientific, educational, conservation, and historical use.” (Sec 4[b]).

The Wilderness Act of 1964 was enacted “In order to ensure that an increasing population, accompanied by expanding settlement and growing mechanization, does not occupy and modify all areas within the United States and its possessions, leaving no lands designated for preservation and protection in their natural condition...”(Section 2 [a]). The Act defines wilderness as an area “untrammelled by man” that has “outstanding opportunities for solitude or a primitive and unconfined type of recreation” and directs agencies to preserve wilderness character and natural conditions. The Act restricts (with some exceptions) activities in the wilderness such as construction of roads, motor vehicles, motorized equipment, structures, installations, aircraft landings and mechanical transport (Section 4 [c]).

However, the Act provides latitude for mining claims, determined to be valid prior to January 1, 1984, to be used for mining and processing and uses “reasonably incident thereto” (Section 4 [d][3]). Section 5 (b) provides for ingress and egress to valid mining claims within designated wilderness ... consistent with the preservation of the area as wilderness, and be permitted to utilize means which have been or are being customarily enjoyed with respect to other such areas similarly situated.

Golden Hand No. 1 and No. 2 Lode Mining Claims Draft EIS

Wilderness Character

Each wilderness is very unique. Because of this uniqueness, wilderness character cannot be compared from one wilderness to another. Since the 1964 Wilderness Act did not explicitly define “wilderness character” the Forest Service national framework team (Landres et al. 2005) identified four tangible qualities of wilderness in an attempt to make the idealized description of wilderness character relevant and practical to wilderness stewardship:

- Untrammeled: An area where the earth and its community of life are untrammeled by man, and conditions where human influence does not impede the free play of natural forces or interfere with natural processes.
- Natural: wilderness ecological systems are substantially free from the effects of modern civilization. .
- Undeveloped: an area of undeveloped Federal land retaining its primeval character and influence without permanent improvements or human habitation, with the imprint of man’s work substantially unnoticeable. This quality is degraded by the presence of structures, installations, use of motor vehicles, motorized equipment or mechanical transport;
- Solitude or a primitive and unconfined type of recreation: this quality is about the opportunity for people to experience wilderness, free from excessive visitor encounters, or signs of modern civilization, and is degraded by settings that reduce these opportunities.

Even though natural integrity and untrammeled conditions are similar, they differ in that untrammeled means “...freedom from human control rather than lack of human influences” (Cole 2000). Thus, an area could be low in natural integrity because of previous human influences, but high in untrammeled conditions if natural processes are being allowed to operate freely. Wilderness character can also be expressed in terms of solitude and sense of remoteness, and opportunities for primitive and unconfined recreation. Activities that can affect wilderness character include encounters with motorized vehicles, acres and type of physical disturbance, noise, and signs of mechanization and development. The duration of these impacts is also an important factor to consider when analyzing the effects on the wilderness experience.

Within these qualities resides societal ideals integral to the understanding of wilderness character. These ideals encompass personal experiences in natural environments that are relatively free from the encumbrances and signs of modern society.

Wilderness is a resource that consists of many interacting and contributing biophysical and social elements that include: wildlife, fish, recreation, soils, water, vegetation, wildness, scenery, and cultural resources. As such, wilderness can be viewed as a “composite” resource, and management must focus on the whole rather than the component parts (Hendee et al. 1990). In analyzing the effects on the wilderness resource, all of these interacting elements need to be taken into consideration.

Wilderness character can be realized on-site when visiting a wilderness area or off-site by simply knowing that the National Wilderness Preservation System exists to provide for preservation of natural and untrammeled conditions. As shown in the survey results discussed below, there is satisfaction in realizing that areas have been designated “... to assure that an increasing population, accompanied by expanding settlement and growing mechanization, does not occupy and modify all areas within the United States and its possessions, leaving no lands designated for preservation and protection in their natural condition...” (The Wilderness Act, 1964, Sec2 [a]).

A 1995 national survey rated the importance of 13 values of wilderness (Cordell et al 1998). Results indicated that respondents held off-site values including the knowledge that water quality, wildlife habitat, and air quality were being protected for future generations, as the most important. On-site values such as recreational opportunities were found to be less important. Haas et al (1986) also conducted a study on the values people place on wilderness, and found that people place a lot of importance on biophysical resources, and knowing they have the option now and in the future to visit an area that they perceive as being “unimpaired for future use and enjoyment as wilderness”.

Affected Environment

The Golden Hand claims No. 1 and No. 2 (hereafter referred to as the Golden Hand) occur in an area

that has been altered by past mineral exploration and development activities dating from the late 1800s to 1941 (Cater et. al 1973). After production and development ended in 1941, the road from Pueblo Summit to the Golden Hand was abandoned and managed under Idaho Primitive Area guidelines. This road (Trail #013) continues to serve non-motorized uses. The Idaho Primitive Area was designated in 1931 to “conserve primitive conditions of environment, habitation, subsistence and transportation for the enjoyment of those who cherish the early traditions...” (USDA 1978). Figure 3-3 displays the trails and roads in the vicinity of Golden Hand.

Maps of the late 1950s and 1960s of the Payette National Forest and Idaho Primitive Area show FR #373 terminating two miles below Pueblo Summit, where both the Mosquito Ridge (#003) and Pueblo Summit (#013) trails originated. However, unauthorized motorized use of the Pueblo Summit trail (#013) was known to occur. In the late 1970s, the Forest Service physically blocked this old mining road at Pueblo Summit (the Primitive Area boundary) to try to prevent these unauthorized intrusions into the Primitive Area.

In 1980, the United States Congress designated the River of No Return Wilderness (now known as the Frank Church-River of No Return Wilderness (FC-RONR Wilderness) with the passage of the Central Idaho Wilderness Act. This Wilderness included 2,361,767 acres of federal land that had largely been managed as a primitive area since the 1930s (Idaho Primitive Area, Salmon River Breaks Primitive Area, and adjacent Roadless Area Review and Evaluation [Rare] II units). The FC-RONR Wilderness represents the largest contiguous designated wilderness in the lower 48 states. Four national forests currently have a level of administrative responsibilities for the FC-RONR Wilderness (Bitterroot, Salmon-Challis, Nez Perce, and Payette). The PNF administers approximately 795,515 acres of the wilderness.

The Golden Hand claims are located in the FC-RONR Wilderness and are accessed via FR #371 and #373 to Pueblo Summit, and then 3.0 miles into the Wilderness on Forest Trail #013. Pueblo Summit is considered an undeveloped trailhead portal to the FC-RONR Wilderness. This trailhead is marked with a Wilderness boundary sign, a gate to block motorized intrusions into the Wilderness and a trailhead registration box. Dispersed camping, generally associated with hunting in the fall, occurs along the Wilderness boundary, in the area where the road access transitions to a trail. There are no user amenities or parking controls provided at this location.

Voluntary Trailhead registration data has been collected on the district since 1975. Since registration is voluntary, registration information reflects only a portion of the total actual use. The most recent data suggests a possible registration rate of approximately 28 to 30 percent. Trailhead registration information indicates that Forest Trail #013 receives low use with an average of only about 4.5 groups registering per year over the 30 year period between 1982 and 2011. Based on an estimated registration rate of 30 percent, this would equate to an overall average of roughly 15 groups entering the Wilderness annually via the Pueblo Summit Trailhead over this 30 year period.

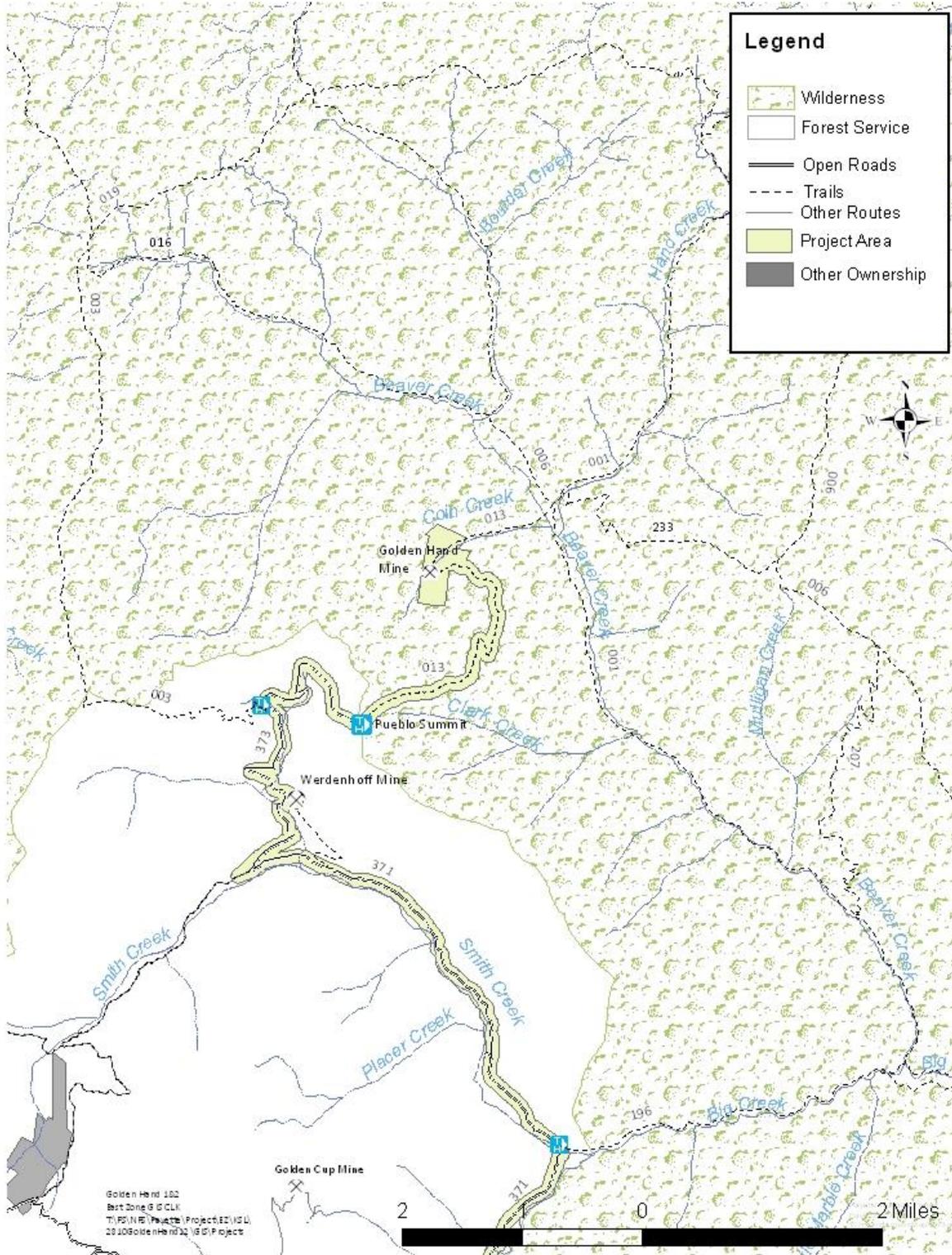


Figure 3-3 Trails and Roads in the Vicinity of Golden Hand

Affected Environment & Environmental Consequences

The Pueblo Summit trailhead provides access to the FC-RONR Wilderness along Forest Trail #013. The first 3.0 miles of the trail is an old roadbed that was used to access the Golden Hand area. It is unknown precisely when this road was constructed or if it was originally built for vehicle or wagon traffic. This road was abandoned and has been managed and maintained for use as a non-motorized trail; no active rehabilitation or re-contouring of the old roadbed has taken place. Since the end of the mining operations and abandonment of the road, this route has been maintained to Wilderness trail standards, which includes maintaining an eighteen inch tread and a clearing width of three to four feet from trail center and ten feet overhead. This maintenance has prevented greater deterioration of the old roadbed. A few trees have established in the roadbed and cut banks, and rocks and deadfall have entered the old roadbed. Sloughing of the cut slope has also taken place (Photo 3-2).



Photo 3-2 Forest Trail #013 Tread Width (White Rod Extended to 10 Feet)

The Golden Hand area includes signs of the past mineral activity and occupancy such as a bunkhouse, ice house, cabin, outhouse, and collapsed mill. Old mining equipment, adits, waste rock dumps, and exploration and haul roads are visible in the area. The abandoned exploration and haul roads have become almost impassable, even to those traveling on foot because of the lodgepole pine and dense alder thickets that have become established. Most of the adits have collapsed and the old buildings and structures are in disrepair. Natural processes are clearly at work to re-establish a more natural system.

Northwest of the claims, Forest Trail #013 converts from old roadbed to a Wilderness trail, with an 18-inch trail tread. The trail follows Coin Creek to the Beaver Creek confluence, and ends at the junction with the Chamberlain Trail (Forest Trail #001), approximately 2.5 miles from the Golden Hand.

The Chamberlain Trail is one of the Krassel Ranger District's primary trails that provide the most direct route from the Big Creek / Smith Creek Trailhead to Chamberlain Basin. The Big Creek / Smith Creek Trailhead serves as the access point for the greatest numbers of Wilderness visitors on the Krassel Ranger District (USDA 2011). Based on an assumed registration rate of 30 percent, an average of roughly 215 groups have annually entered the FC-RONR Wilderness via the Big Creek / Smith Creek Trailhead over the past 30 year period (1982-2011).

Mosquito Ridge trail takes off from FR #373, two miles below Pueblo Summit. This is another undeveloped trailhead, with limited parking and no visitor amenities. Some dispersed camping occurs in the area of this trail / road junction and an outfitter works out of the trailhead from September 1 through mid-November. This trailhead is another recognized portal into the FC-RONR Wilderness and accesses the Mosquito Ridge area (trail #003), which offers extensive views into the South Fork of the Salmon River drainage, Beaver Creek drainage, and Chamberlain Basin. Based on a registration rate of 30

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percent, an average of roughly 29 groups annually entered the FC-RONR Wilderness via the Mosquito trail over the past 30 years.

Outfitter and Guides

There are two Outfitter and Guides that operate in the vicinity of the Golden Hand: Big Creek Lodge and Outfitters, Inc. and Elk Springs Outfitters. Pueblo Summit trailhead has been used in the past, on an intermittent basis, as an access point to the Wilderness for Big Creek Lodge and Outfitters, Inc. This outfitter more frequently will enter the Wilderness from the Big Creek/Smith Creek Trailhead and operates a camp on Ramey Ridge. The previous Special Use Permit and Operating Plan authorized 250 client service days (any day on the National Forest where an outfitter and guide provides services to a client), most of which occurs in an operating area to the east and adjacent to the project area.

Elk Springs Outfitters enter the Wilderness using Mosquito Ridge Trail #004. An assigned camp is located near Mosquito Springs in close proximity to the divide between the Beaver Creek and South Fork of the Salmon River drainages. Client service activities do occur within the Beaver Creek drainage. Elk Springs Outfitter's current Special Use Permit and Operating Plan authorize 230 client service days. Season of use is generally from September 1 through November 18; however, limited summer use also occurs in some seasons depending on client demand.

Wilderness Character

Roderick Nash suggests that Wilderness can be defined as a "scale between two poles" where "...wilderness and civilization become antipodal influences which combine in varying proportions to determine the character of an area" (Nash 1982). Wilderness then can be defined as "the range closest to the wilderness pole". Wilderness, therefore, incorporates some elements of civilization or human activity, but it is the limited presence of civilization that lends wilderness its unique character.

In the immediate area of the Golden Hand site, the Wilderness character, specific to natural integrity and untrammled conditions, has been compromised by past human activity. Evidence of human influences associated with past mining activities is clearly visible and the naturalness of the area has been altered. While these mining remnants provide the Wilderness visitor with a sense of history, these past human-related developments at the site compromise the wilderness character of the area by affecting the natural integrity.

Over the entire FC-RONR Wilderness, evidence of past human activities exists. There are 1,398 prehistoric and historic properties that have been identified in the FC-RONR Wilderness, approximately 2,400 miles of trail, and approximately 1,400 inventoried camp locations. The passage of time has allowed the natural processes to begin to take over at many of these locations so that untrammled conditions (freedom from human control) exist.

The effects on the Wilderness resource can be difficult to quantify and qualify because of the many differing and highly personal views of wilderness and the complexity of this composite resource (USDA 1997). For some members of the public, the effects on *Wilderness character* tend to be viewed as an absolute, so that simply knowing that activities are taking place in the Wilderness is an adverse impact (Hendee, et al. 1990). The physical effects on Wilderness character are disclosed under Fisheries and Watershed Resource, Wildlife Resource, and the Soils Resource sections (Section 3.4, 3.5, and 3.6). The social importance of maintaining and protecting a natural ecosystem free from human control and influence is addressed in this section. The social and spiritual values of an intact, un-compromised Wilderness are highly valued as expressed in the public comments on the Proposed Action for this project.

Looking at the wilderness qualities of Undeveloped and Solitude or a primitive and unconfined type of recreation, there is evidence at the Golden Hand site of previous mining activities. The site is an altered environment that has mining remnants such as a waste rock pile, bunkhouse and other facilities, old roads, and adits. To some people, these features at the Golden Hand site represent an environment that has been altered by man, but to others it provides the visitor with a sense of history and independence,

which is consistent with the definition of Wilderness in the Wilderness Act. "...may also contain ecological, geological, or other features of scientific, educational, scenic or historical values" (Section 2. [c]).

Because the site is difficult to access (four to five hour drive from McCall, the nearest full service community) and an hour to an hour and a half hike, the sense of remoteness and the opportunity for solitude is high. Although the claims are only a few miles from the Pueblo Summit Trailhead, it is difficult to get to the trailhead. The limited use of the trail and trailhead provides ample opportunities for solitude and a primitive recreation experience in the area.

When traveling through the FC-RONR Wilderness, there is a sense of tranquility, isolation, and independence. There is little evidence of human modernization and mechanization with the exception of aircraft use at designated airstrips and jet boat use along the Salmon River. When leaving the immediate area of the Golden Hand site, signs of human activity lessen and are sporadic. Visitors can expect to see little to no signs of human impact or mechanization within the interior of the FC-RONR Wilderness, and the wilderness experience is quite high.

The effects on the Wilderness qualities of untrammeled and natural can be difficult to quantify and qualify because of the many differing and highly personal views of wilderness and the complexity of this composite resource (USDA 1997). The effects to undeveloped and solitude are slightly more quantifiable, where the extent of the mining and mining-related activities can have impacts on the visitor's experience of solitude and sense of remoteness, and primitive recreation. Impacts to undeveloped and solitude can be quantified to some relative degree using number of vehicle roundtrips, noise, number of operating years, number of operating hours per day, length of operating season, and amount of physical disturbance (including tree removal, drilling and trenching, and amount of temporary road maintenance).

3.3.1 Environmental Consequences Specific to Alternative A

There would be no new adverse effects to *Wilderness character* under Alternative A. Since no activities would take place, the natural and untrammeled conditions at the Golden Hand would continue to be restored through natural processes. With no development, no use of mechanized equipment, and no on-site occupancy, the FC-RONR Wilderness would continue to be perceived as "an enduring resource" protected for present and future generations.

Opportunities for solitude and sense of remoteness and *undeveloped* recreation would be preserved with no mining or mining-related activities. As the Golden Hand site continues to recover naturally from sporadic activity over the past century, the Wilderness experience is enhanced. The abandoned mining roads are becoming heavily vegetated, and the structures are in various states of decay. Access to the Golden Hand site would continue to be a challenge since the roads to Pueblo Summit would receive no improvement, minimizing visitor use and preserving the current sense of remoteness and solitude in the adjacent Wilderness.

3.3.2 Environmental Consequences Specific to Alternative B

The following activities could affect the **wilderness character qualities of "untrammeled", "natural", "undeveloped", and "solitude or a primitive unconfined type of recreation":**

- Motorized access to claims (up to 771 vehicle roundtrips in the FC-RONR Wilderness per year)
- Motorized equipment use and activity on the claims (up to 24 hour a day basis)
- 4.0 miles of temporary road authorized, maintained, and used in the FC-RONR Wilderness
- Construct and operate 11 drill pads
- Three sample collection for pits / trenches constructed to bedrock
- Reopening and timber of the caved "Ella" adit
- Roughly 4 months of operation per year
- Three years of mineral development activity
- Road maintenance and use of FR #373

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- Use of bunkhouse
- Use of bunkhouse area for storage
- Use of Penn Ida for storage
- Use of Penn Ida for rock source
- Water withdrawal and piping
- Ford rehabilitation and decommission

AIMMCO's proposal would allow for an extensive, when viewed from a wilderness perspective, amount of physical disturbance to the Wilderness, which would adversely affect wilderness character by allowing for the greatest amount of human influence and control. Authorization and maintenance of temporary roads on abandoned roadbeds in the Wilderness would involve clearing routes of vegetation and debris. The drilling at 11 sites and excavation of trenches would result in greater access needs and a larger amount of disturbed area. Ground disturbing activities would compromise the preservation of natural and untrammeled conditions in the FC-RONR Wilderness now and for future generations.

Alternative B would allow for motorized and mechanized use in the Wilderness, which is not consistent with wilderness character as stated in the Wilderness Act (Sec 2). This use would adversely affect the natural integrity and untrammeled conditions. Motorized and mechanized use represents human influence and human control or "expanding settlement and growing mechanization" (Wilderness Act Section 2 [a]). The vehicle roundtrips to the Golden Hand would result in frequent motorized entry into the Wilderness (up to 771 vehicle roundtrips in the FC-RONR Wilderness per year).

However as previously noted, the Wilderness Act clearly provides for motorized and mechanized use for mining and processing and uses "reasonably incident thereto" on claims determined to be valid prior to January 1, 1984 (Section 4 [d][3]). Section 5 (b) of the Act provides for permitting the ingress and egress to valid mining claims within designated wilderness ... consistent with the preservation of the area as wilderness, by means which have been or are being customarily enjoyed with respect to other such areas similarly situated.

The activities under this alternative involve use of motorized and mechanized equipment and vehicle support both on claims and associated off claim roads in the Wilderness. The actual use and the knowledge of these activities would adversely impact the Wilderness character by compromising the natural integrity and untrammeled conditions of the FC-RONR Wilderness.

Any use or maintenance of the bunkhouse would also adversely affect the natural integrity and untrammeled conditions, being inconsistent with the Wilderness Act's definition of Wilderness as a place "... where man is a visitor who does not remain and is an area of ...undeveloped federal land retaining its primeval character and influence, without permanent improvements or human habitation..." (1964 Wilderness Act, Sec 2[b]).

The vehicle use into the Wilderness would adversely affect the wilderness "undeveloped" quality. Currently, an estimated 15 groups of recreationists enter the FC-RONR Wilderness annually via the Pueblo Summit Trailhead and along trail #013. At the current use levels, it is unlikely that visitors see other Wilderness users on the trail between Pueblo Summit and the mouth of Coin Creek. The approximately 771 vehicle roundtrips would adversely affect those seeking solitude and escape from settlement and mechanization in the Beaver Creek and Hand Creek drainages and the surrounding ridge tops that encompass the project area. During the maximum proposed operating season (approximately July through October) the potential for encountering motorized or mechanized use along Forest Trail #013 from the trailhead to the claims would be high and would greatly impact the sense of solitude and remoteness, and opportunities for a primitive recreation experience. In addition, opportunities to see, hear, or otherwise notice project related activities would exist from some locations both in and outside of the Wilderness.

There would be an estimated 4.0 miles of temporary road authorized, maintained, and used in the FC-RONR Wilderness (including the 3.0 miles of Forest Trail #013). In addition, 11 drill pads would be constructed and sampling trenches / pits would be excavated. This amount of construction and confirmation activity would adversely affect Wilderness experience. Wilderness was created as an area

where man's impacts are unnoticed and where solitude and remoteness, and primeval nature are expected.

The drilling, trenching, and temporary road maintenance would occur under this alternative with the use of mechanized and motorized vehicles, which would result in both noise and possibly dust. The expectation of the Wilderness visitor is to visit a primitive area where one can escape the mechanized and developed world. This would have a large impact on the Wilderness user's sense of solitude and remoteness. This would also impact the primitive recreation experience in the Beaver Creek and Hand Creek drainages and the surrounding ridge tops that encompass the project area. As the visitor leaves the area and ventures further into the Wilderness the direct impacts could lessen; however, the overall experience could be negatively impacted.

Under this alternative, a three year operating period is proposed. The likelihood of encountering motorized and mechanized uses along Forest Trail #013 from the trailhead to the claims is high over that period of time and would affect the Wilderness experience within the Beaver Creek and Hand (Coin) Creek drainages and the surrounding ridge tops that encompass the project area. Generally, access to the FC-RONR Wilderness via Pueblo Summit is from July to November, so there would be limited opportunities over the three year operating period when the public could visit the area without the mining operations taking place. The longer the operations occur, the longer the impacts would be to the wilderness experience.

The length of operation per day would not be limited under this alternative; therefore Wilderness visitors may experience noise, dust, and lights over a 24 hour work day, adversely affecting solitude and remoteness and opportunities for a primitive recreation experience. All of these practices would affect the "opportunities for solitude or a primitive unconfined type of recreation" experience.

The proposed roadwork on FR #371 and FR #373 would be expected to allow easier access to both Forest Trail #013 and #003, which could encourage an increase in visitation to the Wilderness. Though it would provide improved access to a primitive recreation experience, it could also have adverse impacts on the sense of solitude and remoteness that currently exists in the Wilderness and in the areas accessed by Forest Trail #013 and #003. The impacts at both these unimproved and undeveloped trailheads could increase, where the situation is already marginal in terms of the recreation experience and opportunity being provided and the protections in place.

In summary, under Alternative B, the Wilderness user would see physical impacts to the land, motorized and mechanized equipment, and hear noise and could see dust from these machines from July to November for up to 3 years. This type and amount of development would adversely affect the Wilderness users' sense of solitude and remoteness and enjoyment of a primitive recreation experience in the Beaver Creek and Hand (Coin) Creek drainages, and the surrounding ridge tops that encompass the project area. Motorized intrusions would insure that motorized and mechanical activities overall duration is reduced and limited to the temporary term. Due to the improved access, impacts and changes to the availability of the Wilderness experience and opportunity could reach into the long term.

3.3.3 Environmental Consequences Specific to Alternative C

While covered in detail in the descriptions of the Alternatives in Chapter 2, the principle differences between Alternative B and Alternative C would be:

- Fuel Storage would occur at Werdenhoff rather than within the FC-RONR Wilderness under Alternative C.
- The use of Penn Ida for storage and the associated motorized wilderness travel to access the site would not occur.
- Alternative C would further restrict motorized access to claims (up to 571 vehicle roundtrips in the FC-RONR Wilderness per year).
- Under Alternative C the bunkhouse would not be used as an office under.

The effects of this alternative are essentially the same as for Alternative B, in terms of effects on **wilderness character** and the four qualities associated with the character. There is really no pragmatic

or substantially identifiable difference. While not measurable, there would be slightly less impact from Alternative C because the alternative would authorize potentially fewer motorized trips, use of the bunkhouse for an office would not be approved under this alternative, Penn Ida would not be cleared for additional storage, and no motorized travel to the Penn Ida site for general storage would occur.

3.3.4 Cumulative Effects

Cumulative effects to the wilderness resource are limited to the analysis area; therefore, the cumulative effect analysis area would be the analysis area for wilderness character. When considering the cumulative effects of the proposed project, including road maintenance, ground disturbance, motorized and mechanized uses, and access into the FC-RONR Wilderness, other impacts to the wilderness character must be considered.

Throughout the FC-RONR Wilderness there are signs of human impacts resulting from current and past occupancy and use of the land. For example, there are 1,398 prehistoric and historic properties identified in the FC-RONR Wilderness and approximately 1,920 inventoried camp locations. These sites are recognized in the Central Idaho Wilderness Act as conforming activities.

The Central Idaho Wilderness Act allows for a number of “nonconforming” activities in the FC-RONR Wilderness. These uses include jet boating on the Salmon River and the landing of aircraft at a number of private, state, and federal landing strips within the Wilderness. Currently, there are eight airstrips operated by the Forest Service for public use in the FC-RONR Wilderness, all of which provide motorized access into the interior of the Wilderness. It is likely that these ongoing uses would continue to increase and impact wilderness character.

Outfitter and Guide activities, recreation use, research activities, noxious weed control, fire management, airstrip maintenance, search and rescue, trail maintenance, and cultural resource management activities can contribute to cumulative effects on wilderness character. Requests for motorized equipment and mechanized transport in the Wilderness occurs on an annual basis. The Forest Service may approve emergency use of helicopters, pumps, and chain saws on a case-by-case basis for Forest Service fire management activities and county search and rescue operations. Outfitter and Guides, aviators, and Forest Service personnel may request the use of motorized and/or mechanized equipment such as wheelbarrows, chain saws, rock drills, and generators for non-emergency purposes. Other agencies and researchers request the use of motorized and mechanized access or equipment in the Wilderness. Based on current trends, it is expected that the number of requests and approvals would continue to increase, with cumulative impacts to wilderness character. Reference **Appendix A** for additional project information and maps related to the cumulative effects analyses completed for this project.

During fiscal year 2002, there were 49 reported authorizations for administrative use of motorized or mechanized equipment in the FC-RONR Wilderness. While in the most recent year of record (2011), there were 16 separate authorizations reported, which accounted for about 128 instances of motorized / mechanized equipment use (helicopters, chains saws, pumps, air drops of retardant, cargo or smoke jumpers). The full extent of illegal motorized and mechanized intrusions into the FC-RONR Wilderness is unknown, although there are annual reports of incidents.

Alternative A would not contribute to cumulative effects to wilderness character over the entire FC-RONR Wilderness beyond the past, present, or foreseeable future activities.

Alternatives B and C would both allow for many additional days of motorized or mechanized use in the Wilderness that would extend over an estimated 291 acre area that includes temporary roads and the claims. Alternative B and C in combination with ongoing motorized or mechanized use in the FC-RONR Wilderness would add to the authorized use and impact wilderness character.

3.4 Fisheries and Watershed Resource

This section of the document discusses the existing characteristics of the watershed, fisheries, and fish habitat, as well as the effects of the Alternatives on those resources. The Golden Hand mining claims are adjacent to Coin Creek, a tributary to Beaver Creek. Coin Creek is fish bearing in its lower reaches. All of the above fish species of concern occur in Beaver Creek. Access roads to the mine are located along portions of Logan Creek, Big Creek, Smith Creek, and North Fork Smith Creek (Figure 3-5 and 3-5b). Fish species of concern are also located in these streams.

Analysis Area

The analysis area for fish extends to all subwatersheds (6th level Hydrologic Unit (HU) in which the project area occurs, including: Beaver Creek, Smith Creek, Logan Creek, Big Creek-Little Marble Creek, and Upper Big Creek (Figure 3-4). The streams in this area include Upper Big Creek and its tributaries, including Beaver, Smith, North Fork Smith, Logan and Coin Creeks. Big Creek flows into the Middle Fork Salmon River, and is within the Lower Middle Fork Salmon River 4th level USGS (HUC). The analysis area was selected because the subwatersheds encompass the entire project area, including primary travel routes.

The analysis of direct and indirect effects to the water resources focuses on the portion of the project area from the Big Creek trail head to the Golden Hand claims No. 1 and No. 2 (Figure 2-1). This area includes FR #371 and #373 to Pueblo Summit and the access route down Forest Trail #013 to the claims. FR #343, the road up Logan Creek is not evaluated because the road is in better condition, has regular maintenance and the increase in traffic due to this proposal is expected to be minimal.

The majority of the proposed project activities would occur on the Golden Hand lode mining claims (Figure 3-6, Figure 2-1). The claims are adjacent to an unnamed tributary of Coin Creek, a tributary of Beaver Creek, which, in turn, flows into Big Creek. The project area also includes the travel route between the claims and the Walker Mill site (Figure 2-1). This route (16.4 miles) includes FS Trail #013, which is a system trail in the FC-RONR Wilderness that is located on an old road bed, and FR #371, #373, and #343, which are system roads. The travel route occurs within the Smith Creek, Logan Creek, and Coin Creek drainages, which all drain into Big Creek (Figure 2-1).

Water Quality Regulatory Requirements

Congress intended the Clean Water Act of 1972 (Public Law 92-500) as amended in 1977 (Public Law 95-217) and 1987 (Public Law 100-4) to protect and improve the quality of water resources and maintain their beneficial uses. The Clean Water Act (Section 313) and Executive Order 12088 of January 23, 1987 address Federal agency compliance and consistency with water pollution control mandates. Agencies must be consistent with requirements that apply to "any governmental entity" or private person. Compliance is to be in line with "all Federal, State, interstate, and local requirements, administrative authority, and process and sanctions respecting the control and abatement of water pollution".

- a. Compliance with State requirements for protection of waters within Idaho (Idaho Administrative Code IDAPA 58.01.02) means that "The existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected" and "wherever attainable, surface waters of the state shall be protected for beneficial uses, which for surface waters includes all recreational use in and on the water surface, and the preservation and propagation of desirable species of aquatic life." Further, the Department shall "assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources, and cost-effective and reasonable best management practices (BMPs) for nonpoint source control". Big Creek, the receiving drainage of Coin and Smith Creeks, is designated as a Special Resource Water by the State of Idaho (Idaho APA 58.01.02).

The Clean Water Act (Sections 208 and 319) recognized the need for control strategies for nonpoint source pollution. The National Nonpoint Source Policy (December 12, 1984), the Forest Service Nonpoint Strategy (January 29, 1985), and the USDA Nonpoint Source Water Quality Policy (December 5, 1986) provide a protection and improvement emphasis for soil and water resources and water-related beneficial uses. Soil and water conservation practices (BMPs) were recognized as the primary control mechanisms for nonpoint source pollution on National Forest System lands. The Environmental Protection Agency

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supports this perspective in their guidance, "Nonpoint Source Controls and Water Quality Standards" (August 19, 1987).

The Forest Service applies Best Management Practices (BMPs) to achieve Idaho Water Quality Standards. The site-specific application of BMPs, with a monitoring and feedback mechanism, is the approved strategy for controlling nonpoint source pollution. Furthermore construction or maintenance of Forest roads, or temporary roads for moving mining equipment qualify for an exemption from Section 404 dredge or fill permitting requirements, in waters of the United States including wetlands (404)(f)(1)(A), if they are constructed and maintained in accordance with BMPs to assure that flow and circulation patterns and chemical and biological characteristics of the waters are not impaired (404)(f)(1)(E). Appropriate BMPs for this project are described as project design features in Section 2.4.4.

According to Idaho Administrative Code IDAPA 58.01.02, streams in the analysis area are non-designated surface waters and, as such, are protected for beneficial uses, which include all recreational use in and on the water and the protection and propagation of fish and wildlife, wherever attainable. Because waters in the analysis area support cold-water aquatic life and primary or secondary contact recreation beneficial uses, the State of Idaho applies cold-water aquatic life and primary or secondary contact recreation criteria to these waters. The streams in the analysis area are also protected for bull trout spawning and rearing. Water temperatures cannot be caused to exceed ten degrees Celsius daily average during June, July, and August for juvenile bull trout rearing; and nine degrees Celsius daily average during September and October for bull trout spawning.

According to the Department of Environmental Quality's 2008 Integrated Report Beaver Creek and its tributary Coin Creek, where the Golden Hand claims reside, fully meet beneficial uses. Smith, and Logan Creeks, and the portion of Big Creek within the project area have not been assessed. Currently there are no TMDLs within the analysis area.

Fish Populations

The MFSR Watershed provides habitat for three fish species listed as threatened under the Endangered Species Act (ESA, 16 USC 1531 *et seq.*), Snake River Spring/Summer Chinook salmon (*Oncorhynchus tshawytscha*), Snake River Basin steelhead (*O. mykiss gairdneri*), and Columbia River bull trout (*Salvelinus confluentus*), and one Region 4, Payette National Forest sensitive fish species, westslope cutthroat trout (*O. clarkii lewisi*). In addition to being threatened, bull trout are a Payette National Forest (PNF) Management Indicator Species (MIS). Distinguishing between redband trout (AKA rainbow trout) and steelhead is difficult because they are conspecific and no distinction among them is made unless a barrier restricting anadromy is present. Redband trout are resident, fresh water fish; steelhead are anadromous, migrating to and from the sea. Reference to "steelhead" throughout this document would include both anadromous and resident redband trout.

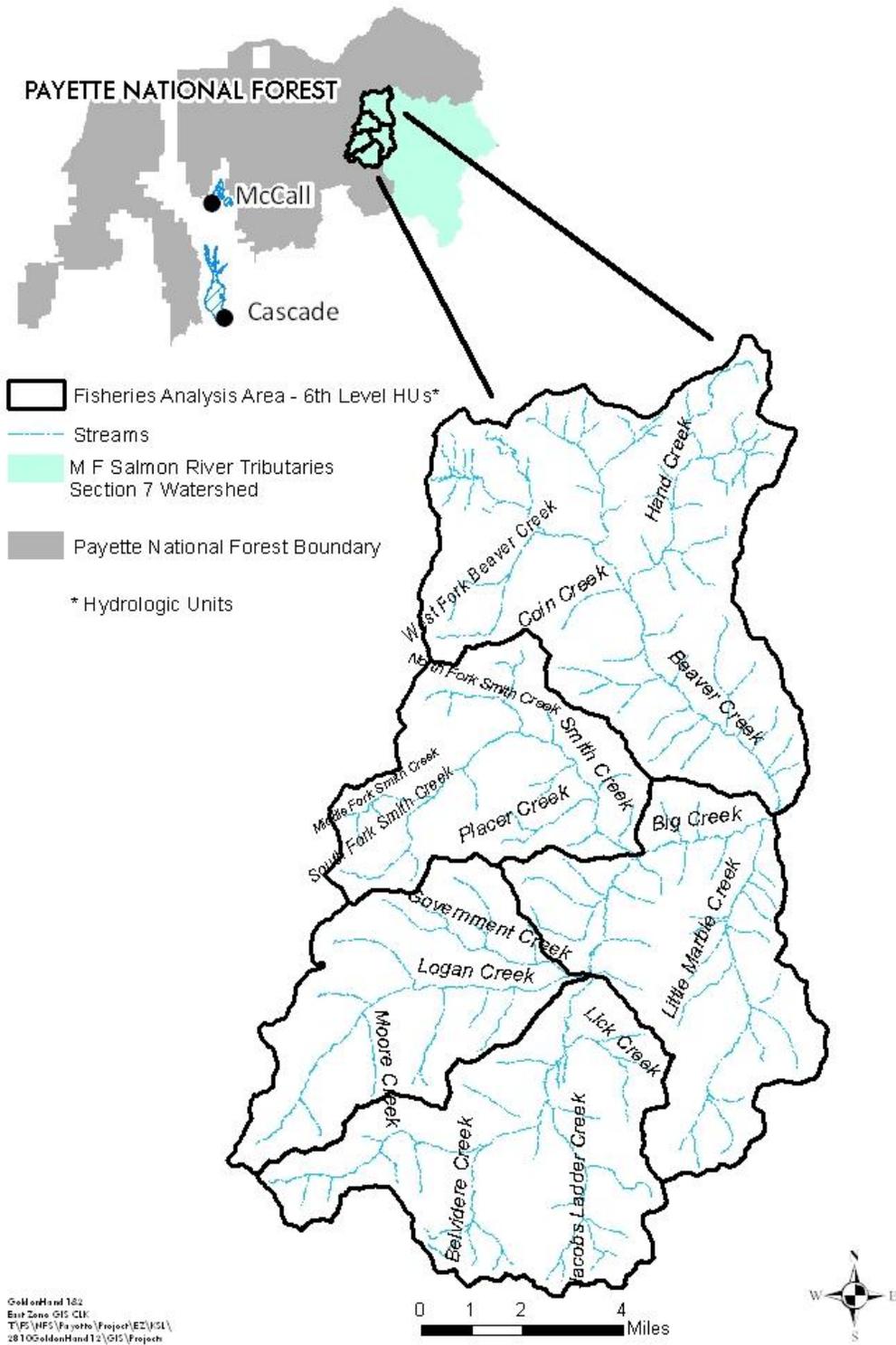


Figure 3-4. Fishery and Watershed Analysis Area

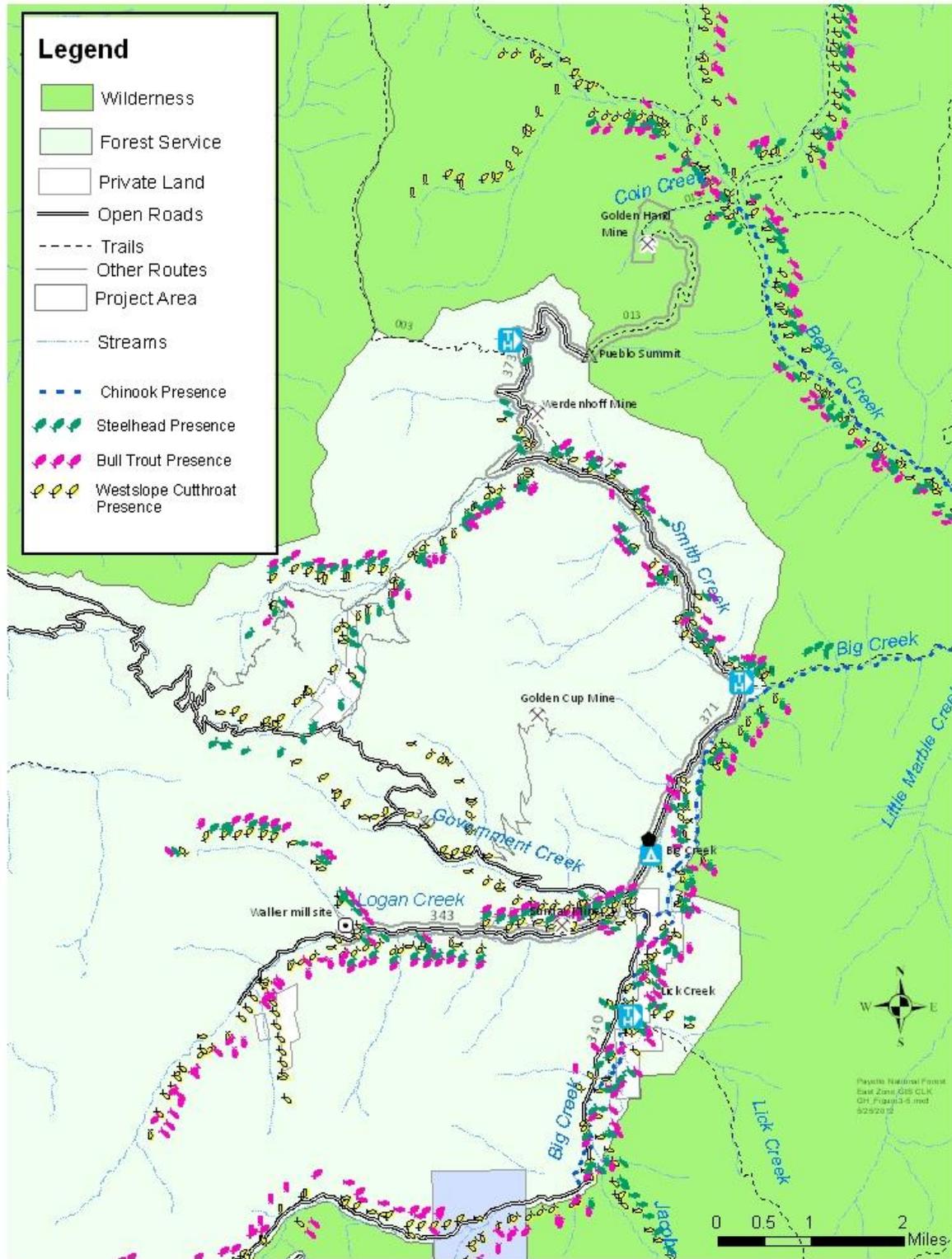


Figure 3-5. ESA Listed, Sensitive, and MIS Fish Distribution, and Designated Critical Habitat in Golden Hand Vicinity

Golden Hand No 1 & 2 Lode Mining Claims Road Maintenance and Reconstruction

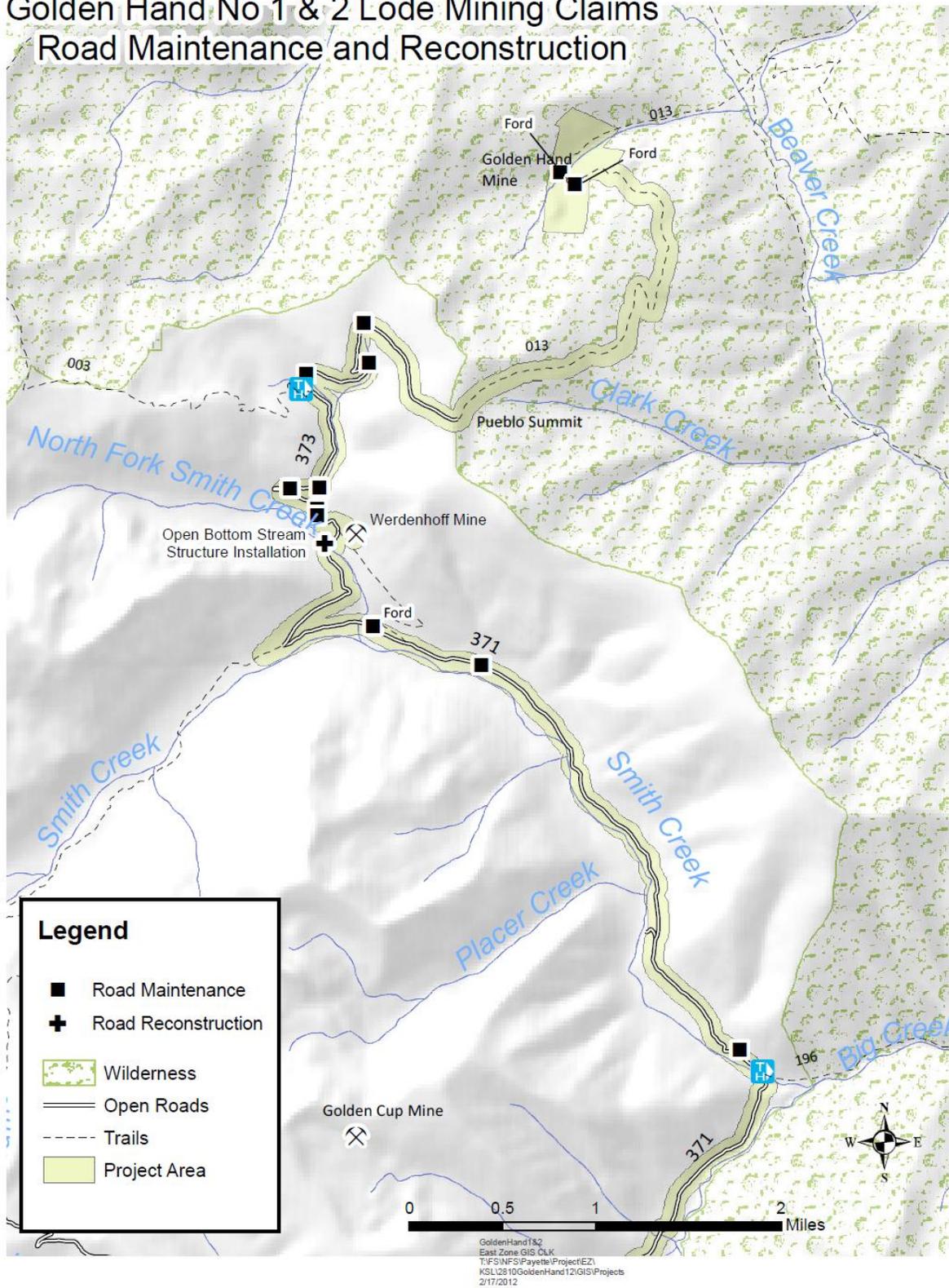


Figure 3-6 Road Maintenance and Reconstruction

Affected Environment & Environmental Consequences

The project and analysis areas contain federally threatened, Forest Service sensitive, and PNF Management Indicator Species (MIS). Raleigh Consultants (Raleigh 1994) conducted fish presence and fish habitat surveys in Coin, Beaver, Smith, Logan, and Upper Big Creeks in 1993 and 1994 using Region 1/Region 4 Habitat Inventory guidelines (Overton et al., 1997). PNF fisheries technicians inventoried portions of Logan, Beaver, Coin, Smith, and North Fork Smith Creeks in 1999 and 2002, 2003, and 2008 (Zurstadt 2012) using modified R1/R4 Habitat Inventory guidelines. PNF fisheries technician conducted spawning surveys for steelhead in Smith Creek in 2003, and 2004, and bull trout in 2002, 2003, and 2004 (Zurstadt 2012). House et al. (2005) electrofished and inventoried habitat in 2004 and 2005. Table 3-1 summarizes the presence of fish species based on these inventories.

Table 3-1 Documented Fish Species Presence (P) or Not Found (NF) in the Analysis Area^a

Stream	Upper Big Cr.	Coin Creek	Beaver Creek	Smith Creek	NF Smith Cr.	Logan Creek
Chinook salmon	P	NF	P	NF	NF	P
Steelhead (Redband trout)	P	P	P	P	P	P
Bull Trout	P	P	P	P	P	P
Westslope Cutthroat Trout	P	P	P	P	P	P
Brook Trout	P	NF	NF	NF	NF	P
Other	whitefish	NF	whitefish	sculpin	sculpin	sculpin

^aRaleigh, 1994, House et al. 2005, Zurstadt 2012. Species distribution surveys have been conducted over numerous years by numerous parties. If a species was detected by any particular survey the species is presumed present (P) even if a subsequent survey failed to detect the species. The assumption that the species is still likely present is sound because typical fish distribution surveys often fail to detect fish even when they are present.

Chinook Salmon

Snake River spring/summer Chinook salmon (hereafter referred to as “Chinook salmon”) were listed as *threatened* on April 22, 1992 by the National Marine Fisheries Service (NMFS) (57FR14653). Critical habitat for Chinook salmon was established December 28, 1993 (58FR68543). Designated critical habitat (DCH) for Snake River spring/summer Chinook salmon consists of river reaches of the Columbia, Snake, and Salmon Rivers, and all tributaries of the Snake and Salmon Rivers (except for the Clearwater River), and adjacent riparian zones (i.e., 300 feet on either side of the normal high water line [50 CFR 226.205]), presently or historically accessible to Snake River spring/summer Chinook, except reaches above impassible natural falls and Hells Canyon Dam. The analysis area includes some streams designated as Chinook salmon critical habitat.

Chinook salmon were documented in Beaver Creek (up to Hand Creek, Zurstadt 2012), Big Creek, and Logan Creek (Raleigh 1994, House et al. 2005, Zurstadt 2012)¹. No Chinook salmon were identified in Smith Creek, but the streams appear to provide sufficient habitat (Raleigh 1994, House et al. 2005, Zurstadt 2012). The analysis area is part of the Chinook salmon’s critical habitat due to historical use. Chinook salmon have not been detected in North Fork Smith Creek or Coin Creek.

Steelhead

Snake River steelhead (hereafter referred to as “steelhead”) were listed as *threatened* August 18, 1997 by the NMFS (62FR43937). The final rule designating critical habitat for steelhead was published by NMFS on September 2, 2005, and took effect on January 2, 2006 (70 FR 52630). In the case of steelhead, critical habitat includes only the water column and streambed, not adjacent riparian areas. Upper Big Creek, Logan Creek, Smith Creek, Beaver Creek and Coin Creek are all DCH (50 CFR 226.212) (Figure 3-5 and 3-5b).

Tributaries of the Middle Fork Salmon River provide principal rearing habitat for steelhead. Spawning habitat is found throughout the analysis area in the Big Creek drainage. Steelhead have been documented in the upper Big Creek, Logan Creek, Smith Creek, North Fork Smith Creek, and Beaver Creek drainages, including the lower 500 m of Coin Creek (Figure 3-5 and 3-5b; Raleigh 1994; House et al. 2005; Zurstadt

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2012)¹. Forest Service surveys (Zurstadt 2012) also documented steelhead in North Fork of Logan Creek. The PNF conducted spawning surveys in Smith Creek in 2003 and 2004, but had minimal success detecting redds. Steelhead spawning surveys in a remote location like Smith Creek and Big Creek are problematic due to access issues in the spring and variable flow conditions during snow melt that can make viewing fish or substrate difficult.

Bull Trout

Columbia River bull trout (hereafter referred to as “bull trout”) were listed as *threatened* June 10, 1998 by the United States Fish and Wildlife Service (USFWS) (63FR31647). On October 18, 2010 the USFWS designated critical habitat for bull trout, which includes upper Big Creek, Logan Creek, Smith Creek, North Fork Smith Creek, and Beaver Creek (75 FR 63898) (Figure 3-5 and 3-5b). As with steelhead, bull trout critical habitat includes only the water column and streambed, not adjacent riparian areas. Bull trout is the only aquatic MIS for the Payette National Forest (Forest Plan p. E-3).

Bull trout have been documented in the analysis area in Big Creek, Logan Creek, Smith Creek, North Fork Smith Creek below the first ford, and Beaver Creek, and the lower 500 meters of Coin Creek (Figure 3-5 and 3-5b; Raleigh 1994, House et al. 2005, Zurstadt 2012)¹. Forest Service surveys (Zurstadt 2012) have also documented bull trout in the North Fork of Logan Creek. Spawning bull trout (fluvial and resident based on relatively small the size of fish observed) were identified in Smith Creek below the confluence of the North Fork Smith Creek (Zurstadt 2012).

Westslope Cutthroat Trout

Westslope cutthroat trout are designated as *sensitive* species by the Intermountain Regional Forester. Westslope cutthroat trout were petitioned in 2000 for listing (65FR20120) under the Endangered Species Act but were not approved for listing by the USFWS (65FR21020). Critical habitat is not designated for sensitive species. Westslope cutthroat trout occur throughout the analysis area including Beaver Creek, lower Coin Creek, Smith Creek, NF Smith Creek, and Logan Creek (Figure 3-5 and 3-5b).

Westslope cutthroat trout have been documented in the Logan Creek, Smith Creek, North Fork Smith Creek from the mouth to upstream of the 2nd ford, Beaver Creek, and upper Big Creek drainages, in the North Fork of Logan Creek, and in the lower 500 meters of Coin Creek (Figure 3-5 and 3-5b; Raleigh 1994; House et al. 2005, Zurstadt 2012)¹.

Other Fish Species

Other fish species that occur in the analysis area include mountain whitefish (*Prosopium williamsoni*), sculpin (*Cottus* spp.) and brook trout (*S. fontinalis*), which are an introduced species. In some areas of the PNF brook trout are considered a risk to bull trout population viability (Burns et al. 2005). Brook trout were observed in upper Big Creek, Logan Creek in 1993, and in Lick Creek in 1999. Brook trout were not detected in surveys of Logan Cr., NF Logan Cr., and Government Cr. in 2004. No brook trout have been detected in Smith Cr. Hybridization between brook trout and bull trout is likely, but the extent is unknown. (Burns et al. 2005, Zurstadt 2012).

Fish Habitat Conditions

Habitat data were compared with Forest Plan Watershed Condition Indicators (WCIs) to assess if habitat parameters are functioning appropriately, functioning at risk, or functioning at unacceptable risk (USDA 2003, 2010 pp. B-12-21). Forest Plan WCIs provide a means to assess how management actions may influence the condition and trend of aquatic resources, including native and desired non-native fish (USDA 2003, 2010 pp. B-12-21). The functioning appropriately value for WCIs can also be interpreted to indicate desired future condition for various habitat parameters. The time scales for effects analysis are defined in the Forest Plan as temporary (0-3 years), short-term (> 3 years to 15 years), and long-term (>15 years) (USDA 2003, 2010 p. III-4).

The Forest Plan Appendix B, provides options and criteria for Riparian Conservation Area (RCA) deliniation (USDA 2003, 2010, p. B-33). Option 1 was selected, which uses 300-foot slope distance from

¹ Species distribution surveys have been conducted over numerous years by numerous parties. If a species was detected by any particular survey the species is presumed present even if a subsequent survey failed to detect the species. The assumption that the species is still likely present is sound because typical fish distribution surveys often fail to detect fish even when they are present.

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the ordinary high water mark on perennial streams, and 150-foot slope distance from the ordinary high water mark on intermittent streams.

Since the early 1990's, various fish habitat inventory and monitoring occurred in portions of the analysis area. Temperature data have been collected with varying levels of consistency from 1994 - 2010. These surveys have provided the baseline information to evaluate current condition throughout the project area. The Mineral and Soil Resource Section (Sections 3.2 and 3.5) provides additional detail on geologic characteristics, soil types, landslide potential, and riparian condition and channel characteristics.

In general, the following information describes habitat conditions in streams in the analysis area and photographs of typical stream reaches are contained in Photo3-3.

- Channels contain abundant large woody debris.
- Cobble embeddedness exceeds 19 percent at all sites except Big Creek near the confluence with Smith Creek.
- Road density is low overall, but concentrated in RCAs, and over 20 miles of road are within 200 feet of streams.
- Stream temperatures are cool (generally below 12°C).
- Streams have no known chemical contamination.
- Channels are steep and entrenched, streams are cascading (Rosgen Type A) or moderately entrenched, riffle-dominated (Rosgen Type B).
- Channel average widths range from 1.7-10.2 meters.
- Channel average depths range from 0.05-0.33 meters.
- Width to maximum depth ratios are less than 10.
- Stream banks are stable.

It was determined that the following WCIs were relevant for the analysis of effects for the proposed project: interstitial sediment deposition, change in peak/base flows, and chemical contaminants. The baseline condition and project effects to these WCIs are discussed in more detail than other WCIs. Inventory data are on file at the PNF Supervisors Office (Zurstadt 2012) and detailed information on current condition of all WCIs can be referenced in Appendix B, Table B-1.

Photo 3-3. Photographs of Streams within the Project Area



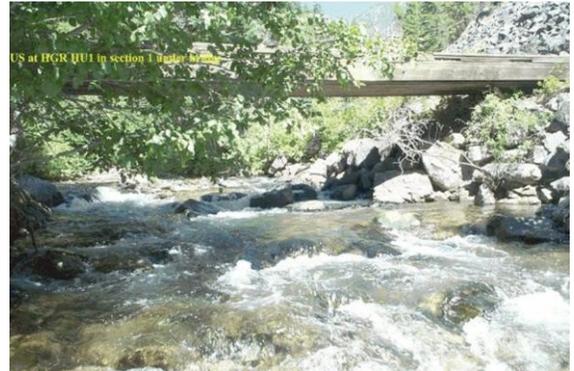
Coin Creek near old bunkhouse



Coin Creek near confluence with Beaver Creek



Beaver Creek downstream of Coin Creek



Beaver Creek at confluence with Big Creek



North Fork Smith Creek upstream of second ford



Smith Creek downstream of North Fork Smith Creek

Interstitial Sediment Deposition

The current condition of the interstitial sediment deposition indicator is determined by summarizing data on fine sediment levels in the analysis area using measures of cobble embeddedness and surface fines.

Cobble embeddedness is the degree in which cobble substrate (e.g., substrate particles ranging from approximately 45 to 300 mm) are surrounded or covered by fine sediment. The rearing capacity of salmon habitat is decreased as cobble embeddedness levels increase. Suttle et al. (2004) found that growth and survival of juvenile steelhead declined with a measure of increasing substrate embeddedness.

Surface fines are sediment particles less than 6 mm that are visible on the surface of the streambed. An estimate of the percent of streambed surface covered by fine sediment is used by the Forest Service as an indicator of fine sediment levels within the streambed; however, a clear relationship between surface fines and salmonid survival and growth has not been established.

Based on the most current data, the interstitial sediment delivery indicator is rated Functioning at Unacceptable Risk. The rating is based on values for cobble embeddedness and free matrix (a surrogate for cobble embeddedness) that are Functioning at Risk or Functioning at Unacceptable Risk at all sites except for Big Creek near the confluence with Smith Creek (Appendix B, Table B-1). In addition, many of the surface fines estimates are Functioning at Risk or Functioning at Unacceptable Risk.

The model WEPP:Road is designed to predict runoff and sediment yield specifically from roads (Elliot et al. 1999). The WEPP:Road sediment model predicts sediment delivery from a road segment on a yearly basis using average slope, local climate, soil type, cross drain spacing, road width and a vegetative buffer component (Elliot et al. 1999). The model was used to predict and compare project and management-induced sediment delivery between existing conditions (Alternative A) and the action alternatives. For most midslope forest roads, only those road segments and fillslopes near stream crossings have a high potential to contribute eroded material to streams (Burroughs and King 1989). Therefore, only road segments at stream crossings were quantitatively evaluated in the analysis. The primary application of this erosion model is to estimate the runoff and amount of sediment entering a stream system from a given road segment. The model is best used to compare different management alternatives rather than to predict absolute quantities of sediment delivery (Elliot et al. 1999).

Road Density and Location

RCAs include riparian corridors, wetlands, intermittent streams, and other areas that help maintain the integrity of aquatic ecosystems. Protection of these areas is vital in maintaining current and future sources of large woody material, intact riparian vegetation communities, and functional ecological processes of temperature regulation (water, air, and soil). Protection of RCAs is often accomplished by delineating riparian area buffer, and restricting or prohibiting management activities, such as roads, within these areas (USDA 2003, 2010). There are approximately 33 miles of road within RCAs in the analysis area, with Smith and Logan Creeks having the highest mileages (Table 3-2).

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Table 3-2 Roads and Road Density within RCAs in the Golden Hand Analysis Area

	Road Length (miles)				Road Density (mi/mi ²)					
	In Analysis Area		In RCAs ^c		In Analysis Area			In RCAs ^c		
Analysis Area 6th Hucs	System ^a	Un-authorized ^b	System ^a	Un-authorized ^b	System ^a	Un-authorized ^b	Total	System ^a	Un-authorized ^b	Total
Beaver Cr	0	4.7*	0	1.2 ^c	0	0.1	0.1	0	0.2*	0.2
Big Cr-Little Marble Cr	2.8	2.1	1.1	0.5	0.1	0.1	0.2	0.3	0.1	0.4
Logan Creek	11.6	21.3	6.7	5.3	0.5	1.0	1.5	2.2	1.8	4.0
Smith Creek	16.1	10.1	7.6	2.7	0.8	0.5	1.3	2.4	0.8	3.3
Upper Big Creek	9.4	9.2	4.9	3.3	0.3	0.3	0.7	1.0	0.7	1.7
Overall	39.8	47.3	20.5	12.8	0.3	0.3	0.6	0.9	0.6	1.5

^aSystem: roads wholly or partially within or adjacent to NFS lands needed for long-term motor vehicle access, including state roads, county roads, privately owned roads, NFS roads, other FS authorized roads.

^bUnauthorized: roads not constructed or maintained or intended for long-term use.

^cRCAs estimated from GIS stream layer by placing 150-ft. buffers around intermittent streams and 300 ft.-buffers around perennial streams.

^dA non-motorized trail (#013) is located on 2.8 miles of old road bed, which is classified as unauthorized road in this table.

About half the roads in the analysis area are system (39.8 miles), and half are unauthorized (47.3 miles). System roads in the analysis area are native-surface roads used by miners, hunters, and the general public. These roads are occasionally maintained. Unauthorized roads in the analysis area are not open for public use and are not maintained.

Overall, system road densities across the watersheds are low (0.3), but the combined densities of system and unauthorized roads in RCAs are of concern at 1.5 miles per square miles of RCA (Table 3-2).

Road densities are generally low when measured across watersheds (Table 3-2). The highest (system and unauthorized combined) road densities are located in Logan Creek (1.5 mi/mi²) and Smith Creek (1.3 mi/mi²). The highest (system and unauthorized combined) road densities in RCAs occur in the Logan Creek subwatershed. Of the 87.1 miles of roads in the analysis area, 33.3 miles (38 percent) are located within RCAs.

Sediment travel distances and buffer strip efficiencies vary based on geologic erosion factors, road location, design, and the application of BMPs to control sediment flows. Erosion from roads generally increases when motorized use increases (Dexter et al. 2008; Bilby et al. 1989; Reid and Dunne 1984). Sediment delivery to streams from roads increases substantially when the roads are within 200 feet of the stream channel (Belt et al 1992). The largest sediment loss occurs in the first two or three years after construction or reconstruction. Sediment loss usually decreases substantially after those initial few years, as the cut and fill slopes stabilize and become revegetated (Burroughs and King 1989, Ketcheson and Megahan 1996). Logan and Smith Creek are the most notable having 8.2 and 6.0 miles within 200 feet of a channel. Over 20 miles of system and unauthorized roads occur within 200 feet of stream channels within the analysis area (Table 3-3). On steep slopes derived of gneiss and schist parent materials in the Nez Perce National Forest in Idaho, Burroughs and King (1989) found that 90 percent of the non-channelized sediment traveled less than 88 feet below outsloped roads, and 90 percent of the channelized sediment from insloped roads traveled 200 feet or less. In a study based on a model of sediment yields by road lengths and buffer strips, the model showed that road segments between cross drains 10 meters or less in length had no noticeable sediment yield at any slope as long as a 10-meter buffer was in place. In this modeling study, Morfin and others (1996) showed that 80-100 percent of the sediment was trapped on a buffer strip 130 feet wide for any road length or slope in the Idaho climate.

Table 3-3 Miles of Road Within 200 Feet of Stream Channels

6th Field HUC	Road Length (miles) within 200 Feet of Stream Channels		
	System ^a	Unauthorized ^b	Total
Beaver Cr	0	0.9 ^c	0.9
Big Cr-Little Marble Cr	0.4	0.3	0.7
Logan Creek	4.8	3.4	8.2
Smith Creek	4.4	1.6	6.0
Upper Big Creek	3.2	1.9	5.1
Overall	12.9	8.0	20.9

^aSystem: roads wholly or partially within or adjacent to NFS lands needed for long-term motor vehicle access, including state roads, county roads, privately owned roads, NFS roads, other FS authorized roads.

^bUnauthorized: roads not constructed or maintained or intended for long-term use.

^c A non-motorized trail (#013) is located on 2.8 miles of old road bed, which is classified as unauthorized road in this table.

The road density and location indicator is rated at Functioning at Unacceptable Risk overall within the analysis area.

Chemical Contaminants and/or Nutrients

A water sample was taken from Coin Creek in October 2002 below the historic mining disturbance. Chemical analysis determined that all metals in the sample were below detection limits. A sample was also taken from an adit discharge at the mine site that infiltrates into the waste rock dump. The water sample showed total metal concentrations below the detection limits except for lead (1 ug/L). The adit lead concentration is below the EPA freshwater chronic criterion of 2.5 ug/L (expressed as dissolved). The Ella adit and waste rock dump are expected to be dry based on the local geology (Jim Egnew, personal communication, 2011).

Roads are located adjacent to Big Creek and its tributaries, and the possibility of a toxic fuel spill exists. Fuels and petroleum products are moderately to highly toxic to salmonids, depending on concentrations and exposure time (Mason 1991).

The chemical contaminants and/or nutrients indicator is rated Functioning Acceptable in the analysis because there are no 303d water quality limited water bodies, and there is no evidence of contamination from past mining actions (Jim Egnew, personal communication, 2011).

Change in Peak/Base Flows

There are a number of State water rights for irrigation, domestic, culinary, and hydropower use in the analysis area. Water rights in the analysis area total 2.24 CFS. Some of these diversions withdraw more than 10% of base flows from smaller fish bearing tributaries.

Using the USGS flow prediction model (USGS 2011) the lowest predicted flows for Big Creek below the confluence with Beaver Creek occur in October when flows are estimated to exceed 64.8 CFS 80 percent of the time. Base flow in Beaver Creek near Big Creek has been estimated at 40 CFS (Raleigh 1994), and the lowest predicted flow (USGS model) occur in October when flows are estimated to exceed 28.1 CFS 80 percent of the time.

There are currently no diversions in Coin Creek or Beaver Creek. Coin Creek near Forest Trail #013 crossing was estimated at 0.5 CFS (Raleigh 1994; 2010 data on file Project Record). Flow near the mouth of Coin Creek has been estimated at 6.25 CFS (Sept. 8, 2008), and 3.35 CFS (July 30, 2002) and as low as 0.71 CFS on September 23, 1993 by Raleigh (1994).

The indicator for peak/base flows in the analysis area is considered Functioning at Risk for Big Creek due to the influence of the various diversions on tributaries to Big Creek, and Functioning Appropriately for Coin and Beaver Creek (Beaver Creek 6th HU) where no diversions occur.

3.4.1 Environmental Consequences Specific to Alternative A

This alternative would have no direct or indirect effects on any watershed condition indicator (WCI), fish habitat, or fish populations. This alternative would have no influence on the existing functionality ratings of the WCIs in the analysis area.

3.4.2 Environmental Consequences Specific to Alternative B

3.4.2.1 Interstitial Sediment Deposition

Under Alternative B, project activities that may affect sediment production include:

- Maintain and improve drainage on portions of FR #371 and #373 between the Big Cr. Trailhead and Pueblo Summit (approximately 8.0 miles) and maintain approximately 4.1 miles of temporary road on abandoned and unauthorized roads.
- Install an open bottom stream crossing structure (e.g., metal arch, cement box, or bridge) on NF Smith Creek.
- Increased use of motorized vehicles on existing roads and temporary roads (up to 771 trips per 100 day season from Werdenhoff into the FC-RONR Wilderness).
- Repair of a ford across Coin Creek and a ford of a tributary to Coin Creek.
- Construct eleven drill pads from which 13-18 core holes would be drilled.
- Excavating trenches in road bed for rock chip samples.
- Reopen and timber a caved mine adit (the "Ella") to allow access for underground mapping and sampling. Excavated material would be placed on the existing flat disturbed area in front of the portal location.
- Blading of approximately 4,000 square feet of a previously disturbed area on Claim 2 to provide supply storage area and location for portable toilets.

Interstitial Sediment Deposition Related to System Road and Temporary Road Use Outside of the FC-RONR Wilderness

Approximately 8 miles of system road outside of the FC-RONR Wilderness (Smith Creek Subwatershed), FR #371 and #373, would be maintained and improved reducing sediment delivery to stream channels in the temporary, short, and long term (Table 3-4). The model does not account for increased sediment from ford reconstruction or road maintenance. The road would be improved in the following ways:

- Construct driveable dips where appropriate along FR #371 and #373.
- Place coarse and well graded aggregate on approximately 500 feet of road surface.
- Construct an insloped ditch on FR 373 for approximately 450 feet.
- Repair a small (approximately 50 linear feet of road) section of road fill on FR 373 by adding additional material. At the same location, widen a section of FR 373 by further cutting into the slope.
- Install a box culvert/steel arch pipe capable of Aquatics Organism Passage (AOP) on FR 373 at the North Fork Smith Creek near Werdenhoff. Improve the road alignment on both sides of the stream to straighten the approaches.
- Armor approaches to several North Fork Smith Creek crossings of FR #371.
- Raise the road surface where substantial portions of road with poor drainage exist.

Approximately 0.1 miles of temporary road would be authorized on an old road bed to access the Werdenhoff site where crew camping would occur. The total number of trips within the FC-RONR Wilderness by motorized vehicles is estimated to be 771 per operating season.

Increased motorized travel on the system road from the Walker Mill site (on Logan Creek) to Smith Creek (Figure 2-1) is not expected to cause a measurable increase in sediment over baseline because the roads are in good condition (i.e., gravel, bridges, culverts, more maintenance) and travel would mostly be limited to fuel transport. Due to the short length and long distance from a stream, use of 0.1 miles of temporary road to access the Werdenhoff is not expected to result in measurable sediment delivery to streams channels.

Road stream crossings can be a major point of sediment delivery from roads (Gucinski et al. 2001; Taylor et al. 1999; Furniss et al. 1991). Fording can increase sediment delivery in three ways: Wave action from fording vehicles eroding streambanks, tire rutting concentrating surface runoff on approaches, and water draining off vehicles and eroding approaches (Brown 1994). Fording streams can also temporally increase turbidity by mobilizing fine material in the substrate of the ford. This type of turbidity represents redistribution of fine sediment within the channel rather than increased sediment yield from sources outside the channel. Although suspended sediment can kill fish at high concentrations (Waters 1995), it is not usually considered an important source of mortality. Turbidity can reduce the ability of fish to locate food and can damage respiratory tissues (Waters 1995), but short-term increases in turbidity are most likely to result in simple avoidance of turbid water. There are approximately nine stream crossings (all fords) along FR #371 and #373 including two fords of the North Fork Smith Creek. An open bottom stream crossing structure (e.g., arch pipe, cement box, or bridge) would be installed at the second upstream ford of North Fork Smith Creek (Figure 3-3), which would reduce turbidity generated from fording. Additional road improvements (e.g. graveling approaches to stream crossings, cross drains) and maintenance would offset sediment delivery in the temporary to long term (as long as maintenance occurs) generated from increase motorized use (Table 3-4). The approaches to fords are naturally rocky and well armored and approaches would be further armored by adding rock; therefore, sediment delivery from wave action, rutting, or water draining off vehicles is not likely. Installation of an open bottom structure on NF Smith Creek near the Werdenhoff would prevent turbidity. Sediment delivery could increase temporarily during installation of dips, adding rock to road, and other road maintenance, but the project design features described in Chapter 2.2.4 would minimize delivery.

Table 3-4 WEPP model sediment yield^b (lbs) for roads by alternative.

Alternative	Sediment Yield (lbs) Outside Wilderness FR #371 and #373 ^a Temporary to Long Term	Sediment Yield (lbs) Inside Wilderness Temporary to Short- Term	Sediment Yield (lbs) Inside Wilderness Long-Term
A	6,120	40.4	40.4
B	180	1.2	0.7
C	180	1.2	0.7

^a WEPP output from McGreer (2005).

^b The model does not account for temporary increases in sediment from repair of ford or road maintenance.

Interstitial Sediment Deposition in the FC-RONR Wilderness Related to Use of Temporary Road and Maintenance of Fords on Coin Creek

Approximately 4.0 miles of abandoned roadbed inside the FC-RONR Wilderness would be used and maintained as temporary road. Of the 4.0 miles of temporary road 0.7 miles would be in RCAs (Table 3-2) and 0.5 miles within 200 feet of stream channels (Table 3-3). Use of the temporary road would require repair of a ford on Coin Creek and a ford of a tributary to Coin. The total number of trips within the FC-RONR Wilderness by motorized vehicles is estimated to be 771 per operating season. Many of the vehicles and heavy equipment would only need to make one round trip per operating season. The most frequent trips would be made by supply, fuel, and personnel transport.

Inside the FC-RONR Wilderness maintenance of roads (i.e., moving rock, dirt and other debris, and trees that have grown in from road prism, maintenance of fords) on the old road beds would be required to make them drivable. Adding cross drains would minimize the temporary to short term increase in sediment delivery from motorized travel. Maintenance and use of roads that are generally greater than 200 feet from stream channels, such as FR 503739500 to the Penn Ida (Figure **Error! Reference source not found.**3-6), would not likely result in sediment delivery to streams because drainage features would be added where needed. Restricting road use when conditions are

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unacceptable due to moisture and limiting the number of trips to what is necessary to accomplish the activities would further minimize sediment delivery to streams.

The ford that washed out on an unnamed tributary to Coin Creek would be maintained (Figure 3-6; Photo 3-4). The maintenance would entail filling the incised roadbed with a combination of large rock and retaining structures (e.g., gabion baskets, riprap), and would likely result in temporary sediment delivery (Taylor et al. 1999). The use of course, clean rock would minimize sediment delivery during maintenance of the ford. Drainage improvements would be made on the approaches to the ford to route water and sediment off of the road and into the vegetation, which would further minimize temporary to short term sediment delivery. Long term sediment delivery would be reduced below the current baseline through rehabilitation of ford approaches (Chapter 2.4.4).



Photo 3-4 Photograph on Left Shows Road Washout on Tributary to Coin Creek That Would Be Repaired. Photograph on Right Shows Ford on Coin Creek That Would Be Repaired.

A second ford is located between the bunkhouse facility and the Ella Portal (Figure 3-6; Photo 3-4). This ford would require improvements and maintenance to drain water properly, reduce sediment, and be passable to vehicles. The road surface would be bladed, cross drains would be added, and the approaches to the ford would be pulled back to improve drivability. Maintenance of the ford would cause some temporary sediment delivery due to soil disturbance on the ford approaches (Taylor et al 1999). The approaches to the ford have a high natural rock content, which would help minimize erosion and sediment delivery. Drainage improvements would be made at the crossing, which would help route water and sediment off of the road and away from the stream helping minimize sediment delivery in the temporary to short-term (Table 3-4). Long term sediment delivery would be reduced below the current baseline through rehabilitation of ford approaches (Section 2.4.4). The rocky, armored approaches would prevent sediment delivery caused by wave action, rutting, and water drainage from vehicles. There would be increased turbidity when vehicles crossed the fords stirring up fine material in the fords, but the plumes would likely be diffuse and settle out of the water column rapidly.

3.4.2.2 Chemical Contamination

Under Alternative B, project activities that may result in contamination of waterways include:

- Transport and storage of fuel and drilling additives
- Use of drilling additives
- Use of portable latrines.
- Leaks/drips of oil and/or fuel from vehicles and drill equipment

Hazardous substances associated with the project would include diesel fuel, gasoline, drilling fluids, and lubricating grease. In the event hazardous or regulated materials were spilled, measures would be taken to control and contain the spill and the Forest Service and the State of Idaho would be notified, as required. Any hazardous substance spills would be cleaned immediately and resulting waste would be transferred off-site in accordance with all applicable local, state, and federal regulations. All equipment used would be inspected by the Forest Service to ensure that it is in good working order and has no visible leaks. Contract drillers would maintain spill kits on site for use in case of a spill. Appropriate spill containment would be provided for all stored toxicants. The operator would adhere to the guidelines pertaining to transport, storage, handling, and disposal of hazardous materials and spill response cited in the Best Management Practices for Mining in Idaho. A Spill Prevention Containment and Countermeasures (SPCC) plan would be submitted for Forest Service approval prior to project implementation.

While drilling, approximately 500 gallons of diesel fuel would be brought to the site every other day in a DOT approved tank from AIMMCO's operations on Logan Creek to the Golden Hand Mine. Gasoline for vehicles would be transported from Logan Creek to the Werdenhoff Mill site on an as needed basis, likely to be weekly. Gasoline would be transported in DOT approved truck mounted. Transport of fuel in DOT approved tanks would minimize the chance of fuel spills.

Diesel fuel stored in the FC-RONR Wilderness would be in a 1,320 gallon dual lined trailer mounted tank that is transported to and from the site empty. Unless specifically approved by a Forest Service Fishery Biologist, the tank would be placed in a liner capable of containing 120 percent of the tanks volume. Unless otherwise agreed, the storage tank would be located outside of RCAs. Unless otherwise agreed, all other toxicants would be stored outside of RCAs and would have containment.

The use of portable latrines in the FC-RONR Wilderness and at the Werdenhoff would be required. Use of the small capacity, sealable latrines would insure against the contamination of streams.

Contamination from petroleum products washing or dripping off vehicles at fords is possible. The road surface improvements and maintenance that reduce direct delivery of road surface runoff into streams should also reduce potential for chemical contamination. Likewise installation of an open bottom structure on NF Smith Creek would reduce the potential for contamination.

All drill pads would be located at least 200 feet from stream channels minimizing the likelihood of spills or other contaminants at the drill pads reaching streams. In addition, following design features would further reduce the chance of chemical contaminants reaches Coin Creek. Prior to discharge of fluids into sumps (settling basin) the Forest Service would check for hydro-carbon contamination and AIMMCO would clean the fluid of all contaminants. The drilling fluid would be discharged in a controlled manner to the excavated sump. The inspection for contamination would be repeated after all of the fluid has ponded in the sump and any further contamination removed. If open tanks are used for drilling fluids, oil absorbent pads would be floated on the surface during operations to absorb any petroleum-based contaminants. All mechanical equipment would be inspected by the Forest Service to ensure good working condition and determination of no visible leaks. Oil absorbent pads would be on site and placed, prior to any activities, under the drilling platform and any possible sources of fuel, oil, or hydraulic fluid leakage. Soiled pads would be disposed of properly.

Road drainage improvements and installation of an open bottom structure on NF Smith Creek would reduce chemical contamination by a small amount in the short to long-term. The likelihood of fuel or other petrochemical spills would be minimized through the use of DOT approved tanks and appropriate containment and Forest Service approved SPCC plans. Unless otherwise agreed, toxicants would not be stored in RCAs.

3.4.3 Environmental Consequences Specific to Alternative C

3.4.3.1 Interstitial Sediment Deposition

Under Alternative C, project activities that may affect sediment production include:

- Maintain and improve drainage on portions of Forest Roads (FR) #371 and #373 between the Big Cr. Trailhead and Pueblo Summit (approximately 8.0 miles) and maintain approximately 4.1 miles of temporary road on abandoned and unauthorized roads.
- Install an open bottom stream crossing structure (e.g., metal arch, cement box, or bridge) on NF Smith Creek.
- Increased use of motorized vehicles on existing roads and temporary roads (up to 571 trips per 100 day season from Werdenhoff into the FC-RONR Wilderness).
- Repair of a ford across Coin Creek and a ford of a tributary to Coin Creek.
- Construct eleven drill pads from which 13-18 core holes would be drilled.
- Excavating trenches in road bed for rock chip samples.
- Reopen and timber a caved mine adit (the “Ella”) to allow access for underground mapping and sampling. Excavated material would be placed on the existing flat disturbed area in front of the portal location.
- Blading of approximately 4,000 square feet of a previously disturbed area on Claim 2 to provide supply storage area and location for portable toilets.

Interstitial Sediment Deposition Related to System Road and Temporary Road Use Outside of the FC-RONR Wilderness

Under Alternative C, project activities that may affect sediment production are the same as Alternative B. Under Alternative C there would be approximately 200 fewer motor vehicle trips from the Werdenhoff to the Golden Hand Mine per season. Sediment delivery in the temporary to short term from increased motorized travel would be offset by road improvements and maintenance. As long as maintenance occurs, road improvements would reduce sediment delivery in the long term.

Road drainage improvements would offset temporary to short-term sediment delivery from increased motorized travel and, as long as maintenance continues, result in long-term minor reductions in sediment delivery resulting from authorized use of the roads and normal erosion from the road surface (Table 3-4). Fewer motorized trips in Alternative C would result in less temporary and short term sediment delivery and turbidity, but there would be no difference in the long term reductions related to road improvements.

Interstitial Sediment Deposition in the FC-RONR Wilderness Related to Use of Temporary Road and Maintenance of Fords on Coin Creek

Under Alternative C, project activities that may affect sediment production are the same as Alternative B. Under Alternative C there would be approximately 200 fewer motor vehicle trips from the Werdenhoff to the Golden Hand Mine per season. Sediment delivery in the temporary to short term from increased motorized travel would be offset by road improvements and maintenance. As long as maintenance occurs, road improvements would reduce sediment delivery in the long term.

Drainage improvements would reduce sediment delivery minimizing temporary to short term increases in sediment delivery from increased traffic (Table 3-4), but some temporary to short term delivery would occur from ford maintenance and use, which is not captured in the WEPP model. Fewer motorized trips in Alternative C would result in less temporary and short term sediment delivery and turbidity than Alternative B.

3.4.3.2 Chemical Contamination

Under Alternative C, there is minor decreased risk of contamination from reduced fording in the FC-RONR Wilderness, otherwise project activities that may affect chemical contaminants in streams are the same as Alternative B (Section 3.4.1.2).

3.4.4 Environmental Consequences Specific to Alternative B and C

3.4.4.1 Interstitial Sediment Deposition

Under Alternative B and C, project activities that may affect sediment production include:

- Maintain and improve drainage on portions of FR #371 and #373 between the Big Cr. Trailhead and Pueblo Summit (approximately 8.0 miles) and maintain approximately 4.1 miles of temporary road on abandoned and unauthorized roads.
- Install an open bottom stream crossing structure (e.g., metal arch, cement box, or bridge) on NF Smith Creek.
- Increased use of motorized vehicles on existing roads and temporary roads (up to 771 trips (Alternative B) or 571 trips (Alternative C) per 100 day season from Werdenhoff into the FC-RONR Wilderness).
- Repair of a ford across Coin Creek and a ford of a tributary to Coin Creek.
- Construct eleven drill pads from which 13-18 core holes would be drilled.
- Excavating trenches in road bed for rock chip samples.
- Reopen and timber a caved mine adit (the “Ella”) to allow access for underground mapping and sampling. Excavated material would be placed on the existing flat disturbed area in front of the portal location.
- Blading of approximately 4000 square feet of a previously disturbed area on Claim 2 to provide supply storage area and location for portable toilets.

Rehabilitation of Approaches to Road-Stream Crossings in the FC-RONR Wilderness

The road stream crossings of Coin Creek would be rehabilitated through a road prism to trail conversion. At both crossings half of the road prism would be obliterated (Chapter 2.4.4) leaving the other half to maintain the existing non-motorized trail (Forest Trail #013). Rehabilitation of the crossing and maintenance of cross drains on the trail would reduce sediment delivery over the long-term (Table 3-4), and increase RCA productivity and function.

Interstitial Sediment Deposition Related to Drill Pads, the Ella Portal, Trenches for Rock Chip Samples, and Supply Storage Area.

Slope gradient and length have been shown to be important factors influencing erosion rates (Burroughs and King 1989). Belt et al. (1992) concluded that a distance (i.e., riparian buffer) between the road and stream of 200 - 300 feet is generally effective in trapping sediment that is not channelized. Channelized sediment flows can move thousands of feet and are limited by the amount and frequency of flow (Belt et al. 1992). Under both Alternatives, drill pads, trenches for rock chip samples, and the Ella Portal, are located approximately 200 feet or more from stream channels (Figure **Error! Reference source not found.**2-1). Non-channelized sediment flow would likely be trapped by dense ground cover (i.e., vegetation, duff, woody debris) between the disturbed areas and stream channels. In addition, the use of silt fences would further reduce the likelihood of erosion off of disturbed sites. Due to the vegetated buffer between the disturbed sites and stream channels and application of mitigations, sediment delivery to stream channels and associated effects to fish habitat from non-channelized flow is not expected. The temporary roads would be outsloped; therefore, channelized flow of sediment down borrow ditches would not be likely. Following project completion roadbeds would not be fully recontoured, but would be returned to the original width at drill pad locations. All disturbed areas would be seeded with a certified weed-free native seed mix and mulched. A previously disturbed area (Photo 3-5) of approximately 4000 square feet would be bladed to store supplies. Erosion control would be placed downhill of all disturbed soil. Delivery of sediment from the storage area is not expected because of the distance to Coin Creek and the use of erosion control. Reclamation of the project area would include recontouring drill pads to the original slope shape where this project has altered slopes and revegetation of the

disturbed ground. Project design features for drill sites, rock chip sampling, the Ella Portal, and blading the storage area would likely keep sediment from entering the streams.



Photo 3-5 Disturbed Area Near Bunkhouse That Would Be Leveled and Used for Storage

Summary of Effects to ESA Listed Fish, Critical Habitat, and MIS from Interstitial Sediment Deposition

Temporary to short term increases in interstitial sediment deposition from increased motorized travel on FR #371 and #373 would be offset by reductions in sediment delivery due to road improvements and maintenance. Therefore, temporary to long term effects to ESA listed fish, Designated Critical Habitat (DCH), and MIS are expected to be slightly beneficial. The decrease in sediment delivery would be small and is not likely to have population level effects. Turbidity associated with fording tributaries to NF Smith Creek is not expected to reach NF Smith Creek. The open bottom structure installed on NF Smith Creek near the Werdenhoff would prevent turbidity from fording (Figure 3-6). Turbidity from fording lower NF Smith Creek is not expected to have negative effects on ESA listed fish in NF Smith Creek and Smith Creek due to the short duration and small magnitude of the plume.

Inside the FC-RONR Wilderness, the points of sediment delivery at the road stream crossings are approximately 1 mile from where fish occur in the lower 500 meters of Coin Creek; therefore, the effects to ESA listed fish, DCH, and MIS are expected to be negligible. Similarly the effects of drainage improvements and rehabilitation of ford approaches resulting in long term reductions in sediment delivery would not have measurable effects on fish or fish habitat due to the distance from occupied habitat.

Direct effects to ESA listed fish at the fords on North Fork Smith Creek

Increased traffic at the most downstream ford on NF Smith Creek (Figure 3-6 and Photo 3-6) would increase the risk of direct effects to fish ranging from disturbance of normal behavior to mortality. Westslope cutthroat trout and juvenile steelhead have been documented in North Fork Smith Creek (Table 3-1). Bull trout have been observed in Smith Creek in vicinity of the confluence with North Fork Smith Creek. In a 2011 PNF survey no bull trout were observed near the fords on NF Smith Creek, but in 2002, a bull trout was observed in North Fork Smith Creek 200 meters below the ford (Zurstadt 2012); therefore, although unlikely, bull trout presence and spawning in or near the ford is possible. Juvenile steelhead occur near the ford, but adult steelhead spawning had not been documented in NF Smith Creek. Westslope cutthroat trout have been observed near the ford, and spawning at the ford in the spring is possible, but unlikely due to the large size of substrate (Photo 3-6). Adult fish of all species present would likely evade fording vehicles, but juvenile fish that seek cover in the substrate and eggs are more vulnerable to being crushed. The likelihood that fish or egg mortality increases at the ford with increased use under the action Alternatives is small

because adult fish would likely evade fording vehicles and the number of juveniles at the ford at any one time would likely be few to none. The few occurrences of disturbance or mortality of individuals from increased fording are not likely to result in measurable population level effects.

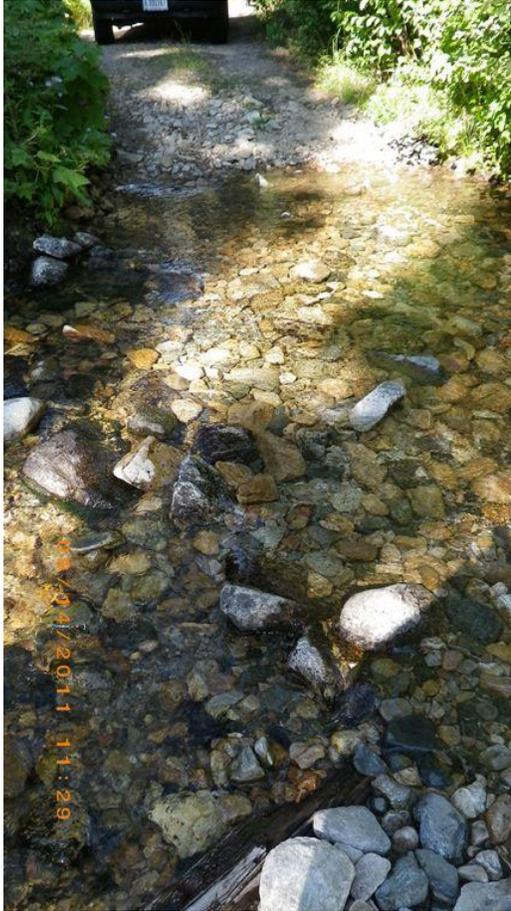


Photo 3-6 Downstream Ford of NF Smith Creek

Westslope cutthroat trout and juvenile steelhead have been observed near the ford on NF Smith Creek near the Werdenhoff (Figur3-6). Installation of an open bottom structure under both Alternative B and C would prevent fording related effects to fish. Dewatering of the channel would be required for installation of the structure and stranded juvenile steelhead and westslope cutthroat trout may need to be captured and moved to downstream. Care would be taken to minimize harm to relocated fish, and based on surveys the number of fish that would need to be moved is likely to be less than 10.

3.4.4.2 Stream Flow

Under Alternative B and C, project activities that may affect stream flow include:

- Water withdrawal from Coin Creek at a rate of 0.04 cubic feet per second (CFS) or 10% of the existing flow of Coin Creek, whichever is less.
- Water delivered by gravity (no alteration of stream channel such as damming or ditching) would be contained in several 5,000 gallon capacity tanks located within the existing road prism then conveyed to drill sites through PVC pipes by pumping.

The diversion would occur during the summer period of operation and would not influence peak flows, which occur in the spring, or winter base flows. The effects to fish and fish habitat from diversion of flow during the period of operation (July-October) were analyzed using the following two approaches: 1) Examination of the percent reduction in base flows. 2) The Tennant Method which uses an examination of the reduction in flow as a percentage of average annual flow.

Examination of Base Flows

Fish occur in the lower 500 meters of Coin Creek, which is approximately 1 mile downstream of the point of diversion. Estimated base flows in Coin Creek where fish occur are as low as 0.71 Cubic Feet per Second (CFS). The lowest predicted flows for Big Creek below the confluence with Beaver Creek occur in October when flows are estimated to exceed 64.8 CFS 80 percent of the time

(model estimated error 59 percent). Base flow in Beaver Creek near Big Creek has been estimated at 40 CFS (Raleigh 1994), and the lowest predicted flows (USGS model) occur in October when flows are estimated to exceed 28.1 CFS 80 percent of the time (model estimated error 59 percent).

The diversion rate from upper Coin Creek (above Forest Trail #013) would be limited to 0.04 CFS or 10 percent of the flow, whichever is less. Maintenance of ninety percent of normal stream flow contributes substantially toward the protection of fish migration, spawning and other life stages at and downstream of diversions (Orth and White 1993). At estimated low flows the diversion rate of 0.04 CFS from upper Coin Creek would leave 92 percent of the flow in upper Coin Creek, 94 percent of the flow in Coin Creek where fish occur, 99.9 percent of the flow in Beaver Creek, and 99.94 percent of the flow in Big Creek.

Tennant Method

Tennant (1976) found that habitat characteristics such as velocity, top width, depth, and discharge, change dramatically when flows are reduced to below 10 percent of average annual flow, and the magnitude of effect and rate of change decline significantly when flows are greater than 60 percent of the average annual flow. Tennant's method is used widely and often referred to as the Montana Method. Using the USGS discharge model the estimated average annual flow for Beaver Creek and Big Creek below the Confluence with Beaver Creek are 108 CFS and 263 CFS respectively. Modeled average annual flow for Coin Creek is not reported here because the small drainage size is outside of the model range. A diversion rate of 0.04 CFS equates to 0.04 percent of the average annual flow in Beaver Creek and 0.02 percent of the average annual flow of Big Creek below Beaver Creek. The percent reduction in average annual flow is extremely small and therefore would have a minimal influence on the percent of average annual flow remaining in streams.

The Forest Service would approve the use of a waterline to be placed in Coin Creek. The rate of diversion must be measured with a flow meter approved by the Forest Service. In stream flows would be measured at a point about 100 meters downstream of the confluence of Coin Creek and the unnamed tributary that flows through claim No. 4. Monitoring would occur throughout the months of operation. The water diversion rate would be reduced if the flow at the point of measurement dropped below 0.4 CFS in order to maintain a removal of less than 10 percent of the flow.

Summary of Stream Flow Effects

After considering the effects of diverting water from Coin Creek both as a percentage of base flow and using the Tennant Method the following conclusions were made. The diversion would result in a minor temporary to short term degradation of the base flow in Coin Creek that would not move the peak/base flow indicator for the Beaver Creek 6th HU from Functioning Acceptable to Functioning at Risk. In the short to long-term peak/base flow would return to pre-diversion flows following completion of drilling operations. In addition, the diversion would occur during the summer period of operation (July-October) and would not influence peak flows, which occur in the spring, or winter base flows. The effects to fish or fish habitat including MIS and ESA listed fish where they occur, and DCH where it occurs, in the lower 500 meters of Coin Creek, Beaver Creek below the confluence with Coin Creek, or Big Creek are expected to be minor due to the small proportion of water removed.

3.4.5 Cumulative Effects

Given the need to assess potential effects at a logical hydrologic scale, the analysis area for cumulative effects to the water resources includes five subwatersheds: Beaver Creek, Smith Creek, Big Creek-Little Marble, Logan Creek, and Upper Big Creek (Figure 3-4). Subwatersheds downstream of the selected analysis area were not included because they are located in FC-RONR Wilderness where management related watershed effects are relatively small.

Scattered mining disturbance in the upper Big Creek area dates back over 100 years. Numerous placer and lode deposits were prospected, worked, and abandoned. The Golden Hand, Velvet Quartz, Fourth of July Mines, and a few small underground prospects located primarily in the Logan Creek drainage are still active. Walker Mill site, a small milling operation, is located along Logan Creek. Reference

Appendix A for additional project information and maps related to the cumulative effects analyses completed for this project.

Ongoing actions in the analysis area that may contribute to the cumulative effects of the action alternatives analyzed in this DEIS include activities on over 700 acres of privately owned land within the analysis area. On Federal and private land ongoing actions include one guest outfitter lodge, private summer residences, historical and present mining activities, water diversions, hydropower sites, an airstrip, grazing by livestock on private land and by pack/saddle stock throughout localized areas, and a Forest Service guard station. Outfitters and guides operate in these watersheds and are required to conform to practices to protect ESA listed fish species. Reference **Appendix A** for additional project information and maps related to the cumulative effects analyses completed for this project.

Another ongoing action is the Walker Mill site that operates under a plan of operations approved by the Forest Service in 1990. The Walker Mill site includes a 50-ton per day ball mill and gravity milling process, a 50 by 100 by 7-foot deep tailings pond, 1,000 feet of access road, a water transmission line, and an explosives storage shed. The operating plan was amended in 2002 to allow relocation and temporary operation (until December 31, 2003) of a carbon-in-pulp (CIP) cyanide vat leach plant from private land to a nearby mill site on National Forest System land. These actions were determined “Not Likely to Adversely Affect” ESA listed species or critical habitat by the Forest Service, and not likely to lead to listing of cutthroat trout.

Likely future actions include the Big Creek Fuels Reduction Project. Reference **Appendix A** for additional project information and maps related to the cumulative effects analyses completed for this project.

Alternative A would have no direct or indirect effects on any watershed condition indicator, fish habitat, or fish populations, therefore no cumulative effects would occur.

When considered in conjunction with existing conditions and other reasonably foreseeable future actions, the cumulative effect of Alternatives B and C on WCIs are considered minor but degrading in the temporary to short term given increases in sediment delivery to Coin Creek, reduction in Coin Creek flows and beneficial to NF Smith Creek and Coin Creek in the long-term given road improvements, installation of an open bottom structure on NF Smith Creek, and rehabilitation of stream crossing approaches on Coin Creek.

3.5 Soil Resources

This section of the document discusses the existing characteristics of soil resources, as well as the effects of the alternatives on those resources. The discussions will focus on slope stability. The analysis of direct and indirect effects to slope stability would be contained to the area of modeled potential landslide prone north of Coin Creek (Figure 3-7).

Slope Stability

Mass instability or landslides are naturally occurring disturbances that have and will continue to have an influence within the analysis area. Although landslides are naturally occurring events, human caused disturbances such as road construction, reconstruction, drill pad construction and trenching can increase the potential for and occurrence of landslides.

The term "landslides," is a collective term that includes both deep-seated, geologic failures and smaller localized mass erosional events such as slumps, debris torrents, debris slides and rockfall. Three principal factors influence slope stability: soil moisture, root strength and slope gradient. No landslides have been identified in the project area.

The forest has developed a base GIS layer for indicating potential for landslide prone areas, expressed as a stability index, utilizing the Stability Index Mapping (SINMAP) model. SINMAP has its theoretical basis in the infinite plane slope stability model with wetness obtained from a topographically based steady state model of hydrology (Stability Index Mapping; Pack et al 1998). The SINMAP model uses landslide initiation points in GIS to calibrate input parameters to the model. Digital elevation model (DEM) methods are used to obtain slope and catchment areas for each individual pixel mapped. Input parameters are allowed to be uncertain following uniform distributions between specified limits. Input parameters are adjusted and calibrated for geographic "calibration regions" based upon soil, vegetation and/or geologic data. The calibration involves an interactive visual calibration that adjusts parameters while referring to observed landslides (mapped in GIS). The calibration involves adjustment of parameters so that the stability map "captures" a high proportion of observed landslides in regions with low stability index, while minimizing the extent of low stability regions. The SINMAP modeling produces a stability index for each pixel of the DEM analyzed. The pixels may then be grouped into different stability classes based on their calculated stability index.

Stability indices output by SINMAP should not be interpreted as numerically precise and are most appropriately interpreted in terms of relative hazard or risk. It should also be noted that the model has not been calibrated specifically for the project area, because no landslides were identified in the project area, therefore this model provides a broad, coarse filter, assessment of the potential landslide hazard. The result is a spatial representation of potential instability accounting for topography and water collection.

In general the highest concentration of high to moderate potential landslide prone areas within the project area exists in the area north of Coin Creek (Figure 3-7).

Forest Roads 503739800 and 503739900, which were most likely constructed in the 1940's (Jim Egnew, personal communication, 2011). These roads extend about 0.3 and 0.1 miles across a slope that was mapped as having a high to moderate probability as landslide prone. The first half of FR 503739800 traverses across landtype 109- Cryoplanated Uplands, which is typified as having deep sandy and loamy skeletal (high rock content) soils (USDA 1974). Slope gradients range from 25 to 55 percent. The inherent erosion hazard is low, which means that there is no appreciable hazard of erosion on undisturbed ground. Overall erosion hazards for roads on this landtype are moderate for road cuts, fills and surfaces, which means that there is sufficient resistance (most likely due to the high percentage of rock in the soil) to limited exposure of bare soil. Mass failure hazards for this landtype are: Low for slumps, very low for debris slides, low for dry creep; road cuts are rated as moderate to moderately high and fill slopes are moderate. Overall debris slides can be expected every 100 years and road cuts will yield enough material from slumps to require more than annual removal of material.

The second portion of FR 503739800 and all of 503739900 cut across the slope of an 111a-1 landtype- Weakley Dissected Glacial Trough Land-which is typified as having shallow and moderately deep skeletal

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sandy and loamy soils. Slope gradients range from 40 to 60 percent. The inherent erosion hazard is moderate-moderately high which means that unvegetated areas may yield high volumes of sediment (USDA 1974). Overall erosion hazards for roads on this landtype are moderate-high for road cuts and fills. In some areas cuts and fills may yield excessively high volumes of sediment. The rating was moderate-moderately low for road surfaces. Mass stability hazards for this landtype are: low for debris slides, moderate-low for slumps, and wet dry creep, moderate for cut slope hazard, and moderate-low for fill slope hazard. Cut slopes can be expected to slough enough material onto the road surface that will require seasonal removal of material.

These roads were walked by the interdisciplinary team in 2008 and 2010. FR 503739800 has some wet areas on the road surface in the first several hundred yards where the road intercepts ground water (Photo 3-7).



Photo 3-7. Seep on FR 503739800

Other than the seeps on FR 503739800, the roads (503739000, 503739800, and 503739900) were in good shape with some minor sloughing of cut slopes, but no evidence of mass movement or surface erosion on cut, fill, or road surface and good ground cover percentages on all surfaces. Visual inspection of these roads showed that the cut slopes were stable in spite of the hazards associated with road construction on these land types noted above. This could be the influence of a southerly aspect and well-drained, rocky soils that support good vegetative ground cover on the previously disturbed ground and vigorous tree growth on the undisturbed ground.

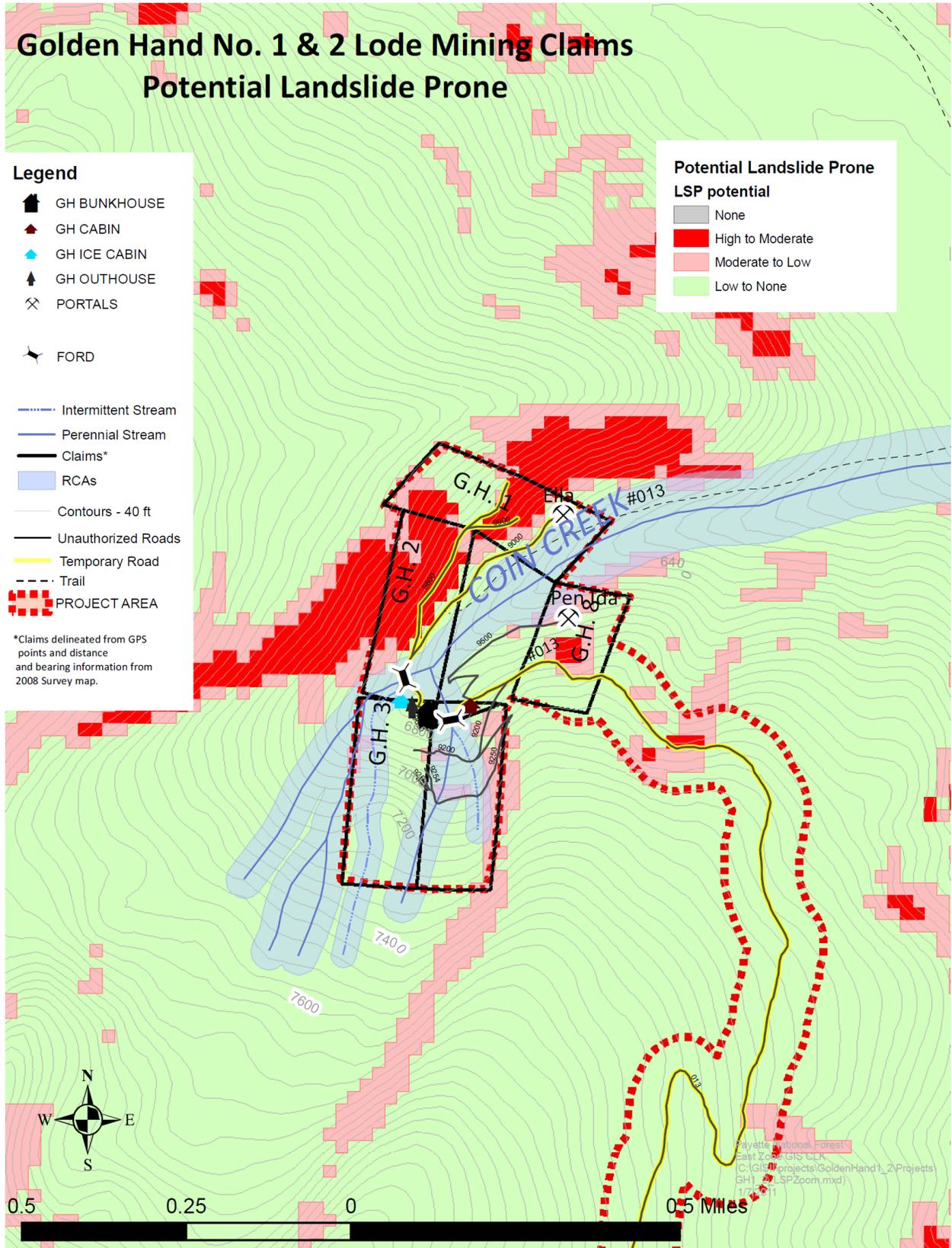


Figure 3-7. Potential Landslide Prone Areas in Golden Hand Area

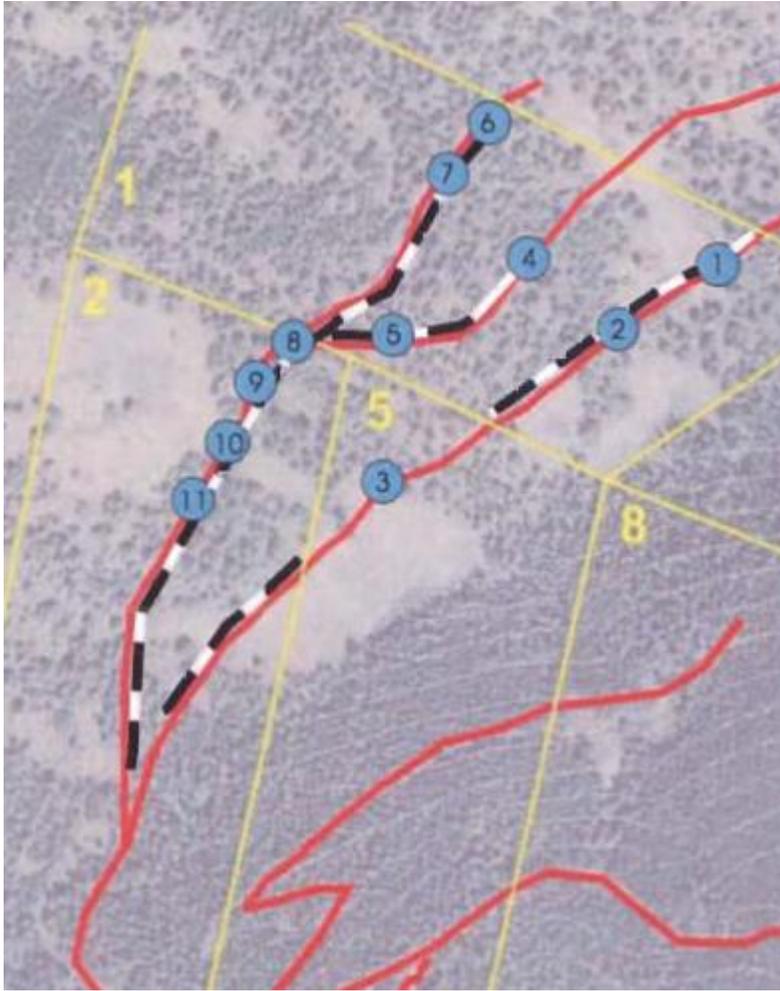


Figure 3-8. Aerial Photography View of Confirmation Activities On or Near SINMAP Modeled Landslide Prone Areas

Areas devoid of tree cover do exist in the analysis area (Figure 3-8). The bare areas are areas that have talus slopes, rocky outcrops and areas that are shallow to bedrock. Field evaluation indicated that the area mapped as having a moderate to high potential for landslide prone lacked the common characteristics found in such areas. Areas with deeper soils supported coniferous trees. The rooting strength of trees is a major factor in adding stability to slopes (USDA 2003, 2010). The areas without trees had shallow soil depth (Figure 3-8). Both areas have a high percentage (greater than 35 percent) of angular rock in the soil profile, which creates a higher internal angle of friction increasing soil stability.

3.5.1 Environmental Consequences Specific to Alternative A

This alternative does not propose any activities in the analysis area and therefore would have no direct or indirect effects on slope stability. The roads that traverse across the moderate to high probability of landslide prone would remain in place.

3.5.2 Environmental Consequences Specific to Alternative B and C

Eight drill pads would be constructed on temporary roads 503739800 and 503739900 that traverse land modeled as having a high to moderate potential as being landslide prone. Each drill pad site would widen the road from its existing width (about 8 feet) to about 20 feet to create a drill pad for the equipment to operate on. In addition a lined mud pit would be excavated from the road surface near the drill pad. Drill sites would be reclaimed after drilling was completed. Because these slopes did not exhibit all the elements

of landslide prone landscape the potential for mass movement is considered low. Saturation of the fill due to rain events could trigger minor slumps or channelized flow within the newly created road fill. To mitigate the potential occurrence of slumping, or channelized flow, the operator would be required to place silt fence using metal posts and having wire mesh backing the fabric below constructed drill pads. Disturbed areas would be restored to pre-disturbed dimensions, seeded, and/or mulched after drilling is completed. Overall Alternatives B and C would have no measurable or otherwise discernible impacts to slope stability or associated sedimentation from slope failures.

3.5.3 Cumulative Effects

The direct and indirect effects of any alternative on slope stability would be limited to the analysis area. Therefore the area used to assess cumulative effects consists of the area of modeled potential landslide prone north of Coin Creek within the FC-RONR Wilderness (Figure 3-7).

There are no past, present, ongoing, or foreseeable future projects that could affect slope stability within the analysis area. Reference **Appendix A** for additional project information and maps related to the cumulative effects analyses completed for this project.

Since all alternatives would have no measurable or discernible direct or indirect effects to slope stability and there are no past, present, ongoing, or foreseeable future projects that could affect slope stability within the analysis area, there would be no incremental or cumulative impacts.

3.6 Wildlife Resources

This section of the document discusses the existing conditions of the wildlife resources, as well as the effect of the various alternatives on those resources. Effects from proposed activities are analyzed at several scales depending on the extent of direct and indirect effects to each species. For most species the analysis area would be the 10,101 acre wildlife analysis area (Figure 3-9). The lone exception would be the Columbia spotted frog. Columbia spotted frog analysis area would be the project area (Figure 1-2).

Species considered in this analysis included all threatened, endangered, proposed, candidate, sensitive, management indicator species (MIS), any additional species under specific forest plan direction, and any species associated with Source Habitat Suites identified by the DEIS for Forest Plan Amendments Proposed to Facilitate Implementation of the 2011 Plan-Scale Wildlife Conservation Strategy (Phase 1: Forest Biological Community) (USDA 2011) as a species of concern. Focal species² to be analyzed were determined by the following rationale:

- The analysis area and Krassel Ranger District are outside the current and historic range for greater sage grouse, southern Idaho ground squirrel, and Columbian sharp-tailed grouse, which were accordingly eliminated from detailed analysis.
- White-headed woodpecker, American three-toed woodpecker, northern Idaho ground squirrel, flammulated owl, great gray owl, spotted bat, mountain quail, peregrine falcon, rocky mountain bighorn sheep, bald eagle, yellow-billed cuckoo, and common loon were eliminated from detailed analysis due to the lack of source habitat, lack of effects, and/or key habitat features within the analysis area.
- Source habitat for Family 4 (Early Seral and Lower Montane) consists of the stand initiation stages of subalpine, montane, lower montane, and riparian woodland communities (Wisdom et al. 2000). Source habitat occurs in Potential Vegetation Groups (PVG)s 1 through 6 (USDA 2011). Source habitat also occurs in shrub- and grassland communities Environmental Site Potentials (ESPs): Mountain and Wyoming Big Sagebrush, Montane Shrub. This habitat does not occur within the analysis area. As a result species associated with this family were eliminated from detailed analysis.
- Source habitats for Family 6 consists of montane and lower montane forests, riparian and upland woodlands, chokecherry-serviceberry-rose, mountain mahogany, and riparian shrublands (Wisdom et al 2000). Special habitat features include nectar-producing flowers and logs and talus. Source habitat includes curl leaf mountain mahogany woodland and montane foothill deciduous shrubland. With the exception of riparian habitats and brush fields, the Golden Hand Analysis Area does not provide source habitat for species in this family.
- The western bluebird is the sole member of Family 8 because its source habitat is a unique combination of woodlands, shrublands, grasslands, and early and late-seral forests (Wisdom et al 2000). Burned areas likely also provide source habitat. The juxtaposition of open areas and forests is a necessary component of source habitat. Snags less than 21 inches dbh are a special habitat feature and are used for nesting. Source habitat occurs in PVGs 1, 2, 3, 4, 5, and 6 and includes perennial grass slopes, perennial grass montane, montane shrub, mountain and Wyoming big sagebrush, and shrub-forest transition (Miller et al 2008). Within the Golden Hand analysis area, shrub and grassland types do not occur along south facing slopes and are not represented by the extensive grassland and shrub/sage communities used by species in this family (USDA 2011)
- Source habitat for Family 10 (Range Mosaic) consists of various shrub-, herb-, and woodlands (Wisdom et al. 2000). Many species in the family prefer open cover types with a high percentage of grass and forbs in the understory. Source habitat occurs in ESPs: Perennial Grass Montane, Low Sagebrush, Mountain and Wyoming Big Sagebrush. This habitat does not occur within the analysis area. As a result species associated with this family were eliminated from detailed analysis.

Boreal owl, fisher, northern goshawk, pileated woodpecker, Canada lynx, wolverine, gray wolf, mule deer, rocky mountain elk, Townsend's big-eared bat, and Columbia spotted frog have source habitat in the

² Focal species are those species selected during this analysis to represent other species within a source habitat family. The species were selected by evaluating the key environmental correlates and ecological functions associated with species in the family and selecting species representing those correlates and functions potentially affected by the action alternative(s).

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analysis area and project activities could impact individuals or habitat. Of this suite of species, boreal owl, pileated woodpecker, Canada lynx, gray wolf, Townsend's big-eared bat, and Columbia spotted frog were selected as focal species. The focal species were chosen because they represent an appropriate range of families having habitat present in the analysis area, have overlap of source habitat with eliminated species, and represent a range of habitats in the analysis area that species of the family utilize as source habitat. Fisher, northern goshawk, mule deer, and rocky mountain elk were eliminated from detailed discussion in this section as focal species, but analysis of these species are contained in the Wildlife Technical Report and Biological Evaluations for TEPC/S wildlife species in the project record. Wolverine is discussed in detail in this section due to high levels of interest in effects to this species and candidate status for listing as a threatened and endangered species. Table 3-5 displays all species considered, the species status, associated source habitat/family, and effects determination.

Table 3-5 Wildlife Species Considered, Species Status, and Associated Source Habitat Suite and Family.

Source Habitat Suite	Family #	Family Name	Species Considered in this Analysis	Species Status ¹	Selected Focal Species (Analyzed in Detail)	Effects Determination ³ for TES, R4 Sensitive and MIS Species for Alternative B and C.
Suite 1: Forest Only	1	Low Elevation, Old Forest	White-headed Woodpecker	S/MIS		NI
	2	Broad Elevation, Old Forest	American Three-toed Woodpecker	S		NI
			Boreal Owl	S	X	MI
			Fisher	S		MI
			Flammulated Owl	S		NI
			Great Gray Owl	S		NI
			Northern Goshawk	S		MI
			Pileated Woodpecker	MIS	X	MI
	3	Forest Mosaic	Canada Lynx	T	X	NLAA
			Mountain Quail	S		NI
			Wolverine	S/C		MI
	4	Early-seral and Lower Montane	None ²	--		--
	Suite 2: Combination of Forest and Rangeland	5	Forest and Range Mosaic	Gray Wolf	S	X
Mule Deer				--		-
Rocky Mountain Bighorn Sheep				S		NI
Rocky Mountain Elk				--		-
Peregrine Falcon				S		NI
6		Forests, Woodlands, and Montane Shrubs	None ²	NA		-
7		Forests, Woodlands, and Sagebrush	Spotted Bat	S		NI
			Townsend's Big-eared Bat	S	X	NI

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Source Habitat Suite	Family #	Family Name	Species Considered in this Analysis	Species Status ¹	Selected Focal Species (Analyzed in Detail)	Effects Determination ³ for TES, R4 Sensitive and MIS Species for Alternative B and C.
	8	Rangeland and Early and Late-seral Forests	None ²	NA		-
	9	Woodlands	None ²	NA		-
Suite 3: Rangeland Only	10	Range Mosaic	None ²	NA		-
	11	Sagebrush	Greater Sage Grouse	S		NI – Analysis area is not within the current and historic range for species.
	12	Grassland and Open-canopy Sagebrush	Northern Idaho Ground Squirrel	T		NE – No potential source habitat in the analysis area.
			Southern Idaho Ground Squirrel	S		NI – Analysis area is not within the current and historic range for species.
			Columbian Sharp-Tailed Grouse	S		NI – Analysis area is not within the current and historic range for species.
Suite 4: Riverine and Non-riverine Riparian and Wetland	13	Riverine Riparian and Wetland	Bald Eagle	S		NI –
			Columbia Spotted Frog	S	X	MI
			Yellow-Billed Cuckoo	S		NI
	14	Non-riverine riparian and wetland	Common Loon	S		NI

¹Species Status: C = candidate (USFWS 2012); E = endangered (USFWS 2012); MIS = Forest Plan management indicator species (Forest Plan Appendix E); S = sensitive (USDA 2011); and T = threatened (USFWS 2012).

²None = no species identified because habitat is not present, or if present, would not be affected by the action alternative(s).

³NI = No Impact, NE = No Effect, NLAA = May Affect, Not Likely to Adversely Affect, MI = May Impact Individuals but is not likely to cause a trend to federal listing.

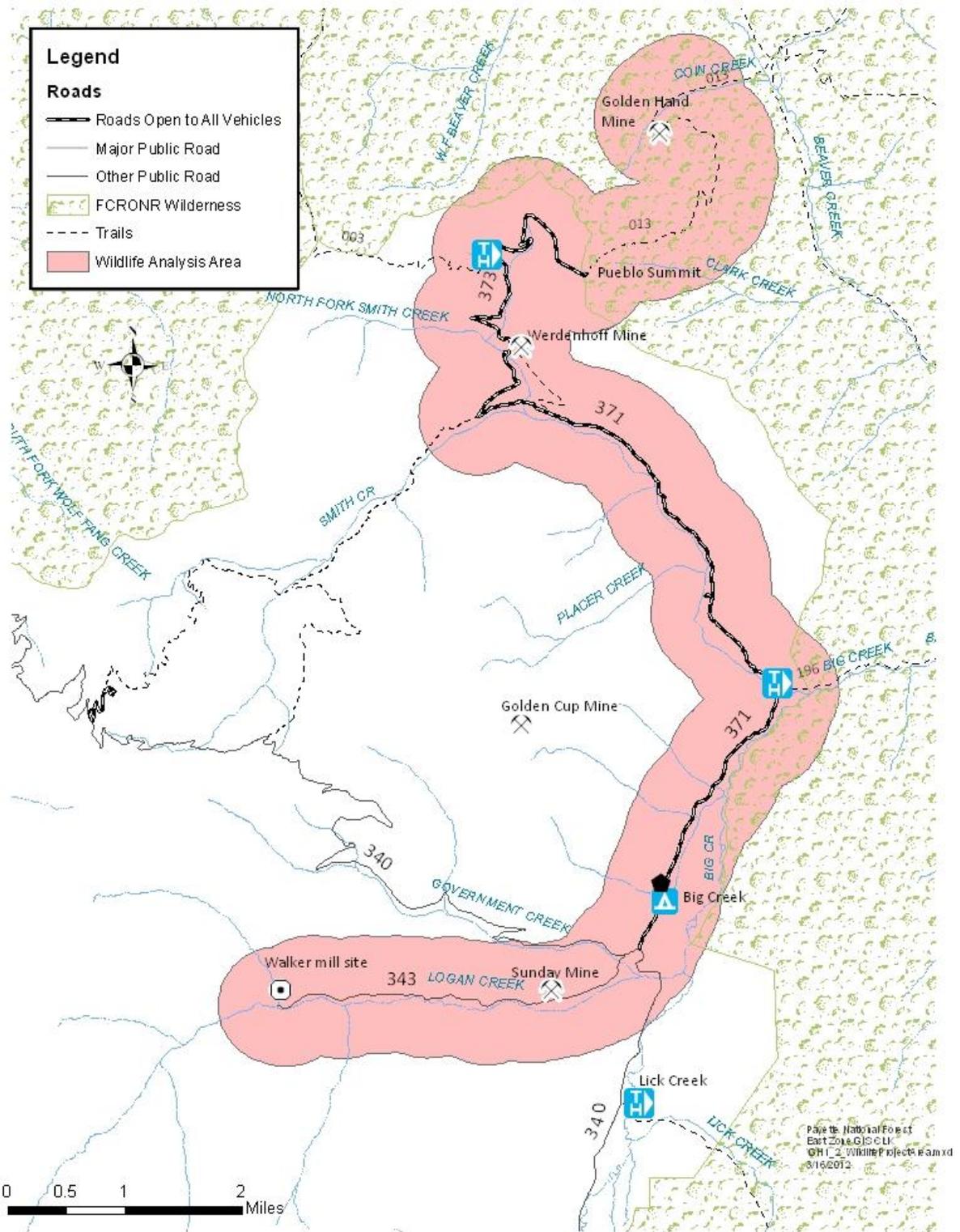


Figure 3-9 Wildlife Analysis Area

3.6.1 Boreal Owl (R4 Sensitive Species)

Source habitat for boreal owls includes old forest and unmanaged young forest stages of subalpine and montane forests and riparian woodlands (Wisdom et al 2000). Specific cover types and structural stages that provide source habitat are the old forest multi-story stages of Engelmann spruce/subalpine fir, and aspen; and the old forest single and multi-story stages of interior Douglas-fir, western larch, and lodgepole pine. Unmanaged young forest stages of all these cover types and of grand fir also serve as source habitats if suitable large diameter snags are present. Source habitats typically support abundant lichens and fungal sporocarps which provide important foods for southern red-backed voles, the principal prey of boreal owls (Hayward 1994).

On the Payette National Forest, vegetative communities that could provide source habitat conditions include PVGs 3, 4, 7, 8, 9, and 11 (Egnew et al 2010 and Hergenrider 2009). In Idaho, occupied forests are generally located at or above 5,000 feet in elevation. Compared to historic conditions, source habitat has decreased from ≥ 20 to < 60 percent (USDA 2011). The elevation of the analysis area is approximately from 6,000 feet to 8300 feet and no sightings have been documented in the past.

3.6.1.1 Environmental Consequences Specific to Alternative A

This Alternative would have no direct or indirect effect and therefore no cumulative effects on boreal owl or its habitat.

3.6.1.2 Environmental Consequences Common to Alternative B

In comparison to Alternative A (No Action), Alternative B would increase levels of noise disturbance to source habitat for this species in the temporary term. Actual ground disturbing activities would occupy a very small area. Ground disturbing activities would occur on previously disturbed ground – on existing road beds or otherwise disturbed areas composed of colder subalpine fir and Douglas-fir habitat types including lodgepole pine, subalpine fir, Douglas-fir, and Engelmann spruce tree species. These on-the-ground disturbances would occur in source habitat. Project activities may remove or move individual or small groups of trees or snags, but would have no meaningful change to the condition of the vegetation when viewed at the stand or activity area. Hence, the condition and amount of source habitat would not change, including nesting habitat (Section 2.4.4).

Noise from project activities could cause displacement of boreal owl. Project activities such as core drilling and road actions could create some temporary noise disturbance on any given day and this disturbance is expected to occur over an approximate 4 month period for three years. Boreal owl habitat in the analysis area is abundant and any individuals present during project activities may be displaced in the temporary term but would be expected to return upon completion of the seasonal project activities.

3.6.1.3 Environmental Consequences Common to Alternative C

In comparison to Alternative A (No Action), Alternative C would increase levels of noise disturbance to source habitat for this species in the temporary term, but to a lesser extent than Alternative B. This slight decrease in disturbance from Alternative C is due to the approximate reduction of 200 authorized annual trips into the FC-RONR Wilderness.

All other effects are the same as Alternative B (Section 3.6.1.2).

3.6.1.4 Cumulative Effects

The direct and indirect effects of any alternative on boreal owl would primarily be limited to the analysis area. Therefore the area used to assess cumulative effects consists of the 10,101 acre analysis area (Figure 3-9).

Past activities include the original development of the Werdenhoff Millsite, which is addressed in the existing condition and analysis of alternatives. The Sunday Mine occurs in the analysis area and could have impacted trees or snags through past disturbance. While covered in the existing condition, many wildfires have occurred in the past and have altered vegetative composition.

There are several ongoing activities that could affect trees or snags and disturbance in the analysis area. The Walker Millsite occurs in the analysis area. The mine site potentially affects trees or snags through clearing and maintenance activities along with the associated noise. Firewood harvest occurs annually along roads randomly removing trees or snags and creating noise. Private lands, especially around Edwardsburg, continue to be developed annually to various degrees potentially affecting trees or snags and having associated noise disturbance. The Big Creek Lodge, Big Creek Guard Station, Big Creek Airstrip, and Big Creek Campground would continue to operate on an annual basis and receive maintenance. Private timber harvest, mostly for personal use, would likely continue in an ongoing fashion at unknown levels. Ongoing road and trail maintenance would continue and potentially affect roadside trees and generate noise. District and FC-RONR Wilderness weed management programs would continue to eradicate populations of noxious weeds in the analysis area usually through motorized access to the wilderness boundary. And, motorized activities associated with recreational activities, lodges, hunting, fishing, trapping, tribal endeavors, and other activities that require motorized access would continue in the analysis area. Reference **Appendix A** for additional project information and maps related to the cumulative effects analyses completed for this project.

The Big Creek Fuels Reduction Project occurs partially within the analysis area and represents a reasonably foreseeable project. Currently, this project is in the planning stages. A range of thinning and motorized activities could impact trees or snags; however, specifics are not currently available.

Alternative A would not result in any direct, indirect, or cumulative effects.

Alternative B and C in combination with ongoing and foreseeable future activities could incrementally increase the number of individual trees or snags felled and/or removed. However, at the stand or activity area there would likely be no meaningful change. Alternative B and C in combination with ongoing activities could incrementally add to the disturbance of boreal owls, if present. However these incremental effects would be limited to the temporary term and owls would be expected to return upon completion of the seasonal project activities. Alternative B and C may impact individuals but would not likely contribute to a trend toward Federal Listing or cause a loss of viability to the population or species

3.6.2 Pileated Woodpecker (Management Indicator Species)

Pileated woodpeckers occupy dense deciduous, coniferous, or mixed forests, open woodlands, second growth forests, and parks and wooded residential areas of towns (NatureServe 2008). The species prefers habitats with tall closed canopies and high basal areas. General characteristics of habitat provide opportunities for nesting, roosting, and foraging, and include the presence of large diameter trees and snags, multiple canopy layers, decaying wood on the forest floor, and a somewhat moist environment that promotes fungal decay, and ant, termite, and beetle populations to forage upon (NatureServe 2008). Source habitats for pileated woodpeckers are typically late-seral stages of subalpine and montane community types.

On the Payette National Forest, vegetative communities that could provide source habitat conditions include PVGs 2, 3, 5, 6, 8, and 9 (Egnew et al 2009). Some PVGs are capable of providing source

habitat conditions under historical fire regimes while others do so because of altered fire regimes. Special habitat features for pileated woodpecker include large diameter (>21 inch dbh) snags and hollow live trees for nesting and roosting, and large standing dead and downed trees for foraging (USDA 2011).

Within the 10,101 acre analysis area, roughly 2,432 acres are considered source habitat.

Four pileated woodpecker sightings have been documented within the analysis area. A management indicator species (MIS) monitoring transect occurs within the analysis area along FR 371 (Big Creek-Smith Creek Rd.). The transects were monitored from 2004 through 2009 and pileated woodpeckers were detected along this route during monitoring surveys. Two were detected on survey in 2005 and two more were detected on survey in 2008 (NRM NRIS Wildlife Database 2010).

3.6.2.1 Environmental Consequences Specific to Alternative A

This Alternative would have no direct or indirect effect and therefore no cumulative effects on pileated woodpecker or its habitat.

3.6.2.2 Environmental Consequences Common to Alternative B

Forest-wide, pileated woodpecker habitat is widespread and increasing (USDA 2011). Proposed activities may affect 2,432 acres of existing source habitat under this Alternative and the potential for loss of nest trees or for disturbance at an active nest site could be possible, but unlikely due to project design features for the project (Section 2.4.4). Ground disturbing activities would occur on previously disturbed ground – on existing road beds or otherwise disturbed areas composed of colder subalpine fir and Douglas-fir habitat types including lodgepole pine, subalpine fir, Douglas-fir, and Engelmann spruce tree species. These on-the-ground disturbances would occur in source habitat. Project activities may remove or move individual or small groups of trees, Coarse Woody Debris (CWD), or snags, but would have no meaningful change to the condition of the vegetation when viewed at the stand or activity area. Hence, the condition and amount of source habitat would not change, including nesting habitat (Section 2.4.4).

Noise from project activities could cause displacement of pileated woodpecker. Project activities such as core drilling and road actions could create some temporary noise disturbance on any given day and this disturbance is expected to occur over an approximate 4 month period for three years. Pileated woodpecker habitat in the analysis area is abundant and any individuals present during project activities may be displaced in the temporary term but would be expected to return upon completion of the seasonal project activities.

3.6.2.3 Environmental Consequences Common to Alternative C

In comparison to Alternative A (No Action), Alternative C would increase levels of noise disturbance to source habitat for this species in the temporary term, but to a lesser extent than Alternative B. This slight decrease in disturbance from Alternative C is due to the approximate reduction of 200 authorized annual trips into the FC-RONR Wilderness.

All other effects are the same as Alternative B (Section 3.6.2.2).

3.6.2.4 Cumulative Effects

The direct and indirect effects of any alternative on pileated woodpecker would primarily be limited to the analysis area. Therefore the area used to assess cumulative effects consists of the 10,101 acre analysis area (Figure 3-9).

Past activities include the original development of the Werdenhoff Millsite, which is addressed in the existing condition and analysis of alternatives. The Sunday Mine occurs in the analysis area and could have impacted trees, CWD, or snags through past disturbance. While covered in the existing

condition, many wildfires have occurred in the past and have altered vegetative composition.

There are several ongoing activities that could affect trees, CWD, or snags and disturbance in the analysis area. The Walker Millsite occurs in the analysis area. The mine site potentially affects trees, CWD, or snags through clearing and maintenance activities along with the associated noise. Firewood harvest occurs annually along roads randomly removing trees, CWD, or snags and creating noise. Private lands, especially around Edwardsburg, continue to be developed annually to various degrees potentially affecting trees, CWD, or snags and having associated noise disturbance. The Big Creek Lodge, Big Creek Guard Station, Big Creek Airstrip, and Big Creek Campground would continue to operate on an annual basis and receive maintenance. Private timber harvest, mostly for personal use, would likely continue in an ongoing fashion at unknown levels. Ongoing road and trail maintenance would continue and potentially affect roadside trees/CWD and generate noise. District and FC-RONR Wilderness weed management programs would continue to eradicate populations of noxious weeds in the analysis area usually through motorized access to the wilderness boundary. And, motorized activities associated with recreational activities, lodges, hunting, fishing, trapping, tribal endeavors, and other activities that require motorized access would continue in the analysis area. Reference **Appendix A** for additional project information and maps related to the cumulative effects analyses completed for this project.

The Big Creek Fuels Reduction Project occurs partially within the analysis area and represents a reasonably foreseeable project. Currently, this project is in the planning stages. A range of thinning and motorized activities could impact trees, CWD, or snags; however, specifics are not currently available.

Alternative A would not result in any direct, indirect, or cumulative effects.

Alternative B and C in combination with ongoing and foreseeable future activities could incrementally increase the number of individual trees, CWD, or snags felled and/or removed. However, at the activity area or stand there would likely be no meaningful change. Alternative B and C in combination with ongoing activities could incrementally add to the disturbance of pileated woodpeckers, if present. However these incremental effects would be limited to the temporary term and pileated woodpeckers would be expected to return upon completion of the seasonal project activities.

3.6.3 Canada Lynx (Threatened)

Lynx are typically associated with large tracts of higher elevation boreal or coniferous forest that is often interspersed with rock outcrops, bogs and thickets. In Idaho, Canada lynx typically inhabit montane and subalpine coniferous forests above 4,000 feet (McKelvey et al 2000; Ruediger et al 2000). In central Idaho, primary habitat has been identified as lodgepole pine, subalpine fir, and Engelmann spruce habitat types (Ruediger et al 2000).

On the Payette National Forest, vegetative communities that could provide source habitat conditions include PVGs 3, 7, 8, 9, 10, and 11 (Hergenrider 2009). Down logs and root wads are a special habitat feature for lynx (Wisdom et al 2000; Ruggiero et al 1999; Koehler 1990) and provide important natal and maternal denning sites.

The Golden Hand Analysis Area occurs within the both the 60,156 acre Beaver Gold LAU and the 61,611 acre Upper Big Creek LAU (Figure 1-4 in Resource Specialist Report). Source habitat in the combined LAUs is currently at 120,092 acres. Approximately 5,473 acres of source habitat are currently in suitable condition within the Golden Hand Analysis Area.

Within the 10,101 acre analysis area, roughly 6,649 acres are considered source habitat capacity while 5,473 acres exhibit source habitat conditions. Due to this species' very large average home range size, the analysis area could provide a small portion of a single home range. Source habitat within the analysis area is fairly continuous, and dominated by patches with good connectivity between patches. Total existing tons/acre of coarse woody debris (i.e. downed logs) are generally at or below desired

ranges for the PVGs that make up source habitat capacity. Project activities would not require or permit removal of logs and coarse woody debris in the analysis area in order to preserve and promote those habitat attributes that constitute Canada lynx denning habitat.

The most recent recorded lynx observation on the PNF was a sighting of probable lynx tracks during an aerial survey for wolverine tracks in 2009 in Chamberlain Basin approximately 12 miles north and east of the analysis area. Prior to that, several lynx were observed between 1984 and 1988 in the same vicinity north and northeast of the analysis area (Terra Burns 1988). Many, but not all, of these observations were by persons with good qualifications at identification. Given that lynx have been sighted very infrequently on the Forest and no sightings have occurred near the analysis area, it is believed unlikely that resident lynx occur in the vicinity of the analysis area.

3.6.3.1 Environmental Consequences Specific to Alternative A

This Alternative would have no direct or indirect and therefore no cumulative effects on Canada lynx or its habitat.

3.6.3.2 Environmental Consequences Common to Alternative B

Actual ground disturbing activities would occupy a very small area. Ground disturbing activities would occur on previously disturbed ground – on existing road beds or otherwise disturbed areas composed of colder subalpine fir and Douglas-fir habitat types including lodgepole pine, subalpine fir, Douglas-fir, and Engelmann spruce tree species. Most of these on-the-ground disturbances would occur in source habitat, some of which is unsuited due to fires or other vegetative conditions. Project activities may remove or move individual or small groups of trees, CWD, or snags, but would have no meaningful change to the condition of the vegetation when viewed at the stand or activity area. Hence, the condition and amount of source habitat in the analysis area and LAU would not change, including denning habitat.

The amount of suitable lynx habitat that could be disturbed by the project is extremely small and inconsequential when considered in the context of the LAU and the average lynx home range size.

Noise from project activities is highly unlikely to cause displacement of lynx, in part because noise would be intermittent and temporary and because there are no known locations of lynx in or near the project area. Project activities such as core drilling and road actions would create some temporary noise disturbance on any given day and this disturbance is expected to occur over an approximate 4 month period for three years.

3.6.3.3 Environmental Consequences Common to Alternative C

In comparison to Alternative A (No Action), Alternative C would increase levels of noise disturbance to source habitat for this species in the temporary term, but to a lesser extent than Alternative B. This slight decrease in disturbance from Alternative C is due to the approximate reduction of 200 authorized annual trips into the FC-RONR Wilderness.

All other effects are the same as Alternative B (Section 3.6.3.2).

3.6.3.4 Cumulative Effects

The direct and indirect effects of any alternative Canada lynx would primarily be limited to the analysis area. Therefore the area used to assess cumulative effects consists of the 10,101 acre analysis area (Figure 3-9).

Past activities include the original development of the Werdenhoff Millsite, which is addressed in the existing condition and analysis of alternatives. The Sunday Mine occurs in the analysis area and

could have impacted trees, CWD, or snags through past disturbance. While covered in the existing condition, many wildfires have occurred in the past and have altered vegetative composition.

There are several ongoing activities that could affect trees, CWD, or snags and disturbance in the analysis area. The Walker Millsite occurs in the analysis area. The mine site potentially affects trees, CWD, or snags through clearing and maintenance activities along with the associated noise. Firewood harvest occurs annually along roads randomly removing trees, CWD, or snags and creating noise. Private lands, especially around Edwardsburg, continue to be developed annually to various degrees potentially affecting trees, CWD, or snags and having associated noise disturbance. The Big Creek Lodge, Big Creek Guard Station, Big Creek Airstrip, and Big Creek Campground would continue to operate on an annual basis and receive maintenance. Private timber harvest, mostly for personal use, would likely continue in an ongoing fashion at unknown levels. Ongoing road and trail maintenance would continue and potentially affect roadside trees/CWD and generate noise. District and FC-RONR Wilderness weed management programs would continue to eradicate populations of noxious weeds in the analysis area usually through motorized access to the wilderness boundary. And, motorized activities associated with recreational activities, lodges, hunting, fishing, trapping, tribal endeavors, and other activities that require motorized access would continue in the analysis area. Reference **Appendix A** for additional project information and maps related to the cumulative effects analyses completed for this project.

The Big Creek Fuels Reduction Project occurs partially within the analysis area and represents a reasonably foreseeable project. Currently, this project is in the planning stages. A range of thinning and motorized activities could impact trees, CWD, or snags; however, specifics are not currently available.

Alternative A would not result in any direct, indirect, or cumulative effects.

Alternative B and C in combination with ongoing and foreseeable future activities could incrementally increase the number of individual trees, CWD, or snags felled and/or removed. However, at the stand or activity area there would likely be no meaningful change. Alternative B and C in combination with ongoing activities could incrementally add to the disturbance of Canada lynx, if present. However, as discussed, it is believed unlikely that lynx occupy the habitat in the analysis area. Alternative B and C may affect, but is not likely to adversely affect Canada Lynx.

3.6.4 Gray Wolf (R4 Sensitive Species)

Gray wolves utilize a wide array of forested and non-forested habitats and are considered a habitat generalist. They have large home ranges and make seasonal movements in pursuit of their primary prey (ungulates). Human factors have been the greatest source of documented mortality for wolves in Idaho (Nadeau et al 2009). Roads, trails, and their associated human use and development increase the potential for human-wolf conflict as does the presence of livestock (USDA 2011). They persist in most habitats that contain sufficient big-game (moose, elk, and deer) populations that are able to support their prey needs.

On the Payette National Forest, vegetative communities that could provide source habitat conditions include all forest, woodland, and non-forested vegetation types. All structural conditions are utilized (Nutt 2008). Key features of habitat include sufficient ungulate prey and limited human conflict.

The entire Golden Hand Analysis Area would be considered source habitat for this species.

3.6.4.1 Environmental Consequences Specific to Alternative A

This Alternative would have no direct or indirect effect on wolves or their habitat.

3.6.4.2 Environmental Consequences Common to Alternative B

Human disturbance is a key factor in the persistence of wolves within source habitat. Road density is the primary source of disturbance and can negatively affect the quality of wolf source habitat and result in human-cause disturbance or mortality. While noise disturbance would occur within the entire project analysis area and there is the potential for disturbance throughout the implementation period, activities would not occur within the critical denning period when young are immobile between March and early May (USDI 2007) as snow levels would prevent road access. This Alternative may have direct effects, through disturbance, on wolves should they be present during project activities within the analysis area. Wolves may be displaced temporarily by disturbance but would be expected to return to the area once the disturbance has stopped.

Project activities may remove individual or small groups of trees, CWD, or snags, but would not change the condition of the vegetation when viewed at the stand or activity area and therefore the amount of habitat in the analysis area.

3.6.4.3 Environmental Consequences Common to Alternative C

In comparison to Alternative A (No Action), Alternative C would increase levels of noise disturbance to source habitat for this species in the temporary term, but to a lesser extent than Alternative B. This slight decrease in disturbance from Alternative C is due to the approximate reduction of 200 authorized annual trips into the FC-RONR Wilderness.

All other effects are the same as Alternative B (Section 3.6.4.2).

3.6.4.4 Cumulative Effects

The direct and indirect effects of any alternative on gray wolf would primarily be limited to the analysis area. Therefore the area used to assess cumulative effects consists of the 10,101 acre analysis area (Figure 3-9).

Past activities include the original development of the Werdenhoff Millsite, which is addressed in the existing condition and analysis of alternatives. The Sunday Mine occurs in the analysis area and could have impacted trees, CWD, or snags through past disturbance. While covered in the existing condition, many wildfires have occurred in the past and have altered vegetative composition.

There are several ongoing activities that could affect trees, CWD, or snags and disturbance in the analysis area. The Walker Millsite occurs in the analysis area. The mine site potentially affects trees, CWD, or snags through clearing and maintenance activities along with the associated noise. Firewood harvest occurs annually along roads randomly removing trees, CWD, or snags and creating noise. Private lands, especially around Edwardsburg, continue to be developed annually to various degrees potentially affecting trees, CWD, or snags and having associated noise disturbance. The Big Creek Lodge, Big Creek Guard Station, Big Creek Airstrip, and Big Creek Campground would continue to operate on an annual basis and receive maintenance. Private timber harvest, mostly for personal use, would likely continue in an ongoing fashion at unknown levels. Ongoing road and trail maintenance would continue and potentially affect roadside trees/CWD and generate noise. District and FC-RONR Wilderness weed management programs would continue to eradicate populations of noxious weeds in the analysis area usually through motorized access to the wilderness boundary. And, motorized activities associated with recreational activities, lodges, hunting, fishing, trapping, tribal endeavors, and other activities that require motorized access would continue in the analysis area. Reference **Appendix A** for additional project information and maps related to the cumulative effects analyses completed for this project.

The Big Creek Fuels Reduction Project occurs partially within the analysis area and represents a reasonably foreseeable project. Currently, this project is in the planning stages. A range of thinning and motorized activities could impact trees, CWD, or snags; however, specifics are not currently available.

Alternative A would not result in any direct, indirect, or cumulative effects.

Alternative B and C in combination with ongoing and foreseeable future activities could incrementally increase the number of individual trees, CWD, or snags felled and/or removed. However, at the stand or activity area there would likely be no meaningful change. Alternative B and C in combination with ongoing activities could incrementally add to the disturbance of wolves, if present. However these incremental effects would be limited to the temporary term and wolves would be expected to return upon completion of the seasonal project activities. Alternative B and C may impact individuals but would not likely contribute to a trend toward Federal Listing or cause a loss of viability to the population or species.

3.6.5 Townsend's Big-Eared Bat (R4 Sensitive Species)

The Townsend's big-eared bat is a year-round resident of the Interior Columbia River Basin and is considered a forest generalist within the subalpine, montane, upland woodland, and riparian woodland community groups (Wisdom et al 2000). This species uses caves, mines, and buildings for roosting where they aggregate in large colonies. Townsend's big-eared bats forage for moths in sagebrush, bitterbrush, and open ponderosa pine forests. The distribution of this species is patchy due to their specialized roosting requirements. Primary threats are related to human disturbance and loss of roost sites and hibernacula (USDA 2011).

On the Payette National Forest, vegetative communities that could provide source habitat conditions include PVGs 1, 2, 3, 4, 5, 6, and 7 and non-forest vegetation types including low sagebrush, mountain and Wyoming big sagebrush, montane shrub, and shrub-forest transition (Geier-Hayes and Nutt 2008). These types provide source habitat when located within the maximum foraging distance (15 miles) of roost locations (i.e. caves, mines, and other suitable structures). The Ella is currently caved and does not provide habitat. There is suitable roost sites (i.e. caves, mines, and other suitable structures) within the analysis area. Mine adits located in the analysis area were found to have bats present; however, Townsend's big-eared bats were not directly identified during the surveys in the analysis area. The nearest sightings were over 10 miles from the roosting habitat located in the analysis area.

3.6.5.1 Environmental Consequences Specific to Alternative A

This Alternative would have no direct or indirect effect on Townsend's big-eared bat or their habitat and therefore no cumulative effect.

3.6.5.2 Environmental Consequences Common to Alternative B

Source habitat for Townsend's big-eared bat occurs throughout the analysis area and includes potential roosts in adits. Actual ground disturbing activities would occupy a very small area. Ground disturbing activities would occur on previously disturbed ground – on existing road beds or otherwise disturbed areas composed of colder subalpine fir and Douglas-fir habitat types including lodgepole pine, subalpine fir, Douglas-fir, and Engelmann spruce tree species. Most of these on-the-ground disturbances would occur in source habitat. Project activities may remove or move individual or small groups of trees, CWD, or snags, but would have no meaningful change to the condition of the vegetation when viewed at the stand or activity area. Hence, the condition and amount of source habitat would not change. Roosting habitat would not be affected by project activities. Since project design features (Section 2.4.2.2 and Section 2.4.4) would exclude entry and colonization of bats, Alternative B would not create or provide any roosting habitat at the Ella.

Noise from project activities could cause displacement of Townsend's big-eared bat. Project activities such as core drilling and road actions could create some temporary noise disturbance on any given day and this disturbance is expected to occur over an approximate 4 month period for three years. Townsend's big-eared bat habitat in the analysis area is abundant and any individuals present during project activities may be displaced in the temporary term but would be expected to

return upon completion of the seasonal project activities.

3.6.5.3 Environmental Consequences Common to Alternative C

In comparison to Alternative A (No Action), Alternative C would increase levels of noise disturbance to source habitat for this species in the temporary term, but to a lesser extent than Alternative B. This slight decrease in disturbance from Alternative C is due to the approximate reduction of 200 authorized annual trips into the FC-RONR Wilderness.

All other effects are the same as Alternative B (Section 3.6.5.2).

3.6.5.4 Cumulative Effects

The direct and indirect effects of any alternative on Townsend's Big-eared bat would primarily be limited to the analysis area. Therefore the area used to assess cumulative effects consists of the 10,101 acre analysis area (Figure 3-9).

Past activities include the original development of the Werdenhoff Millsite, which is addressed in the existing condition and analysis of alternatives. The Sunday Mine occurs in the analysis area and could have impacted trees or snags through past disturbance. While covered in the existing condition, many wildfires have occurred in the past and have altered vegetative composition.

There are several ongoing activities that could affect trees or snags and disturbance in the analysis area. The Walker Millsite occurs in the analysis area. The mine site potentially affects trees or snags through clearing and maintenance activities along with the associated noise. Firewood harvest occurs annually along roads randomly removing trees or snags and creating noise. Private lands, especially around Edwardsburg, continue to be developed annually to various degrees potentially affecting trees or snags and having associated noise disturbance. The Big Creek Lodge, Big Creek Guard Station, Big Creek Airstrip, and Big Creek Campground would continue to operate on an annual basis and receive maintenance. Private timber harvest, mostly for personal use, would likely continue in an ongoing fashion at unknown levels. Ongoing road and trail maintenance would continue and potentially affect roadside trees and generate noise. District and FC-RONR Wilderness weed management programs would continue to eradicate populations of noxious weeds in the analysis area usually through motorized access to the wilderness boundary. And, motorized activities associated with recreational activities, lodges, hunting, fishing, trapping, tribal endeavors, and other activities that require motorized access would continue in the analysis area. Reference **Appendix A** for additional project information and maps related to the cumulative effects analyses completed for this project.

The Big Creek Fuels Reduction Project occurs partially within the analysis area and represents a reasonably foreseeable project. Currently, this project is in the planning stages. A range of thinning and motorized activities could impact trees or snags; however, specifics are not currently available.

Alternative A would not result in any direct, indirect, or cumulative effects.

Alternative B and C in combination with ongoing and foreseeable future activities could incrementally increase the number of individual trees or snags felled and/or removed. However, at the stand or activity area there would likely be no meaningful change. Alternative B and C in combination with ongoing activities could incrementally add to the disturbance of Townsend's big-eared bat, if present. However these incremental effects would be limited to the temporary term and Townsend's big-eared bat would be expected to return upon completion of the seasonal project activities. Since Alternatives B and C would have no direct or indirect effect to roosting habitat, Alternative B and C would have no cumulative effect to roosting habitat. Alternative B and C may impact individuals but would not likely contribute to a trend toward Federal Listing or cause a loss of viability to the population or species.

3.6.6 Columbia Spotted Frog (R4 Sensitive Species)

Columbia spotted frogs are aquatic and typically occur in or near permanent bodies of water such as lakes, ponds, slow moving streams, and marshes. The frogs generally occur along the marshy edges of such sites where emergent vegetation (e.g. grasses, sedges, cattails, etc.) is fairly thick and where there is an ample amount of dead and decaying vegetation. Some occupied sites may also have a layer of algae or small vegetation (e.g. duckweed) on the surface of the water. During summer months, they may travel away from breeding sites, but are still typically associated with aquatic sites with vegetated margins (Gomez 1994). Occupied aquatic sites may be surrounded by a wide variety of terrestrial vegetation including mixed coniferous and subalpine forests, grasslands, and shrub-steppe communities. Key features of source habitat for the Columbia spotted frog include the aquatic site itself, its banks and streambank vegetation, and the conditions of the surrounding uplands.

Source habitat for this species includes overwintering, breeding, and post-breeding habitat, all of which could be associated with slow-moving portions of creeks that occur in the analysis area.

No sightings have been documented within the analysis area.

3.6.6.1 Environmental Consequences Specific to Alternative A

This Alternative would have no direct or indirect effect on Columbia spotted frog or their habitat and therefore no cumulative effect.

3.6.6.2 Environmental Consequences Common to Alternative B

Installing a box culvert/steel arch pipe, activities at fords, and water withdrawal at Coin Creek under this Alternative have the potential to impact this species or its habitat if such activities occur in the vicinity of standing water. Modification of habitat would not be expected to result in any temporary or long term impacts because the habitat would remain suitable after installation of the stream crossing structure is completed or water withdrawal is complete. Activities such as fording and armoring of fords would measurably alter habitat (Section 2.4.4). More importantly, activities at fords and water withdrawal from Coin Creek could disturb, displace, or even lead to mortality if individuals happen to be present during the activity. However, spotted frogs are quite mobile and would likely be able to move away from equipment if threatened (USDA 2011). Furthermore the slow moving water that provides source habitat is generally lacking within the analysis area and limits the areas where frogs would likely occupy. While these potential impacts could be substantial for individual frogs, even causing mortality, the overall impact to the species is expected to be minimal due to the small amount of area where water would be removed from streams, stream structures would be installed, and activities at fords and the corresponding small number of frogs potentially present in these areas.

3.6.6.3 Environmental Consequences Common to Alternative C

In comparison to Alternative A (No Action), Alternative C would increase levels of disturbance and potential impacts to individuals, but to a lesser extent than Alternative B. Alternative C would authorize approximately 200 less trips per year within the FC-RONR Wilderness and therefore likely result in fewer crossings of the two fords located within the FC-RONR Wilderness.

All other effects are the same as Alternative B (Section 3.6.6.2).

3.6.6.4 Cumulative Effects

The direct and indirect effects of any alternative on Columbia spotted frog would be limited to the project area. Therefore the area used to assess cumulative effects consists of the 1,308 acre project area (Figure 1-2).

Past activities include the original development of the Werdenhoff Millsite, which is addressed in the existing condition and analysis of alternatives. The Sunday Mine occurs in the analysis area and could have impacted individuals through past disturbance.

There are several ongoing activities that could affect trees or snags and disturbance in the analysis area. The Walker Millsite occurs in the analysis area. The mine site potentially affects habitat and individuals through clearing and maintenance activities along with the associated noise. Firewood harvest occurs annually along roads randomly removing trees or snags, creating noise, and crossing fords. Private lands, especially around Edwardsburg, continue to be developed annually to various degrees potentially affecting habitat or individuals. The Big Creek Lodge, Big Creek Guard Station, Big Creek Airstrip, and Big Creek Campground would continue to operate on an annual basis and receive maintenance. Private timber harvest, mostly for personal use, would likely continue in an ongoing fashion at unknown levels. Ongoing road and trail maintenance would continue and potentially affect habitat and individuals at stream crossings. District and FC-RONR Wilderness weed management programs would continue to eradicate populations of noxious weeds in the analysis area usually through motorized access to the wilderness boundary. And, motorized activities associated with recreational activities, lodges, hunting, fishing, trapping, tribal endeavors, and other activities that require motorized access would continue in the analysis area. Reference **Appendix A** for additional project information and maps related to the cumulative effects analyses completed for this project.

The Big Creek Fuels Reduction Project occurs partially within the analysis area and represents a reasonably foreseeable project. Currently, this project is in the planning stages. A range of thinning and motorized activities could impact trees or snags; however, specifics are not currently available.

Alternative A would not result in any direct, indirect, or cumulative effects.

Alternative B and C in combination with ongoing and foreseeable future activities could incrementally increase the amount of disturbance at fords and possibly further impact individual Columbia spotted frogs if present. However these incremental effects would most likely be limited to the temporary term and result in temporary displacement. While these potential cumulative impacts could be substantial for individual frogs, even causing mortality, the overall impact to the species is expected to be minimal due to the small amount of area where water would be removed from streams, stream structures would be installed, and activities at fords and the corresponding small number of frogs potentially present in these areas. Alternative B and C may impact individuals but would not likely contribute to a trend toward Federal Listing or cause a loss of viability to the population or species.

3.6.7 Wolverine (R4 Sensitive Species and Candidate)

Habitat for wolverine includes alpine tundra and subalpine and montane forests. Within forest types, all structural stages except the closed canopy stem exclusion stage provide source habitat (Wisdom et al 2000). Primary habitat during winter is mid-elevation conifer forest, while summer habitat is subalpine areas associated with high-elevation cirques (Copeland 1996). Summer use of high-elevation habitats is related to the availability of prey and den sites and possibly human avoidance. Lower elevation forests likely contain the greatest amount of ungulate carrion in winter (Copeland 1996).

Spring snow cover (April 15 to May 14) is the best overall predictor of wolverine occurrence (Aubrey et al 2007). Snow cover during the denning period is essential for successful wolverine reproduction range-wide (Magoun and Copeland 1998; Inman et al 2007c). Wolverine dens tend to be in areas of high structural diversity such as logs and boulders with deep snow (Magoun and Copeland 1998; Inman et al 2007). Reproductive females dig deep snow tunnels to reach the protective structure of logs and boulders where they produce offspring. This behavior presumably protects the vulnerable kits from predation by large carnivores, including other wolverines (Pulliainen 1968), but may also have physiological benefits for kits by buffering them from extreme cold, wind, and desiccation (Pulliainen 1968). All of the areas in the lower 48 states for which good evidence of persistent wolverine

populations exists contain large and well-distributed areas with deep snow cover that persists through the wolverine denning period (Aubry et al 2007).

On the Payette National Forest, source habitat is defined by areas that contain a persistent snow layer as defined by Copeland (1996) (figure 1-5 in Resource Specialist Report). These areas typically coincide with mixed conifers at mid-elevations, and subalpine and alpine habitats at higher elevations. Special habitat features include deep persistent snow above timberline and den sites (e.g. talus slopes, boulder fields, beaver lodges, old bear dens, fallen logs, root wads of fallen trees, and large cavities). Denning habitat may be a factor limiting distribution and abundance (Copeland 1996) and wolverines may abandon dens in response to disturbance (Copeland 1996, Magoun and Copeland 1998).

On the Payette National Forest those areas that could provide source habitat conditions for wolverines include those areas covered by persistent snow cover (Copeland 1996). The Golden Hand Analysis Area contains only a small portion of the persistent snow layer as defined by Copeland (1996). This habitat is in the higher elevation portion of the analysis area near Pueblo Summit. The majority of the analysis area is considered summer (non-breeding) habitat. Current source habitat is considered to be >0% but <50% within the two 5th level watersheds where the analysis area occurs. The majority of the non-wilderness portion of the analysis area is also closed to winter motorized use (USDA 2011).

No wolverine sightings have been documented within the analysis area although 2 wolverines were observed approximately 2 miles west of the analysis area in 2009.

3.6.7.1 Environmental Consequences Specific to Alternative A

This Alternative would have no direct or indirect effect on wolverine or their habitat and therefore no cumulative effect.

3.6.7.2 Environmental Consequences Common to Alternative B

Source habitat for wolverine is relatively abundant in the analysis area with a robust snow pack on most years. Actual ground disturbing activities would occupy a very small area. Ground disturbing activities would occur on previously disturbed ground – on existing road beds or otherwise disturbed areas composed of colder subalpine fir and Douglas-fir habitat types including lodgepole pine, subalpine fir, Douglas-fir, and Engelmann spruce tree species. Most of these on-the-ground disturbances would occur in source habitat. Project activities may remove or move individual or small groups of trees, CWD, or snags, but would have no meaningful change to the condition of the vegetation when viewed at the stand or activity area. Hence, the condition and amount of source habitat would not change, including denning habitat. Project activities would occur during the non-breeding time of year so breeding activities would not be disrupted.

Noise from project activities could cause displacement of wolverine. Project activities such as core drilling and road actions could create some temporary noise disturbance on any given day and this disturbance is expected to occur over an approximate 4 month period for three years. Wolverine habitat in the analysis area is abundant and any individuals present during project activities may be displaced in the temporary term but would be expected to return upon completion of the seasonal project activities.

3.6.7.3 Environmental Consequences Common to Alternative C

In comparison to Alternative A (No Action), Alternative C would increase levels of noise disturbance to source habitat for this species in the temporary term, but to a lesser extent than Alternative B. This slight decrease in disturbance from Alternative C is due to the approximate reduction of 200 authorized annual trips into the FC-RONR Wilderness.

All other effects are the same as Alternative B (Section 3.6.7.2).

3.6.7.4 Cumulative Effects

The direct and indirect effects of any alternative on wolverine would primarily be limited to the analysis area. Therefore the area used to assess cumulative effects consists of the 10,101 acre analysis area (Figure 3-9).

Past activities include the original development of the Werdenhoff Millsite, which is addressed in the existing condition and analysis of alternatives. The Sunday Mine occurs in the analysis area and could have impacted trees or snags through past disturbance. While covered in the existing condition, many wildfires have occurred in the past and have altered vegetative composition.

There are several ongoing activities that could affect trees or snags and disturbance in the analysis area. The Walker Millsite occurs in the analysis area. The mine site potentially affects trees or snags through clearing and maintenance activities along with the associated noise. Firewood harvest occurs annually along roads randomly removing trees or snags and creating noise. Private lands, especially around Edwardsburg, continue to be developed annually to various degrees potentially affecting trees or snags and having associated noise disturbance. The Big Creek Lodge, Big Creek Guard Station, Big Creek Airstrip, and Big Creek Campground would continue to operate on an annual basis and receive maintenance. Private timber harvest, mostly for personal use, would likely continue in an ongoing fashion at unknown levels. Ongoing road and trail maintenance would continue and potentially affect roadside trees and generate noise. District and FC-RONR Wilderness weed management programs would continue to eradicate populations of noxious weeds in the analysis area usually through motorized access to the wilderness boundary. And, motorized activities associated with recreational activities, lodges, hunting, fishing, trapping, tribal endeavors, and other activities that require motorized access would continue in the analysis area. Reference **Appendix A** for additional project information and maps related to the cumulative effects analyses completed for this project.

The Big Creek Fuels Reduction Project occurs partially within the analysis area and represents a reasonably foreseeable project. Currently, this project is in the planning stages. A range of thinning and motorized activities could impact trees or snags; however, specifics are not currently available.

Alternative A would not result in any direct, indirect, or cumulative effects.

Alternative B and C in combination with ongoing and foreseeable future activities could incrementally increase the number of individual trees or snags felled and/or removed. However, at the stand or activity area there would likely be no meaningful change. Alternative B and C in combination with ongoing activities could incrementally add to the disturbance of wolverine, if present. However these incremental effects would be limited to the temporary term and wolverine would be expected to return upon completion of the seasonal project activities. Since Alternatives would have direct or indirect effect to habitat, Alternative B and C would have no cumulative effect to habitat. Alternative B and C may impact individuals but would not likely contribute to a trend toward Federal Listing or cause a loss of viability to the population or species.

3.7 Roadless Resource

This section of the document discusses the existing conditions and characteristics of the Inventoried Roadless Areas (IRAs) within the project area, as well as the effects of the various alternatives on the resource. The Project Area contains 25 acres within the Big Creek Fringe IRA, 29 acres within the Cottontail Point/Pilot Peak IRA, 102 acres within the Placer Creek IRA, 45 acres within the Secesh IRA, and 89 acres within the Smith Creek IRA, Figure 3-10. Unless noted otherwise, the analysis area would be comprised of the 1,309 acre project area.

The project area is uniquely situated in that several IRAs terminate immediately adjacent to roads in the project area. The following briefly describes each IRA:

The Big Creek Fringe IRA, discussed on pages C-168 thru C-171 of the Forest Plan FEIS, encompasses a narrow strip of land less than a mile wide between Big Creek and the Frank Church – River of No Return (FC-RONR) Wilderness on the Krassel Ranger District. Access is by road along Big Creek (FR #340 and #371), and by the trail from Big Creek into Cougar Basin (Forest Trail 004). The Secesh IRA lies directly to the west; Placer Creek IRA lies to the northwest; and the FC-RONR Wilderness forms the eastern border. The IRA is approximately 1,083 acres in size.

The Cottontail Point/Pilot Peak IRA, discussed on pages C-180 thru C-184 of the Forest Plan FEIS, is located on the McCall Ranger District, in the north central portion of the Forest. The area stretches from Marshall Mountain in the west, across the South Fork Salmon River to Pueblo Summit in the east. The FC-RONR Wilderness forms the area's north boundary. The Chimney Rock, Crystal Mountain, and Secesh IRAs lie to the south, and the Marshall Mountain Mining District lies to the west. The IRA is approximately 98,833 acres in size.

Located on the Krassel Ranger District, the Placer Creek IRA (C-232 thru C-235 of the Forest Plan FEIS) lies south of Smith Creek and east of the Big Creek Work Station. It is accessed by the Warren-Profile Gap and Big Creek Roads, and by two primitive mining roads from the south. The FC-RONR Wilderness and the Cottontail/Pilot Peak and Secesh IRAs surround the area. The IRA is approximately 6,944 acres in size.

The Secesh IRA, discussed on pages C-241 thru C-245 of the Forest Plan FEIS, lies within the McCall and Krassel Ranger Districts on the Payette NF. The area stretches across the center of the Forest, from Payette Lake on the west to Big Creek on the east. The Warren-Elk Creek Road (FR #340) on the north and the Lick Creek Road (FR #48) on the south provide boundaries and the principal vehicle access. Trails provide entry into much of the area, with some portions being accessible only by cross-country hiking. The Needles and Caton Lake IRAs lie directly to the south; the French Creek IRA lies to the west; the FC-RONR Wilderness adjoins to the east; and the Crystal Mountain, Chimney Rock, and Cottontail Point/Pilot Peak IRAs lie to the north. The IRA is approximately 248,251 acres in size.

Located on the Krassel Ranger District, the Smith Creek IRA, discussed on pages C-251 thru C-254 of the Forest Plan FEIS, lies between Smith Creek and the FC-RONR Wilderness. FR #371 and two primitive trails provide access. The Placer Creek IRA adjoins the Smith Creek IRA to the south and west. The IRA is approximately 2,285 acres in size.

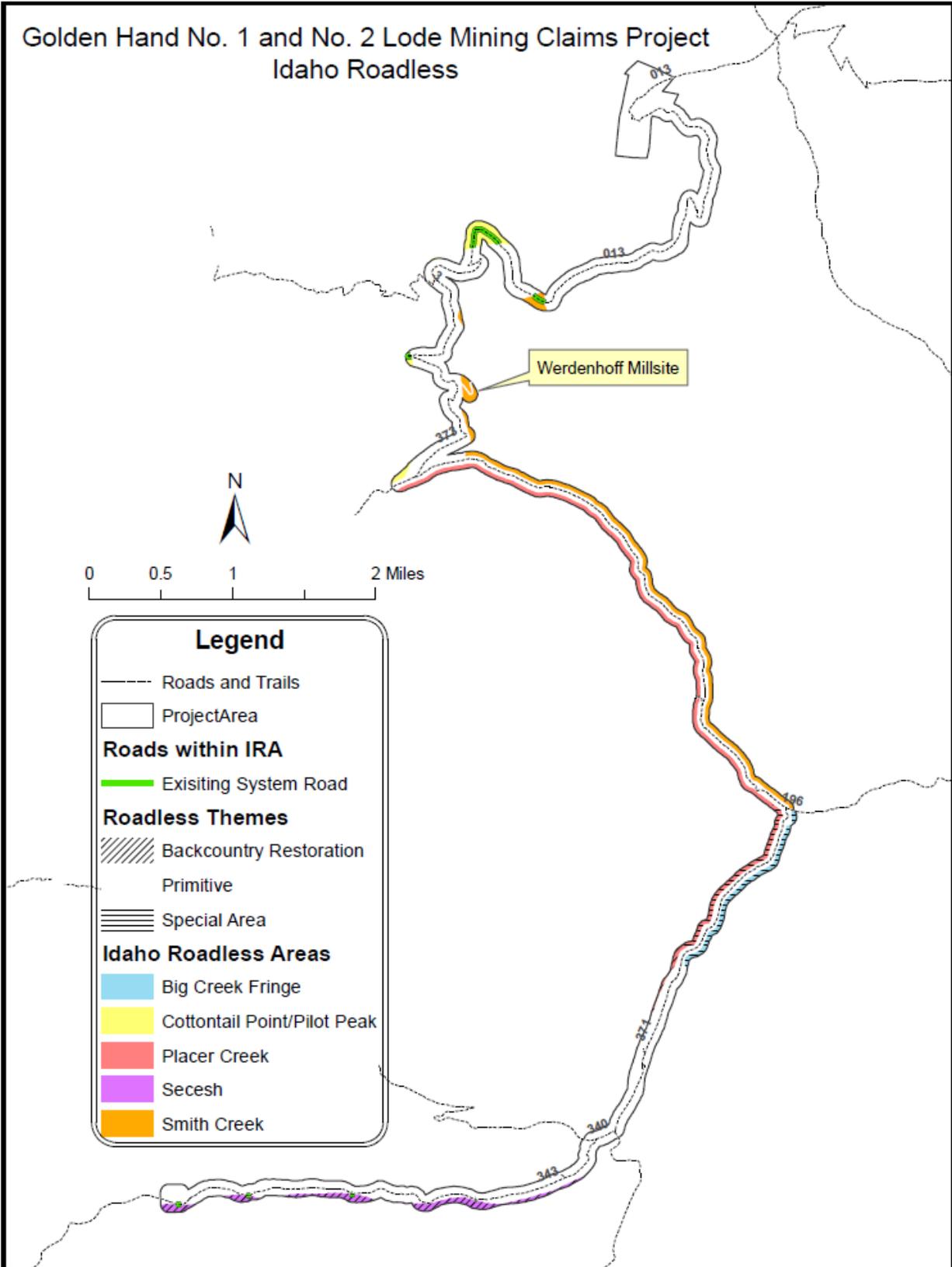


Figure 3-10 Inventoried Roadless Area within the Project Area

Golden Hand No. 1 and No. 2 Lode Mining Claims Draft EIS

In 2005, the Forest Service developed a monitoring protocol for wilderness character (Landres et al., 2005) that replaces the wilderness attribute rating system. This protocol describes wilderness qualities as: Natural, Undeveloped, Untrammeled, and Opportunities for Primitive Recreation, or Solitude. These qualities are very similar to the wilderness attributes described in the wilderness attribute rating system but more closely reflect the definition of wilderness and describe its essential qualities. Table 3-6 provides a crosswalk to align the wilderness qualities from the wilderness character monitoring protocol to the wilderness attributes from the older wilderness attribute rating system analyzed in this document.

Table 3-6 Crosswalk of Wilderness Qualities to Wilderness Attributes.

Wilderness Qualities from Wilderness Character Monitoring Protocol	Wilderness Attributes from Wilderness Attribute Rating System
Untrammeled –monitors modern human activities that directly control or manipulate the components or processes of ecological systems inside wilderness	Natural Integrity
Natural –monitors both intended and unintended effects of modern people on ecological systems inside wilderness since the time the area was designated.	Natural Integrity Apparent Naturalness
Undeveloped –monitors the presence of structures, construction, habitations, and other evidence of modern human presence or occupation	Apparent Naturalness Remoteness
Outstanding opportunities for solitude or a primitive and unconfined type of recreation –monitors conditions that affect the opportunity for people to experience solitude or primitive, unconfined recreation in a wilderness setting	Solitude Opportunities for Primitive Recreation

In October 2008, the US Department of Agriculture adopted a state-specific, final rule establishing management direction for designating roadless areas in Idaho (36 CFR §294; 73 Federal Register 61456-61496). In March of 2011, the Forest Plan Special Area Themes identified in 2008 and located in the project area were administratively corrected with regard to the theme category (36 CFR §294; 76 Federal Register 17341-17343). Those areas within the project area that were designated as Forest Plan Special Area in 2008 have been changed to account for the fact that the Payette National Forest Land and Resource Management ROD (USDA 2003, 2010) did not find Big Creek eligible for Wild and Scenic River designation. Since the Forest Plan did not establish a special management area for which the theme was developed, the correction removed this erroneous classification from the Idaho Rule. Since the correction was implemented, areas formerly designated as Forest Plan Special Area in the Big Creek Fringe IRA within the project area have been changed to a Backcountry/Restoration Theme. Areas formerly designated as Forest Plan Special Area in the Smith Creek IRA within the project area have been changed to a Primitive Theme. And, approximately 3 acres formerly designated as Forest Plan Special Area of the Placer Creek IRA within the project area have been changed to a Primitive Theme, while roughly 21 acres have been changed to Backcountry/Restoration Theme.

The final rule designates 250 Idaho Roadless Areas, including those within the project area, and establishes five management themes that provide prohibitions with exceptions or conditioned permissions governing road construction, timber cutting, and discretionary mineral development. The Big Creek Fringe IRA was assigned 23 acres of a Backcountry/Restoration Theme and 2 acres of a Primitive Theme within the project area. The Cottontail Point/Pilot Peak IRA was assigned a Primitive Theme within the project area. The Placer Creek IRA was assigned 25 acres of Backcountry/Restoration Theme and 77 acres of a Primitive Theme within the project area. The Secesh IRA was assigned a Backcountry/Restoration Theme within the project area. Lastly, the Smith Creek IRA has 89 acres of a Primitive Theme within the project area.

Of the system roads that occur in the project area approximately 0.1 miles of FR #343 occurs in several small slivers within the Secesh IRA and approximately 0.5 miles of FR #373 occurs within Primitive Themes of the Cottontail Point/Pilot Peak and Smith Creek IRAs. The inclusion of these segments within a roadless area boundary appears to be a mapping error. Corrections to this mapping error would not be sought through this project.

The IRAs, in general, have a high capability for natural integrity, natural appearance, solitude, and opportunities for challenge and adventure. This is principally due to the large and generally connected areas coupled with the lack of past development, rugged terrain, and limited access points. The following discussions of the wilderness attributes are specific to the entire IRA and could vary within the analysis area due to its proximity to roads and past development:

Big Creek Fringe IRA

Natural Integrity and Appearance: There have been no major human-caused disturbances and there is only about 0.5 mile of unauthorized road within the boundaries; thus, the natural integrity appears intact and the natural appearance is high.

Opportunities for Solitude and Primitive Recreation: The area consists primarily of slopes facing the Big Creek Road. Because development (summer homes, lodge, work center, air strip) occurs along the road, and the road is a popular access point for the adjacent Wilderness area, the opportunity for solitude within the Fringe itself is low. Due to its shape (a long, narrow strip of land), the area alone provides very little opportunity for primitive recreation. The opportunities for primitive recreation become high, however, in conjunction with the adjacent FC-RONR Wilderness. The steep slopes offer challenging backpacking.

Special Features: In conjunction with the Big Creek Road, the area serves as an access point to the FC-RONR Wilderness. The portion close to Big Creek is an elk calving area.

Manageability and Boundaries: Due to the area's small size, alternative boundaries are not practical. Because the area is less than 5,000 acres, the only wilderness management opportunity would be to add the area to the existing FC-RONR Wilderness.

Cottontail Point/Pilot Peak IRA

Natural Integrity and Appearance: The natural integrity and natural appearance of the area are high, except in the heavily mined Warren Meadows area and along the border near the Salmon River, where several special uses are in effect. Associated with the mining, are an estimated 23.5 miles of unauthorized and 8.6 miles of authorized roads within the boundary. Other portions of this large area have had very little disturbance.

Opportunities for Solitude and Primitive Recreation: The limited access and rugged terrain over much of the area create a high opportunity for solitude and primitive recreation. The area is very remote from any large population centers, although local use from Warren, Secesh Meadows, and McCall is increasing.

Special Features: The South Fork Salmon River Canyon and the Wolf Fang Peak area are scenic landmarks. The South Fork Salmon River has been found suitable for Wild and Scenic River designation. There are 5.5 miles and 1,701 acres of land considered suitable for inclusion in the Wild and Scenic River System within the area. The area also provides important habitat for threatened chinook salmon, steelhead trout, and bull trout, and has many significant cultural resource sites.

Manageability and Boundaries: Forest Plan alternatives evaluated boundary options that would add portions of this area to the FC-RONR Wilderness. These changes would enhance existing wilderness by moving the boundaries to ridge tops and away from mid-slope. Existing mining activity could complicate managing this area as wilderness.

Placer Creek IRA

Natural Integrity and Appearance: The natural integrity is somewhat affected by the presence of old mining sites and mining roads that intrude into the interior of the area. There is an estimated 0.4 mile of unauthorized road within the boundary. The natural appearance is low near the surrounding and intruding roads, and fairly high away from them.

Golden Hand No. 1 and No. 2 Lode Mining Claims Draft EIS

Opportunities for Solitude and Primitive Recreation: Steep, densely timbered slopes contribute to light use and moderate to high opportunities for solitude and primitive recreation. Challenging big-game hunting is available.

Special Features: A small group of unnamed mountains exceeding 8,000 feet is the area's central feature. Scenic Placer Lake sits in a small alpine basin at the head of Placer Creek.

Manageability and Boundaries: No practical boundary alternatives exist. The area is considered in its entirety in the roadless evaluation. Past, existing, and potential mining activity could complicate managing this area as wilderness.

Secesh IRA

Natural Integrity and Appearance: Although several activities have occurred along portions of the boundary, the natural integrity of the area remains high. This is a large area with relatively few road corridors or other developed incursions. The natural appearance for this area is also high, although this appearance has been modified in some areas by road intrusions and recent fires. There are an estimated 32.2 miles of unauthorized road and 2.2 miles of authorized road within the boundary. When visitors leave surrounding road corridors, they are not affected by human activity or developments.

Opportunities for Solitude and Primitive Recreation: This area has a high opportunity for solitude and for primitive recreation because of its substantial size, rugged terrain, limited access, and the lack of large population centers nearby. The roads accessing this area pass around the outer edges and intrude in only a few places. The rugged topography and climate provide many challenging and primitive recreation opportunities.

Special Features: The Secesh River and South Fork Salmon River are suitable for Wild and Scenic River designation. There are 13.9 miles of the Secesh River and 10.4 miles of the South Fork Salmon River and 4,177 acres of land associated with the Secesh River and 3,604 acres of land associated with the South Fork Salmon River considered suitable for inclusion in the Wild and Scenic River System within the area. Scenic landmarks include Slick Rock, Loon Peaks, and the South Fork Salmon River Canyon. Elk winter range occurs along the East Fork South Fork Salmon River and along the South Fork Salmon River. Research Natural Areas (RNAs) have been established at Pony Meadows and Circle End Creek. Three potential National Natural Landmarks lie within the boundaries: Slick Rock, Lick Creek Block Stream, and Rainbow Rock. There are approximately 4,330 acres of the western portion of the area that are part of the municipal watershed for the city of McCall, and an additional 714 acres in the eastern portion that are part of the Yellow Pine Water Users watershed.

Manageability and Boundaries: As mentioned above, this area is very large and relatively intact, lending itself to many boundary options. The current level of developed uses and activities is relatively low both within and around the area. The Loon Lake Trail is a highly publicized and used mountain bike trail. Mountain bike use on the Duck Lake – Twenty Mile Lakes Trail is moderately high.

Smith Creek IRA

Natural Appearance and Integrity: There is an estimated 0.3 mile of unauthorized road and 0.1 mile of authorized road within the boundary. One mining claim in the southern tip and roads along the western boundary do little to detract from the area's high natural integrity or its high natural appearance.

Opportunity for Solitude and Primitive Recreation: The opportunity for solitude is low; the area is small, so the visitor is always near a road. Primitive recreation opportunity is high in conjunction with the adjacent wilderness. No roads or maintained trails intrude, but the entire area is accessible by perimeter roads. The area offers challenging big-game hunting.

Special Features: McFadden Point is a prominent landmark.

Manageability and Boundaries: The only boundary option considered, because of the area's small size, is as an addition to the FC-RONR Wilderness. Past, present, and future mining activities could complicate managing this area as wilderness.

3.7.1 Environmental Consequences Specific to Alternative A

Apparent Naturalness/Natural Integrity – This alternative would have no direct or indirect effects on apparent naturalness or natural integrity.

Primitive Recreation/Solitude – This alternative would have no direct or indirect effects on primitive recreation/solitude. Road use would continue at roughly current levels with visitors to IRAs within the project area experiencing a loss of solitude from passing vehicles due to the close proximity of roads to the IRAs within the project area. Within the Cottontail Point/Pilot Peak, Smith Creek, and Secesh IRAs road use would occur at roughly current levels on those portions of Forest #373 and #343 that occur within the IRA.

Special Features, Special Values, or Special Places - This alternative would have no direct or indirect effects on special features, values, or places.

Wilderness Manageability and Boundaries – This alternative would have no direct or indirect effects on special features, value, or place.

3.7.2 Environmental Consequences Common to Alternative B

The impacts of project activities would be limited primarily to effects on solitude from travel associated with project activities. Within all IRAs occurring in the project area impacts of proposed activities would be a reduced feeling of solitude from proposed vehicle travel. These impacts would be limited to those periods when vehicles pass by a particular area where it can be heard. Impacts would be expected to be temporary in nature and last only for the duration of the project. No further discussion would occur relative to general travel associated with this Alternative within or adjacent to IRA's in the project area.

Road maintenance activities associated with this alternative would take place on 0.5 miles of the #373 road located within the Cottontail Point/Pilot Peak and Smith Creek IRAs; facilities at Werdenhoff for housing, staging, and processing cores would take place adjacent the Smith Creek IRA; and, the cutting of timbers could occur within IRAs. The following discussions are relative to these activities under this alternative:

Apparent Naturalness/Natural Integrity – Proposed road maintenance activities would have little effect on apparent naturalness/natural integrity outside of the disturbance from proposed road maintenance activities, which would be indicative of current road management.

The cutting of trees for timbers could impact the apparent naturalness of IRAs if cutting occurred within the boundary of an IRA. It would be unlikely that timbers would be cut in IRAs except those areas where a system or temporary road is in an IRA or immediately adjacent where timbers could be retrieved. Due to the limited nature of the tree cutting for timbers and project design features associated with the cutting of timbers, it would be expected that the projects effects would be limited to impacts of slash and stumps. The negative impacts of slash would fade quickly in the short term; however, stumps would negatively impact the apparent naturalness of the area into the long term when decomposition alleviates the impacts. While these impacts would occur, they would be somewhat tempered by the proximity of National Forest system roads and the visitor's increased tolerance for this type of activity near system roads.

Werdenhoff would be used for crew housing, processing of drill cores, and a staging area. The project does not propose improvements to any of the existing facilities that would alter the appearance. Temporary structures could include RVs, tents, and an assortment of equipment/vehicles. Because these activities would not take place within Smith Creek IRA, these temporary facilities would not impact the apparent naturalness and natural integrity within the Smith Creek IRA.

Primitive Recreation/Solitude – Road maintenance activities associated with this alternative would take place on 0.5 miles of the #373 road located within the Cottontail Point/Pilot Peak and Smith Creek IRAs; facilities at Werdenhoff for housing, staging, and processing cores would take place adjacent the Smith Creek IRA; and, the cutting of timbers could occur within IRAs. Noise and possibly dust associated with these activities would leave visitors with a reduced sense of solitude. Impacts to solitude would be expected to be temporary in nature and last only for the duration of the project.

Since activities are adjacent/just within the boundaries of the IRA and would occur on already disturbed sites, there would be negligible impacts on the primitive recreation environment when compared to the existing condition. These impacts would largely be due to the increased activity and would persist for the duration of the project until such time facilities/equipment are removed from and adjacent the IRA.

Due to the improved access, it is possible that impacts and changes to the available primitive experience and solitude would extent into the short and long terms. The proposed maintenance on FR #371 and FR #373 would allow easier access into the short and long terms. Though it would provide improved access to a primitive recreation experience, it could also reduce the sense of solitude and remoteness that currently exists due to increases in traffic possibly associated with improved access.

Special Features, Special Values, or Special Places - This alternative would have no direct or indirect effects on special features, values, or places outside of important habitat for threatened fish species and cultural resource. Effects of this project to fishery, water, soil, wildlife, and cultural resources are covered elsewhere in this document (Sections 3.4, 3.5, 3.6, and 3.12).

Wilderness Manageability and Boundaries – This alternative would have no direct or indirect effects on wilderness manageability and boundaries.

3.7.3 Environmental Consequences Common to Alternative C

The impacts of project activities would be limited primarily to effects on solitude from travel associated with project activities. Within all IRAs occurring in the project area impacts of proposed activities would be a reduced feeling of solitude from proposed vehicle travel. These impacts would be limited to those periods when vehicles pass by a particular area where it can be heard. Impacts would be expected to be temporary in nature and last only for the duration of the project. Unless otherwise noted, no further discussion would occur relative to general travel associated with this Alternative within or adjacent to IRA's in the project area.

Road maintenance activities associated with this alternative would take place on 0.5 miles of the #373 road located within the Cottontail Point/Pilot Peak and Smith Creek IRAs; facilities at Werdenhoff for housing, staging, and processing cores would take place adjacent the Smith Creek IRA; and, the cutting of timbers could occur within IRAs. The following discussions are relative to these activities under this alternative:

Apparent Naturalness/Natural Integrity – Proposed road maintenance activities would have little effect on apparent naturalness/natural integrity outside of the disturbance from proposed road maintenance activities, which would be indicative of current road management.

The cutting of trees for timbers could impact the apparent naturalness of IRAs if cutting occurred within the boundary of an IRA. It would be unlikely that timbers would be cut in IRAs except those areas where a system or temporary road is in an IRA or immediately adjacent where timbers could be retrieved. Due to the limited nature of the tree cutting for timbers and project design features associated with the cutting of timbers, it would be expected that the projects effects would be limited to impacts of slash and stumps. The negative impacts of slash would fade quickly in the short term, however stumps would negatively impact the apparent naturalness of the area into the long term when decomposition alleviates the impacts. While these impacts would occur, they

would be somewhat tempered by the proximity of system roads and the visitor's increased tolerance for this type of activity near system roads.

Werdenhoff would be used for crew housing, processing of drill cores, and a staging area. The project does not propose improvements to any of the existing facilities that would alter the appearance. Temporary structures could include RVs, tents, and an assortment of equipment/vehicles. Because these activities would not take place within Smith Creek IRA, these temporary facilities would not impact the apparent naturalness and natural integrity within the Smith Creek IRA.

Primitive Recreation/Solitude – Road maintenance activities associated with this alternative would take place on 0.5 miles of the #373 road located within the Cottontail Point/Pilot Peak and Smith Creek IRAs; facilities at Werdenhoff for housing, staging, and processing cores would take place adjacent the Smith Creek IRA; and, the cutting of timbers could occur within IRAs. Noise and possibly dust associated with these activities would leave visitors with a reduced sense of solitude. Impacts to solitude would be expected to be temporary in nature and last only for the duration of the project.

Since activities are adjacent/just within the boundaries of the IRA and would occur on already disturbed sites, there would be negligible impacts on the primitive recreation environment when compared to the existing condition. These impacts would largely be due to the increased activity and would persist for the duration of the project until such time facilities/equipment are removed from and adjacent the IRA.

Due to the improved access, it is possible that impacts and changes to the available primitive experience and solitude would extend into the short and long terms. The proposed maintenance on FR #371 and FR #373 would allow easier access into the short and long terms. Though it would provide improved access to a primitive recreation experience, it could also reduce the sense of solitude and remoteness that currently exists due to increases in traffic possibly associated with improved access.

When compared to Alternative B, Alternative C could have a slightly reduced impact on primitive recreation/solitude, due to the barring of diesel fuel transport every other day from Werdenhoff to Pueblo Summit and possibly the reduced number of trips authorized within the wilderness.

Special Features, Special Values, or Special Places - This alternative would have no direct or indirect effects on special features, values, or places outside of important habitat for threatened fish species and cultural resource. Effects of this project to fishery, water, soil, wildlife, and cultural resources are covered elsewhere in this document (Sections 3.4, 3.5, 3.6, and 3.12).

Wilderness Manageability and Boundaries – This alternative would have no direct or indirect effects on wilderness manageability and boundaries.

3.7.4 Cumulative Effects

The direct and indirect effects of any alternative on IRAs would primarily be limited to the analysis area. Therefore the area used to assess cumulative effects consists of the 1,309 acre analysis area (Figure 3-10).

Past activities include the original development of the Werdenhoff Millsite, which is addressed in the existing condition and analysis of alternatives. The Sunday Mine occurs in the analysis area and could have impacted the IRA through past disturbance and noise.

There are several ongoing activities that could affect IRAs in the analysis area. The Walker Millsite occurs in the analysis area. The mine site potentially impacted the IRA through past/ongoing ground disturbance and the associated traffic. Firewood harvest occurs annually along roads creating traffic, noise associated with collection, and stumps/slash. Private lands, especially around Edwardsburg,

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continue to be developed annually to various degrees. The Big Creek Lodge, Big Creek Guard Station, Big Creek Airstrip, and Big Creek Campground would continue to operate on an annual basis and receive maintenance along with associated traffic. Private timber harvest, mostly for personal use, would likely continue in an ongoing fashion at unknown levels. Ongoing road and trail maintenance would continue and increase ground disturbance, noise, and traffic. District and FC-RONR Wilderness weed management programs would continue to eradicate populations of noxious weeds in the analysis area usually through motorized access to the wilderness boundary. And, motorized activities associated with recreational activities, lodges, hunting, fishing, trapping, tribal endeavors, and other activities that require motorized access would continue in the analysis area. Reference **Appendix A** for additional project information and maps related to the cumulative effects analyses completed for this project.

The Big Creek Fuels Reduction Project occurs partially within the analysis area and represents a reasonably foreseeable project. Currently, this project is in the planning stages. A range of thinning and motorized activities could impact IRAs; however, specifics are not currently available. Regardless, any proposal would be consistent with the Idaho Roadless Rule. Reference **Appendix A** for additional project information and maps related to the cumulative effects analyses completed for this project.

Alternative A would not result in any direct, indirect, or cumulative effects.

Alternative B in combination with ongoing and foreseeable future activities could incrementally effect primitive recreation/solitude and apparent naturalness/natural integrity within IRAs in the analysis area. However, outside of impacts to solitude, ongoing and future activities would have only negligible incremental impacts in combination with this alternative. Alternative B in combination with ongoing and foreseeable future activities could incrementally increase noise impacts on solitude for the duration of the project. Alternative B would be consistent with Idaho Roadless Rule (36 CFR §294; 73 Federal Register 61456-61496 and 36 CFR §294; 76 Federal Register 17341-17343).

Alternative C in combination with ongoing and foreseeable future activities could incrementally affect primitive recreation/solitude and apparent naturalness/natural integrity within IRAs in the analysis area. However, outside of impacts to solitude, ongoing and future activities would have only negligible incremental impacts in combination with this alternative. When compared to Alternative B, Alternative C could have a slightly reduced impact on primitive recreation/solitude, due to the barring of diesel fuel transport every other day from Werdenhoff to Pueblo Summit and possibly the reduced number of trips authorized within the wilderness. Alternative C in combination with ongoing and foreseeable future activities could incrementally increase noise impacts on solitude for the duration of the project, albeit to a potentially lesser degree than Alternative B. Alternative C would be consistent with the Idaho Roadless Rule (36 CFR §294; 73 Federal Register 61456-61496 and 36 CFR §294; 76 Federal Register 17341-17343).

3.8 Botanical Resources

This section of the document describes the existing conditions, potential habitat, and effects of the alternatives on threatened, endangered, proposed, candidate, sensitive, and Forest watch plants. The analysis area for Threatened, Endangered, Proposed Candidate, and Sensitive (TEPCS) plants includes the access route from the Big Creek Guard Station to the claim site, the proposed developments on and off claims, Coin Creek, and the area adjacent to the proposed lodging and storage facilities. The assessment disclosed in this document was initiated following review of species identified by the U.S. Fish and Wildlife Service as threatened, endangered, proposed, or candidate species; the current and proposed Regional Forester's sensitive species list, and; the current Payette National Forest watch plants list. In addition, documented locations, records of previous field surveys, and Conservation Data Center records were reviewed during the course of this analysis.

Threatened/Endangered Species

No historical populations of any threatened or endangered plant species are known to occur on the Payette National Forest (PNF). From 1995 to 2002 the USFWS added five TEPC species to the PNF 90-Day Species List because potential habitat for these species was thought to occur on the PNF. Since that time the PNF forest botanist has surveyed, analyzed projects effects, and consulted on the threatened species Ute Ladies'-tresses, water Howellia, MacFarlane's four-o'clock, Spalding's silene and the candidate species slender moonwort. Table 3-7 lists the federally listed plants that the PNF has consulted on in the past and shows the global and state rarity ratings as well as global distributions of these species. Ute Ladies'-tresses, water Howellia, MacFarlane's four-o'clock, Spalding's catchfly are listed threatened by the USFWS (USDI 2012) and are ranked critically imperiled in Idaho and imperiled globally. Ute Ladies'-tresses occurs about 300 miles away from McCall in southeast Idaho near the Palisade Dam. Water Howellia occurs about 150 miles away from the PNF near Moscow in northern Idaho. Slender moonwort occurs about 100 miles away on the Sawtooth National Forest. MacFarlane's four-o'clock occurs approximately 35 miles downstream from the Forest boundary in Hells Canyon and the nearest known population of Spalding's catchfly occurs about 30 miles north of PNF lands near the confluence of the Snake and Salmon River.

In 2011 the U.S. Fish and Wildlife Service listed whitebark pine (*Pinus albicaulis*) as a candidate species eligible for Endangered Species Act protection and the Regional Forester listed the plant as sensitive. Habitat for whitebark pine occurs on the access road into the proposed activity site.

Table 3-7. Federally Listed USFWS Threatened and Candidate Plants (Payette National Forest)

Species Name	Common Name	USFWS Status
<i>Botrychium lineare</i>	Slender moonwort	Removed as candidate in 2008
<i>Howellia aquatilis</i>	Water howellia	Threatened
<i>Mirabilis macfarlanei</i>	MacFarlane's four-o'clock	Threatened
<i>Silene spaldingii</i>	Spalding's catchfly	Threatened
<i>Spiranthes diluvialis</i>	Ute Ladies'-tresses	Threatened
<i>Pinus albicaulis</i>	Whitebark Pine	Candidate

Sensitive Plant Species

The Regional Forester through direction outlined in FSM 2670 and the R4 sensitive plant handbook 2609.25 compiles the sensitive plant list for the Payette National Forest (USDA 2006 and USDA 1998). The Forest Plan (USDA 2003, 2010) reflects the State of Idaho rare plant list and contains the Regional Foresters sensitive plant species list. Table 3-8 lists both the Regional sensitive plant species and those included the Forest Plan. The Idaho Conservation Data Center (ICDC) of the Idaho Fish and Game maintains records and references of documented locations for sensitive and rare plant species on the PNF. The pre-field analysis consults these records and references to determine if known or suspected sensitive species or their habitats occur in the project area. The pre-field analysis of the proposed project area identified one candidate and six sensitive or rare plants with possible habitat in the analysis area of the

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Table 3-8. Federal, State, and Forest Service Status of Rare Plant Species with Potential or Known Habitat on the Payette National Forest.

Species Name	Common Name	Forest Service Status ¹	
		Regional Sensitive	PNF Plan
<i>Allium madidum</i>	swamp onion	S	S
<i>Allium tolmiei</i> var. <i>persimile</i>	Tolmie's onion	S	S
<i>Allium validum</i>	Tall Swamp Onion	N	W
<i>Allotropa virgata</i>	candystick	S	S
<i>Arabis sparsiflora</i> var. <i>atrorubens</i>	Sicklepad Rockcress	-	W
<i>Astragalus paysonii</i>	Payson's milkvetch	S	S
<i>Astragalus vexilliflexus</i> var. <i>vexilliflexus</i>	bent flowered milkvetch	S	S
<i>Botrychium lanceolatum</i>	Lance-leaved moonwort	N	W
<i>Botrychium lineare</i>	Slender moonwort	S	S
<i>Botrychium simplex</i>	Least moonwort	S	W
<i>Buxbaumia viridis</i>	green bug moss	N	W
<i>Calamagrostis tweedyi</i>	Cascade reedgrass	S	S
<i>Camassia cusickii</i>	Cusick camas	S	S
<i>Carex aboriginum</i>	Indian Valley Sedge	N	W
<i>Carex buxbaumii</i>	Buxbaum's sedge	N	W
<i>Ceanothus prostratus</i> ssp. <i>prostratus</i>	Mahala-mat ceanothus	N	W
<i>Chrysothamnus nauseosus</i> spp. <i>nanus</i>	dwarf grey rabbitbrush	N	W
<i>Crepis bakeri</i> ssp. <i>idahoensis</i> .	Idaho hawksbeard	N	W
<i>Douglasia idahoensis</i>	Idaho Douglasia	S	S
<i>Draba incerta</i>	Yellowstone draba	N	W
<i>Eatonella nivea</i>	White eatonella	N	W
<i>Epilobium palustre</i>	Swamp Willow Weed	N	W
<i>Epipactis gigantea</i>	Giant helleborine orchid	N	W
<i>Hackelia davisii</i>	Davis' stickseed	N	W
<i>Halimolobos perplexa</i> var. <i>perplexa</i>	Puzzling halimolobos	S	S
<i>Haplopappus radiates</i> <i>Pyrocoma radiata</i>	Snake River golden weed	S	S
<i>Helodium blandowii</i>	Blandow's helodium	N	W
<i>Hierochloe odorata</i>	Sweetgrass	N	W
<i>Howellia aquatilis</i>	Water howellia	N	W
<i>Leptodactylon pungens</i> ssp. <i>hazeliae</i>	Hazel's prickly phlox	S	S
<i>Lewisia sacajaweaana</i>	Sacajawea's bitterroot	S	S
<i>Lobaria scrobiculata</i>	Pored lungwort	N	W
<i>Mimulus clivicola</i>	Bank Monkeyflower	S	S
<i>Mirabilis macfarlanei</i>	MacFarlane's four-o'clock	N	W
<i>Peraphyllum ramosissimum</i>	Squaw apple	N	W
<i>Pilophorus acicularis</i>	Nail lichen	N	W
<i>Pinus albicaulis</i>	Whitebark pine	S	-

Affected Environment & Environmental Consequences

Species Name	Common Name	Forest Service Status ¹	
		Regional Sensitive	PNF Plan
<i>Polystichum kruckebergii</i>	Kruckeberg's Sword-fern	N	W
<i>Ribes wolfii</i>	Wolf's current	N	W
<i>Rubus bartonianus</i>	Bartonberry	S	S
<i>Salix glauca</i>	gray willow	N	W
<i>Sanicula graveolens</i>	Sierra sanicle	N	W
<i>Saxifraga bryophora</i> var. <i>tobiasiae</i>	Tobias' saxifrage	S	S
<i>Schistostega pennata</i>	Luminous moss	N	W
<i>Sedum borschii</i>	Borch's stonecrop	N	W
<i>Sedum valens</i>	Canyon sedum		
<i>Silene spaldingii</i>	Spalding's catchfly	N	W
<i>Spiranthes diluvialis</i>	Ute Ladies'-tresses	N	W
<i>Triantha occidentalis</i> ssp. <i>brevistyla</i>	Short-style tofieldia	S	S
<i>Trifolium douglasii</i>	Douglas clover	N	W

¹Forest Service Status - S = Region 4 Sensitive, W = Forest Watch plants, N = No current status.

Whitebark Pine

Whitebark pine (*Pinus albicaulis*) is a native, 5-needled conifer classified as a stone pine that has large dense seeds that lack wings and depends upon birds and squirrels for dispersal across the landscape. Considered a small to medium size conifer, trees grow from 40-60 feet tall at maturity. In Idaho, they typically grow at higher elevations between 6,000 and 10,000 feet in the subalpine fir zone.

Whitebark pine also occurs in Wyoming, Montana, Nevada, California, Oregon, Washington and Canada. Historically, whitebark pine dominated many of the upper subalpine plant communities of the western United States but a number of agents have reduced its natural regeneration. White pine blister rust, fire exclusion, bark beetles, animals, and fungal diseases have all reduced the ability of mature trees to reproduce. White pine blister rust is the greatest threat to whitebark pine regeneration. In blister rust-infected trees, branch die-off occurs on cone-producing branches resulting in the loss of seed production.

In July, 2011, the U. S. Fish and Wildlife Service announced that whitebark pine warranted protection under the Endangered Species Act (ESA) but that the species is precluded by the need to address other listing actions of higher priority. The Service then added the species to the candidate list of species eligible for ESA protection and annual review. Whitebark pine habitat does occur in the project area on the access road to the proposed activity area just northeast of Mosquito Ridge on road #013 and #373.

Borch's Stonecrop

Borch's stonecrop (*Sedum borschii*), a perennial herb of the Stonecrop family (*Crassulaceae*), grows in the mid to higher elevation mountains of the northern half of the Idaho Batholith.

Borch's sedum, a disjunct species, occurs in the northern half of the Idaho Batholith, western Montana, Seven Devils Mountains, and the eastern edge of the Columbia Plateau. Clausen (1975) noted that the plants occupy a variety of rock types on cliffs and slopes. Sties with known populations vary from open to those with a canopy of large conifers.

Project activities should not impact possible habitat for Borch's stonecrop. The pre-field analysis rated the probability of occurrence of this species as low. The closest population occurs south of Edwardsburg in the FC-RONR Wilderness. Surveys of the possible potential habitat in the project area found no Borch's stonecrop plants or definite habitat. As a perennial, the foliage of *Borch's stonecrop* remains visible during the growing season and the risk of overlooking possible populations or habitat for *Borch's stonecrop* appears very low.

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Puzzling Halimolobos

Puzzling halimolobos (*Halimolobos perlexa* var. *perplexa*) is a short-lived perennial or biennial herb member of the mustard family (*Brassicaceae*). Puzzling halimolobos, an endemic species confined to the Salmon River drainage, grows in unstable, gravelly or sandy slopes, road cuts, and dredge tailings composed of both quartzite and granitic substrates. The elevation range of the plant extends from 3,000-5,000 feet. Sites with known populations vary from open to ones with a canopy of large conifers.

Project activities should not impact possible habitat for puzzling halimolobos. The pre-field analysis rated the probability of occurrence of this species as low. The nearest population occurs in the main Salmon River drainage. Surveys of possible puzzling halimolobos habitat in the project area found no plants or definite habitat. As a perennial/biennial, the foliage of puzzling halimolobos remains visible during the growing season and the risk of overlooking possible populations or habitat appears very low.

Payson's Milkvetch

Payson's milkvetch (*Astragalus paysonii*) is a perennial herb of Pea family (*Fabaceae*). In Idaho, Payson's milkvetch occurs primarily in areas disturbed by natural and human processes at elevations between 4,600- 5,800 feet. Known as an early succession species, it usually will not pioneer newly disturbed sites but is often found along road cuts and trails with exposed, sand soil and low grass/forb cover.

Payson's milkvetch is a regional endemic known only from northern and east-central Idaho and western Wyoming. Project activities should not impact possible habitat for Payson's milkvetch. The pre-field analysis rated the probability of occurrence of this species as low. The nearest population to the project area occurs in Chamberlain Basin. Surveys of the possible potential habitat in the project area found no Payson's milkvetch plants or definite habitat. As a long-lived perennial, the foliage of Payson's milkvetch remains visible during the growing season and the risk of overlooking possible populations or habitat appear very low.

Bent Flower Milkvetch

Bent flowered milkvetch (*Astragalus vexilliflexus* var. *vexilliflexus*) is a long-lived perennial of the pea family (*Fabaceae*). Bent flowered milkvetch, widespread in northern Great Plains and adjacent eastern Rocky Mountain front, occurs only in Idaho east of Yellow Pine in the vicinity of Monumental Summit between the South and Middle Forks of the Salmon River. The Idaho population is disjunct from the nearest population in Beaverhead County, Montana that is about 125 miles from the Idaho population. The plants grow on open rocky slopes and outcrops of shale and sandstone with elevations on the PNF ranging from 7,500-8,200 feet.

Project activities should not impact possible habitat for bent flowered milkvetch. The pre-field analysis rated the probability of occurrence of this species as low and the nearest population occurs near Yellow Pine, Idaho. Surveys of possible bent flowered milkvetch habitat in the project area found no plants or definite habitat. As a long-lived perennial, the foliage of Bent flowered milkvetch remains visible during the growing season and the risk of overlooking possible populations or habitat appears very low.

Candystick

Candystick (*Allotropa virgata*) is a member of the heath family (*Ericaceae*). The main population of candystick occurs west of the Cascade Mountains with disjunct populations occurring in central Idaho and western Montana. On the PNF numerous populations occur south of the Main Salmon River in stands of lodgepole pine with understories of grouse whortleberry and bear grass. Elevations range from 5,000-7,000 feet. Sites with known populations usually contain decomposing wood and mature lodgepole pine.

Project activities should not impact possible candystick habitat. The pre-field analysis rated the probability of occurrence of this species as low in the area where activities would occur. The nearest population occurs near Warren, Idaho. Surveys of possible Candystick habitat in the project area found no plants or definite habitat. Because the flower stalks of Candystick remain visible for two growing season and the risk of overlooking possible populations or habitat during surveys appears very low.

Sacajawea's bitterroot

Sacajawea's bitterroot is a perennial herb with deep fleshy roots. The main populations of Sacajawea's bitterroot occur in the central mountains of Idaho. On the PNF populations grow at the headwaters of Belvidere Creek. Typically the species is found at elevations from 5,500-9,500 feet near late snow banks on upper slopes and ridge tops.

Project activities should not impact possible habitat for Sacajawea's bitterroot. The pre-field analysis rated the probability of occurrence of this species as low in the area where activities would occur. Much of the rocky area within the Golden Hand mining proposal that would support this bitterroot has previously been disturbed or does not contain the vegetation or geologic features that would support Sacajawea's habitat.

3.8.1 Environmental Consequences Specific to Alternative A

Botanical surveys conducted in 2002, 2008, and 2009 found no habitat for any of the species in Table 3-7 and 3-8, except, for whitebark pine that was found on the road accessing the project activity area. Therefore, effects discussions would be limited to whitebark pine.

This alternative does not propose any new management activities or ground-disturbance and is not expected to have any effect on threatened, endangered, proposed, candidate, sensitive, or Forest watch plants

3.8.2 Environmental Consequences Specific to Alternative B and C

Botanical surveys conducted in 2002, 2008, and 2009 found no habitat for any of the species in Table 3-7 and 3-8, except, for whitebark pine that was found on the road accessing the project activity area. Therefore, effects discussions would be limited to whitebark pine and the action Alternatives would not have any effect on other threatened, endangered, proposed, candidate, sensitive, or Forest watch plants.

Direct effects to individual plants of white bark pine (*Pinus albicaulis*) could occur from the action Alternatives. Random and minimal disturbance from moving equipment or other project activities could directly limb or trample some saplings or seedlings of whitebark pine along the roadside. But no major activities are planned for whitebark pine habitat. Overall habitat quality for whitebark pine species would not be impacted by the action Alternatives. Current management practices for weed control should keep indirect adverse impacts from weed invasion to a minimum. No large tree removal is planned for this project and impacts to whitebark pine should not be substantial.

3.8.3 Cumulative Effects

Activities considered for the cumulative effects analysis in this section include a variety of actions. They included: recreation activities, mining, and fire management, habitat improvement projects for wildlife and fish, and recreational livestock grazing. These activities have occurred and will continue to occur within the project area that supports whitebark pine. Reference **Appendix A** for additional project information and maps related to the cumulative effects analyses completed for this project.

Alternative A would have no direct, indirect, or cumulative effects on any threatened, endangered, proposed, candidate, sensitive, or Forest watch plants or their habitats

For Alternative B and C, these past and ongoing impacts to individual whitebark pine in combination with potential direct impacts to individuals from proposed activities could further negatively impact those individuals within the project area. These impacts would be limited to those few individuals directly impacted by the project and may or may not overlap temporarily, and would likely not be measureable in intensity.

For Alternative B and C, cumulative effects would have minimal adverse affects to individual whitebark pine and its habitat. However, the cumulative effects would not adversely affect the habitat or populations of whitebark pine, and would not contribute to a trend toward Federal listing for any

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sensitive species.

Alternative B and C would have no effect to any threatened or endangered plant species. No habitat for any threatened or endangered plant species occurs in the project analysis area.

Alternative B and C may impact individuals but would not likely contribute to a trend toward Federal Listing or cause a loss of viability to the population or species of whitebark pine, (*Pinus albicaulis*), a candidate and sensitive species. Alternative B and C would have no impact on any other candidate, proposed, or sensitive plant species.

3.9 Noxious Weeds

Noxious weeds are defined as a state-designated plant species that causes negative ecological and economic impacts to both agricultural and other lands within the state. Noxious weeds pose a threat to native plants, often out-competing them. Habitats for these species vary, but can generally be characterized as disturbed areas of compacted dry soils. Roads, powerline corridors, cutting units, burned areas, trails, and other areas associated with human activity, particularly motorized use, are likely locations for noxious weeds. For this project the analysis area would be comprised of the 1,309 acre project area, which comprises the area where project activities would be likely to facilitate spread of existing population or introduce new populations to the area. Field surveys in the 1,309 acre analysis area identified the presence of four small populations of noxious weeds (Figure 3-11). Two of these populations are spotted knapweed (*Centaurea maculosa*) and two are Canada thistle (*Cirsium arvense*). All populations are located along FR #371 between FR #50340 and Forest Trail #196. Although only four populations have been identified, given the existing road and trail systems, noxious weeds are likely present in other unknown locations. Other noxious weeds known to be present in adjacent drainages include creeping and tall buttercup along with houndstongue.

3.9.1 Environmental Consequences Specific to Alternative A

Recreation-related introduction and distribution of noxious weeds would continue to occur adjacent to roads open to vehicles, trails open to recreational livestock and packstock, and along motorized trails in the analysis area. Noxious weed species present in the area or new introductions could increase in population size and distribution. Significant populations of plants would continue to be addressed through the District's and the FC-RONR Wilderness noxious weed program.

3.9.2 Environmental Consequences Specific to Alternative B and C

Recreation-related introduction and distribution of noxious weeds would continue to occur adjacent to roads open to vehicles, trails open to recreational livestock and packstock, and along motorized trails in the analysis area. Noxious weed species present in the area or new introductions could increase in population size and distribution. Significant populations of plants would continue to be addressed through the District's noxious weed program.

Proposed activities associated with the action Alternatives would not be expected to introduce noxious weeds into the analysis area. Design features associated with the action Alternatives (Section 2.4.4) require the cleaning of all off-road equipment potentially carrying noxious weed seeds prior to moving into the analysis area and the inspection of gravel sources for weeds. Furthermore, the action Alternatives would require the use of weed free mulches, seed, and other needed materials (Section 2.4.4). Proposed activities would provide gravel for several sections of road; however, the known gravel sources in the area are not known to contain noxious weeds at this time and would be inspected prior to sourcing.

Alternative B would allow for approximately 200 more trips into the wilderness on an annual basis; however, along FR #371 both alternatives are expected to have similar trips on average annually. Both Alternatives may contribute to the distribution of noxious weeds already present as vehicles pass along FR #371 while completing project activities. As noted above, existing noxious weed populations would be addressed through the District's and the FC-RONR Wilderness noxious weed program.

These Alternatives do not include construction of any new system roads and all authorized temporary roads would be closed to motorized traffic upon completion of use.

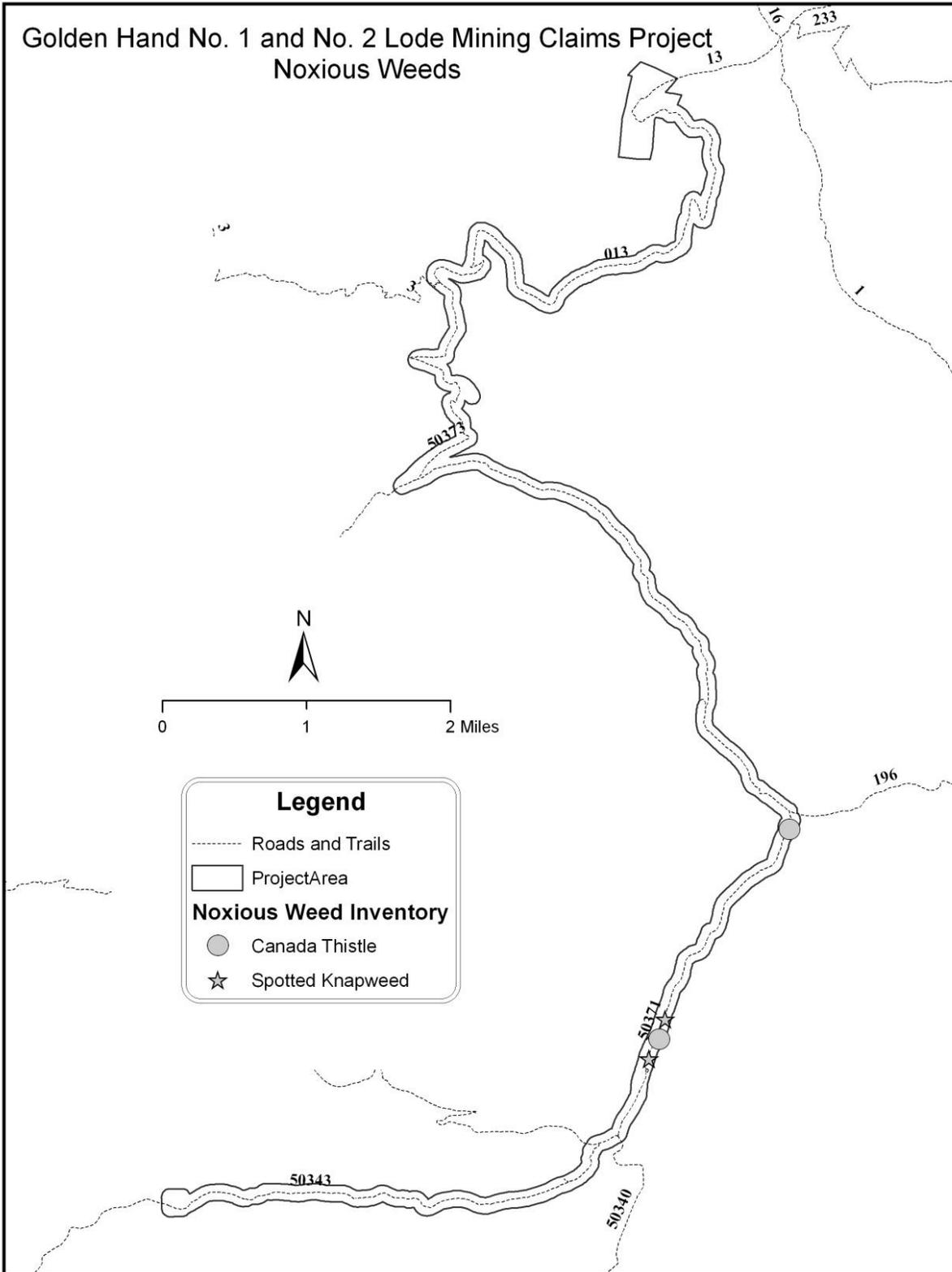


Figure 3-11 Inventoried Noxious Weed Populations

3.9.3 Cumulative Effects

The direct and indirect effects of any alternative on noxious weeds would be limited to the analysis area. Therefore the area used to assess cumulative effects consists of the 1,309 acre analysis area (Figure 3-11).

Past activities include the original development and abandonment of the Sunday Mine, Golden Hand Mine, and the Werdenhoff Millsite. However, these past activities are unlikely to have impacted noxious weed establishment or distribution based on the era of these workings.

There are several ongoing activities that could affect noxious weeds in the analysis area. The Walker Millsite occurs in the analysis area. The mine site potentially impacts noxious weed establishment and distribution through past/ongoing ground disturbance and the associated traffic. Firewood harvest occurs annually along roads possibly introducing new populations and distributing existing populations. Private lands, especially around Edwardsburg, continue to be developed annually to various degrees. The Big Creek Lodge, Big Creek Guard Station, Big Creek Airstrip, and Big Creek Campground would continue to operate on an annual basis and receive maintenance along with traffic that could introduce new populations. And, private timber harvest, mostly for personal use, would likely continue in an ongoing fashion at unknown levels. Ongoing road and trail maintenance would continue and possibly increase the distribution of existing populations. District and FC-RONR Wilderness weed management programs would continue to eradicate populations of noxious weeds in the analysis area. Reference **Appendix A** for additional project information and maps related to the cumulative effects analyses completed for this project.

The Big Creek Fuels Reduction Project occurs partially within the analysis area and represents a reasonably foreseeable project. Currently, this project is in the planning stages. A range of thinning activities could impact noxious weed introduction and distribution; however, specifics are not currently available. Regardless any proposal would include design feature requiring the use of weed free materials and equipment cleaning. Potential effects would likely be limited to the distribution of existing populations. Reference **Appendix A** for additional project information and maps related to the cumulative effects analyses completed for this project.

Alternative A would not result in any direct, indirect, or cumulative effects on noxious weeds.

Alternative B and C in combination with ongoing and foreseeable future activities could introduce some risk of spread of noxious weeds in the analysis area. Since the effects of Alternative B and C are expected to be limited to the distribution of existing populations, the incremental effect of Alternative B and C in combination with ongoing and foreseeable future projects would be the increased potential for distribution of existing populations. Large or high risk populations of plants would continue to be addressed through the District's and the FC-RONR Wilderness noxious weed program.

3.10 Air Quality

The basic framework for controlling air pollutants is the 1970 Clean Air Act, as amended in 1990. The primary means by which this is accomplished is through the implementation of the National Ambient Air Quality Standards (NAAQS). In addition to the NAAQS, other sections or provisions of the Clean Air Act, as amended, address general conformity, prevention of significant deterioration, and visibility (i.e. regional haze). There are no mandatory Class I airsheds, maintenance areas, or nonattainment areas within the project area, therefore elements pertaining to general conformity do not specifically apply. The analysis area and those lands immediately adjacent the project area are considered Class II airsheds. Under the 1977 Clean Air Act amendments, Congress defined mandatory Class I federal areas for wilderness areas greater than 5,000 acres, but the Frank Church – River of No Return (FC-RONR) Wilderness was designated following that effort and has not since been included as a Class I airshed. Table 3-10 discloses those Class I airsheds and other important areas in the larger vicinity.

Approximately 291 acres of the 1,309 acre project area is in the FC-RONR Wilderness area, there are few emission sources in the area. Visibility is an important component of the wilderness experience. Currently, the predominate sources of emissions affecting visibility in the project area are outside the local area and are regional emission sources predominantly due to summer fires and coal fired plants. Local sources in the immediate area are limited and generally restricted to vehicle exhaust, smoke, and dust. Particulates from dust and smoke adversely affect visibility but these are generally short-term emission sources associated with disturbed areas related to fires and traffic on dirt roads. While generally a dryer environment, the standard visual ranges at Craters of the Moon over 100 miles south and east of the project area averaged 162 miles from 2000 to 2010. Within the Sawtooth National Recreation Area standard visual range averaged 155 miles from 2000 to 2010. Within the FC-RONR, standard visual range median values were 108 miles and 133 miles in summer and fall respectively from 1989 thru 1993. The poorest visibility (10th percentile) ranged from 55 miles to 75 miles in the summer and fall respectively during that same time period (Jackson 2001). The overall air quality and hence visibility of the FC-RONR occurring south and east of the project area is generally excellent with only short time impacts (Jackson 2002).

The Environmental Protection Agency (EPA) has established NAAQS for six air pollutants; carbon monoxide, ozone, nitrogen dioxide, sulfur dioxide, lead, and particulate matter. As they relate to this project, particulate matter associated with dust and emissions from unpaved roads, vehicles, and equipment are the pollutants of most concern because of potential impacts on human health and visibility. For this analysis PM-2.5, PM-10, nitrogen dioxide, and sulfur dioxide were used as indicators for analysis. The NAAQS for PM-10 (particulate matter less than 10 micrometers in aerodynamic diameter) were established in 1987 and updated in December of 2006. The NAAQS for PM-2.5 (particulate matter less than 2.5 micrometers in aerodynamic diameter) were established in 1997. Although PM-2.5 causes more severe health effects and visibility impacts than PM-10, the PM-10 standards were retained because they also have the potential to cause significant health effects. Nitrogen dioxide and sulfur dioxide standards were established in 1971 and have since been amended. According to the NAAQS, PM-10 cannot exceed 150 micrograms/cubic meter ($\mu\text{g}/\text{m}^3$) within a 24 hour period and PM-2.5 cannot exceed 35 $\mu\text{g}/\text{m}^3$ within a 24 hour period either alone or in combination with existing pollution sources. Nitrogen dioxide cannot exceed 100 parts per billion in a 1 hour period averaged over 3 years and sulfur dioxide cannot exceed 75 parts per billion in a 1 hour period averaged over 3 years. Table 3-9 displays all the NAAQS standards (EPA 2012).

An area that violates the NAAQS is designated as "nonattainment". For the purposes of regulating ambient air quality, the Idaho DEQ does not have baseline data for the affected environment. However, air quality in the project area is generally good to excellent due to the lack of urban and industrial sources and a minimum of other activities (vehicle dust and emissions) in the area that would generate pollutants. Existing sites near Idaho City, Salmon, Garden Valley, and McCall monitor PM-2.5 levels. A review of air quality monitors since 2010 revealed that on a 24 hour average only Salmon and Idaho City exceeded a PM-2.5 level of 35. A total of 33 days exceeded standards and these were almost exclusively recorded in the winter and spring months most probably associated with wood burning and stagnant air masses (IDEQ 2012). Project activities would not occur during this time frame. The yearly average over 5.5 years within the FC-RONR was 3 $\mu\text{g}/\text{m}^3$ for PM-2.5 (Jackson 2002).

Affected Environment & Environmental Consequences

Table 3-9 National Ambient Air Quality Standards (NAAQS)

Pollutant	Primary/ Secondary	Averaging Time	Level	Form
Carbon Monoxide	Primary	8-hour	9 ppm	Not to be exceeded more than once per year
		1-hour	35 ppm	
Lead	Primary and Secondary	Rolling 3 month average	0.15 ug/m ³	Not to be exceeded
Nitrogen Dioxide	Primary	1-hour	100 ppb	98 th percentile, averaged over 3 years
	Primary and Secondary	Annual	53 ppb	Annual Mean
Ozone	Primary and Secondary	8-hour	0.075 ppm	Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years
Particulate Pollution PM-2.5	Primary and Secondary	Annual	15 ug/m ³	annual mean, averaged over 3 years
		24-hour	35 ug/m ³	98 th percentile, averaged over 3 years
Particulate Pollution PM-10	Primary and Secondary	24-hour	150 ug/m ³	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide	Primary	1-hour	75 ppb	99 th percentile of 1-hour daily maximum concentrations, averaged over 3 years
	Secondary	3-hour	0.5 ppm	Not to be exceeded more than once per year

Acidic inputs from the atmosphere, mainly sulfate (SO₄) and nitrate (NO₃), can negatively impact aquatic and terrestrial ecosystems (EPA 2001). Their acidifying effects contribute to degradation of stream and lake water quality by lowering the Acid Neutralizing Capacity (ANC) which can be thought of as the water's natural acid buffering system. As the ANC decreases, the pH will eventually decrease and thus the acid levels will increase. The sensitivity of lakes and streams to the negative effects of acid deposition are often linked to natural watershed characteristics, most notably the bedrock geology/lithology types. These areas that receive high levels of acidic deposition and have bedrock geology with a naturally low buffering capacity may exhibit nutrient depletion and stream acidification. Sulfate is the primary component of acidic rain in the eastern U.S., while nitrogen deposition is more of a factor in acidic rain in the mid and western United States (USDA 2012). On the Salmon-Challis National Forest 68 lakes were sampled for acid deposition to determine the ANC. Of these approximately 16 show a low sensitivity (< 50 ANC), 23 are ultra-sensitive (< 75 ANC), eight are very sensitive (75-100 ANC), nine are sensitive (< 200 ANC), and 12 are non-sensitive (> 200 ANC) (Jackson 2001).

The Montana/Idaho Airshed Group, of which the Payette National Forest is a member, was formed in 1998 and yearly releases its operating guidelines for public and private land managers within Idaho. The objective of those guidelines is to coordinate prescribed burning among members to minimize smoke-related impacts to air quality; however, the group also functions as a source of data for particulate emissions in general. The Montana/Idaho Airshed Group monitors daily emissions, burning activities, and particulate matter levels with established monitoring units and certified meteorologists. The Forest Service, in cooperation with Idaho DEQ, has placed a PM-10 monitor near Garden Valley.

Class I Areas are subject to the most stringent restrictions relative to additional air pollution. The Clean Air Act established the national visibility goals of preventing any future, and the remedying of any existing, impairment of visibility in mandatory Class I Areas where impairment results from man-made air pollutants. The EPA's regional haze regulations (July 1, 1999) require that all states develop visibility plans to address regional haze impairment of Class I Areas within their state, as well as Class I Areas outside of their state that may be affected by emissions from within their state. Table 3-10 lists the Class I Areas and population centers within a 100 kilometer radius of the project area where impacts may occur.

Table 3-10 Sensitive Areas

Site	Distance from Project Area (Kilometers)	Direction from Project Area
Sawtooth Wilderness Area (Class I)	100	South
Hells Canyon Wilderness Area (Class I)	90	West
Selway-Bitterroot Wilderness (Class I)	56	North
Frank Church River of No Return Wilderness (Class II)	0	Generally North and East
City of McCall (Class II)	60	West
Yellow Pine Community (Class II)	19	South

Alternatives could produce pollutants during project implementation when emissions from road maintenance, drilling, trenching, and vehicle trips inside/outside the wilderness occur; and, from other unaccounted emissions such as wood stoves in trailers and stationary equipment exhaust. The discussion of effects documents possible emissions from the authorized trips into the FC-RONR Wilderness and estimates of possible emissions from other project activities. The approximate emissions displayed are meant to serve only as a comparison between Alternatives and would not represent an actual emission from the project activities. Actual emissions could vary depending on a host of factors including but not limited to climatic conditions and the actual equipment utilized. The number of trips into the FC-RONR Wilderness from Werdenhoff represents the primary difference between Alternatives with regard to emissions.

3.10.1 Environmental Consequences Specific to Alternative A

This alternative does not propose any activities. Therefore no direct or indirect effects on air quality are expected. Impacts from dust and vehicle/other emissions in the area associated with recreational/other activities would not change appreciably from the existing condition and would continue to contribute pollutants based on the conditions present at the time of travel. Current use levels in the area are low given the remote setting of the project area from any population source. Depending on actual usage of the analysis area, activities would continue to produce dust, nitrogen dioxide, and sulfur dioxide.

3.10.2 Environmental Consequences Specific to Alternative B

Alternative B would add approximately 771 vehicle trips annually in the project area from Werdenhoff into FC-RONR Wilderness. Trips within the wilderness account for the primary difference of emissions between alternatives. Additionally, this alternative could produce pollutants during project implementation when emissions from activities such as road maintenance, drilling, trenching, and vehicle trips inside/outside the wilderness occur; and, from other unaccounted emissions such as wood stoves in trailers and stationary equipment exhaust. Based on estimates and assumptions it was calculated that Alternative B would annually produce approximately 5,500 pounds of PM-10 particulate matter, 700 pounds of PM-2.5 particulate matter, 23,500 pounds of nitrogen dioxide, and 1,600 pounds of sulfur dioxide (Table 3-11).

Table 3-11 Alternative B and C Pollutant Inputs

Pollutant	Alternative B Emission (Lbs.)	Alternative C Emission (Lbs.)
Particulate Pollution PM-2.5	700	630
Particulate Pollution PM-10	5,500	4,900
Nitrogen Dioxide	23,500	20,100
Sulfur Dioxide	1,600	1,400

Particulates contributed to the atmosphere can be suspended and travel long distances or relatively short distances as evident by the visible dust adjacent to roads. The amount of pollutants produced,

suspended, and distributed depend heavily on environmental conditions such as moisture content of the roads, air humidity, winds, etc. Of the potential pollutants produced, all or none could be distributed depending on environmental conditions. Assuming all emissions are dispersed into the air column it would generally take little mixing to dilute emissions to low levels in the atmosphere or have any meaningful impact on the existing condition of pollutants within the air column.

While Alternative B would increase pollutants from dust, vehicle, and other emissions in the project area, it would not likely have measurable effects on air quality in any Class I Area, the FC-RONR Wilderness, or at monitoring sites, given the distance and dilution that would occur as particles and air mix over distance. Project design features (section 2.4.4) would mitigate emissions by reducing the dust impacts and maintaining pollution controls on exhaust. Impacts to the wilderness user are disclosed in Section 3.3 and would be generally limited to localized impacts from dust prior to dispersal where it is no longer perceived by the wilderness user. It would not be expected that suspended particles would have a measureable impact on overall visibility in the FC-RONR Wilderness, nor would any deposition likely have measurable increases in lake acidity.

3.10.3 Environmental Consequences Specific to Alternative C

Alternative C would add approximately 571 vehicle trips annually in the project area from Werdenhoff into FC-RONR Wilderness. Trips within the wilderness account for the primary difference of emissions between alternatives. Additionally, this alternative could produce pollutants during project implementation when emissions from activities such as road maintenance, drilling, trenching, and vehicle trips inside/outside the wilderness occur; and, from other unaccounted emissions such as wood stoves in trailers and stationary equipment exhaust. Based on estimates and assumptions it was calculated that Alternative C would annually produce approximately 4,900 pounds of PM-10 particulate matter, 630 pounds of PM-2.5 particulate matter, 20,100 pounds of nitrogen dioxide, and 1,400 pounds of sulfur dioxide (Table 3-11).

Pollutants contributed to the atmosphere can be suspended and travel long distances or relatively short distances as evident by the visible dust adjacent to roads. The amount of pollutants produced, suspended, and distributed depend heavily on environmental conditions such as moisture content of the roads, air humidity, winds, etc. Of the potential pollutants produced, all or none could be distributed depending on environmental conditions. Assuming all emissions are dispersed into the air column it would generally take little mixing to dilute emissions to low levels in the atmosphere or have any meaningful impact on the existing condition of pollutants within the air column.

While Alternative C would increase pollutants from dust, vehicle, and other emissions in the project area, it would not likely have measurable effects on air quality in any Class I Area, the FC-RONR Wilderness, or at monitoring sites, given the distance and dilution that would occur as particles and air mix over distance. Project design features (section 2.4.4) would mitigate emissions by reducing the dust impacts and maintaining pollution controls on exhaust. Impacts to the wilderness user are disclosed in Section 3.3 and would be generally limited to localized impacts from dust prior to dispersal where it is no longer perceived by the wilderness user. It would not be expected that suspended particles would have a measureable impact on overall visibility in the FC-RONR Wilderness, nor would any deposition likely have measurable increases in lake acidity.

3.10.4 Cumulative Effects

The area used to assess this project's cumulative effects on air quality consists of a 100 kilometer radius around the project area. There are no known past activities that, when combined with proposed activities, would result in a noticeable incremental effect on air quality. Present/Ongoing and Foreseeable future actions considered in this cumulative effects analysis include numerous activities over a very wide area and include, but are not limited to, other prescribed fires, wildfires, wood stoves, logging/mining/industrial activities, road construction/maintenance, vehicle emissions, recreation uses, and/or other sources of pollutants on adjacent National Forest, State, and private lands.

Golden Hand No. 1 and No. 2 Lode Mining Claims Draft EIS

Alternative A does not propose any activities and therefore would have no direct, indirect, or cumulative effects on air quality.

Dust, vehicle, and other emissions that result from Alternative B and C could combine with air pollutants from other projects, including but not limited to other prescribed fires, wildfires, wood stoves, logging/mining/industrial activities, road construction/maintenance, vehicle emissions, recreation uses, and/or other sources of pollutants on adjacent National Forest, State, and private lands. Many of these activities are largely driven by seasonal opportunities or requirements that present parameters on resource managers, landowners, and users to conduct their activities simultaneously. Even though the impacts of these activities are widely spaced over vast, complex terrain, degradation of air quality could occur at localized sites from cumulative effects.

Due principally to the increase in number of trips from Werdenhoff into the FC-RONR Wilderness, Alternative B could potentially add more pollutants than Alternative C and therefore has the potential to contribute more pollutants to cumulative impacts than Alternative C.

Air quality would continue to be monitored at sites throughout the state for daily and annual standards. Organizations such as the Montana/Idaho State Airshed Group would continue to work with agencies to manage inputs such as smoke impacts.

With relation to national and global petroleum reserves, the energy consumption associated with individual alternatives, as well as the differences between alternatives, is insignificant. Additionally, the energy consumption and thus the associated minor emissions would likely have unmeasurable and insignificant effects at a global scale on emissions or greenhouse gas.

3.11 Scenic Environment

This section of the document discusses the existing conditions and characteristics of the scenic environment within the project area, as well as the effects of the various alternatives on those resources. The analysis area used in this assessment consists of the 1,309 acre project area (Figure 3-12) as seen from sensitive viewing locations identified in the Forest Plan and others deemed appropriate for this analysis.

While most all National Forest lands can be viewed from high vista points or from aircraft, the esthetic concern varies along with the types of viewers, numbers of viewers, and the view duration. During the Forest Planning effort various visual quality objectives (VQOs) were established for seen areas. These VQOs function as indicators of allowable levels of induced change on the landscape. VQOs defined in the Forest Plan include:

Preservation (P) – This visual quality objective allows ecological changes only.

Retention (R) - Provides for management activities that are not visually evident to the casual forest visitor.

Partial Retention (PR) - Management activities may be visible but remain subordinate to the characteristic landscape.

Modification (M) - Management activities may dominate the characteristic landscape, but must concurrently use natural, established form, line, color, and texture. Activities should appear as natural occurrences when viewed in foreground or middleground distances.

Maximum Modification (MM) - Management activities may dominate the characteristic landscape, but should appear as natural occurrences when viewed in background distances.

The distance from which a landscape is viewed has an effect on how much detail, pattern, color, line, and texture a viewer sees. To capture this difference, various distance zones are established from the sensitive viewing areas:

Foreground (Fg) - That portion of a view from the observer to ¼ to ½ mile from the observer. The limit of this zone is based upon distances at which textural details can be perceived.

Middleground (Mg) - That portion of a view from ¼ or ½ mile up to three to five miles from the observer. Texture is characterized by the masses of trees in stands of uniform tree cover.

Background (Bg) - The visible terrain beyond the foreground and middleground where individual trees are not visible but are blended into the total fabric of the stand. Also, that portion of a view between three to five miles from the observer, and as far as can be seen.

A third component of visual quality relates to the degree of variety (variety class) within a visual landscape. The more distinctive the variety class, the more restrictive the visual quality objective. In contrast, those landscapes with minimal variety usually have less restrictive VQOs.

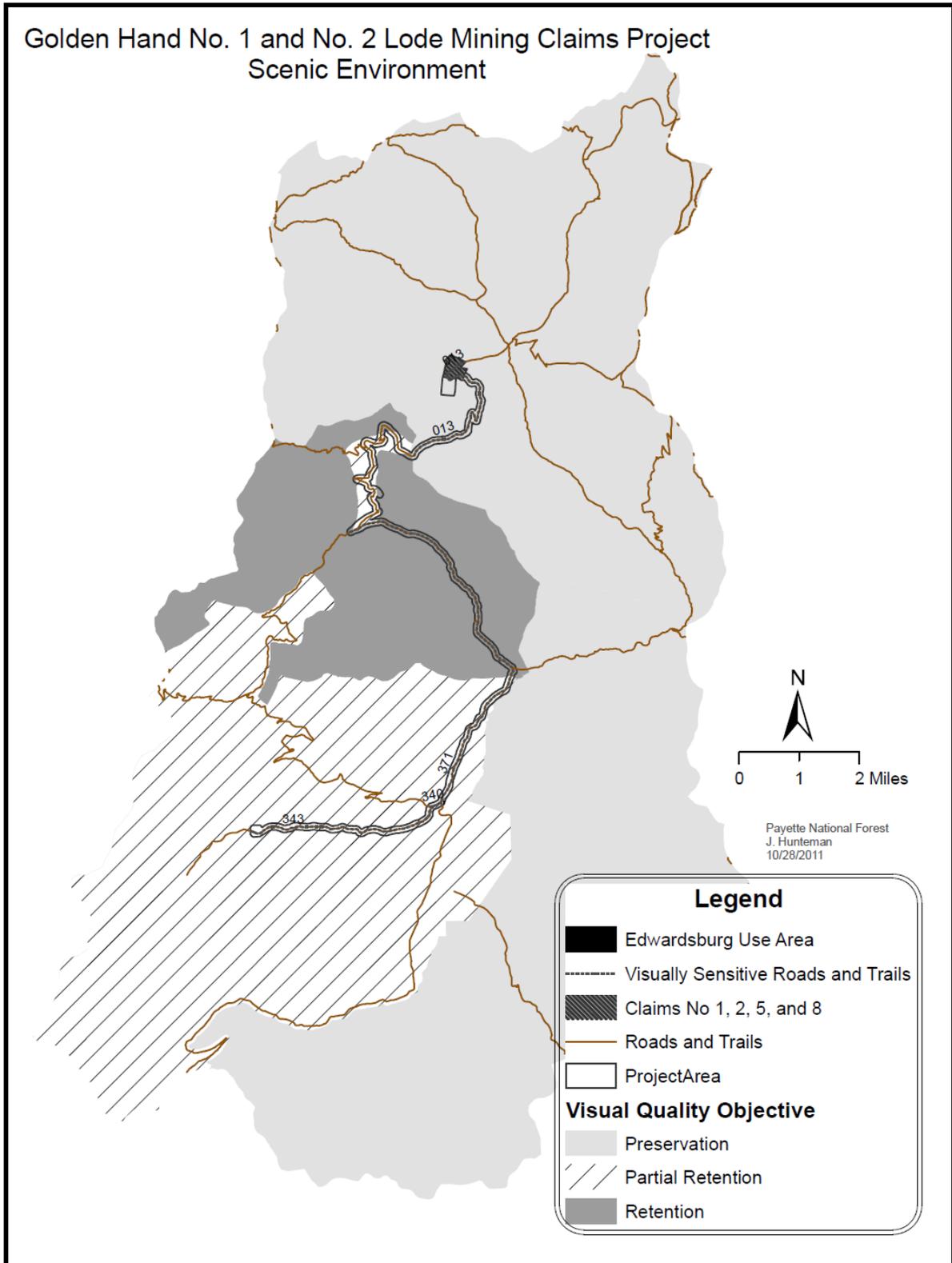


Figure 3-12 Sensitive Travel Routes and Use Areas

Affected Environment & Environmental Consequences

The 1,309 acre analysis area lies within Management Area 14 (Frank Church – River of No Return Wilderness), discussed on pages III-269 through III-274 in the Forest Plan and within Management Area 13 (Big Creek/Stibnite) discussed on pages III-257 through III-267. Page III-261 of the Forest Plan identifies visually sensitive travel routes or use areas within Management Area 13 and specifies the VQOs for those viewsheds. Management Area 14 is designated wilderness and all lands within the wilderness have a visual quality objective of Preservation, which provides the highest possible protection of scenic quality (FP III-273). For the purpose of this analysis it would be assumed that Forest Trail #013 would be visually sensitive. Additionally for the purpose of disclosing effects to the visually sensitive FC-RONR Wilderness, the analysis would also use the collection of mining claims where activities would generally occur as a sensitive use area. Table 3-12 discloses the visually sensitive travel routes or use areas that provide views into the project area, and identifies their sensitivity levels, variety classes, and VQOs provided in the Forest Plan or as defined for this analysis.

Table 3-12 Visual Quality Objectives for Sensitive Travel Routes or Use Areas

Sensitive Route or Area	Sensitivity Level	Variety Class	Primary Visual Quality Objective
Big Creek-Smith Creek Road #371	1	Common	Fg Retention
Logan Creek Road #343	2	Common	Fg Retention
Warren-Profile Gap #340	1	Common	Fg Retention
Edwardsburg Use Area	2	Common	Fg Retention
Golden Hand Claims No. 1, No. 2, No. 5, and No. 8	1	Distinctive or Common	Fg Preservation
Forest Trail #013	1	Distinctive or Common	Fg Preservation

Fg – Foreground

As might be expected, the visual condition varies from site to site depending upon the landscape and its inherent diversity along with such features as intensity of past wildfire in any particular location and past management/development. The following discussions generally describe the existing viewsheds as seen from the individual sensitive locations, and are specific to those viewing distances of concern.

Big Creek-Smith Creek Road – This road, also known as FR #371, is a travel way heading north from Edwardsburg to the Big Creek Guard Station and Airstrip then turning west and north to travel along Smith Creek. Approximately 6.9 miles of this road occur within the project area. This road is in fair travel condition to Smith Creek and offers the traveler a relatively slow speed tour of the Big Creek Area. Once along Smith Creek travel becomes more difficult and the traveler encounters very slow travel. Views in the foreground as the traveler heads north from Edwardsburg are dominated by the facilities in the Big Creek Area, including a campsite, airstrip, remnants of a lodge, and guard station. These occur in a rustic setting with views of forested landscaped interspersed with past wildfire, scree slopes, and meadows in the middle and backgrounds. As the traveler follows Smith Creek the valley becomes more incised and views in the foreground are restricted to a largely forested mixed-conifer landscape and Smith Creek, although views of scree slopes and steep meadows are evident in places. In the foreground the landscape is unaffected by past wildfires, however the casual observer could see pockets of mortality largely created by the mountain pine beetle. Project activities that would occur in this area would generally be restricted to the transport of equipment, personnel, fuel, and other supplies.

Logan Creek - This road, also known as FR #343, is a travel way accessing the Walker Millsite from the Edwardsburg area to the east. This road is largely native surface and offers the traveler a slow speed tour of the backcountry. Approximately 3.4 miles of this road occur within the project area. In this area the foreground offers views of a forested mixed-conifer landscape and Logan Creek. The foreground is unaffected by past wildfire. Project activities that would occur in this area would generally be restricted to the transport of equipment, personnel, fuel, and other supplies.

Warren-Profile Gap - This road, also known as FR #340, is a travel way accessing the Edwardsburg area from Yellowpine to the south and Warren to the west. This road is largely native surface and offers the traveler a relatively slow speed tour of the backcountry. The views in the foreground of this road in the project area are restricted to a short 0.3 mile section immediately north and west of the Edwardsburg area.

Golden Hand No. 1 and No. 2 Lode Mining Claims Draft EIS

In this area the foreground offers views of a forested mixed-conifer landscape and Logan Creek. Some views of the Edwardsburg area are visible as the traveler approaches that area. The foreground is unaffected by past wildfire. Project activities that would occur in this area would generally be restricted to the transport of equipment, personnel, fuel, and other supplies.

Edwardsburg Use Area – The northwestern most tip of the Edwardsburg area is located in the project area. Views into the foreground from the area would offer a mixed conifer landscape unaffected by wildfire. Project activities that could be seen in this area would generally be restricted to the transport of equipment, personnel, fuel, and other supplies.

Golden Hand Claims No. 1, No.2, No. 5, and No. 8 – Travelers within the claims would be restricted to overland travel or travel along unauthorized roads that exist from past mining activities prior to wilderness designation. Views in the foreground would vary, but would generally be a mix of forested and open scree hillsides with signs of past mining interspersed throughout. While much of the area would be indicative of the common variety class in the foreground, the areas around the mining ruins could shape a distinctive variety class given the setting and the era of the ruins.

Forest Trail 013 – Forest Trail #013 provides access into the wilderness from the Pueblo Summit Trailhead. The traveler is restricted to foot or horse travel at a typically slow pace. Approximately 3.3 miles of this trail occur within the project area. Views in the foreground vary as the traveler proceeds through the Project Area. As the traveler leaves Pueblo Summit heading north the views are of mixed alpine forest interspersed with open areas revealing surface rock. As the traveler proceeds views become dominated by a past wildfire that left a patchwork of mortality and live trees from the 2005 event. Lastly as the traveler enters the Coin Creek drainage the forested landscape in the foreground is unaffected by wildfire and typically denser than the forest to the south. The traveler would also notice the remnants of past mining activities on the Golden Hand Claims including a bunkhouse, ice house, outhouse, and cabin. While much of the area would be indicative of the common variety class in the foreground, the areas around the mining ruins could shape a distinctive variety class given the setting and the era of the ruins.

3.11.1 Environmental Consequences Specific to Alternative A

This alternative does not propose any new management activities therefore no management-induced changes to the scenic resources would occur. Over time, the landscape appearance will slowly change. Past fires would regenerate to mature forests over time, while other areas would randomly be affected by fires. Insect populations would also alter the landscape through epidemic and endemic populations. However, it is expected the scenic environment would continue to convey visual effects similar to the current condition barring a large catastrophic fire event.

3.11.2 Environmental Consequences Specific to Alternative B

Implementation of this alternative would result in visible changes as viewed from Golden Hand Claims No. 1, No. 2, No. 5, and No. 8, along Forest Trail #013, and as viewed from FR #371, #340, and #343. The amount of that change would vary depending upon the observer's position in the landscape and the specific activity in that particular viewshed.

Since project activities in the Edwardsburg area, FR #371, FR #340, and FR #343 would generally be restricted to activities such as the transport of equipment, personnel, fuel, and other supplies, these project activities would not affect the VQOs along/within these sensitive areas. These types of activities would not alter the visual characteristics of the area, therefore it is expected that FR #343, FR #340, and the Edwardsburg area would continue to meet a visual quality objective of partial retention. Additionally, FR #371 would continue to meet the VQOs of retention and partial retention. No further discussion of direct or indirect regarding these activities to VQOs would be discussed.

In order to achieve this project's purpose and need of mining activities in the FC-RONR Wilderness, the VQOs of preservation associated with wilderness would be reduced to an objective of maximum modification. Due to the reduction of preservation VQOs in the wilderness to accommodate mining activities, this alternative would necessitate a Forest Plan amendment to standard SCST01 to allow

activities in the wilderness.

The traveler in wilderness would expect and the designation of preservation would imply that alterations to the landscape would be dominated by natural disturbances. Human disturbance would be expected to be restricted to activities such as maintenance of trails. Other disturbances from the past would be expected to resemble past activity with no evidence of current activity and structures indicative of the era when activity occurred. Because of the setting and expectations of observers in this setting, activities that otherwise may meet a less restrictive VQO would likely be considered modification or maximum modification in the wilderness due to a heightened awareness of deviations from the natural-appearing landscape.

Big Creek-Smith Creek Road – The cutting of trees for timbers could take place along this road section. Stumps would be cut within six inches of the ground on the high side, slash would be lopped and scattered to within one foot of the ground, and 70 percent of the merchantable trees would be left in harvest areas along that portion of the road with a VQO of retention. Stumps would be cut within six inches of the ground on the high side and slash would be lopped and scattered to within one foot of the ground along that portion of the road with a VQO of partial retention. Due to the limited nature of the tree cutting for timbers and project design, the activity of cutting trees with the remaining stumps and slash would meet VQOs in the temporary term once fresh cutting and red needles gray.

Warren-Profile Gap and Logan Creek - The cutting of trees for timbers could take place along this road section. Stumps would be cut within six inches of the ground on the high side and slash would be lopped and scattered to within one foot of the ground along that portion of the road with a VQO of partial retention. Due to the limited nature of the tree cutting for timbers and project design, the activity of cutting trees with the remaining stumps and slash would meet VQOs in the temporary term once fresh cutting and red needles gray.

Edwardsburg Use Area – The cutting of trees for timbers is not expected to occur within this section, however trees could be cut immediately adjacent to this area. Stumps would be cut within six inches of the ground on the high side and slash would be lopped and scattered to within one foot of the ground along that portion of the road with a VQO of partial retention. Due to the limited nature of the tree cutting for timbers and project design, the activity of cutting trees with the remaining stumps and slash would meet VQOs in the temporary term once fresh cutting and red needles gray.

Golden Hand Claims No. 1, No. 2, No. 5, and No. 8 – Project activities that would be evident to the casual observer by creating disturbed soil could include maintenance of temporary roads, confirmation work (core drilling on 11 pads, pit-rock chip sampling, and the Ella mine opening), and needed clearing near the bunkhouse and Penn Ida mine. These activities would create a disturbed area including bare soil and would constitute clear evidence of deviation from the natural appearance in the foreground. Given the expectation of the casual observer, these activities would meet a VQO of maximum modification. Because of the ground disturbance involved with these activities, the effects would slowly fade over time as natural processes occur and the vegetation again reclaims roads and other disturbed sites to a point the disturbance again appears to be indicative the era when past mining occurred. In the short term, it would be expected that the appearance of disturbed areas would appear more natural as natural processes occur and the sites become more indicative of the current condition, however these management induced disturbances would linger as a deviation to a casual observer in the wilderness. It would be expected that in the long term, the area would again meet a VQO of preservation as the disturbed areas again appear indicative of the era when mining occurred in the FC-RONR wilderness.

Project activities that would be evident to the casual observer by placing modern/new equipment in the area could include the parking of vehicles/trailers, storage of materials, the placing of new timbers at the Ella mine, the water diversion, the installation of water pipes, and placement water storage tanks. These activities would represent a deviation from the expected landscape in the foreground. The observer would not expect to see motorized equipment, trailers, freshly hewn timbers, water storage, and new pipes within the wilderness. Project design features requiring natural or neutral colors could lessen the distance where facilities become visible and would dampen the visual impact to a slight

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degree once visible. Regardless of the design features that would likely reduce impacts, these activities would only meet a VQO of maximum modification. However, these activities would be short term in nature and would only last for the duration of the project at what point infrastructure and equipment would be removed from the wilderness. Mine timbers still exposed following the caving of the mine entrance could attract the casual observer longer into the short term, until such time the timbers weather and appear more indicative of the era when past mining occurred.

Restoration and occupation of the Golden Hand bunkhouse would be evident to casual observer. The installation of such features as roofing, stove pipes, new logs, windows, and porch posts/flooring would appear evident. While these activities would be carried out in an effort to meet the setting of the building, they would appear as a deviation from the rustic and rundown appearance the observer expects of most structures in the wilderness. These activities would meet a VQO of maximum modification. These activities would largely fade in the short term as wood and metal weather and become more in tune with the area and the expectation of observers. It is expected that activities would not meet a VQO of preservation until the long term when the cabin again takes on a more 'run downed' and weathered quality that the observer would expect to see.

Lighting facilities used in conjunction with mining activities would be evident to the casual observer. In the wilderness the observer would expect to see a dark night, where the only evidence of human activity would be from the occasional camp fire or small flashlights. Lighting facilities designed to provide working light for mining operations would be unexpected and could be visible into the middleground. Design features encouraging that lights point downward could reduce the influence of light and could, depending on the observer's position, reduce the distance the light is visible. Regardless of the design feature that would likely reduce impacts, these activities would meet a VQO of maximum modification and only impact objectives while project activities take place.

Forest Trail 013 – Project activities that would be evident to the casual observer by creating disturbed soil could include maintenance of temporary roads (4.0 miles) and needed clearing near the bunkhouse. These activities would create a disturbed area including bare soil and would constitute clear evidence of deviation from the natural appearance in the foreground. Given the expectation of the casual observer, these activities would meet a VQO of maximum modification. Because of the ground disturbance involved with these activities, the effects would slowly fade over time as natural processes occur and the vegetation again reclaims roads and other disturbed sites to a point the disturbance again appears to be indicative the era when past mining occurred. In the short term, it would be expected that the appearance of disturbed areas would appear more natural as natural processes occur and the sites become more indicative of the current condition, however these management induced disturbances would linger as a deviation to a casual observer in the wilderness. It would be expected that in the long term, the area would again meet a VQO of preservation as the disturbed areas again appear indicative of the era when mining occurred in the FC-RONR wilderness.

Project activities that would be evident to the casual observer by placing modern/new equipment in the area could include the parking of vehicles/trailers, storage of materials, the water diversion, the installation of water pipes, and placement water storage tanks. These activities would represent a deviation from the expected landscape in the foreground. The observer would not expect to see motorized equipment, trailers, water storage, and new pipes within the wilderness. Project design features requiring natural or neutral colors could lessen the distance where facilities become visible and would dampen the visual impact to a slight degree. Regardless of the design features that would likely reduce impacts, these activities would meet a VQO of maximum modification. However, these activities would be short term in nature and would only last for the duration of the project at what point infrastructure and equipment would be removed from the wilderness.

Restoration and occupation of the Golden Hand bunkhouse would be evident to casual observer. The installation of such features as roofing, stove pipes, new logs, windows, and porch posts/flooring would appear evident. While these activities would be carried out in an effort to meet the setting of the building, they would appear as a deviation from the rustic and rundown appearance the observer expects of most structures in the wilderness. These activities would meet a VQO of maximum modification. These activities would largely fade in the short term as wood and metal weather and

become more in tune with the area and the expectation of observers. However, it is expected that activities would not meet a VQO of preservation until the long term when the cabin again takes on a more 'run downed' and weathered quality that the observer would expect to see.

Lighting facilities used in conjunction with mining activities would be evident to the casual observer. In the wilderness the observer would expect to see a dark night, where the only evidence of human activity would be from the occasional camp fire or small flashlights. Lighting facilities designed to provide working light for mining operations would be unexpected and could be visible into the middleground. Design features encouraging that lights point downward could reduce the influence of light and could, depending on the observer's position, reduce the distance the light is visible. Regardless of the design feature that would likely reduce impacts, these activities would meet a VQO of maximum modification and only impact objectives while project activities take place.

3.11.3 Environmental Consequences Specific to Alternative C

Implementation of this alternative would result in visible changes as viewed from Golden Hand Claims No. 1, No. 2, No. 5, and No. 8, along Forest Trail #013, and as viewed from FR #371, #340, and #343. The amount of that change would vary depending upon the observer's position in the landscape and the specific activity in that particular viewshed.

Since project activities in the Edwardsburg area, FR #371, FR #340, and FR #343 would generally be restricted to activities such as the transport of equipment, personnel, fuel, and other supplies, these project activities would not affect the VQOs along/within these sensitive areas. These types of activities would not alter the visual characteristics of the area, therefore it is expected that FR #343, FR #340, and the Edwardsburg area would continue to meet a visual quality objective of partial retention. Additionally, FR #371 would continue to meet the VQOs of retention and partial retention. No further discussion of direct or indirect regarding these activities to VQOs would be discussed.

In order to pursue this project's purpose and need of mining activities in the FC-RONR Wilderness, the VQOs of preservation associated with wilderness were reduced to an objective of maximum modification in order to accommodate project activities. Due to the reduction of preservation VQOs in the wilderness to accommodate mining activities, this alternative would necessitate a Forest Plan amendment to pursue activities in the wilderness.

The traveler in wilderness would expect and the designation of preservation would imply that alterations to the landscape would be dominated by natural disturbances. Human disturbance would be expected to be restricted to activities such as maintenance of trails. Other disturbances from the past would be expected to resemble past activity with no evidence of current activity and structures indicative of the era when activity occurred. Because of the setting and expectations of observers in this settings, activities that otherwise may meet a less restrictive VQO would likely be considered modification or maximum modification in the wilderness due to a heightened awareness of deviations from the natural-appearing landscape.

Big Creek-Smith Creek Road – The cutting of trees for timbers could take place along this road section. Stumps would be cut within six inches of the ground on the high side, slash would be lopped and scattered to within one foot of the ground, and 70 percent of the merchantable trees would left in harvest areas along that portion of the road with a VQO of retention. Stumps would be cut within six inches of the ground on the high side and slash would be lopped and scattered to within one foot of the ground along that portion of the road with a VQO of partial retention. Due to the limited nature of the tree cutting for timbers and project design, the activity of cutting trees with the remaining stumps and slash would meet VQOs in the temporary term once fresh cutting and red needles gray.

Warren-Profile Gap and Logan Creek - The cutting of trees for timbers could take place along this road section. Stumps would be cut within six inches of the ground on the high side and slash would be lopped and scattered to within one foot of the ground along that portion of the road with a VQO of partial retention. Due to the limited nature of the tree cutting for timbers and project design, the activity

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of cutting trees with the remaining stumps and slash would meet VQOs in the temporary term once fresh cutting and red needles gray.

Edwardsburg Use Area – The cutting of trees for timbers is not expected to occur within this section, however trees could be cut immediately adjacent to this area. Stumps would be cut within six inches of the ground on the high side and slash would be lopped and scattered to within one foot of the ground along that portion of the road with a VQO of partial retention. Due to the limited nature of the tree cutting for timbers and project design, the activity of cutting trees with the remaining stumps and slash would meet VQOs in the temporary term once fresh cutting and red needles gray.

Golden Hand Claims No. 1, No. 2, No. 5, and No. 8 – Project activities that would be evident to the casual observer by creating disturbed soil could include maintenance of temporary roads, confirmation work (core drilling on 11 pads, pit-rock chip sampling, and the Ella mine opening), and needed clearing near the bunkhouse. These activities would create a disturbed area including bare soil and would constitute clear evidence of deviation from the natural appearance in the foreground. Given the expectation of the casual observer, these activities would meet a VQO of maximum modification. Because of the ground disturbance involved with these activities, the effects would slowly fade over time as natural processes occur and the vegetation again reclaims roads and other disturbed sites to a point the disturbance again appears to be indicative the era when past mining occurred. In the short term, it would be expected that the appearance of disturbed areas would appear more natural as natural processes occur and the sites become more indicative of the current condition, however these management induced disturbances would linger as a deviation to a casual observer in the wilderness. It would be expected that in the long term, the area would again meet a VQO of preservation as the disturbed areas again appear indicative of the era when mining occurred in the FC-RONR wilderness.

Project activities that would be evident to the casual observer by placing modern/new equipment in the area could include the parking of vehicles/trailers, storage of materials, the placing of new timbers at the Ella mine, the water diversion, the installation of water pipes, and placement water storage tanks. These activities would represent a deviation from the expected landscape in the foreground. The observer would not expect to see motorized equipment, trailers, freshly hewn timbers, water storage, and new pipes within the wilderness. Project design features requiring natural or neutral colors could lessen the distance where facilities become visible and would dampen the visual impact to a slight degree once visible. Regardless of the design features that would likely reduce impacts, these activities would only meet a VQO of maximum modification. However, these activities would be short term in nature and would only last for the duration of the project at what point infrastructure and equipment would be removed from the wilderness. Mine timbers still exposed following the caving of the mine entrance could attract the casual observer longer into the short term, until such time the timbers weather and appear more indicative of the era when past mining occurred.

Lighting facilities used in conjunction with mining activities would be evident to the casual observer. In the wilderness the observer would expect to see a dark night, where the only evidence of human activity would be from the occasional camp fire or small flashlights. Lighting facilities designed to provide working light for mining operations would be unexpected and could be visible into the middleground. Design features encouraging that lights point downward could reduce the influence of light and could, depending on the observer's position, reduce the distance the light is visible. Regardless of the design feature that would likely reduce impacts, these activities would meet a VQO of maximum modification and only impact objectives while project activities take place.

Forest Trail 013 – Project activities that would be evident to the casual observer by creating disturbed soil could include maintenance of temporary roads and needed clearing near the bunkhouse. These activities would create a disturbed area including bare soil and would constitute clear evidence of deviation from the natural appearance in the foreground. Given the expectation of the casual observer, these activities would meet a VQO of maximum modification. Because of the ground disturbance involved with these activities, the effects would slowly fade over time as natural processes occur and the vegetation again reclaims roads and other disturbed sites to a point the disturbance again appears to be indicative the era when past mining occurred. In the short term, it would be expected that the appearance of disturbed areas would appear more natural as natural processes occur and the sites

become more indicative of the current condition, however these management induced disturbances would linger as a deviation to a casual observer in the wilderness. It would be expected that in the long term, the area would again meet a VQO of preservation as the disturbed areas again appear indicative of the era when mining occurred in the FC-RONR wilderness.

Project activities that would be evident to the casual observer by placing modern/new equipment in the area could include the parking of vehicles/trailers, storage of materials, the water diversion, the installation of water pipes, and placement water storage tanks. These activities would represent a deviation from the expected landscape in the foreground. The observer would not expect to see motorized equipment, trailers, water storage, and new pipes within the wilderness. Project design features requiring natural or neutral colors could lessen the distance where facilities become visible and would dampen the visual impact to a slight degree once visible. Regardless of the design features that would likely reduce impacts, these activities would meet a VQO of maximum modification. However, these activities would be short term in nature and would only last for the duration of the project at what point infrastructure and equipment would be removed from the wilderness.

Lighting facilities used in conjunction with mining activities would be evident to the casual observer. In the wilderness the observer would expect to see a dark night, where the only evidence of human activity would be from the occasional camp fire or small flashlights. Lighting facilities designed to provide working light for mining operations would be unexpected and could be visible into the middleground. Design features encouraging that lights point downward could reduce the influence of light and could, depending on the observer's position, reduce the distance the light is visible. Regardless of the design feature that would likely reduce impacts, these activities would meet a VQO of maximum modification and only impact objectives while project activities take place.

3.11.4 Cumulative Effects

Given the general lack of any direct or indirect effects on visual resources beyond the project area, the area used to assess cumulative effects was limited to the 1,309 acre analysis area.

Past activities include the original development and abandonment of the Golden Hand Mine, Werdenhoff Millsite, and the Sunday Mine. These activities are addressed as part of the existing condition, but would have impacted the visual scene from past ground disturbance and associated infrastructure.

There are several ongoing activities that could affect visual resources in the analysis area. The Walker Millsite occurs in the analysis area. The mine site impacts the visual resource through past/ongoing ground disturbance and the associated infrastructure. Firewood harvest occurs annually along roads, leaving associated slash and stumps. Private lands, especially around Edwardsburg, continue to be developed annually to various degrees. The Big Creek Lodge, Big Creek Guard Station, Big Creek Airstrip, and Big Creek Campground would continue to operate on an annual basis and receive maintenance. Private timber harvest, mostly for personal use, would likely continue in an ongoing fashion at unknown levels. Reference **Appendix A** for additional project information and maps related to the cumulative effects analyses completed for this project.

The Big Creek Fuels Reduction Project occurs partially within the analysis area and represents a reasonably foreseeable project. Currently, this project is in the planning stages. A range of thinning activities could impact the visual resources; however, specifics are not currently available. Reference **Appendix A** for additional project information and maps related to the cumulative effects analyses completed for this project.

Alternative A would not result in any direct, indirect, or cumulative effects on visual quality.

Alternative B and C in combination with ongoing and foreseeable future activities could introduce some degree of additional visual change. The direct and indirect effects of Alternative B and C could only be incremental outside the wilderness along FR #340, #341, and #371 where tree cutting could occur for mine timbers. Ongoing firewood cutting and the Big Creek Fuels Reduction Project could

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incrementally increase the numbers of cut trees along these routes. Firewood cutting in the area is generally limited to the homes in the area of Edwardsburg and is generally scattered and random in nature as firewood cutters seek dead trees. Firewood permits have terms that reduce impacts to the visual resource by requiring low stumps and the slash be scattered away from roads. It would be expected that the Big Creek Fuels Reduction Project would have design features that limited impacts to the VQO of partial retention. Given the scattered and random nature of firewood cutting in the area and the included/expected design features associated with firewood cutting and the Big Creek Fuels Reduction Project, it would not be expected that incremental effects would result in changes to the VQOs over those described in the Environmental Consequences section above.

As disclosed in Section 2.4.2.1 and 2.4.3.1, both Alternative B and C would require one amendment to the Forest Plan. This would be a one time, site specific, non-significant amendment that would not change overall Forest Plan goals, objectives, DFC, or associated outputs. Alternatives B and C would:

- Amend Forest Plan Standard SCST01 to allow for activities not meeting Visual Quality Objectives associated with the Golden Hand No. 1 and No. 2 Lode Mining Claims Project to occur, by appending the following: “For the Golden Hand No. 1 and No. 2 Lode Mining Claims Project allow activities within that portion of the project area, approximately 291 acres, which would not meet the Visual Quality Objective of Preservation.”

With the proposed Forest Plan amendment, both Alternatives would be consistent with Forest Plan standards.

3.12 Cultural Resources

This section of the document discusses the existing conditions and characteristics of cultural resources within the project area, as well as the effects of the various alternatives on those resources. Since activities associated with alternatives that could affect cultural resources would be confined to the project area, the analysis area used in this assessment consists of the 1,309 acre project area (Figure 1-2).

The Idaho State Historic Preservation Office (hereafter referred to as SHPO) has determined the Golden Hand Mine site eligible to the National Register of Historic Places (NRHP). The SHPO advises and assists the Forest Service in identifying and preserving culturally significant properties. A cultural resource inventory was conducted in consultation with the SHPO to meet the Section 106 compliance process of the National Historic Preservation Act and its implementing regulations (36 CFR 800). Based on the inventory, the SHPO determined the Golden Hand Mine site was eligible to the NRHP as it met two criteria for nomination to the National Register: (1) The mine site is associated with events that have made a significant contribution to the broad pattern of Idaho's mining history; and (2) The mine site has yielded, or may be likely to yield, information important to the area's history (36 CFR 60).

Public comments regarding cultural resources and Tribal trust responsibilities addressed concerns such as potential threats to social, cultural, or historic areas within the project area, treaty fishing rights, and the effects of the project on other Tribal rights.

The proposed activities are located within the Big Creek drainage and in the FC-RONR Wilderness, and situated within the Nez Perce Tribe's territory as defined by the Treaty of 1855 and findings of the Indian Claims Commission Docket No.175. The Big Creek system was historically and still is very important to the life and culture of the Tribe. Tribal members have lived in and conducted subsistence and ceremonial activities in the Coin Creek/Beaver Creek area as well as the entire Big Creek drainage. The Tribe continues to exercise its treaty-reserved rights in these areas.

American Indian Rights

American Indian Tribes are afforded special rights under various federal statutes that include the NHPA, the Native American Graves Protection and Repatriation Act (NAGPRA), and the American Indian Religious Freedom Act (AIRFA). Federal guidelines direct federal agencies to consult with American Indian Tribal representatives who may have concerns about federal actions that may affect religious practices, other traditional cultural uses, as well as cultural resource sites and remains associated with American Indian ancestors. Any tribe whose aboriginal territory occurs within a project area is afforded the opportunity to voice concerns for issues governed by NHPA, NAGPRA, or AIRFA.

Federal responsibilities to consult with Indian tribes are included in Executive Orders 12875 and 13007. Executive Order 12875 calls for regular consultation with Tribal governments; and Executive Order 13007 requires consultation with Indian tribes and religious representatives on the access, use, and protection of Indian sacred sites.

The Golden Hand project area is located within ceded lands of the Nez Perce Tribe. Ceded lands are federal lands on which the federal government recognizes that a tribe has certain inherent rights conferred by treaty. In the Nez Perce Treaty of 1855, Article 3, the United States of America and the Nez Perce Tribe mutually agreed that the Nez Perce retain the right of:

...taking fish at all usual and accustomed places in common with citizens of the Territory [of Idaho]; and of creating temporary buildings for curing, together with the privilege of hunting, gathering roots and berries, and pasturing horses and cattle...

The government's trust responsibility requires the Forest Service (and other federal agencies) to assess proposed actions for their potential to affect treaty rights and interests including American Indian cultural resources, sacred sites, and other traditional cultural properties. Where potential impacts may exist, the federal agencies must seek consultation with the Nez Perce Tribe, and must address those impacts in planning documents and final decisions.



Photo 3-8. Vicinity of the Golden Hand Mine Site with Historic Building

American Indians have occupied the area of the present day FC-RONR Wilderness for thousands of years. Archaeological evidence suggests that ancient Indians (Paleo-Indians) were hunting and gathering in the Wilderness 9,000 to 10,000 years ago (Swanson and Sneed 1966; Gallagher 1975). When Euro-Americans arrived in the area in the early 19th century, the primary Tribal groups inhabiting the central Idaho mountains were the Nez Perce and the Northern Shoshone (Lowie 1909, Steward 1938).

American Indians of central Idaho relied on hunting, gathering, and fishing for their subsistence. Winter villages, associated with big game winter ranges, and access to good anadromous fishing areas, were located in the lower elevations of Big Creek and the Salmon Rivers (Liljeblad 1957). In the late spring or early summer, family units left their winter villages for higher elevations where vegetable root crops and big game could be found.

The influx of Euro-Americans into central Idaho in the early 19th century as a result of the fur trade, displaced the Indian populations. The gold rush in 1860 and later developments such as homesteading and agriculture further displaced Indian populations.

The Nez Perce Tribe has informed the PNF that the Big Creek system was historically and still is very important to the life and culture of the Tribe. Tribal members have lived in and conducted subsistence and ceremonial activities in the Coin Creek/Beaver Creek area as well as the entire Big Creek drainage. The Tribe continues to exercise its treaty-reserved rights in these areas.

Mining History

In the late 1800's, the gold rush brought miners into central Idaho from places such as Washington, Oregon, California, and Montana. The migration of merchants, laborers, and farmers followed. Mining communities began to develop in the Big Creek area in the 1880's. During this time period, gold placer deposits were found and worked along lower Smith Creek and for approximately one mile below the confluence with Big Creek. James M. Hand claimed the Golden Hand mineral lode discovery in 1889 (Cater et al. 1973).

Gold deposits discovered in 1901 at Thunder Mountain (approximately 21 straight-line miles from the Golden Hand Mine site) renewed the public's interest in gold prospecting in the Big Creek area (Waite 1994). Prospecting continued until 1909. Most mining claims in the Big Creek area were located prior to 1910 (Cater et al. 1973). There was renewed exploration and development at the Golden Hand Mine between 1932 and 1941. The majority of the facilities, equipment, and roads in the area of the claims are from this time period (Shenon and Ross 1936).

Existing Condition

No known pre-historic sites were located in the vicinity of the Golden Hand Mine (Rossillon 1981 and Dixon 2002); however, mining history remnants from the 1890's and 1930's are considered historic and eligible to the NRHP. These mining history remnants include six structures, three mine adits, a waste rock pile, and a variety of mining-related machinery.

The July 2002 site inventory conducted by a Forest Service Cultural Resource Specialist identified six structures at the Golden Hand Mine site that were constructed in the 1930s (Shenon and Ross 1936). The main bunkhouse, latrine, food storage building, and log cabin are standing, while the mill building and tippie tower with ore bins and a crusher, are collapsed. The main bunkhouse is the most prominent feature at the site, and is a large, 2 ½ storied, milled lumber framed building (Photo 3-9). This building is located on claim No. 3. Three historic mine adits were also inventoried at the mine site along with an old road grader, boiler, and other mining-related machinery.

In addition to the historic remnants at the Golden Hand Mine site, there are cultural resource properties adjacent to the access route to the mine (FR #371 and #373) that may be potentially eligible to the NRHP. The Smith Creek Road Survey was conducted from September 12 – 15, 2011. The portion of this road from the Wilderness trailhead to its junction with the road to Pueblo Summit was constructed in 1933. The road to Pueblo Summit was constructed prior to the creation of the Forest. This area is within the historic Alton Mining District that was established in the mid-1880s. Earlier archaeological surveys recorded four sites in this area. These sites were monitored in 2011 and the site forms updated to Archaeological Survey of Idaho Site Inventory Forms.



Two of these sites are eligible to the National Register of Historic Places and are within the area of potential effects. Five new sites were recorded. Two of these sites are eligible to the National Register and one is within the area of potential effects. All sites would be treated as eligible and any impacts to these properties would be avoided. Although mining-related traffic would pass by these properties, none of the properties are close enough to the road to receive any impacts from the Proposed Action or alternatives.

Photo 3-9. Bunkhouse North of Claim No's. 3 and 4 at the Golden Hand Mine Site

In 2003, a Memorandum of Agreement (MOA) with the Idaho SHPO was reached as mitigation for the use of the Golden Hand bunkhouse as an office/cafeteria and a camping area. The MOA (FS Agreement NO. 03_MU_110401230-008) included a contextual history of the Golden Hand Mine and 82 black and white photographs of site features. The MOA was completed by the Payette National Forest in 2003 and sent to the Idaho SHPO on November 12, 2003.

3.12.1 Environmental Consequences Specific to Alternative A

Under Alternative A, the existing cultural resource properties at the Golden Hand mine site would continue to be allowed to decay. Currently, the FS has no plans to restore, stabilize, or maintain the properties at the Golden Hand Mine to meet cultural resource protection standards.

There would be no change to the current condition of the area and the ability of the Nez Perce Tribe to exercise treaty rights including "...taking fish at all usual and accustomed places in common with citizens of the Territory [of Idaho]; and of creating temporary buildings for curing, together with the privilege of hunting, gathering roots and berries, and pasturing horses and cattle..."

3.12.2 Environmental Consequences Specific to Alternative B

The MOA to provide a contextual history of the Golden Hand Mine and 82 black and white photographs of site features was completed in 2003. Elsewhere, this alternative would avoid impacting eligible Historic Properties to the National Register of Historic Places. Therefore, this alternative would have no adverse effect on cultural resources.

The main bunkhouse is in poor condition and would require extensive renovation for use as an office. An estimate of the costs of renovating the bunkhouse to meet historic preservation needs has not been done, however, a building inspection was conducted in 2002 and that cost estimate for improving the structure to meet Occupational Safety and Health Administration codes has been inflated to \$65,000 (Hersel and Huntzman, 2011). It is expected that there would be additional costs (in excess of \$65,000) due to many factors including, but not limited to, inability to use power tools and transport cost into the area.

Alternative B would result in changes to the current condition of the immediate area in and around the mining claims as described in other resource sections. It is unknown how that might affect the ability of the Nez Perce Tribe to exercise treaty rights. Effects to fisheries are analyzed in the Fisheries Resource section (Section 3.4). Alternative B could have temporary to short term negative effects to individual steelhead, bull trout and the associated designated critical habitat (Section 3.4). Effects to Chinook salmon and designated critical habitat would likely be negligible. Installation of stream crossing structure would result in temporary to short term benefits to steelhead. However, the potential effect on the Tribe's "...taking fish at all usual and accustomed places" cannot be determined. Other impacts associated with use of the area are described in the Wilderness and Wildlife resource sections (Sections 3.3 and 3.6). Hunting opportunities are unlikely to be affected. The claim area also contains berries (primarily *Vaccinium* sp.) and possibly other vegetative resources used by the Tribe; however, the proposed activities would have negligible impacts to any vegetative resources. No pasture for livestock occurs in the area. Effects to Tribal social fabric or religious practice can only be assessed by the Nez Perce Tribe.

3.12.3 Environmental Consequences Specific to Alternative C

The MOA to provide a contextual history of the Golden Hand Mine and 82 black and white photographs of site features was completed in 2003. Elsewhere, this alternative would avoid impacting eligible Historic Properties to the National Register of Historic Places. Therefore, this alternative would have no adverse effect on cultural resources.

Alternative C would result in changes to the current condition of the immediate area in and around the mining claims as described in other resource sections. It is unknown how that might affect the ability of the Nez Perce Tribe to exercise treaty rights. Effects to fisheries are analyzed in the Fisheries Resource section (Section 3.4). Alternative C could have temporary to short term negative effects to individual steelhead, bull trout and the associated designated critical habitat (Section 3.4). Effects to Chinook salmon and designated critical habitat would likely be negligible. Installation of stream crossing structure would result in temporary to short term benefits to steelhead. However, the potential effect on the Tribe's "...taking fish at all usual and accustomed places" cannot be determined. Other impacts associated with use of the area are described in the Wilderness and Wildlife resource sections (Sections 3.3 and 3.6). Hunting opportunities are unlikely to be affected. The claim area also contains berries (primarily *Vaccinium* sp.) and possibly other vegetative resources used by the Tribe; however, the proposed activities would have negligible impacts to any vegetative resources. No pasture for livestock occurs in the area. Effects to Tribal social fabric or religious practice can only be assessed by the Nez Perce Tribe.

3.12.4 Cumulative Effects

Since the effects of proposed alternatives would be limited to the project area only, the area used to assess the cumulative effects on cultural resources consists of the 1,309 acre analysis area (Figure 1-2).

Past activities that could have affected cultural resources are discussed as part of the existing condition in this section. It is recognized that past and ongoing actions by individuals, groups, and others could have impacted the existing condition by creating the artifacts seen today and in some cases removing or altering the original artifact over time. However, it would be impossible to fully understand or quantify the true number of artifacts that exist or the full extent to which alterations or removals have occurred. Therefore, there would be no known or quantifiable past, ongoing, or foreseeable future activities within the cumulative effects area that would affect this resource. Reference **Appendix A** for additional information and maps related to the cumulative effects analyses completed for this project.

Neither of the alternatives considered in detail are expected to have any direct or indirect unmitigated effects on cultural resources, therefore no cumulative effects are anticipated. However, Alternative B would restore the bunkhouse at Golden Hand to a useable condition. The needed improvements could add incrementally to improvements or modifications to the original structure that could have been completed in the past.

3.12 Recreation Opportunity Spectrum (ROS)

This section of the document discusses the existing conditions and characteristics of the Recreation Opportunity Spectrum (ROS) classes within the project area, as well as the effects of the various alternatives on those classes. For direct and indirect effects, the analysis area for Recreation Opportunity Spectrum (ROS) would be the Golden Hand No. 1 and No. 2 Lode Mining Claims project area. Proposed activities such as motorized access into the FC-RONR Wilderness and tree removal for trees for timbers along Forest Roads along FR #371 and #373 could affect Recreation Opportunity Spectrum and the desired recreation opportunities the classes represent. These activities would have no effect on ROS outside of the project area.

The Forest Plan has identified Recreation Opportunity Spectrum (ROS) settings in the watershed that allow for many kinds of recreational activities and experiences. The identified ROS categories within the analysis area include Primitive and Roded Natural (Figure 3-13). ROS settings have been identified for both summer and winter recreation; however, given the lack of winter activities proposed for this project there would be no effects to ROS winter classes and winter classes would not be discussed further. The ROS settings for the project area are entirely.

Primitive: Approximately 291 acres of the analysis area are a Primitive ROS setting. These areas provide for primitive recreation opportunities in unroaded and non-motorized settings. Unmodified natural and natural-appearing settings dominate the physical environment. In that these areas are generally larger than 5,000 acres, they offer opportunities for solitude, remoteness, and risk, with no on-site controls or restrictions evident after entry. Encounters with other users, and signs of other users, are minimal. Prescribed fire could be used to attain a variety of resource objectives. Generally, snowmobile, ATV, and other OHV uses are inconsistent with this ROS class.

In relatively rare cases, a motorized use may be present within areas classified as Primitive. This may occur as a result of uses authorized by legislation, administrative or emergency use of motorized vehicles, a setting inconsistency, or as an anomaly whose effects are extremely limited.

Roded Natural: Approximately 1,018 acres of the analysis area are a Roded Natural ROS setting. These areas provide for a wide range of recreation activities that are generally focused along the primary and secondary travel routes in a natural-appearing, roded, motorized setting. Recreation facilities are provided to facilitate recreation use. There may be a moderate to high degree of user interaction, as well as the sights and sounds of other users, depending upon the facilities provided. Seasonal or year-round recreation facilities are provided for user comfort and convenience. Although structures may be designed to accommodate numerous users, they generally convey a rustic theme and blend with the natural landscape. There may be considerable on-site user controls or restrictions. Opportunities for isolation, challenge, or risk are generally not very important, although opportunities for practicing outdoor skills may be important.

Scenic values are often emphasized. Recreation is often only one of many management objectives applied to these areas. A wide range of management activities and objectives may occur, generally being guided by the adopted visual quality objectives. Landscape modifications due to resource management activities, where evident, harmonize with the natural setting. Prescribed fire could be used to attain a variety of resource objectives.

A wide range of recreation facilities may be provided for user convenience and comfort. Developed campgrounds of varying size, complexity, and development scale could occur. There may also be a wide range of facilities and structures to support other Forest uses such as telecommunication facilities, power lines, and administrative sites.

A wide range of transportation routes can occur, from State Highways to native-surfaced, timber access roads. Cross-country snowmobile use may occur on adequate snow depth in accordance with the current travel management plan or map and travel amendments. There may be areas, trails, or roads within this ROS class where motorized use is prohibited or restricted to enhance recreation experiences or to protect public safety or resources.

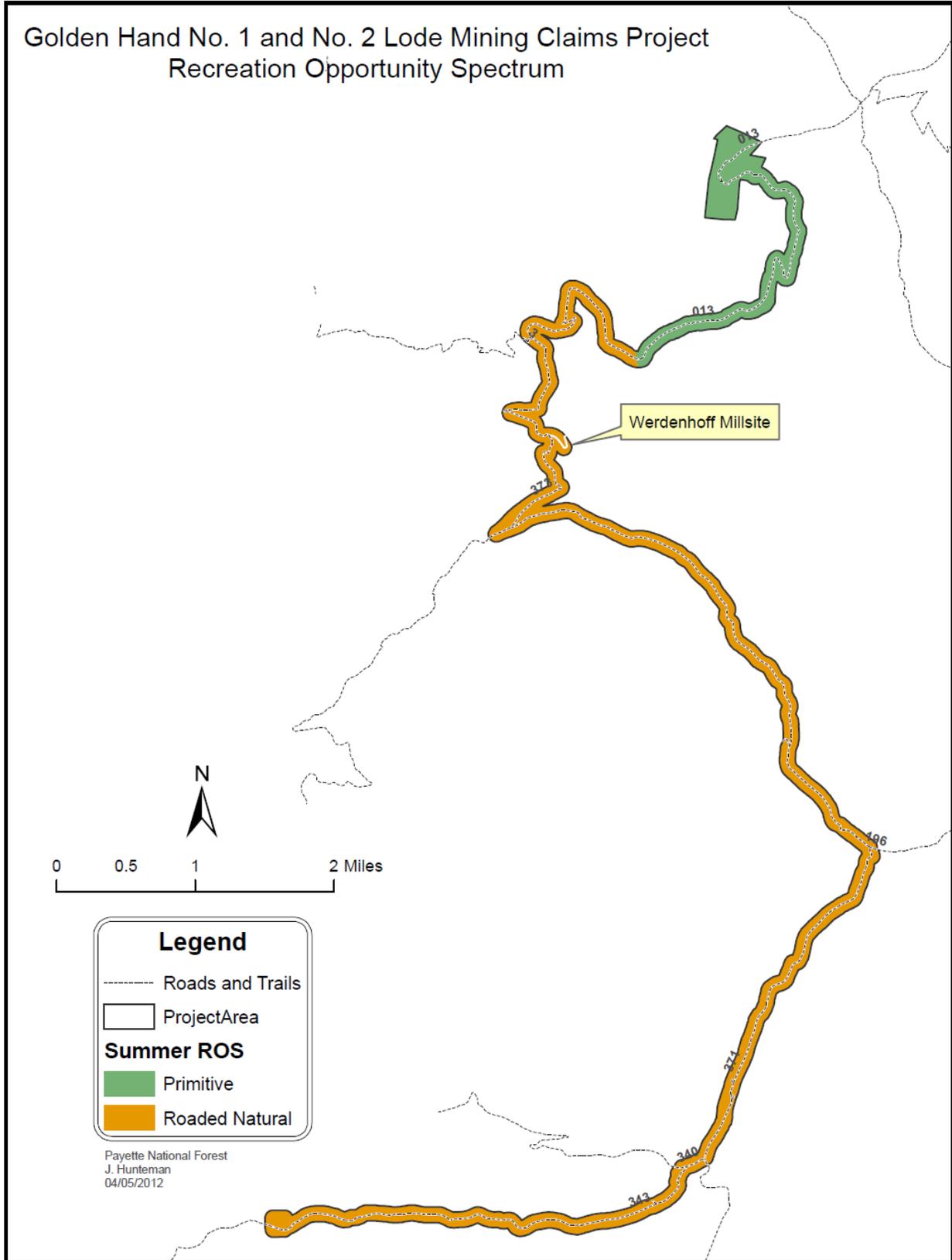


Figure 3-13 Recreation Opportunity Spectrum (ROS)

3.13.1 Environmental Consequences Specific to Alternative A

The No Action Alternative would have no known direct, indirect, or cumulative effects on ROS within the analysis area.

3.13.2 Environmental Consequences Specific to Alternative B and C

Recreation Opportunity Spectrum classifications would remain unchanged with either Alternative.

Within the FC-RONR Wilderness activities would not be consistent the ROS classification due to impacts on wilderness characteristics (Section 3.3) and increased likelihood of frequent encounters with users expecting a primitive setting. However, the activities within the primitive setting are considered to be a setting inconsistency and being conducted pursuant the 1872 Mining Law (Section 1.5). Following project activities, the portion of analysis area in a primitive ROS setting would return to conditions indicative and consistent with the setting. The area would remain classified as a primitive ROS setting.

Project activities within the roughly 1,018 acres of Roaded Natural would be consistent with the ROS setting. Activities such as, but not limited to, the staging area, road use, road maintenance/reconstruction, harvest of trees for timbers are consistent with this ROS setting. Affects to visual quality are covered in Section 3.11

3.13.3 Cumulative Effects

Since the direct and indirect affects to ROS settings are limited to inconsistencies in the primitive ROS setting portion of the analysis area, the area used to assess the cumulative effects was limited to that roughly 291 acre portion of the project area with a primitive ROS setting (Figure 3-13).

Past activities include the original development and abandonment of the Golden Hand Mine. These activities are addressed as part of the existing condition, but would have impacted a primitive ROS setting by conducting activities that would have been setting inconsistencies pursuant the 1872 Mining Law. Reference **Appendix A** for additional project information and maps related to the cumulative effects analyses completed for this project.

Ongoing trail maintenance would continue and increase ground disturbance and increase the potential for encounters. District and FC-RONR Wilderness weed management programs would continue to eradicate populations of noxious weeds in the analysis area potentially increasing the potential for encounters with other users expecting a primitive experience. Reference **Appendix A** for additional project information and maps related to the cumulative effects analyses completed for this project.

Alternative A would not result in any direct, indirect, or cumulative effects on visual quality.

Alternative B and C in combination with past and ongoing activities could incrementally increase the number of activities considered to be a setting inconsistency pursuant the 1872 Mining Law.

3.14 Irreversible and Irretrievable Effects

For the purposes of this analysis, irreversible effects are defined as those effects resulting from a proposed activity that cannot be reversed within a reasonable period of time as perceived from a human time scale. Irretrievable effects are those effects caused by the activities that change outputs or commodities.

Wilderness – Irretrievable losses would occur to the untrammelled conditions and to Wilderness experience during and after the period of operation.

Energy - Implementation of Alternative B and C would irretrievably commit an indeterminate amount of fossil fuels in order to implement proposed activities.

3.15 Other Disclosures

Effects of Alternatives on Wetlands and Floodplains –

There are some small wetlands and floodplains in the project area, but they would not be filled under any alternative. The action alternatives would improve existing road crossings. These activities are permitted under the Corps of Engineers Nationwide Permits, Section 330.5(a). Because no drainage of wetlands would occur or floodplains would be altered, the goal and intent of Executive Orders 11988 (Floodplain Management) and 11990 (Protection of Wetlands) would be met.

For the action alternatives, direct and indirect effects to wetlands and floodplains would be minimized through the application of Project Design Features (Section 2.4.4).

Effects of Alternatives on Social Groups - The alternatives do not differ in their effects on minorities, Native American Indians, women, or Civil Liberties of any American Citizen. The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, sex, religion, age, disability, political beliefs, sexual orientation, or marital or family status. (Not all prohibited bases apply to all programs). Persons with disabilities who require alternative means for communication of program information (Braille, large print, audio tape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD).

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326 - W, Whitten Building, 1400 Independence Avenue, SW, Washington, D.C. 20250-9410 or call (202) 720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.

Effects of Alternatives on Threatened, Endangered, and Proposed Species –

This required disclosure involves wildlife, plant, fish, and habitat listed under the Endangered Species Act of 1973, as amended (ESA). Effects to species listed as regionally sensitive are disclosed in Chapter 3.

Alternative A does not propose any federal action that could affect listed species.

Alternative B and C would have no effect to any threatened or endangered plant species. No habitat for any threatened or endangered plant species occurs in the project analysis area (Section 3.8).

Alternative B and C could have temporary to short term negative effects to individual steelhead, bull trout and the associated designated critical habitat (Section 3.4). Effects to Chinook salmon and designated critical habitat would likely be negligible. Installation of stream crossing structure would result in temporary to short term benefits to steelhead.

Alternative B and C would have no effect on Northern Idaho Ground Squirrel and may affect, not likely to adversely affect Canada Lynx (Section 3.6).

Consultation with the USFWS and National Oceanic and Administration (NOAA) is ongoing for threatened and endangered species and any effect determination would be preliminary until consultation is completed.

Prime Farmland, Rangeland, and Forest Land (USDA Regulation 9500-3)

There are no prime farmlands, rangelands, or forest lands located on the Payette National Forest (Forest Plan EIS, p. 3-979). Therefore no effects to prime farmland, rangeland, or forest lands would occur with implementation of any alternative.

Natural or Depletable Resource Requirements and Conservation Potential

This project has been designed to conform to applicable laws and regulations pertaining to natural or depletable resources, including minerals and energy resources. Regulations of mineral and energy activities on the National Forest, under the 1872 General Mining Law and the Mineral Leasing Act of 1920, are shared with the Bureau of Land Management.

With relation to national and global petroleum reserves, the energy consumption associated with the individual alternatives, as well as the differences between alternatives, is insignificant. Implementation of

Affected Environment & Environmental Consequences

Alternative B and C would irretrievably commit an indeterminate amount of fossil fuels in order to implement proposed activities.

Environmental Justice (E.O. 12898) - Executive Order 12898 (59 Fed. Register 7629, 1994) directs federal agencies to identify and address, as appropriate, any disproportionately high and adverse human health or environmental effects on minority populations and low-income populations. Based upon the analysis disclosed in this document, the proposed alternatives are in compliance with Executive Order 12898.

National Forest Management Act (NFMA)

This Act guides development and revision of National Forest Land Management Plans and contains regulations that prescribe how land and resource management planning is to be conducted on NFS lands to protect National Forest resources. The different alternatives for this project were developed to comply with NFMA, and represent varying degrees of resource protection.

Clean Water Act, The Federal Water Pollution Control Act of 1972 (PL 92-500) as amended in 1977 (PL 95-217) and 1987 (PL 100-4)

The objective of the Federal Water Pollution Control Act, commonly referred to as the Clean Water Act (CWA), is to restore and maintain the chemical, physical, and biological integrity of the nation's waters by preventing point and nonpoint pollution sources. This Act establishes a non-degradation policy for all federally proposed projects to be accomplished through planning, application, and monitoring of Best Management Practices (BMPs) (Section 2.4.2.2, Section 2.4.3.2, and Section 2.4.4). Identification of BMPs is mandated by Section 319 of the Water Quality Act of 1987 (also referred to as the Clean Water Act), which states, "It is national policy that programs for the control of nonpoint sources of pollution be developed and implemented." Additional information on BMPs is provided in Chapter 2 and the Fisheries and Watershed Resource section, Chapter 3.

Idaho Stream Channel Protection Act

In general terms, the Stream Channel Protection Act applies to any type of alteration work, including recreational dredge mining, done inside the ordinary high water marks of a continuously flowing stream.

A stream channel alteration is defined as any activity that will obstruct, diminish, destroy, alter, modify, relocate or change the natural existing shape or direction of water flow of any stream channel. This includes taking material out of the channel or placing material or structures in or across the channel where the potential exists to affect flow in the channel.

Alternative B and C would adhere to the requirements of the Idaho Stream Channel Protection Act and the 404 Permit Process of the Corp of Engineers. The goals of Executive Orders 11988 and 11990 would be met.

Central Idaho Wilderness Act (CIWA) and the Wilderness Act

The US Congress designated the FC-RONR Wilderness in 1980 with the passage of the CIWA. The CIWA mandated the development of a comprehensive wilderness management plan. The CIWA includes mining direction prohibitions for areas of the FC-RONR Wilderness but specific direction is provided in the Wilderness Act (US Congress 1964, 16 USC 1131-1136).

The Wilderness Act of 1964 (amended in 1978) was enacted by Congress to "secure for the American people, an enduring resource of wilderness for the enjoyment of present and future generations". This act was passed "in order to ensure that an increasing population, accompanied by expanding settlement and growing mechanization, does not occupy and modify all areas within the United States and its possessions, leaving no lands designated for preservation and protection in their natural condition..."(Section 2 [a]). The Wilderness Act contains provisions for mining that include: "Mining locations lying within the boundaries of said wilderness areas shall be held and used solely for mining or processing operations and uses reasonably incident hereto...subject to valid existing rights" (Section 4 [d-3]). Additional provisions in the Act and affects are described in the Minerals and Geology and Wilderness Resources section, Chapter 3.

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The Clean Air Act, as amended in 1990

The purpose of this Act is "...to protect and enhance the quality of the Nation's air resources so as to promote the public health and welfare and the productive capacity of its population; to initiate and accelerate a national research and development program to achieve the prevention and control of air pollution; to provide technical and financial assistance to State and local governments in connection with the development and execution of their air pollution prevention and control programs; and to encourage and assist the development and operation of regional air pollution prevention and control programs."

While Alternative B and C could increase pollutants from dust, vehicle, and other emissions in the project area, it would not be likely to have measurable effects on air quality in any Class I Area or at monitoring sites.

Invasive Species (E.O. 13112) - Executive Order 13112 on Invasive Species directs that federal agencies should not authorize any activities that would increase the spread of invasive species. This project includes design features to limit the spread of invasive species (Section 2.4.4) and incorporates those applicable Forest Standards (USDA 2003, 2010).

American Indian Religious Freedom Act, Executive Order 12875, Executive Order 13007, Executive Order 13175, and Native American Graves Protection and Repatriation Act

The American Indian Religious Freedom Act, Public Law No. 95-341, 92 Stat. 469 (Aug. 11, 1978) (commonly abbreviated to AIRFA), is a United States federal law and a joint resolution of Congress that was passed in 1978. AIRFA was enacted to protect and preserve the traditional religious rights and cultural practices of American Indians, Eskimos, Aleuts, and native Hawaiians. Executive Order 13175 established a requirement for regular and meaningful consultation between federal and tribal government officials on federal policies that have tribal implications. Executive Order 12785 was enacted in order to reduce unfunded mandates upon State, local, and tribal governments; to streamline the application process for and increase the availability of waivers to State, local, and tribal governments; and to establish regular and meaningful consultation and collaboration with State, local, and tribal governments on Federal matters that significantly or uniquely affect their communities. Executive Order 13007 was enacted in order to protect and preserve Indian religious practices. The Native American Graves Protection and Repatriation Act provides a process for museums and Federal agencies to return certain Native American cultural items, such as human remains, funerary objects, sacred objects, or objects of cultural patrimony, to lineal descendants, and culturally affiliated Indian tribes and Native Hawaiian organizations.

A proposal of the project was presented to tribe representatives at the April 8, 2010, June 10, 2010, and April 12, 2012 Wings and Roots Meeting. Individual scoping packages were also forwarded to representatives of the Shoshone-Bannock and Nez Perce Tribes in March of 2010. The project was presented to the Shoshone – Bannock Tribe in Fort Hall on June 22, 2011. The project was also presented at the Nez Perce Tribe and Payette National Forest Staff to Staff meeting on May 11, 2010. Additional coordination with the Tribes will be conducted before a decision on this project is made to ensure that Tribes interests are considered.

Short-Term Uses Versus Long-Term Productivity

Pursuant to National Environmental Policy Act (NEPA) regulations (40 CFR 1502.16) an Environmental Impact Statement must consider the relationship between short-term uses of the environment and the maintenance and enhancement of long-term productivity. Short-term uses are those that generally occur on a yearly basis, such as livestock grazing as a use of the forage resource or timber harvest as a use of the wood resource. Long-term productivity refers to the capability of the land to provide market outputs and amenity values for future decades. The quality of life for future generations is linked to the capability of the land to maintain its productivity.

For this proposed project, project design features and mitigation measures built into the action alternatives ensure that long-term productivity would not be impaired by the application of short-term management practices. For some resources, such as water quality, long-term productivity is expected to increase due to the short-term project design criteria proposed by the action alternatives.

Unavoidable Adverse Environmental Impacts

Proposed activities likely would produce some minor and temporary adverse effects on some components of the environment that cannot be avoided and that would be expected to dissipate in the short and temporary term. Actions that benefit one resource or component can have at least temporary adverse effects on others. Potential adverse effects are documented by resource in this Chapter 3. The Proposed Action includes project design features and mitigation measures to avoid or reduce potential adverse environmental effects (Chapter 2). Monitoring and Evaluation Plans (Appendix C) have been designed to measure how effective the project design features and mitigation measures are in reducing potential adverse effects.

Idaho Roadless Rule

All alternatives would be consistent with the Idaho Roadless Rule (Section 3.7.4).

Facilitation of Hunting Heritage and Wildlife Conservation (E.O. 13443)

On August 16, 2007, President George Bush signed an executive order directing appropriate Federal agencies to facilitate the expansion and enhancement of hunting opportunities and the management of game species and their habitat (FR Vol. 72, No. 160, August 20, 2007).

The project area provides habitat for several game species including deer, elk, black bear, mountain lion, wolf, and forest grouse. The effects to wolves, deer, and elk were considered in this analysis. Mountain lion presence is largely tied to the presence of deer and maintaining deer habitat is the primary consideration for this species.

Black bears are habitat generalists. While they prefer mixed deciduous-coniferous forests with thick understories, they will utilize a variety of habitats. Special habitat features include fallen logs and debris, and standing hollow trees that provide denning sites for bears. The project would not have measurable effects on habitat.

Blue grouse, spruce grouse, and ruffed grouse may be present in the project area. Habitat use and needs vary between the species. Blue grouse are found in open coniferous forests, often with a fir component. Douglas-fir provides day roosts and the buds and needles are an important winter food. Subalpine fir, with its dense foliage, is often selected as a night roost. Ruffed grouse utilize dense forests with some deciduous trees or shrubs. Aspen is an important component of habitat. Young forests provide optimum habitat for the species. Spruce grouse occupy coniferous forests that include short needled trees (lodgepole pine, spruce-fir). *Vaccinium spp* are a common component of habitats. Key features include forest structure that provides cover (i.e., lodgepole pine prior to self pruning). All three grouse species are associated with forested habitats. The project would not have measurable effects on habitat.

Best Available Science

The conclusions disclosed in this document are based on a review of the project's record that reflects consideration of relevant scientific information and responsible opposing views where raised by internal or external sources, and the acknowledgement of incomplete or unavailable information, scientific uncertainty, and/or risk where pertinent.

Migratory Bird Treaty Act

Migratory birds occupy all source habitats found in the analysis area. All alternatives would comply with the Migratory Bird Treaty Act. This project may however result in an "unintentional take" of individuals during proposed activities. However the project complies with the U.S. Fish and Wildlife Service Director's Order #131 related to the applicability of the Migratory Bird Treaty Act to federal agencies and requirements for permits for "take". In addition, this project complies with Executive Order 13186 because the analysis meets agency obligations as defined under the January 16, 2001 Memorandum of Understanding between the Forest Service and U.S. Fish and Wildlife Service designed to complement Executive Order 13186. If new requirements or direction result from subsequent interagency memorandums of understanding pursuant to Executive Order 13186, this project would be reevaluated to ensure that it is consistent.

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Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) / 36 CFR 228.8

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund, was enacted by Congress on December 11, 1980. This law created a tax on the chemical and petroleum industries and provided broad Federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment.

Nothing in this document or in the approval of a Plan of Operations by the USDA Forest Service authorizes or in any way permits a release or threat of a release of hazardous substances into the environment that will require a response action or result in the incurrence of response costs. All designs, monitoring plans, and analyses required by the Plan of Operations are subject to the requirement of 36 CFR 228.8 that mining operations be conducted so as, where feasible, to minimize adverse environmental impacts on National Forest surface resources. However, the operator's compliance with such requirement in no way insulates or releases it from any liability or obligations which may arise with respect to its operations under any applicable environmental law, including but not limited to the CERCLA, 42 U.S.C. 9601 et seq. The United States reserves its rights and claims under CERCLA to seek performance of response actions and/or reimbursement of response costs that may be incurred as a result of any release or threat of a release of a hazardous substance, or any ancillary operation for the confirmation activity.