# Vegetation Baseline Study

Stibnite Gold Project
Midas Gold Idaho, Inc.

**November 2013, rev. April 2017**

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# SECTION 1: INTRODUCTION

## 1.1 Purpose of Study

The purpose of the vegetation baseline study is to characterize existing conditions prior to the start of proposed mining operations at the Stibnite Gold Project in central Idaho. The study describes the existing vegetation in the project study area and will be used to support the U.S. Forest Service (USFS) environmental impact statement (EIS) on future exploration and mining projects.

## 1.2 Background

**Figure 1-1** shows the location of the Stibnite Gold Project. The project is located in the Stibnite-Yellow Pine Mining District in central Idaho, near the village of Yellow Pine. Located in Valley County, the district is characterized by historic mining activities and unpatented (federal land) and patented (private land) mining claims with known deposits of gold, silver, tungsten, and antimony. The Stibnite-Yellow Pine Mining District is in the Boise National Forest (BOI), but administered by the Krassel Ranger District of the Payette National Forest (PAF).

Mining began in the district in the late 1800s and continued on and off through 1997. Beginning in 2009, Midas Gold Idaho, Inc. (MGII), a subsidiary of Midas Gold Corporation, began to acquire mining claims throughout the district from prior owners or by staking claims on its own behalf. With federal and state approval, MGII initiated mineral exploration activities in 2009 as part of the Stibnite Gold Project to better define the mineral deposit potential for the area. This work included using the existing road network and construction of several temporary roads to access drill sites, build drill pads, drill on both National Forest System (NFS) and private lands, and access disturbed areas for reclamation when exploration work ends.

The PAF Krassel Ranger District has jurisdictional authority over surface disturbance associated with mining and exploration activities on NFS land in the Stibnite-Yellow Pine District. The Payette Lakes Supervisory Area of the Idaho Department of Lands (IDL) has jurisdictional authority over exploration and mining-related activities on private lands within its administrative area (Idaho Administrative Procedure Act [IDAPA] 20.03.02).

In addition to the mining activities occurring in the Stibnite-Yellow Pine Mining District, future mine plans may include proposed access roads that provide transportation routes to and from the project. Proposed access roads would be on land located in the BOI and administered by the Cascade Ranger District as well as PAF land administered by the Krassel Ranger District.

### 1.2.1 Project Area Description

**Figure 1-2** shows the project area. The terrain within the project area consists of narrow valleys surrounded by steep mountains. Elevations along valley floors range from 6,000 to 6,600 feet above mean sea level (msl). The surrounding mountains reach elevations over 8,500 feet above msl. The main drainage basin in the project area is the East Fork of the South Fork of the Salmon River (EFSFSR).

The EFSFSR joins Johnson Creek 16 miles downstream near the village of Yellow Pine. The project area is encompassed by the watersheds of tributaries of the EFSFSR, including Sugar Creek, Meadow Creek, Johnson Creek, Riordan Creek, Burntlog Creek, and Trout Creek. The project area includes Cabin Creek and Warm Lake Creek which are tributary streams to the South Fork of the Salmon River. The primary uses or activities in the area have been mineral exploration, mining, logging, and dispersed recreation.

During non-winter conditions (roads clear of snow), the project site can be accessed from the City of Cascade by traveling northeast on Warm Lake Road (Forest Service road 579 [FS 579]/Forest Highway 22 [FH 22]) for about 37 miles to Landmark, then north on Johnson Creek Road (FS 413) for 28 miles to the village of Yellow Pine, and 14 miles east on Stibnite Road (FS 412) (**Figure 1-1**). The site can also be accessed from McCall during non-winter conditions by traveling east on Lick Creek Road (FS 412) for 33 miles to East Fork Road (FS 412), then 16 miles to the village of Yellow Pine, and 14 miles on Stibnite Road.

During winter, the site can be accessed only from Cascade by traveling 24 miles northeast on Warm Lake Road to the intersection with South Fork Road (FS 474/674), then north on South Fork Road for 32 miles to East Fork Road, 16 miles east on East Fork Road to the village of Yellow Pine, and 14 miles on Stibnite Road.

## 1.3 Organization of Report

- Section 1, the introduction, explains the purpose of the baseline study and provides background information on the project area and surrounding areas.
- Section 2 provides an overview of the vegetation study area.
- Section 3 discusses the regulatory environment and summarizes the methodology used to characterize the existing vegetation.
- Section 4 is a discussion of the affected environment as it relates to vegetation.
- Section 5 contains references and abbreviations and acronyms.
- Section 6 includes the list of preparers.

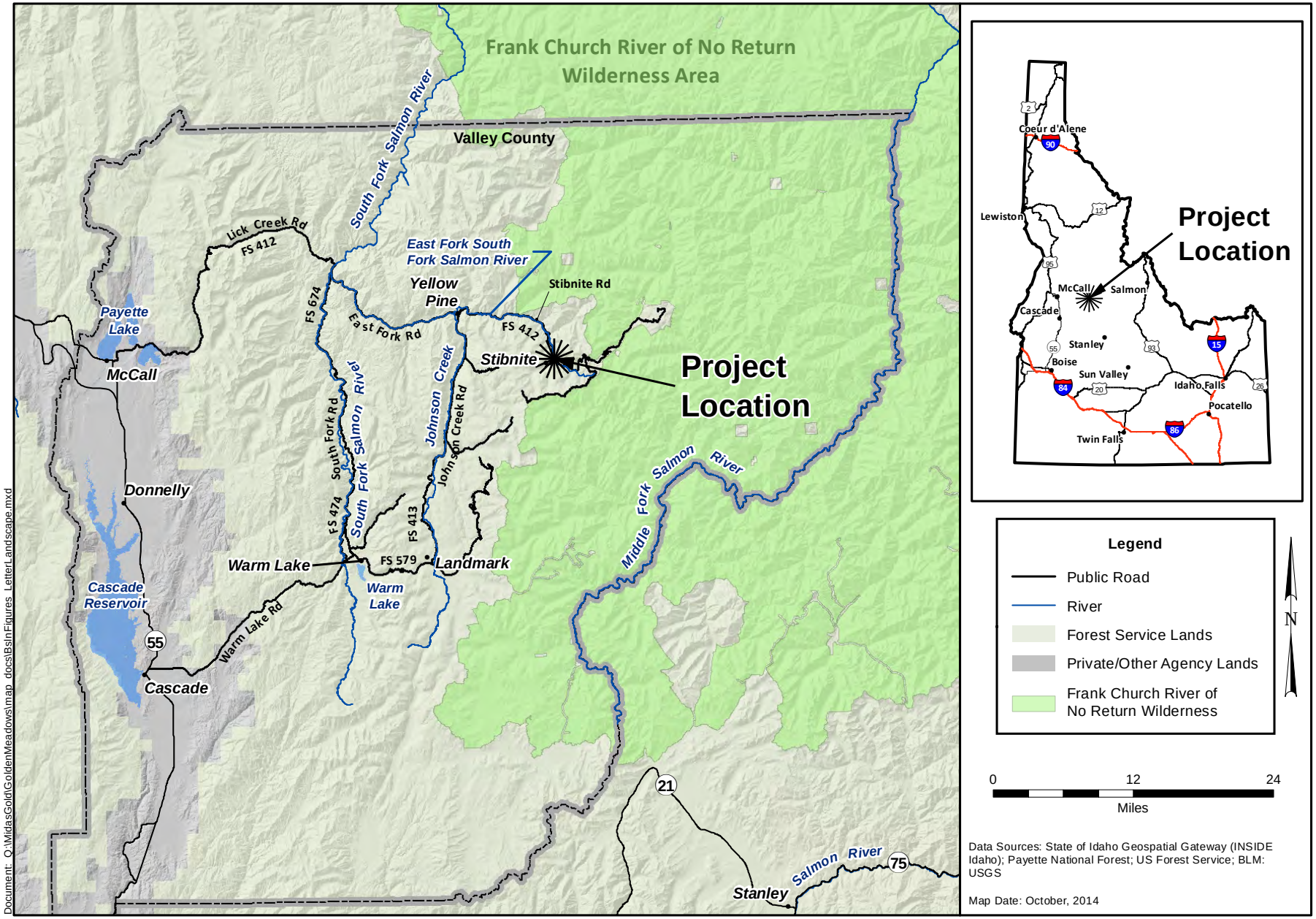



**Figure 1-1**
Vicinity Map
Stibnite Gold Project

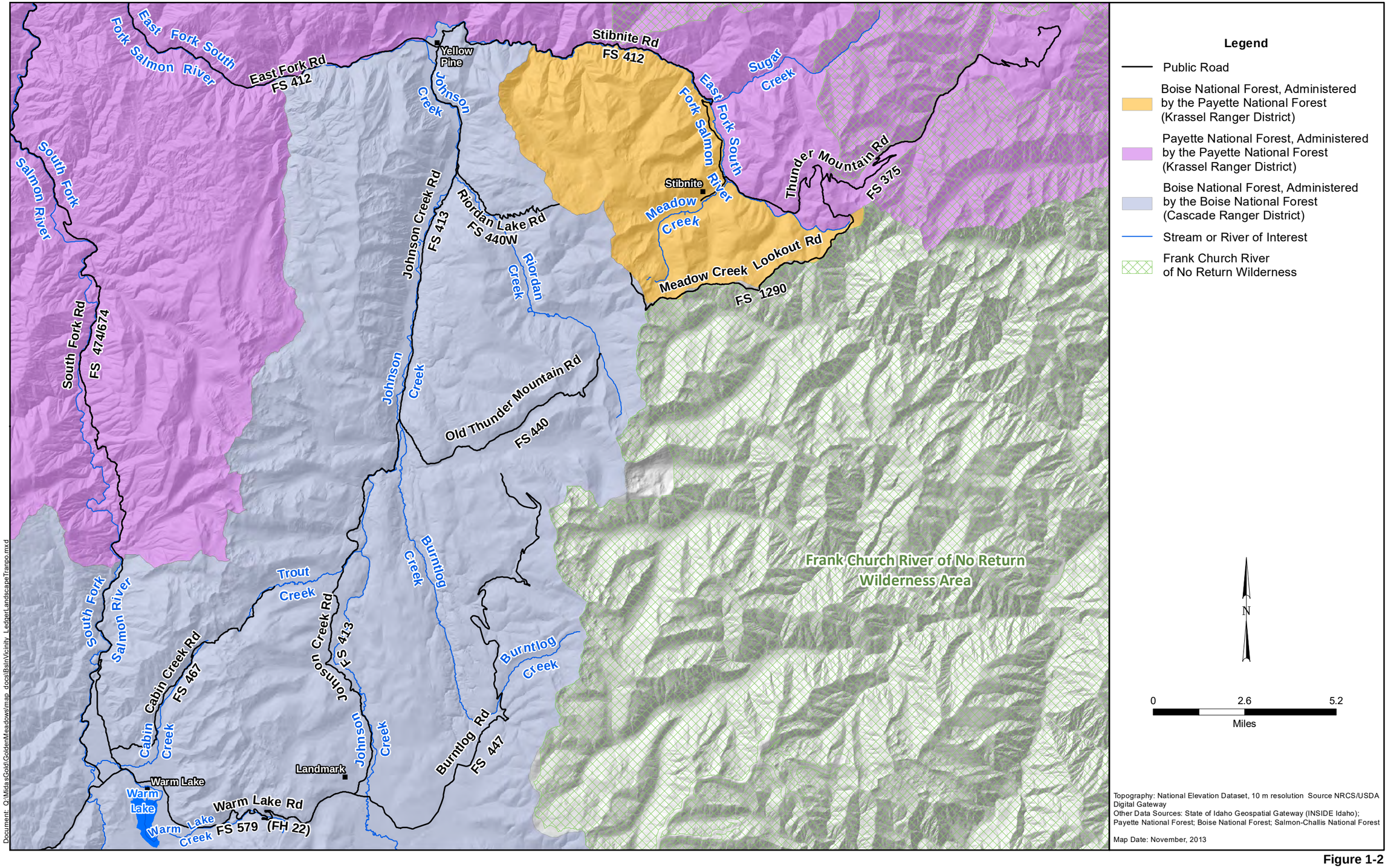



**Figure 1-2**
Project Area Map
Stibnite Gold Project

# SECTION 2: RESOURCE STUDY AREA

## 2.1 Description of Study Area

The vegetation study area encompasses land that could potentially be affected by the Stibnite Gold Project, including locations where proposed access roads to the facility could be modified or constructed. The exact extent of potential impacts on vegetation resources will depend on future mine plans and associated features.

The study area, shown in **Figure 2-1**, is bounded on the north by the north side of the EFSFSR and Stibnite Road from the village of Yellow Pine to Sugar Creek, on the east by the Frank Church River of No Return Wilderness Area, on the south by Warm Lake Road, and on the west by the ridgeline above Cabin Creek Road (FS 467) and north along the ridgeline directly above the west side of Johnson Creek Road. The resource study area for vegetation totals 157,891 acres, including 33,140 acres (21 percent) within the PAF and 124,751 acres (79 percent) within the BOI.

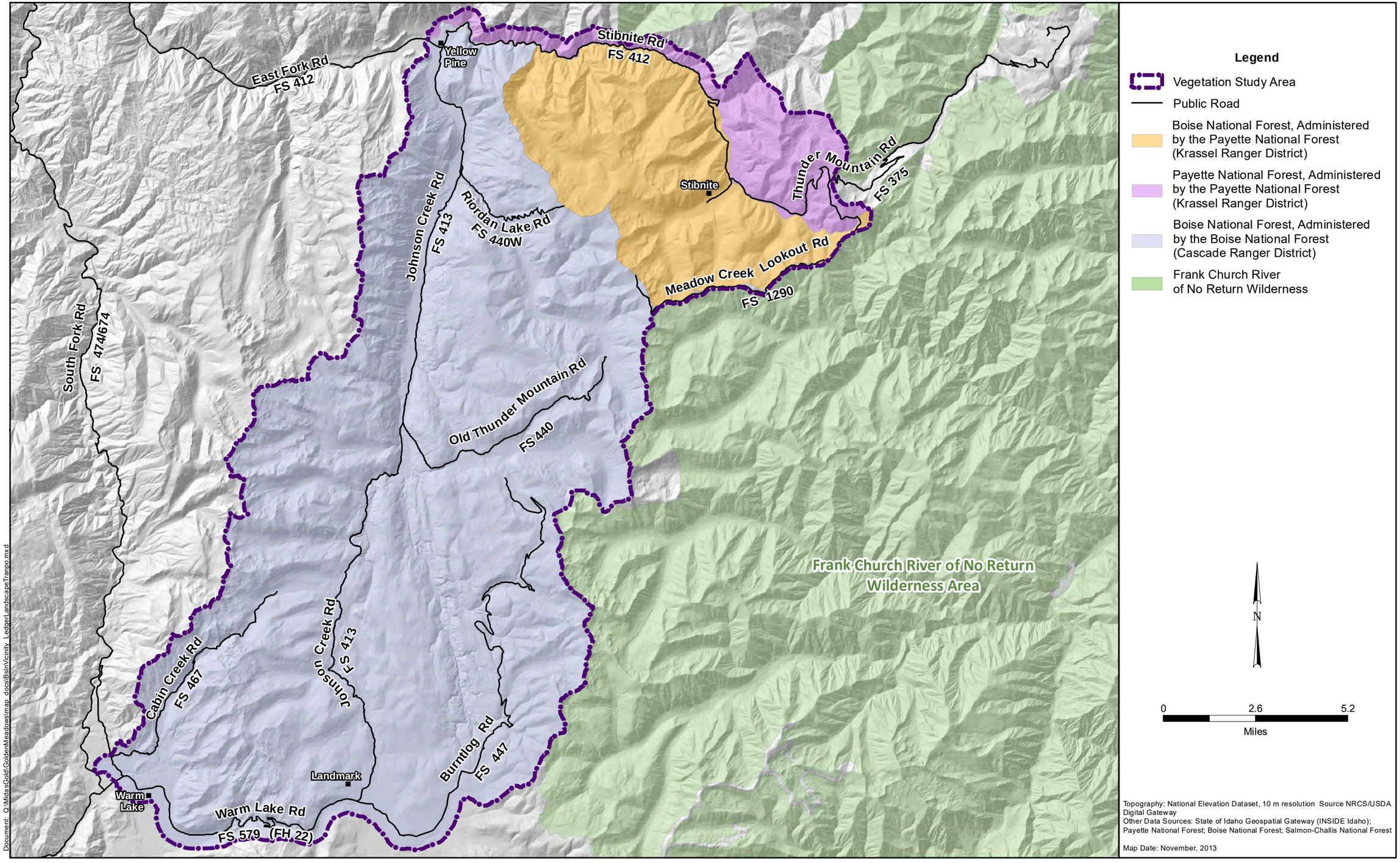



**Figure 2-1**
Study Area Map
Stibnite Gold Project

# SECTION 3: VEGETATION STUDY METHODOLOGY

## 3.1 Literature Review

Before beginning vegetation field studies, the HDR, Inc. (HDR) team reviewed existing information from past studies and site characterization reports to develop an understanding of the baseline vegetation at the Stibnite Gold Project site. The team also reviewed reports on biological evaluations written by the PAF botanist in 2011 and 2012 that describe possible effects of the project on threatened and endangered (T&E) and sensitive plants in the PAF. These reports, created for previous and proposed mining activities, are summarized below:

**URS Corporation/Woodward-Clyde Group, Inc.**

1998-2000 *Stibnite Area Site Characterization/ Stibnite Area Risk Evaluation*

These reports prepared for the Stibnite Area Site Characterization Voluntary Consent Order Respondents describe the results of 1997 and 1999 site characterization field investigations, including physical habitat characterization for the EFSFSR drainage in the vicinity of the Stibnite Mine facility (September 1997). The HDR team reviewed these documents to develop an understanding of the baseline vegetation resources that were present in the Stibnite area between 1998 and 2000.

**U.S. Forest Service**

1994 *Draft Environmental Impact Statement, Stibnite Mine Expansion Project*

This draft environmental impact statement documents the analysis of the five alternatives, including the No Action Alternative, that were developed for the proposed Stibnite Mine Expansion Project, which would expand the size and time period for mining at the existing Stibnite Mine. The HDR team reviewed this document to gain an understanding of the baseline vegetation that existed at the Stibnite Mine in 1994.

2003 *Land and Resource Management Plan, Payette National Forest*

This plan describes USFS management goals and objectives, resource protection methods, desired resource conditions, and the availability and suitability for resource management on land managed by PAF.

2010 *Land and Resource Management Plan, Boise National Forest*

This plan describes USFS management goals and objectives, resource protection methods, desired resource conditions, and the availability and suitability for resource management on land managed by BOI.

2011 *Biological Evaluation for Sensitive Plants, Payette National Forest*

This document was reviewed to develop an understanding of the possible effects of the Stibnite Gold Project on botanical resources.

2012 *Biological Evaluation for Sensitive Plants, Payette National Forest*

This document was reviewed to develop an understanding of the possible effects of the Stibnite Gold Project on botanical resources. This document includes an

evaluation of the potential effects on whitebark pine, which was added as a candidate species under the ESA.

The HDR team evaluated the following existing vegetation information to identify general plant community types, potential habitat for botanical resources, and the presence of non-native plant species:

- Botanical resource plant lists maintained by PAF and BOI botanists.
- Past USFS geographical information systems (GIS) mapping that documented locations of botanical resources, non-native plant species, and forest cover types in the study area.
- Federally-listed plant species listed under the Endangered Species Act (ESA) of 1973 for Valley County and more recent listings by the U.S. Fish and Wildlife Service (USFWS) from 1995 to 2002.

## 3.2 Regulatory Environment and Current Management Direction

### 3.2.1 Regulatory Environment

USFS is the lead agency overseeing the National Environmental Policy Act process for the EIS. The agency manages vegetation resources (also referred to as botanical resources by the USFS) in national forests, including USFS Region 4 sensitive, forest-watch, and ESA plant species in the PAF and BOI that are protected under the ESA of 1973, as amended. (The PAF and BOI are in Region 4 Intermountain Region).

USFWS is the federal agency that manages the listing of ESA species. All vegetation species listed under ESA for Valley County, Idaho, have been analyzed for this baseline study. Animal species listed under the ESA are included in the *Terrestrial Wildlife Baseline Study* (2013).

Section 7 of the ESA directs federal agencies to use their legal authority to carry out conservation programs for listed species. It also requires these agencies to ensure that any actions they fund, authorize, or carry out are not likely to jeopardize the survival of any T&E species or adversely modify their designated critical habitat (if any).

**Botanical Resource Descriptions**

**Endangered** – Any species which is in danger of extinction throughout all or a significant portion of its range and listed as endangered under the ESA.

**Threatened** – Any species which is likely to become endangered in the foreseeable future throughout all or a significant portion of its range and listed as threatened under the ESA.

**Candidate Species** – A species about which USFWS has enough information to propose them for listing as endangered or threatened. Candidate species are not protected by the ESA, but are often considered for planning purposes.

**Region 4 Sensitive Species** – Any plant species identified by the regional forester (Region 4) as being at risk where there are concerns about quantity and quality of habitat needed to support viability.

**Forest-watch Species** – Any plant species designated important by the USFS(PAF or BOI) and listed in the Forest Plan (See sections 3.2.2 and 3.3).

**Non-native Species** – Any introduced plant species (typically weed infestations) in an environment outside a plant's normal distributional range.

### 3.2.2 Current U.S. Forest Service Management Direction

The PAF *Land and Resource Management Plan* and the BOI *Land and Resource Management Plan*, commonly called forest plans, emphasize conservation and recovery of Region 4 sensitive and forest-watch species, and other species at risk, where quantity and quality of habitat needed to support viability is a concern (USFS 2003, p. III-32; 2010, p. III-34). This baseline study

addresses T&E species, sensitive plant species included in the regional forester's sensitive list, and the forest-watch plant species included in the forest plans.

The forest plans also direct USFS to continue to map locations of suitable, occupied habitat for Region 4 sensitive plant species, forest-watch plants, and globally-rare plant communities as ranked by the Natural Heritage Program and the Idaho Native Plant Society. This information is incorporated into a GIS database compiled by the Idaho Conservation Data Center (ICDC), which maintains records of documented plant occurrences for both forests (USFS 2003, 2010). These records and references are consulted during the pre-field analysis to determine if known or suspected sensitive species or their habitats occur in the project area of proposed projects.

The PAF and BOI forest plan goals, objectives, standards and guidelines provide a framework for the analysis of impacts on botanical resources. **Table 3-1** lists the applicable botanical resources goals, objectives, standards and guidelines for the Stibnite Gold Project (USFS 2003, 2010).

**Table 3-1. USFS Botanical Resources Goals, Objectives, Standards and Guidelines Applicable to the Stibnite Gold Project**

| **Number** (See acronym definitions in notes) | **Management Direction Description** |
|---|---|
| BTGO06 | Manage plant community habitats to provide for:<br>a) The desired amount, quality, and distribution of habitats<br>b) Reduced fragmentation within habitats<br>c) Juxtaposition and connectivity to other habitats<br>d) Ecosystem processes that shape habitat |
| BTOB08 | During fine- and site/project-scale analyses, identify and map areas of non-native plant invasions within rare-plant habitat. |
| BTST01 | Management actions that occur within occupied sensitive plant species habitat must incorporate measures to ensure habitat is maintained where it is within desired conditions, or restored where degraded. |
| BTGU01 | For site/project-scale analysis, suitable habitat should be determined for sensitive species within or near the project area. Conduct surveys for those species with suitable habitat to determine presence. Document the rationale for not conducting surveys for other species in the project record. |

Source: USFS 2003, 2010.
BTGO=botanical resource goal; BTOB=botanical resource objective; BTST=botanical resource standard; BTGU=botanical resource guideline

In addition to managing botanical resources, the PAF and BOI forest plans emphasize the control of non-native plant populations (weed infestations) on USFS lands. The PAF and BOI forest plan goals, objectives, standards and guidelines provide a framework for management of undesirable non-native plant species. **Table 3-2** lists the applicable non-native plant management goals, objectives, standards and guidelines for the Stibnite Gold Project (USFS 2003, p. III-35; 2010, p. III-37).

**Table 3-2. USFS Non-Native Plant Management Goals, Objectives, Standards and Guidelines Applicable to the Stibnite Gold Project**

| Number (See acronym definitions in notes) | Management Direction Description |
|---|---|
| NPGO01 | Manage noxious weeds with an integrated weed management approach that uses prevention, education, eradication, containment, and control treatment strategies in a coordinated effort that includes potentially affected resources, users, funding sources, and activities. |
| NPGO02 | Prevent new infestations of undesirable non-native plants or noxious weed species, with emphasis on areas of high susceptibility where those species have a strong probability for establishment and spread. |
| NPOB01 | Maintain and use current field data to update the forest-wide database and map library of current status of noxious weed infestations, treatment activities, and locations of newly established infestations. |
| NPOB05 | Cooperatively work with holders of special use authorizations to identify and manage noxious weed infestations within areas of use to prevent further expansion or reduce existing densities. |
| NPST10 | Projects that may contribute to the spread or establishment of noxious weeds shall include measures to reduce the potential for spread and establishment of noxious weed infestations. |
| NPST11 | Integrated weed management shall be used to maintain or restore habitats for sensitive plants and other native species of concern where they are threatened by noxious weeds or non-native invasive plants. |

Source: USFS 2003, 2010.

NPGO=non-native plant goal; NPOB=non-native plant objective; NPST=non-native plant standard

## 3.3 Review of Botanical Resources

Prior to beginning vegetation field surveys, the HDR team reviewed botanical resource plant lists maintained by PAF and BOI botanists. Following is an overview of the ESA-listed, sensitive and forest-watch species for the PAF and BOI.

### 3.3.1 ESA-Listed Plants

**Table 3-3** shows the federally-listed threatened and candidate plants previously addressed by PAF or BOI and/or consulted on with USFWS, along with their global and state rarity ratings and global distribution. Four species, Ute ladies'-tresses (*Spiranthes diluvialis*), water howellia (*Howellia aquatilus*), MacFarlane's four o'clock (*Mirabilis macfarlanei*), and Spalding's silene (*Silene spaldingii*) are listed as threatened by USFWS and ranked as critically-imperiled in Idaho and imperiled globally (USFS 2011). Slickspot peppergrass (*Lepidium papilliferum*), a proposed endangered species, is imperiled in Idaho and globally.

Past surveys found no populations or habitat for any T&E plant species within the study area (USFS 2011). These include the following:

- Ute ladies'-tresses, which occur about 300 miles from McCall near the Palisades Dam in southeast Idaho.
- Water howellia, found about 150 miles from the PAF near Moscow in northern Idaho.

- MacFarlane's four o'clock, which occur approximately 35 miles northwest the PAF boundary in Hells Canyon.
- Spalding's silene, the nearest known population of threatened plant, occurs about 30 miles north of the PAF near the confluence of the Snake and Salmon rivers.
- Slickspot peppergrass, which occurs on the Snake River Plain in southwest Idaho.

Two plants are listed by the USFWS as candidate species. One of them, whitebark pine (*Pinus albicaulis*), is found in the study area. Slender moonwort (*Botrychium lineare*) occurs in the Sawtooth National Forest, about 100 miles from the study area (USFS 2011).

**Table 3-3. Federally-listed Threatened and Candidate Plants Previously Addressed by PAF or BOI and/or Consulted on with USFWS**

| Species Name | Common Name | Global[1] | State[2] | USFWS | Global Distribution[3] |
|---|---|---|---|---|---|
| *Botrychium lineare* | Slender moonwort | C –G1 | SH | Candidate | sd |
| *Howellia aquatilus* | Water howellia | T- G2 | S1 | Fed. Listed | sd |
| *Lepidium papilliferum* | Slickspot peppergrass | PE-G2 | S2 | Fed. Listed | -- |
| *Mirabilis macfarlanei* | MacFarlane's four-o-clock | T - G2 | S1 | Fed. listed | le |
| *Pinus albicaulis* | Whitebark pine | C | -- | Candidate | -- |
| *Silene spaldingii* | Spalding's silene | T - G2 | S1 | Fed. listed | re |
| *Spiranthes diluvialis* | Ute Ladies'-tresses | T - G2 | S1 | Fed. listed | sd |

[1]Global rankings as assigned by Natural Heritage Program and Idaho Native Plant Society: **C-G1** = Candidate-Globally Critically Imperiled, **PE-G2** = Proposed Endangered-Globally Imperiled, **T-G2** = Threatened-Globally Imperiled, **C** = Candidate.

[2]Idaho State Rankings as assigned Idaho Native Plant Society: **SH** = State Historical Occurrence, **S1** = State Critically Imperiled, **S2** = State Imperiled.

[3]Global Distribution: **sd** = sparsely distributed (isolated populations), **le** = local endemic (< 100 square miles), **re** = regional endemic (distribution 100-10,000).

**--** indicates there was no available data.

Currently, no consultation or project analysis is required by USFWS on any T&E plant species. However, USFWS has asked USFS to continue working with them on conserving these species wherever they may occur (USFWS 2002). Consultation with the USFWS for the candidate species, whitebark pine, is required.

### 3.3.2 Forest Service Region 4 Sensitive or Forest-watch Species

The HDR team also reviewed documented locations and potential habitat for plants that USFS listed as Region 4 sensitive or forest-watch species. **Table 3-4** and **Table 3-5** list the Region 4 sensitive and forest-watch species that are emphasized for conservation and recovery in the PAF and BOI.

Consultation for these species typically occurs annually and includes a meeting of Region 4 personnel, USFWS and the PAF and BOI botanists who maintain the lists. Due to the government shutdown in October 2013, the meeting was postponed until a later date, in 2014, and the 2012 species lists provided by the botanists have been used for this report.

Two sensitive species – bentflowered milkvetch and whitebark pine – are known to occur in the study area (see Section 3.4.1.1).

**Table 3-4. PAF Region 4 Sensitive and Forest-Watch Species Emphasized for Conservation and Recovery in Forest Plan (Updated 2012)**
(Species found in study area shown in bold type)

| Species Name | Common Name | Global[1] | State[2] | Forest Service Status[3] | | Global Distrib.[4] |
|---|---|---|---|---|---|---|
| | | | | Regional Sensitive | PAF Plan | |
| *Allium madidum* | Swamp onion | G3 | S3 | S | S | re |
| *Allium tolmiei* var. *persimile* | Tolmie's onion | G4/T3 | S3 | S | S | le |
| *Allium validum* | Tall swamp onion | G4 | S3 | N | W | w |
| *Allotropa virgata* | Candystick | G4 | S3 | S | S | d |
| *Astragalus paysonii* | Payson's milkvetch | G3 | S3 | S | S | re |
| ***Astragalus vexilliflexus* var. *vexilliflexus*** | **Bentflowered milkvetch** | G4/T4 | S1 | S | S | d |
| *Botrychium lanceolatum var. lanceolatum* | Lance-leaved moonwort | G5T4 | S3 | N | W | cb |
| *Botrychium lineare* | Linear-leaved moonwort | G2 | SH | S | S | sd |
| *Botrychium simplex* | Least moonwort | G5 | S2 | S | W | cb |
| *Buxbaumia viridis* | Green bug moss | G3G4 | S3 | N | W | w |
| *Calamagrostis tweedyi* | Cascade reedgrass | G3 | S2 | S | S | re |
| *Camassia cusickii* | Cusick's camas | G4 | S2 | S | S | re |
| *Carex aboriginum* | Indian Valley sedge | G1 | S1 | N | W | le |
| *Ceanothus prostratus ssp. prostratus* | Mahala-mat ceanothus | G5/? | S1 | N | W | d |
| *Crepis bakeri* ssp. *idahoensis*. | Idaho hawksbeard | G4/T2 | S2 | N | W | le |
| *Douglasia idahoensis* | Idaho dwarf-primrose | G3 | S2 | S | S | le |
| *Draba incerta* | Yellowstone draba | G5 | S2 | N | W | re |
| *Eatonella nivea* | White eatonella | G4G5 | S3 | N | W | d |
| *Epilobium palustre* | Swamp Willow Weed | G5 | S3 | N | W | w |
| *Epipactis gigantea* | Giant helleborine orchid | G3G4 | S3 | N | W | sd |
| *Ericameria nauseosa ssp.nanus* | Dwarf grey rabbitbrush | G5/T4 | S3 | N | W | re |
| *Hackelia davisii* | Davis' stickseed | G3 | S3 | N | W | le |
| *Halimolobos perplexa var. perplexa* | Puzzling halimolobos | G4/T3 | S3 | S | S | le |
| *Helodium blandowii* | Blandow's helodium | G5 | S2 | N | W | cb |
| *Hierochloe odorata* | Sweetgrass | G5 | S1 | N | W | w |

**Table 3-4. PAF Region 4 Sensitive and Forest-Watch Species Emphasized for Conservation and Recovery in Forest Plan (Updated 2012)**
(Species found in study area shown in bold type)

| Species Name | Common Name | Global[1] | State[2] | Forest Service Status[3] | | Global Distrib.[4] |
|---|---|---|---|---|---|---|
| | | | | Regional Sensitive | PAF Plan | |
| *Howellia aquatilus* | Water howellia | T-G2 | S1 | N | W | sd |
| *Leptodactylon pungens* ssp. *hazeliae* | Hazel's prickly phlox | G5/T2 | S2 | S | S | le |
| *Lewisia sacajaweana* | Sacajawea's bitteroot | G2 | S2 | S | S | re |
| *Lobaria scrobiculata* | Pored lungwort | G4 | S1 | N | W | cb |
| *Mimulus clivicola* | Bank Monkeyflower | G4 | S3 | S | S | re |
| *Mirabilis macfarlanei* | MacFarlane's four-o-clock | T-G2 | S2 | N | W | le |
| *Peraphyllum ramosissimum* | Wild crab apple | G4 | S2 | N | W | sd |
| *Pilophorus acicularis* | Nail lichen | G4 | S2 | N | W | sd |
| ***Pinus albicaulis*** | **Whitebark pine** | C-G3G4 | S3 | S | -- | -- |
| *Polystichum kruckebergii* | Kruckeberg's Sword-fern | G4 | S2 | N | W | re |
| *Pyrrocoma radiata (Haplopappus)* | Snake River golden weed | G3 | S3 | S | S | re |
| *Ribes sanguineum* | Red flowered currant | G5 | S2 | N | W | -- |
| *Ribes wolfii* | Wolf's current | G4 | S2 | N | W | d |
| *Rubus bartonianus* | Bartonberry | G2 | S2 | S | S | le |
| *Salix glauca* | Gray willow | G5 | S2 | N | W | D |
| *Sanicula graveolens* | Sierra sanicle | G4 | S1 | N | W | W |
| *Saxifraga bryophora* var. *tobiasiae* | Tobias' saxifrage | G2T2 | S2 | S | S | le |
| *Schistostega pennata* | Luminous moss | G4 | S1 | N | W | cb |
| *Sedum borschii* | Borch's stonecrop | G4? | S2 | N | W | sd |
| *Sedum valens* | Salmon River sedum | G1G2 | S1S2 | N | W | le |
| *Silene spaldingii* | Spalding's silene | T-G2 | S1 | N | W | re |
| *Spiranthes diluvialis* | Ute Ladies'-tresses | T-G2 | S1 | N | W | re |
| *Triantha occidentalis* ssp. *brevistyla* | Short-style tofieldia | G5/T4 | S1 | S | S | d |
| *Trifolium douglasii* | Douglas' clover | G2 | S2 | N | W | re |
| *Trifolium plumosum ssp. amplifolium* | Plumed clover | G4T2 | S2 | N | W | -- |

**Table 3-4. PAF Region 4 Sensitive and Forest-Watch Species Emphasized for Conservation and Recovery in Forest Plan (Updated 2012)**
(Species found in study area shown in bold type)

| Species Name | Common Name | Global[1] | State[2] | Forest Service Status[3] | | Global Distrib.[4] |
|---|---|---|---|---|---|---|
| | | | | Regional Sensitive | PAF Plan | |
| *Tripterocladium leucocladulum* | Naked Rhizomnium moss | G3 | S3 | N | W | le |

Source: USFS 2012a

[1]**Global rarity ratings**: **C** = Candidate, **G** = Global rank indicator (based on rangewide status); see ranking scale below, **T:** Trinomial rank indicator (global status of infraspecific taxa).

[2]**State rarity ratings: S:** State rank indicator (based on status within Idaho); see ranking scale below.

**Components global and state rankings:**

1 = Critically imperiled because of extreme rarity or because some factor of its biology makes it especially vulnerable to extinction (typically 5 or fewer occurrences).
2 = Imperiled because of rarity or because other factors demonstrably make it very vulnerable to extinction (typically 6 to 20 occurrences).
3 = Rare or uncommon but not imperiled (typically 21 to 100 occurrences).
4 = Not rare and apparently secure, but with cause for long-term concern (usually more than 100 occurrences).
5 = Demonstrably widespread, abundant, and secure.
H = Historical occurrence (i.e., formerly part of the native biota; implied expectation that it might be rediscovered or possibly extinct).
? = Uncertainty exists about the stated rank.

[3]**Forest Service Status**: **S** = Region 4 Sensitive, **W** = Forest Watch plants, **N** = No current status.

[4]**Global Distribution**: **d** = disjunct, **le** = local endemic (< 100 square miles), **re** = regional endemic (distribution 100-10,000), **sd** = sparsely distributed (isolated populations), **w** = widespread, **cb** = circumboreal, circumpolar.

**--** indicates there was no available data

**Table 3-5. BOI Region 4 Sensitive and Forest-Watch Species Emphasized for Conservation and Recovery in Forest Plan (Updated 2012)**

| Species Name | Common Name | Global[1] | State[2] | Forest Service Status[3] | | Global Distribution[4] |
|---|---|---|---|---|---|---|
| | | | | Regional Sensitive | BOI Plan | |
| *Allium madidum* | Swamp onion | G3 | S3 | W | W | re |
| *Allium tolmiei var. persimile* | Tolmie's onion | G4/T3 | S3 | S | S | le |
| *Allium validum* | Tall swamp onion | G4 | S3 | W | W | re |
| *Allotropa virgata* | Sugarstick | G4 | S3 | W | W | d |
| *Ancistrocarphus filagineus* (*Stylocline filaginea*) | Wooly stylocline | G5 | S2 | -- | W | -- |
| *Astragalus atratus var. inseptus* | Mourning milkvetch | G4G5/T3 | S3 | N | W | le |
| *Botrychium crenulatum* | Scalloped moonwort | G3 | S1 | -- | W | -- |
| *Botrychium lineare* | Slender moonwort | G2? | SH | S | W | sd |
| *Botrychium lunaria* | Common moonwort | G5 | -- | -- | W | -- |
| *Botrychium multifidum* | Leathery grapefern | G5 | -- | -- | W | -- |
| *Botrychium simplex* | Least moonwort | G5 | S2 | N | W | w |
| *Botrychium virginianum* | Rattlesnake fern | G5 | -- | -- | W | -- |
| *Bryum calobryoides* | Beautiful Bryum | G3 | SH | S | S | w |
| *Carex buxbaumii* | Buxbaum's sedge | G5 | S3 | N | W | w |
| *Carex flava* | Yellow sedge | G5 | S3 | -- | W | -- |
| *Carex livida* | Pale sedge | G5 | S2 | W | W | cb |
| *Carex parryana* var. *brevisquama* (*C. aboriginum*) | Indian Valley sedge | G1 | S1 | -- | W | -- |
| *Carex straminiformis* | Mt. Shasta sedge | G5 | S2 | W | W | d |
| *Cicuta bulbifera* | Bulb-bearing water hemlock | G5 | S2 | W | W | d |
| *Cypripedium fasciculatum* | Clustered lady's slipper | G4 | S3 | N | W | d |
| *Douglasia idahoensis* | Idaho primrose | G2 | S2 | S | S | re |
| *Drosera anglica* | English sundew | G5 | SNR | -- | W | -- |
| *Drosera intermedia* | Spoon-leaved sundew | G5 | S1 | W | W | d |
| *Drosera rotundifolia* | Round-leave sundew | G5 | SNR | -- | W | -- |
| *Epilobium palustre* | Marsh willowherb | G5 | S3 | N | W | w |
| *Epipactis gigantea* | Giant helleborine orchid | G4 | S3 | S | W | sd |
| *Helodium blandowii* | Blandow's Helodium | G5 | S2 | N | W | cb |
| *Hierochloe odorata* | Sweetgrass | G4G5 | S1 | N | W | w |

**Table 3-5. BOI Region 4 Sensitive and Forest-Watch Species Emphasized for Conservation and Recovery in Forest Plan (Updated 2012)**

| Species Name | Common Name | Global[1] | State[2] | Forest Service Status[3] | | Global Distribution[4] |
|---|---|---|---|---|---|---|
| | | | | Regional Sensitive | BOI Plan | |
| *Lepidium papilliferum* | Slickspot peppergrass | G2 | S2 | -- | S | -- |
| *Lewisia sacajaweana (kelloggii)* | Sacajawea's bitterroot | G2 | S2 | S | S | re |
| *Mimulus clivicola* | Bank monkeyflower | G4 | S3 | W | W | re |
| *Phacelia minutissima* | Small Phacelia | G3 | S2 | S | S | re |
| *Polystichum kruckebergii* | Kruckeberg's sword-fern | G4 | S2 | N | W | re |
| *Primula wilcoxiana* | Wilcox's primrose | -- | -- | -- | W | -- |
| *Pyrrocoma insecticruris* | Bugleg goldenweed | G3 | S3 | | S | |
| *Rhynchospora alba* | White beakrush | G5 | S2 | W | W | cb |
| *Sanicula graveolens* | Sierra sanicle | G4G5 | S1 | N | W | w |
| *Scheuchzeria palustris* | Pod grass | G5 | S2 | W | W | w |
| *Schoenoplectus subterminalis* | Swaying bulrush | G4G5 | S3 | -- | W | -- |
| *Sedum leibergii* | Leiberg stonecrop | G4? | S2 | -- | W | -- |
| *Triantha occidentalis* ssp. *brevistyla* (*Tofieldia glutinosa* ssp. *brevistyla*) | Sticky tofieldia | G5T4 | S1 | S | W | d |
| *Vesicarpa (Sphaeromeria) potentilloides var nitrophilum Cinquefoil tansy)* | Fivefinger chickensage | G5 | S1 | -- | W | -- |

Source: USFS 2012b

[1]**Global rarity ratings**: **G** = Global rank indicator (based on rangewide status); see ranking scale below, **T:** Trinomial rank indicator (global status of infraspecific taxa).

[2]**State rarity ratings: S:** State rank indicator (based on status within Idaho); see ranking scale below.

**Components global and state rankings**

1 = Critically imperiled because of extreme rarity or because some factor of its biology makes it especially vulnerable to extinction (typically 5 or fewer occurrences).

2 = Imperiled because of rarity or because other factors demonstrably make it very vulnerable to extinction (typically 6 to 20 occurrences).

3 = Rare or uncommon but not imperiled (typically 21 to 100 occurrences).

4 = Not rare and apparently secure, but with cause for long-term concern (usually more than 100 occurrences).

5 = Demonstrably widespread, abundant, and secure.

H = Historical occurrence (i.e., formerly part of the native biota; implied expectation that it might be rediscovered or possibly extinct).

? = Uncertainty exists about the stated rank.

[3]**Forest Service Status**: **S** = Region 4 Sensitive, **W** = Forest Watch plants, **N** = No current status.

[4]**Global Distribution**: **d** = disjunct, **le** = local endemic (< 100 square miles), **re** = regional endemic (distribution 100-10,000), **sd** = sparsely distributed (isolated populations), **w** = widespread, **cb** = circumboreal, circumpolar.

**--** indicates there was no available data

## 3.4 Performance of Field Surveys

Prior to conducting vegetation field surveys, HDR personnel met on-site with the PAF botanist to confirm the location of botanical resources (bentflowered milkvetch and whitebark pine) known to occur in the study area. The HDR team conducted field surveys for botanical resources and non-native species between June 18, 2012 and August 17, 2012, and between June 10, 2013 and August 8, 2013. During the field surveys, the HDR team compiled an overall vegetation species list for the study area that included the scientific name, common name, family name, Western Mountain Valley and Coast Region wetland indicator status, and plant descriptions for each species documented. Appendix A includes the overall plant species list for the study area.

HDR's team mapped the approximate boundaries of botanical resources and non-native plant species (referred to as polygon areas) using a hand-held Trimble GeoExplorer XT global positioning system (GPS) unit, photographed the plants and surrounding environment observed, and recorded GPS coordinates. The team used the USFWS rare-plant observation report form to record population information on the botanical resources observed (see Appendix B).

### 3.4.1 Evaluation and Compilation of Data

Following the field surveys, the HDR team compiled field data and GPS polygon areas to develop a baseline characterization of vegetation for the Stibnite Gold Project study area; added polygon areas for botanical resources and non-native plant species to existing USFS mapping to show new plant species (see Section 4 of this report); and reviewed plant lists developed during the field surveys to help formulate a baseline description of general vegetation in the study area (also in Section 4).

#### 3.4.1.1 Botanical Resources

Following are descriptions of the only two sensitive species that are known to occur in the study area as documented by USFS and verified by the HDR team: whitebark pine and bentflowered milkvetch.

***Whitebark pine*** (see **Photo 4-4** in Section 4.2.2.1) – Mortality data collected in multiple studies throughout the range of whitebark pine strongly suggest that this conifer species is in decline. In most cases, the cause is attributed to blister rust disease, which has become common in many pine species with five needles. The spread of the disease is likely tied to warmer temperatures and drier conditions within the range of whitebark pine (USFWS 2011). In the past, no botanical surveys were done specifically for whitebark pine in the project study area because past mining activities were typically located outside whitebark pine habitat in sites previously disturbed by mining, with little tree cover or in stands of lodgepole pine.

***Bentflowered milkvetch*** (see **Photo 4-5** in Section 4.2.2.2) – This is a herbaceous, multiple-stemmed perennial that belongs to the pea family (*Fabaceae*) and grows to about 2 inches tall. Its stem leaves are 1.5 to 3.5 inches long and pinnately compound, with 7 to 15 oval- to wedge-shaped leaflets that are darker green above than below and slightly notched at the tips. The small pea-like flowers are white to lilac, arranged on racemes of 5 to 20 flowers. Fruit pods are narrowly crescent-shaped, about one-half to two-thirds of an inch long, glabrous or white-hairy. Each fruit has a distinct groove on the dorsal side and two separate locules (USFS 2011).

Idaho populations occur on exposed, sub-alpine ridgelines, openings in forest canopies and other open mountainous sites at 5,000 to 7,000 feet in elevation. Plants flower in late June to August with fruits occurring in October. Associated plants include elk sedge (*Carex geyeri*), spreading phlox (*Phlox diffusa*), Drummond's rush (*Juncus drummondii*), thistle (*Cirsium sp.*), groundsel (*Senecio sp.*), and yarrow (*Achillea sp.*). Surrounding trees include sub-alpine fir (*Abies lasiocarpa*), lodgepole pine (*Pinus contorta*), and, infrequently, Ponderosa pine (*Pinus ponderosa*). Habitat for this bentflowered milkvetch is commonly associated with calcareous geology (fern marble, middle marble, Hermes marble, dolomite, lower and upper calc-silicates). Two populations occur in or near the Stibnite area (USFS 2011).

#### 3.4.1.2 Non-Native Plants

Following the review of botanical resources, the HDR team reviewed USFS mapping that documented locations of a number of non-native plant species in the study area, particularly along the more heavily used roads. The main non-native species of concern is spotted knapweed (*Centaurea stoebe*), a highly invasive species that occurs in small, scattered populations. Two other weed species, Canada thistle (*Cirsium arvense*) and rush skeletonweed (*Chondrilla juncea*), were shown by USFS GIS mapping to occur within the study area. The HDR team reviewed these undesirable, non-native plant species and helped identify the types of weed species found in the study area and the areas that should be prioritized during the field survey for weeds and other non-native species.

# SECTION 4: AFFECTED ENVIRONMENT

## 4.1 Introduction

This section summarizes the affected environment of the Stibnite Gold Project in terms of the impacts on vegetation resources. In addition to baseline GIS information provided by the USFS, it includes results of the 2012 and 2013 vegetation field surveys that provided a baseline characterization of the 157,891-acre study area.

## 4.2 Inventory of Existing Vegetation

### 4.2.1 General Vegetation

Vegetation in the study area generally consists of upland forest and wetland and riparian plant communities. **Figure 4-1** and **Figure 4-2** show the vegetative cover types in the study area that have been mapped in GIS by the USFS. To provide graphic clarity, the map was split into two parts. The northern portion of the study area is covered on **Figure 4-1** and the southern portion on **Figure 4-2**. The HDR team's vegetation field surveys confirmed that the most common communities are mixed forest, grassland, lodgepole pine (*Pinus contorta*), and Douglas-fir (*Pseudotsuga menziesii*). Forest communities of subalpine fir (*Abies lasiocarpa*) and whitebark pine are found at higher elevations, interspersed with cliffs and talus slopes.

A list developed for all plant species observed during field surveys is included in Appendix A.

Summer wildfires have disturbed much of the overstory (tree canopy) and vegetation in the study area, including approximately 5 percent in 2000, 2 percent in 2003, 5 percent in 2006, and 59 percent in 2007. A fire near the village of Yellow Pine in 2004 burned less than 1 percent of the study area.

**Photo 4-1. Typical wildfire disturbed area**

Although much of the understory (vegetation under the tree canopy) in these areas has started to regenerate, substantial erosion still occurs in highly impacted areas. The primary species that are emerging in the burned areas are grasses, some shrubs, and lodgepole pine. **Photo 4-1** shows a typical wildfire-disturbed area surveyed in 2012 by the HDR team. **Figure 4-3** and **Figure 4-4** show the areas that have been impacted by wildfires. As with the vegetation map, the wildfire map was split into two parts to provide graphic clarity. The northern portion of the study area is covered on **Figure 4-3** and the southern portion on **Figure 4-4**.

#### 4.2.1.1 Upland Vegetation

The coniferous forest (mostly needle-leaved and evergreen trees or shrubs) is the most common upland community HDR documented in the study area. This community usually includes Douglas fir, subalpine fir, lodgepole pine, and Engelmann spruce (*Picea engelmannii*) in the overstory, with an understory of various shrubs, forbs, and grasses such as huckleberry (*Vaccinium spp.*), fireweed (*Epilobium angustifolium*), common yarrow (*Achillea millefolium*), elk sedge (*Carex geyeri*), and bluejoint reedgrass (*Calamagrostis canadensis*). **Photo 4-2** shows a typical upland forest plant community found in the study area during the vegetation field surveys in 2012.

**Photo 4-2. Typical upland forest plant community**

The HDR team documented sparsely vegetated areas that occur on rocky slopes and outcroppings, and in many areas that have been disturbed by past mining-related activities, including access road construction near the northeast corner of the study area. Although many of these areas have been reclaimed, vegetation is typically sparse. Other sparse areas of vegetation are the result of wildfire and recreation features such as trails.

Sparse groundcover of stonecrop (*Sedum lanceolatum*), milkvetch (*Astragalus spp.*), phlox (*Phlox diffusa*), lichen, and various graminoids often occur near rocky areas and ridgelines throughout the study area. **Photo 4-3** shows a typical sparsely vegetated plant community in the study area during the vegetation field surveys in 2012.


**Photo 4-3. Typical sparsely vegetated plant community**

#### 4.2.1.2 Wetland Vegetation

The study area contains three wetland communities – palustrine forested, palustrine scrub-shrub, and palustrine emergent marsh that typically occur along or near streams and tributary channels. Wetlands are also associated with numerous hillside seeps (a moist or wet location where water – usually groundwater – reaches the earth's surface). Wetland communities are described further in the Stibnite Gold Project *Wetland Resources Baseline Study* (HDR 2013).

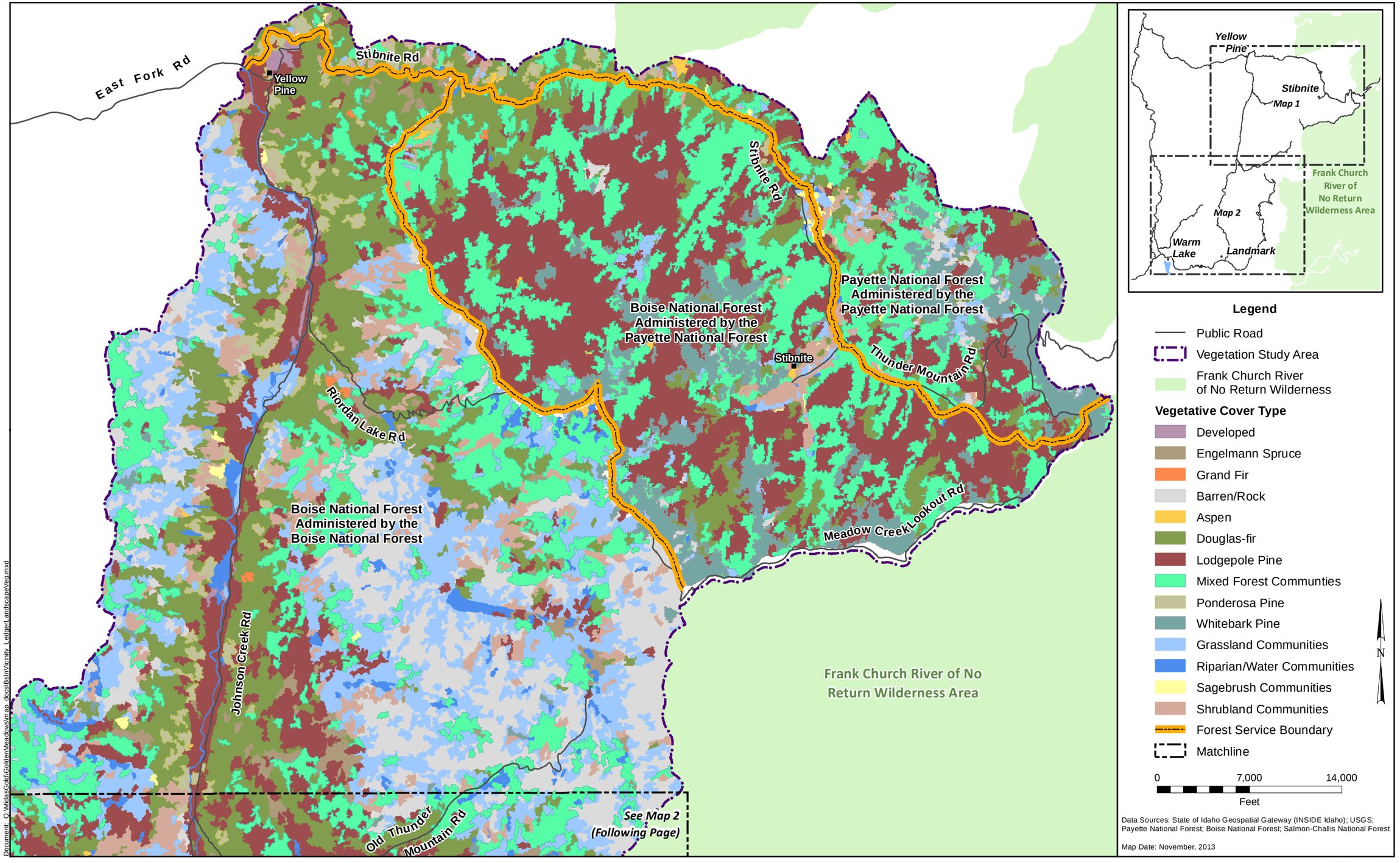



**Figure 4-1**
Vegetative Cover Types
(Northern Portion of Study Area)
Stibnite Gold Project

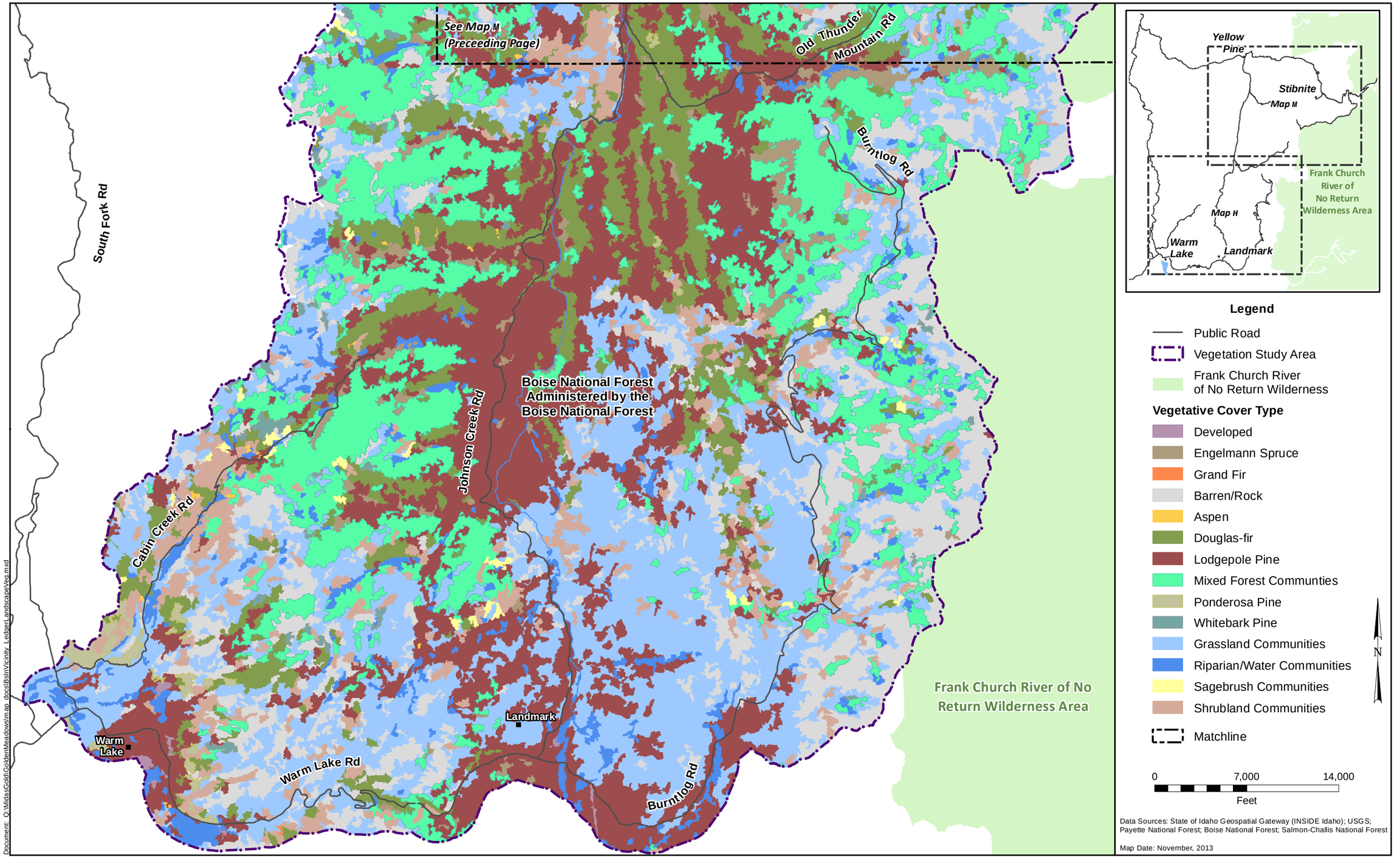



**Figure 4-2**
Vegetative Cover Types
(Southern Portion of Study Area)
Stibnite Gold Project

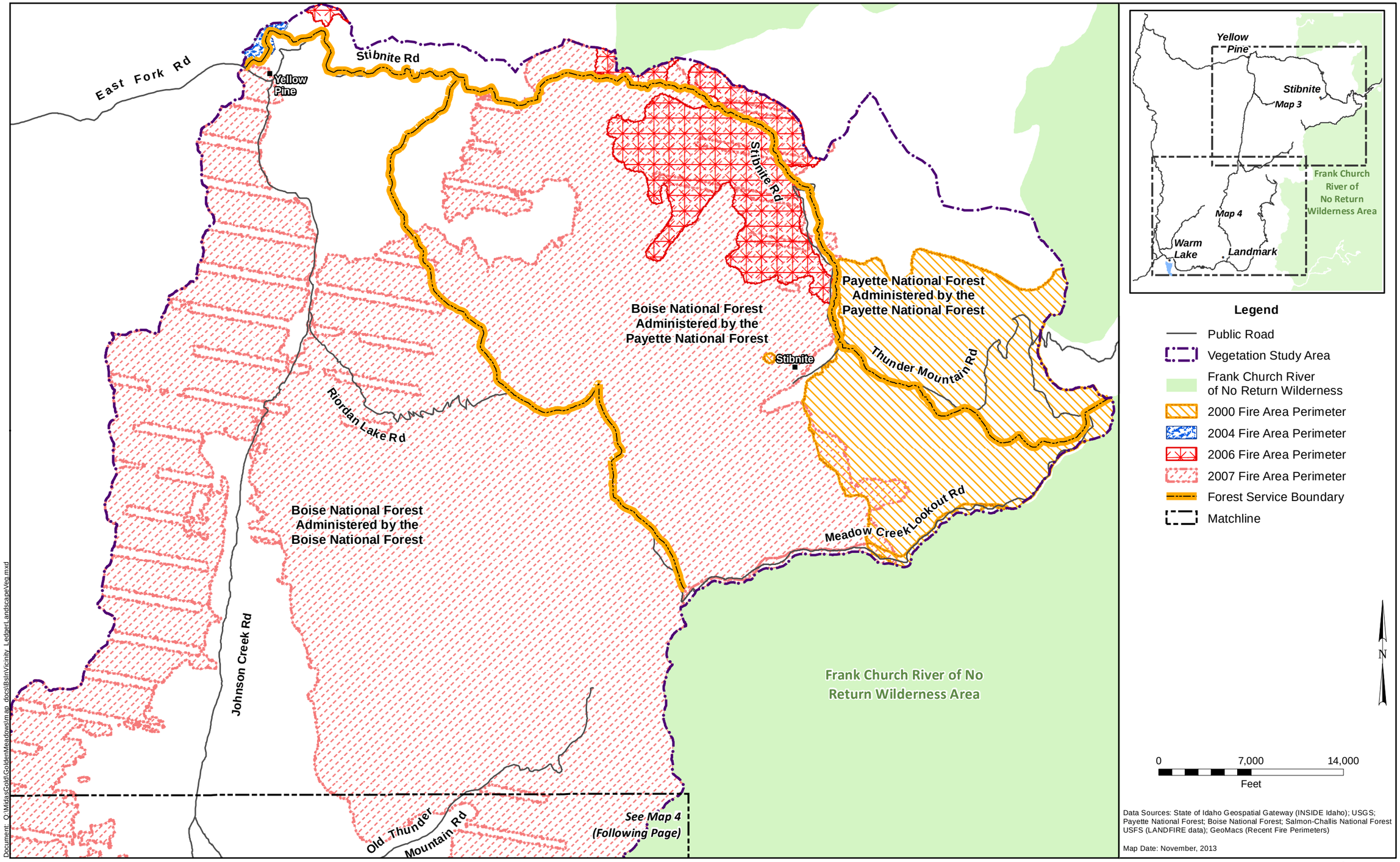



**Figure 4-3**
Areas Impacted by Wildfires
(Northern Portion of Study Area)
Stibnite Gold Project

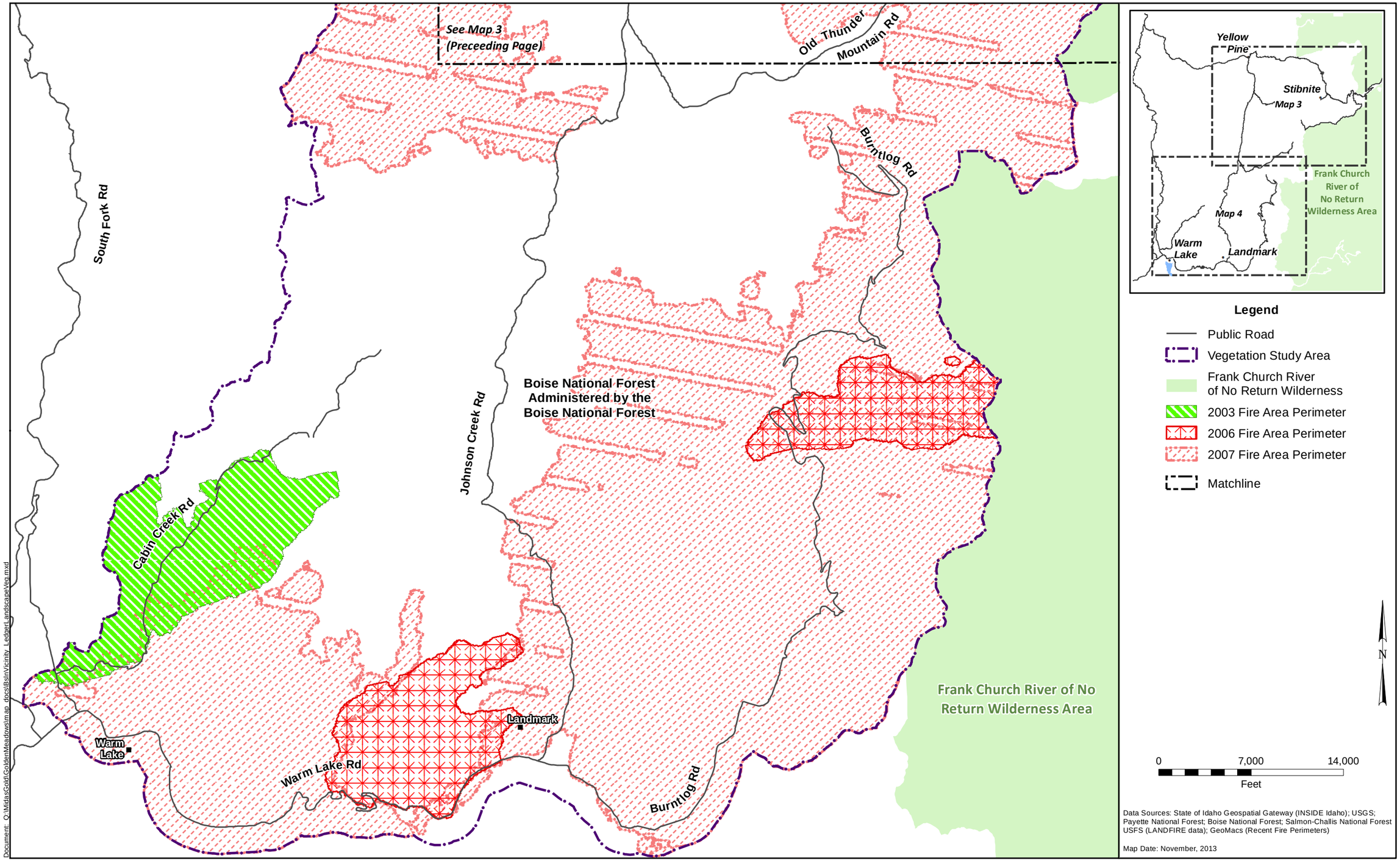



**Figure 4-4**
Areas Impacted by Wildfires
(Southern Portion of Study Area)
Stibnite Gold Project

## 4.2.2 Botanical Resources

### 4.2.2.1 ESA-listed Species

During field surveys, the HDR team found no populations or habitat for any T&E plant species in the study, but documented populations of whitebark pine, which is a candidate species. **Photo 4-4** shows a typical stand of whitebark pine that was documented during the 2012 vegetation field surveys. Appendix C contains additional photographs of whitebark pine taken during the HDR team's 2012 and 2013 field surveys.

**Photo 4-4. Typical whitebark pine stand**

**Figure 4-5** and **Figure 4-6** show whitebark pine cover types mapped by USFS in the study area (approximately 4,617 acres) and whitebark pine polygon areas documented by the HDR team during the 2012 and 2013 vegetation field surveys (approximately 164 acres).

Generally, the most substantial populations of whitebark pine occur at higher elevations toward the east side of the study area. Other significant populations of whitebark pine were observed between Riordan Lake Road and Meadow Creek Lookout Road and along the existing Old Thunder Mountain Road and Burntlog Road. However, many of the whitebark pine trees in these areas are small saplings and seedlings due to wildfire impacts.

Additional whitebark pine populations likely occur on the ridgelines toward the western side of the study area above Johnson Creek Road. However, the HDR team did not field-verify these areas because they are difficult to access and it is not believed they would be impacted by mining activities and associated access roads. Further field documentation of whitebark pine stands may be necessary, depending on future mine plans.

Appendix B includes an Idaho rare plant observation report for whitebark pine completed by the HDR team. Appendix C contains photographs of whitebark pine taken during the HDR team's 2012 and 2013 vegetation field surveys.

#### 4.2.2.2 Forest Service Region 4 Sensitive or Forest-watch Species

Bentflowered milkvetch and whitebark pine are the only sensitive species the HDR team documented and mapped in the study area during 2012 and 2013 vegetation surveys. **Photo 4-5** shows an example of bentflowered milkvetch in the study area.


**Photo 4-5. Bentflowered milkvetch**

**Figure 4-5** and **Figure 4-6** shows polygon areas for bentflowered milkvetch in the study area that were documented by the HDR team during the 2012 vegetation surveys (approximately 62 acres).

Similar to the whitebark pine, bentflowered milkvetch also occurs at higher elevations toward the east side of the study area. Appendix B includes an Idaho rare plant observation report for bentflowered milkvetch. Appendix C contains photographs of bentflowered milkvetch taken during the HDR team's vegetation surveys.

**Table 4-1** summarizes botanical resources the HDR team documented in the study area.

**Table 4-1. Summary of Botanical Resources in Study Area**

| Species Name | Common Name | Acres in Study Area | Notes |
|---|---|---|---|
| *Astragalus vexilliflexus var. vexilliflexus* | Bentflowered milkvetch | Approx. 62 | Populations occur at the east side of the study area. |
| *Pinus albicaulis* | Whitebark pine | Approx. 164 | Populations occur at higher peaks throughout study area. Largest populations documented on the east side of the study area. |

East Fork Rd

Yellow Pine

Stibnite Rd

Boise National Forest
Administered by the
Payette National Forest

Stibnite Rd

Payette National Forest
Administered by the
Payette National Forest

Stibnite

Thunder Mountain Rd

Riordan Lake Rd

Boise National Forest
Administered by the
Boise National Forest

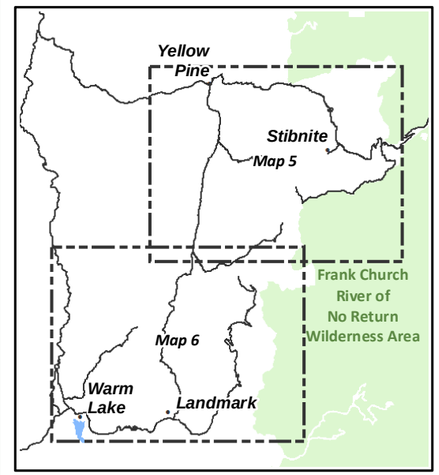
Meadow Creek Lookout Rd

Johnson Creek Rd

Frank Church River of No
Return Wilderness Area

Old Thunder Mountain Rd

See Map 6
(Following Page)




**Legend**

- Public Road
- Vegetation Study Area
- Frank Church River of No Return Wilderness
- Whitebark Pine Cover Types Mapped by the Payette and Boise National Forests
- Whitebark Pine Populations Observed During Field Survey
- Bentflowered Milkvetch Populations Observed During Field Survey
- Forest Service Boundary
- Matchline

N

0 7,000 14,000
Feet

Data Sources: State of Idaho Geospatial Gateway (INSIDE Idaho); USGS; Payette National Forest; Boise National Forest; Salmon-Challis National Forest

Map Date: November, 2013

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**Figure 4-5**
Botanical Resources
(Northern Portion of Study Area)
Stibnite Gold Project

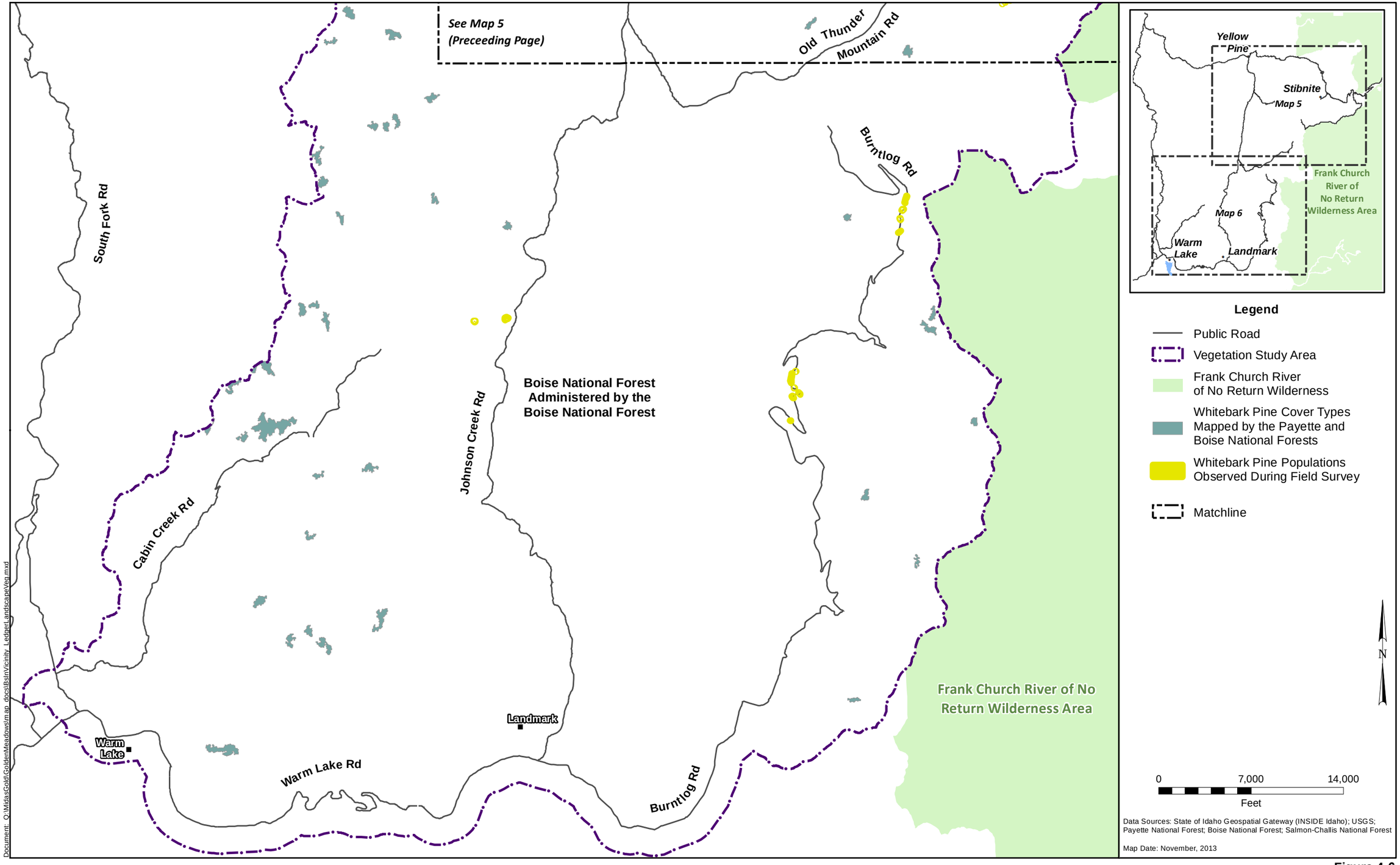


**Figure 4-6**
Botanical Resources
(Southern Portion of Study Area)
Stibnite Gold Project

### 4.2.3 Non-native Plants

HDR's team found two new populations of Canada thistle in the northeastern portion of the study area during 2012 field surveys. In addition to non-native plant species mapped in GIS by USFS, a total of 31.5 acres of non-native plants have been documented and mapped in the study area (**Figure 4-7** and **Figure 4-8**). This includes a population of spotted knapweed along approximately 2 miles of Warm Lake Road and smaller, scattered populations of rush skeletonweed and Canada thistle at various locations within the study area.

**Table 4-2** summarizes non-native species mapped in GIS by USFS and documented by the HDR team in the study area.

**Table 4-2. Summary of Non-Native Species in Study Area**

| Species Name | Common Name | Acres in Study Area | Notes |
|---|---|---|---|
| *Centaurea stoebe* | Spotted knapweed | 31.5 | No new populations documented in 2012 or 2013 plant surveys |
| *Chondrilla juncea* | Rush skeletonweed | 0.18 | No new populations documented in 2012 or 2013 plant surveys |
| *Cirsium arvense* | Canada thistle | 5.6 | New populations documented on old access roads on east side of the study area |

## 4.3 Summary of Affected Environment

This baseline study of vegetation resources will be used as a reference to support the USFS EIS on future exploration and mining projects associated with the Stibnite Gold Project.

Vegetation field surveys confirmed that upland forest, as mapped by USFS in GIS, is the most common vegetation community documented in the study area. Wildfires have disturbed much of the vegetation within the study area but new vegetation is emerging primarily grasses, shrubs and lodgepole pine HDR's team developed an overall plant species list for the entire study area, which is included in Appendix A.

The HDR team evaluated botanical resources and conducted field surveys for PAF and BOI species, confirming that no T&E plant species occur in or adjacent to the study area. The study area contains one candidate species (whitebark pine) and one sensitive species (bentflowered milkvetch). Additional botanical resources may also be present in the study area. Although the HDR team did not field-verify portions of the study area that are difficult to access, it is unlikely that they would be impacted by mining activities and associated access roads. Additional field surveys for botanical resources may be necessary depending on future mine plans.

The HDR team conducted field surveys and confirmed the locations of several non-native plant populations that USFS mapped in GIS and documented and mapped new populations of Canada thistle at various locations within the study area.

East Fork Rd
Yellow Pine
Stibnite Rd
Stibnite Rd
Boise National Forest Administered by the Payette National Forest
Payette National Forest Administered by the Payette National Forest
Stibnite
Thunder Mountain Rd
Riordan Lake Rd
Boise National Forest Administered by the Boise National Forest
Meadow Creek Lookout Rd
Frank Church River of No Return Wilderness Area
Johnson Creek Rd
Old Thunder Mountain Rd
See Map 8 (Following Page)

Yellow Pine
Stibnite
Map 7
Frank Church River of No Return Wilderness Area
Map 8
Warm Lake
Landmark

**Legend**

- Public Road
- Vegetation Study Area
- Frank Church River of No Return Wilderness
- Canada Thistle Populations Observed During Field Survey
- Spotted Knapweed Mapped by the Payette and/or Boise National Forests
- Rush Skeletonweed Mapped by the Payette National Forest
- Canada Thistle Mapped by the Payette National Forest
- Forest Service Boundary
- Matchline

N

0 7,000 14,000
Feet

Data Sources: State of Idaho Geospatial Gateway (INSIDE Idaho); USGS; Payette National Forest; Boise National Forest; Salmon-Challis National Forest

Map Date: November, 2013

Document: Q:\Midas\Gold\GoldenMeadows\mxd_docs\BsinVicinity_LedgerLandscapeVeg.mxd

**Figure 4-7**
Non-native Plants
(Northern Portion of Study Area)
Stibnite Gold Project

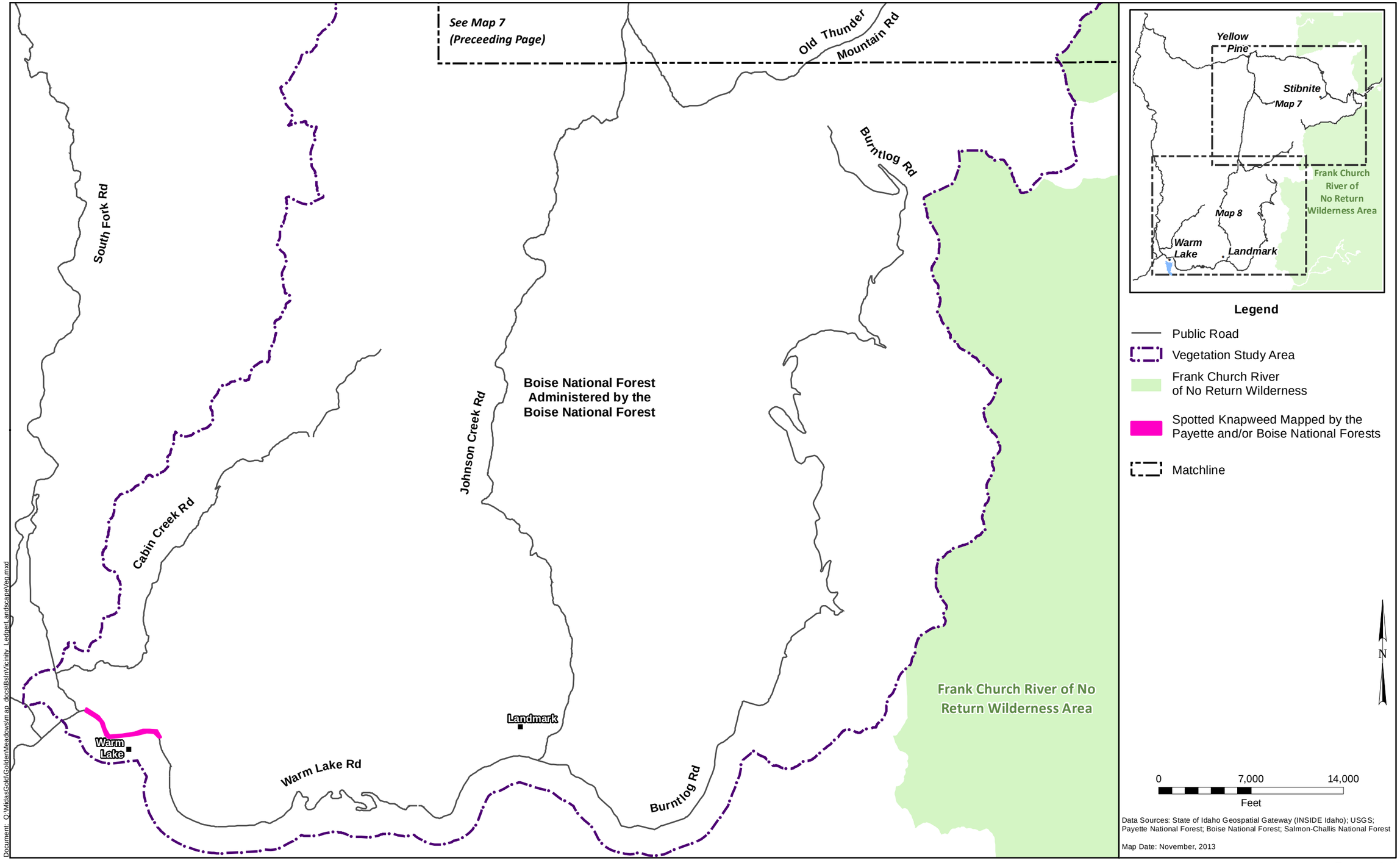


**Figure 4-8**
Non-native Plants
(Southern Portion of Study Area)
Stibnite Gold Project

# SECTION 5: REFERENCES

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## 5.3 Abbreviations and Acronyms

| Abbreviation/Acronym | Definition |
|---|---|
| BOI | Boise National Forest |
| EIS | environmental impact statement |
| EFSFSR | East Fork of the South Fork of the Salmon River<br>(proper name on maps: East Fork South Fork Salmon River) |
| ESA | Endangered Species Act |
| FS | Forest Service road |
| GIS | geographical information system |
| GPS | global positioning system |
| HDR | HDR, Inc. |
| ICDC | Idaho Conservation Data Center |
| IDAPA | Idaho Administrative Procedure Act |
| IDL | Idaho Department of Lands |
| MGII | Midas Gold Idaho, Inc. |
| msl | mean sea level |
| NFS | National Forest System |
| PAF | Payette National Forest |
| T&E | threatened and endangered |
| USFS | U.S. Forest Service |
| USFWS | U.S. Fish and Wildlife Service |

# SECTION 6: LIST OF PREPARERS

**Table 6-1. List of Preparers**

| Name | Title/Qualifications | Role |
|---|---|---|
| **USFS** | | |
| Alma Hanson | Forest Botanist, Payette National Forest | Baseline study oversight/field assistance |
| Vizgirdas, Edna R. | Forest Botanist, Boise National Forest | Data facilitation |
| **HDR, Inc.** | | |
| Robert Waldher | Registered Landscape Architect, Bachelor's in Landscape Architecture | Report author, field investigations |
| Manuel Rauhut | Professional Engineer/Hydrologist; Master's of Engineering, Environmental Engineering; 9 years experience | Field investigations |
| Jesse Tatum | EIT in Civil Engineering, Bachelor of Science, Civil Engineering | Field investigations |
| Matt Modlin | Wildlife Biologist; Bachelor of Science, Wildlife Resources | Field investigations |
| Diane Holloran | GIS Manager; Bachelor of Science in Wildlife Biology; 30 years experience in GIS and data management | Baseline study figures |
| Christine Whittaker | Registered Landscape Architect; Bachelor's in Landscape Architecture; 38 years experience in project management | Project management, QA/QC |
| Tom Menzel | Technical Editor, Bachelor's in Journalism | Technical editing |
| Lesley Thode | Project Assistant, Master's degree in technical communication; 20 years experience in technical communication | Report preparation |

# Appendix A:
# Plant Species List

## Appendix A. Stibnite Gold Project Vegetation Species List

| Scientific Name | Common Name | Family Name | WMVC Indicator Status[a] | Plant Description |
|---|---|---|---|---|
| ***Trees (Tree Stratum)*** | | | | |
| *Abies lasiocarpa* | subalpine fir | Pinaceae | FACU | Native coniferous tree |
| *Alnus incana* | gray alder | Betulaceae | FACW | Native riparian tree/shrub |
| *Alnus viridis sinuata* | Sitka alder | Betulaceae | FACW | Native riparian tree/shrub |
| *Picea engelmannii* | Norway spruce | Pinaceae | FAC | Native coniferous tree |
| *Picea glauca* | white spruce | Pinaceae | FAC | Native coniferous tree |
| *Pinus albicaulis* | whitebark pine | Pinaceae | ----- | Native coniferous tree |
| *Pinus contorta* | lodgepole pine | Pinaceae | FAC | Native coniferous tree |
| *Populus angustifolia* | narrow-leaf cottonwood | Salicaceae | FACW | Native riparian tree |
| *Populus tremuloides* | quaking aspen | Salicaceae | FACU | Native riparian tree |
| *Pseudotsuga menziesii* | Douglas fir | Pinaceae | FACU | Native coniferous tree |
| ***Shrubs (Shrub Stratum)*** | | | | |
| *Acer glabrum* | Rocky Mountain maple | Aceraceae | FAC | Native upland shrub |
| *Amelanchier alnifolia* | saskatoon serviceberry | Rosaceae | FACU | Native perennial shrub |
| *Arctostaphylos uva-ursi* | kinnikinnick | Ericaceae | FACU | Native upland shrub |
| *Artemisia ludoviciana* | white sagebrush | Asteraceae | UPL | Native upland perennial shrub |
| *Betula glandulosa* | bog birch | Betulaceae | OBL | Native wetland shrub |
| *Cassiope sp.* | mountain heather | Ericaceae | FACU | Native upland shrub |
| *Ceanothus velutinus* | snowbrush ceanothus | Rhamnaceae | ----- | Native perennial shrub |
| *Cornus stolonifera* | red-twig dogwood | Cornaceae | FACW | Native riparian shrub |
| *Juniperus communis* | common juniper | Cupressaceae | UPL | Native perennial shrub |
| *Ledum glandulosum* | western labrador tea | Ericaceae | OBL | Native perennial shrub |
| *Lonicera involucrata* | black twinberry | Caprifoliaceae | FAC | Native perennial shrub |
| *Lonicera utahensis* | Utah honeysuckle | Caprifoliaceae | FAC | Native perennial shrub |
| *Mahonia repens* | Oregon grape | Berberidaceae | FACU | Native perennial shrub |
| *Phyllodoce empetriformis* | pink mountainheath | Ericaceae | FACU | Native perennial shrub |
| *Potentilla sp.* | cinquefoil | Rosaceae | FAC | Native perennial shrub |
| *Prunus virginiana* | chokecherry | Rosaceae | FAC | Native riparian shrub |
| *Ribes aureum* | golden currant | Grossulariaceae | FAC | Native riparian shrub |
| *Ribes inerme* | whitestem gooseberry | Grossulariaceae | FAC | Native riparian shrub |
| *Ribes lacustre* | prickly currant | Grossulariaceae | FAC | Native riparian shrub |
| *Ribes montigenum* | gooseberry currant | Saxifragaceae | ----- | Native riparian shrub |
| *Rosa woodsii* | Wood's rose | Rosaceae | FACU | Native riparian shrub |
| *Rubus parviflorus* | thimbleberry | Rosaceae | FACU | Native riparian shrub |
| *Salix arctica* | arctic willow | Salicaceae | FAC | Native riparian shrub |
| *Salix boothii* | booth willow | Salicaceae | FACW | Native riparian shrub |
| *Salix drummondiana* | drummond willow | Salicaceae | FACW | Native riparian shrub |
| *Salix geyeriana* | geyer willow | Salicaceae | FACW | Native riparian shrub |
| *Salix lutea* | yellow willow | Salicaceae | OBL | Native riparian shrub |
| *Salix scouleriana* | Scouler's willow | Salicaceae | FAC | Native perennial shrub |
| *Salix wolfii* | Wolf's willow | Salicaceae | OBL | Native riparian shrub |
| *Sambucus racemosa* | black elderberry | Caprifoliaceae | FACU | Native upland shrub |
| *Spiraea betulifolia* | white spiraea | Rosaceae | FACU | Native perennial shrub |
| *Spiraea douglasii* | rose spiraea | Rosaceae | FACW | Native perennial shrub |

| Scientific Name | Common Name | Family Name | WMVC Indicator Status[a] | Plant Description |
|---|---|---|---|---|
| *Symphoricarpos longiflorus* | snowberry | Caprifoliaceae | FAC | Native upland shrub |
| *Vaccinium caespitosum* | dwarf blueberry | Ericaceae | FACU | Native upland shrub |
| *Vaccinium membranaceum* | thinleaf huckleberry | Ericaceae | FACU | Native upland shrub |
| *Vaccinium scoparium* | grouse whortleberry | Ericaceae | FACU | Native upland shrub |
| ***Forbs (Herbaceous Stratum)*** | | | | |
| *Achillea millefolium* | common yarrow | Asteraceae | FACU | Perennial forb |
| *Aconitum columbianum* | Columbian monkshood | Ranunculaceae | FACW | Perennial forb |
| *Actaea rubra* | red baneberry | Ranunculaceae | FACU | Perennial forb |
| *Agastache urticifolia* | nettleleaf giant hyssop | Lamiaceae | FACU | Perennial forb |
| *Anaphalis margaritacea* | pearly everlasting | Asteraceae | FACU | Perennial forb |
| *Agoseris aurantiaca* | orange agoseris | Asteraceae | FACU | Perennial forb |
| *Angelica arguta* | Lyall's angelica | Apiaceae | FACW | Perennial forb |
| *Angelica pinnata* | small-leaf angelica | Apiaceae | FACW | Perennial forb |
| *Antennaria microphylla* | littleleaf pussytoes | Asteraceae | FACU | Perennial forb |
| *Apocynum cannabinum* | Indian hemp | Apocanaceae | FAC | Perennial forb |
| *Arnica cordifolia* | heartleaf arnica | Asteraceae | ----- | Perennial forb |
| *Arenaria aculeata* | prickly sandwort | Caryophyllaceae | ----- | Perennial forb |
| *Arnica chamissonis* | Chamisso arnica | Asteraceae | FACW | Perennial forb |
| *Arnica longifolia* | longleaf arnica | Asteraceae | FACW | Perennial forb |
| *Arnica mollis* | hairy arnica | Asteraceae | FAC | Perennial forb |
| *Aralia nudicaulis* | wild sarsaparilla | Araliaceae | FACU | Perennial forb |
| *Aster foliaceus* | leafy aster | Asteraceae | FACW | Perennial forb |
| *Astragalus vexilliflexus var. vexilliflexus* | bentflowered milkvetch | Fabaceae | ----- | Perennial forb |
| *Athyrium filix-femina* | ladyfern | Dryopteridaceae | FAC | Perennial forb |
| *Brassica sp.* | mustard | Cruciferae | UPL | Weed species |
| *Calachortus sp.* | mariposa lily | Liliaceae | ----- | Perennial forb |
| *Caltha leptosepala* | elkslip marshmarigold | Ranunculaceae | OBL | Perennial forb |
| *Castilleja miniata* | Indian paintbrush | Scrophulariaceae | FAC | Perennial forb |
| *Chaenactis douglasii* | Douglas' dustymaiden | Asteraceae | ----- | Perennial forb |
| *Comarum palustris* | marsh cinquefoil | Rosaceae | OBL | Perennial forb |
| *Delphinium glaucum* | Sierra larkspur | Ranunculaceae | FACW | Perennial forb |
| *Dodecatheon pulchellum* | shooting star | Primulaceae | FACW | Perennial forb |
| *Dodecatheon jeffreyi* | Sierra shooting star | Primulaceae | FACW | Perennial forb |
| *Cirsium arvense* | Canada thistle | Asteraceae | FAC | Weed |
| *Epilobium angustifolium* | fireweed | Onagraceae | FACU | Perennial forb |
| *Epilobium lactiflorum* | milkflower willowherb | Onagraceae | FACW | Perennial forb |
| *Epilobium palustre* | marsh willowherb | Onagraceae | OBL | Perennial forb |
| *Equisetum arvense* | field horsetail | Equisetaceae | FAC | Perennial native forb |
| *Equisetum fluviatile* | water horsetail | Equisetaceae | OBL | Perennial native forb |
| *Equisetum hyemale* | rough horsetail | Equisetaceae | FACW | Perennial native forb |
| *Equisetum pratense* | meadow horsetail | Equisetaceae | FACW | Perennial native forb |
| *Eriogonum sp.* | buckwheat | Polygonaceae | ----- | Perennial forb |
| *Eriogonum flavum* | alpine buckwheat | Polygonaceae | ----- | Perennial forb |
| *Erigeron compositus* | cutleaf daisy | Asteraceae | ----- | Perennial forb |
| *Erigeron glabellus* | streamside fleabane | Asteraceae | FACW | Perennial forb |

| Scientific Name | Common Name | Family Name | WMVC Indicator Status[a] | Plant Description |
|---|---|---|---|---|
| *Fauria cris-galli* | deer cabbage | Menyanthaceae | OBL | Perennial forb |
| *Fragaria virginiana* | Virginia strawberry | Rosaceae | FACU | Perennial forb |
| *Gentiana sp.* | gentian | gentianaceae | ----- | Perennial forb |
| *Geranium richardsonii* | Richardson's geranium | Geraniaceae | FAC | Perennial forb |
| *Geranium viscosissimum* | sticky purple geranium | Geraniaceae | FACU | Perennial forb |
| *Habenaria sp.* | bog orchid | Orchidaceae | ----- | Perennial forb |
| *Heracleum maximum* | common cowparsnip | Apiaceae | FAC | Perennial forb |
| *Hieracium sp.* | hawksweed | Asteraceae | FACU | Perennial forb |
| *Iliamna rivularis* | streambank wild hollyhock | Malvaceae | FAC | Perennial forb |
| *Ipomopsis aggregata* | scarlet gilia | Polemoniaceae | ----- | Perennial forb |
| *Lemna minor* | common duckweed | Lemnaceae | OBL | Perennial forb |
| *Linanthus nuttallii* | Nuttall's linanthus | Polemoniaceae | FACU | Perennial forb |
| *Listera cordata* | heartleaf twayblade | Orchidaceae | FAC | Perennial forb |
| *Lupinus sp.* | lupine | Fabaceae | ----- | Perennial forb |
| *Marchantia polymporpha* | liverwort | Marchantiaceae | ----- | Non-vascular plant |
| *Maianthemum racemosum* | false lily of the valley | Liliaceae | FAC | Perennial forb |
| *Melilotus alba* | white sweet clover | Leguminosae | FACU | Perennial forb |
| *Melilotus officinalis* | yellow sweet clover | Leguminosae | FACU | Introduced forb |
| *Menziesia ferruginea* | rusty menziesia | Ericaceae | FACU | Perennial shrub/forb |
| *Mertensia paniculata* | tall bluebells | Scropulariaceae | FAC | Perennial forb |
| *Mimulus lewisii* | Lewis' monkeyflower | Scropulariaceae | FACW | Perennial forb |
| *Mimulus guttatus* | seep monkeyflower | Scropulariaceae | OBL | Perennial forb |
| *Mimulus tilingii* | Tiling's monkeyflower | Scropulariaceae | OBL | Perennial forb |
| *Mitella pentandra* | fivestamen miterwort | Saxifragaceae | FAC | Perennial forb |
| *Montia chamissoi* | water minerslettuce | Portulacaceae | OBL | Perennial forb |
| *Myosotis asiatica* | Asian forget-me-not | Boraginaceae | FAC | Perennial forb |
| *Osmorhiza berteroi* | sweet cicely | Apiaceae | FACU | Perennial forb |
| *Pedicularis groenlandica* | elephanthead lousewort | Scrophulariaceae | OBL | Perennial forb |
| *Parnassia fimbriata* | fringed grass of Parnassus | Saxifragaceae | OBL | Perennial forb |
| *Platanthera stricta* | slender bog orchid | Orchidaceae | FACW | Perennial forb |
| *Platanthera dilatata* | scentbottle | Orchidaceae | FACW | Perennial forb |
| *Penstemon sp.* | penstemon | Scrophulariaceae | ----- | Perennial forb |
| *Phlox diffusa* | spreading phlox | Polemoniaceae | ----- | Perennial forb |
| *Phacelia hastata* | silverleaf phacelia | Hydrophyllaceae | ----- | Perennial forb |
| *Polemonium occidentale* | western polemonium | Polemoniaceae | FACW | Perennial forb |
| *Potentilla gracilis* | slender cinquefoil | Rosaceae | FAC | Perennial forb |
| *Pyrola sp.* | wintergreen | Pyrolaceae | FACU | Perennial forb |
| *Ranunculus sp.* | ranunculus | Ranunculaceae | ----- | Perennial forb |
| *Sanguisorba sp.* | burnet | Rosaceae | FACW | Perennial forb |
| *Saxifraga lyallii* | redstem saxifrage | Saxifragaceae | FACW | Perennial forb |
| *Senecio triangularis* | arrowleaf ragwort | Asteraceae | FACW | Perennial forb |
| *Sedum lanceolatum* | spearleaf stonecrop | Crassulaceae | ----- | Perennial forb |
| *Solidago canadensis* | Canada goldenrod | Compositae | FACU | Perennial forb |
| *Stenotus lanuginosus* | wooly mock goldenweed | Asteraceae | ----- | Perennial forb |
| *Taraxacum officinale* | common dandelion | Compositae | FACU | Perennial forb |
| *Thalictrum fendleri* | fender meadowrue | Ranunculaceae | FAC | Perennial forb |
| *Trillium ovatum* | western trillium | Lilaceae | FACU | Perennial forb |

| Scientific Name | Common Name | Family Name | WMVC Indicator Status[a] | Plant Description |
|---|---|---|---|---|
| *Urtica dioica* | stinging nettle | Urticaceae | FAC | Weed |
| *Valeriana edulis* | tobacco root | Valerianaceae | FAC | Perennial forb |
| *Valeriana sitchensis* | Sitka valerian | Valerianaceae | FAC | Perennial forb |
| *Veratrum californicum* | California false hellebore | Liliaceae | FAC | Perennial forb |
| *Veratrum viride* | green false hellebore | Liliaceae | FAC | Perennial forb |
| *Veronica americana* | American speedwell | Scrophulariaceae | OBL | Perennial forb |
| *Veronica wormskjoldii* | alpine speedwell | Scrophulariaceae | FACW | Perennial forb |
| *Viola sp.* | yellow violet | Violaceae | ----- | Perennial forb |
| *Xerophyllum tenax* | common beargrass | Liliaceae | ----- | Perennial forb |
| *Zigadenus elegans* | mountain deathcamas | Liliaceae | FACU | Perennial forb |
| ***Grass and Grasslikes (Herbaceous Stratum)*** | | | | |
| *Agrostis stolonifera* | redtop | Poaceae | FAC | Perennial grass |
| *Bromus carinatus* | California brome | Gramineae | UPL | Perennial grass |
| *Bromus inermis* | smooth brome | Gramineae | FAC | Perennial grass |
| *Bromus tectorum* | cheat grass | Gramineae | UPL | Introduced annual grass |
| *Calamagrostis canadensis* | bluejoint reedgrass | Poaceae | FACW | Perennial grass |
| *Calamagrostis sp.* | pinegrass | Poaceae | ----- | Perennial grass |
| *Calamagrostis stricta* | northern reedgrass | Poaceae | FACW | Perennial grass |
| *Carex aquatilis* | water sedge | Cyperaceae | OBL | Native sedge |
| *Carex athrostachya* | slenderbeak sedge | Cyperaceae | FACW | Native sedge |
| *Carex geyeri* | elk sedge | Cyperaceae | UPL | Native grass |
| *Carex lenticularis* | lakeshore sedge | Cyperaceae | OBL | Native sedge |
| *Carex limosa* | mud sedge | Cyperaceae | OBL | Native sedge |
| *Carex mertensii* | Mertens' sedge | Cyperacea | FAC | Native sedge |
| *Carex microptera* | smallwing sedge | Cyperaceae | FACU | Native sedge |
| *Carex nebrascensis* | Nebraska sedge | Cyperaceae | OBL | Native sedge |
| *Carex pachystachya* | thickhead sedge | Cyperaceae | FAC | Native sedge |
| *Carex praticola* | meadow sedge | Cyperaceae | FACW | Native sedge |
| *Carex rostrata* | beaked sedge | Cyperaceae | OBL | Native sedge |
| *Carex scopulorum* | mountain sedge | Cyperaceae | OBL | Native sedge |
| *Carex simulata* | analogue sedge | Cyperaceae | OBL | Native sedge |
| *Carex vesicaria* | inflated sedge | Cyperaceae | OBL | Native sedge |
| *Deschampsia caespitosa* | tufted hairgrass | Poaceae | FACW | Perennial grass |
| *Elymus elymoides* | squirreltail | Poaceae | FACU | Perennial grass |
| *Thinopyrum intermedium* | intermediate wheatgrass | Poaceae | UPL | Perennial grass |
| *Festuca idahoensis* | Idaho fescue | Poaceae | FACU | Perennial grass |
| *Hordeum jubatum* | foxtail barley | Poaceae | FAC | Perennial grass |
| *Juncus balticus* | Baltic rush | Juncaceae | FACW | Native perennial grasslike |
| *Juncus effusus* | common rush | Juncaceae | FACW | Native perennial grasslike |
| *Juncus ensifolius* | swordfern rush | Juncaceae | FACW | Native perennial grasslike |
| *Juncus mertensianus* | Mertens' rush | Juncaceae | OBL | Native perennial grasslike |
| *Juncus torreyi* | Torrey's rush | Juncaceae | FACW | Native perennial grasslike |
| *Phleum pratense* | timothy | Poaceae | FAC | Introduced perennial grass |
| *Poa glaucifolia* | Swallens's bluegrass | Poaceae | FAC | Perennial grass |
| *Poa pratensis* | Kentucky bluegrass | Poaceae | FAC | Perennial grass |

## Appendix A. Stibnite Gold Project Vegetation Species List

| Scientific Name | Common Name | Family Name | WMVC Indicator Status[a] | Plant Description |
|---|---|---|---|---|
| *Poa secunda* | Sandberg bluegrass | Poaceae | FACU | Perennial grass |
| *Trisetum spicatum* | spike trisetum | Poaceae | UPL | Perennial grass |

[a] Western Mountains, Valleys, and Coast Region indicator categories:

OBL = Obligate Wetland. Plants almost always occur (estimated probability >99% under natural conditions in wetlands.

FACW = Facultative Wetland. Plants usually occur in wetlands (estimated probability 67%-99%), but occasionally found in non-wetlands.

FAC = Facultative. Plants are equally likely to occur in wetlands or non-wetlands (estimated probability 34%-66%).

FACU = Facultative Upland. Plants usually occur in non-wetlands (estimated probability 67%-99%), but occasionally found in wetlands (estimated probability < 99%) in non-wetlands under natural conditions in the region.

UPL = Upland. Plants occur almost always (estimated probability >99%) in non-wetlands under natural conditions in the region.

----- = Not included or status not indicated on Western Mountains, Valleys, and Coast Region plant list.

# Appendix B:
# USFWS Rare Plant Observation Reports

**IDAHO RARE PLANT OBSERVATION REPORT 2012**

Please fill in as many fields as possible, but don't worry if you have to leave blanks. Many fields contain check boxes (double click on box, and click 'checked'). E-mail completed form to plant@idfg.idaho.gov
If you need to mail maps or other materials that can't be sent electronically, send them to Botany Data Manager, Idaho Department of Fish and Game, PO Box 25, 600 S. Walnut St., Boise ID 83707-0025.
Thanks for contributing to rare plant conservation in Idaho!

Species: *Astragalus vexilliflexus var. vexilliflexus* – Bentflowered milkvetch

Observer(s): Robert Waldher (HDR Engineering)

Agency/Organization/Company: HDR Engineering, Midas Gold, Inc.

Address: 412 E Parkecenter Blvd. Ste. 100, Boise, ID 83706

E-mail: Robert.waldher@hdrinc.com Phone: 208-387-7085

Other knowledgeable individuals: Christine Whittaker, RLA (HDR Engineering)

If this observation is part of a larger study or report, what is the study/report? Midas Gold Vegetation Baseline Study

Certainty of identification: ☐ moderate ☒ high ☒ verified by: Alma Hanson, Botanist, Payette National Forest

---

Is this an addition or update of an existing occurrence? ☒ yes ☐ no ☐ unsure

Element occurrence (EO) #, if known: 1

EO survey site name (e.g., a particular landmark or location): Cinnabar Peak

Directions (please be specific so population/subpopulations can be relocated years from now by others):

The site is located in Valley, County, Idaho, within the Payette National Forest. The site lies within the Salmon River Mountains near the Frank Church River of No Return Wilderness and can be accessed from Yellow Pine via Stibnite Road (FS 412) and continuing up Thunder Mountain Road (FS 375) toward Monumental Summit. Continue travel on old mining roads which lead northwest to the ridges between Cinnabar Creek and the East Fork South Fork Salmon River.

Landowner(s): ☐ BLM ☒ USFS ☒ private ☐ other:

If all or part of population is on private land, has the landowner provided consent for the data to be exported?

Date of consent by private landowner, their contact info, and other pertinent comments:

General owner comments:

---

If location data are **GPS data:**

Format of GPS data: ☒ shapefile ☐ digital file (.dbf, .xls, .txt, etc.) ☐ GPS points in subpopulation section

Method used to collect GPS data: ☒ GPS unit ☐ estimated on a paper map ☐ other:

GPS unit was held: ☐ directly over the plant of interest ☒ in the general vicinity of the rare plant

Do the GPS points mark the boundary of a plant group? ☒ yes ☐ no ☐ unsure

Accuracy of GPS unit (± m): ± 3m Datum: ☐ NAD27 ☒ NAD83 ☐ WGS84 ☐ unknown

Coordinate system: ☒ UTM zone 11 ☐ UTM zone 12 ☐ UTM zone unknown ☐ Idaho Transverse Mercator
☐ Decimal degrees, lat/long ☐ state plane ☐ township/range/section

**Population Information** (for entire population; information on subpopulations goes on next page)

Population area (extent of all subpopulations):

Do you feel you mapped the full extent of the population? ☐ yes ☒ no ☐ unsure

Is there more potential habitat in the area that hasn't been surveyed? ☒ yes ☐ no ☐ unsure

Suggestions for other areas to survey: Old mining road running from Cinnabar Peak down into Cinnabar Creek.

The survey was: ☐ very thorough ☒ fairly thorough ☐ cursory ☐ incidental observation

Collector/Collection #: Herbarium:

Photo attached? ☒ yes ☐ no If photos are located elsewhere, where are they?

See photos in Appendix C of Baseline Study.

Monitoring or research needs for this population:

Management needs for this population: The forest plan emphasizes conservation and recovery of Region 4 Sensitive Species that are at risk where quantity and quality of habitat needed support viability is a concern. Mitigation measures and management requirements have been put in place to ensure the continued viability of bentflowered milkvetch

Additional population comments: The survey took place in areas associated with calcareous geology (Fern marble, middle marble, Hermes marble, dolomite, lower and upper calc-silicates). Based on information from past surveys, it appears that this population of bentflowered milkvetch continues to grow vigorously, with no weed invasion. Additional populations of this species may be present on private land near Cinnabar Creek, especially along old roadbeds.

---

Native plant community <u>within</u> the population is:

☐ A. intact with zero to low non-native plant cover and/or minimal anthropogenic disturbance.

☒ B. intact with low to moderate non-native plant cover and/or low to moderate anthropogenic disturbance.

☐ C. partially intact with moderate to high non-native plant cover and/or mod. to high anthropogenic disturbance.

☐ D. almost gone with high non-native plant species cover and/or high anthropogenic disturbance.

Is this rank based on all known subpopulations? ☐ yes ☐ no ☒ unsure

Additional comments on condition of the population: Old roadbeds in the area were never completely re-contoured. The species has spread vigorously to many of these previously disturbed areas.

---

Landscape surrounding the population is:

☐ A. unfragmented, with ecological and hydrological processes intact.

☒ B. partially fragmented, with ecological and hydrological processes intact.

☐ C. moderately fragmented, with ecological and hydrological processes intact.

☐ D. fragmented, with many ecological and hydrological processes no longer intact.

Is this rank based on all known subpopulations? ☐ yes ☐ no ☒ unsure

Additional comments on landscape surrounding the population: The surrounding landscape has been impacted by past mining activities and numerous access roads that exist throughout the area.

**IDAHO RARE PLANT OBSERVATION REPORT 2012-2013**

Please fill in as many fields as possible, but don't worry if you have to leave blanks. Many fields contain check boxes (double click on box, and click 'checked'). E-mail completed form to plant@idfg.idaho.gov
If you need to mail maps or other materials that can't be sent electronically, send them to Botany Data Manager, Idaho Department of Fish and Game, PO Box 25, 600 S. Walnut St., Boise ID 83707-0025.
Thanks for contributing to rare plant conservation in Idaho!

Species: *Pinus albicaulis* – Whitebark pine

Observer(s): Robert Waldher (HDR Engineering)

Agency/Organization/Company: HDR Engineering, Midas Gold, Inc.

Address: 412 E Parkecenter Blvd. Ste. 100, Boise, ID 83706

E-mail: Robert.waldher@hdrinc.com Phone: 208-387-7085

Other knowledgeable individuals: Christine Whittaker, RLA (HDR Engineering)

If this observation is part of a larger study or report, what is the study/report? Midas Gold Vegetation Baseline Study

Certainty of identification: ☐ moderate ☒ high ☒ verified by: Alma Hanson, Botanist, Payette National Forest

---

Is this an addition or update of an existing occurrence? ☐ yes ☐ no ☒ unsure

Element occurrence (EO) #, if known:

EO survey site name (e.g., a particular landmark or location):

Directions (please be specific so population/subpopulations can be relocated years from now by others):

The site is located in Valley, County, Idaho, within the Payette National Forest. The site lies within the Salmon River Mountains near the Frank Church River of No Return Wilderness and can be accessed from Yellow Pine via Stibnite Road (FS 412) and continuing up Thunder Mountain Road (FS 375) toward Monumental Summit. Populations are located at sub-alpine elevations surrounding the Golden Meadows Project.

Landowner(s): ☐ BLM ☒ USFS ☒ private ☐ other:

If all or part of population is on private land, has the landowner provided consent for the data to be exported?

Date of consent by private landowner, their contact info, and other pertinent comments:

General owner comments:

---

If location data are **GPS data:**

Format of GPS data: ☒ shapefile ☐ digital file (.dbf, .xls, .txt, etc.) ☐ GPS points in subpopulation section

Method used to collect GPS data: ☒ GPS unit ☐ estimated on a paper map ☐ other:

GPS unit was held: ☐ directly over the plant of interest ☒ in the general vicinity of the rare plant

Do the GPS points mark the boundary of a plant group? ☐ yes ☒ no ☐ unsure

Accuracy of GPS unit (± m): ± 3m Datum: ☐ NAD27 ☒ NAD83 ☐ WGS84 ☐ unknown

Coordinate system: ☒ UTM zone 11 ☐ UTM zone 12 ☐ UTM zone unknown ☐ Idaho Transverse Mercator
☐ Decimal degrees, lat/long ☐ state plane ☐ township/range/section

**Population Information** (for entire population; information on subpopulations goes on next page)

Population area (extent of all subpopulations):

Do you feel you mapped the full extent of the population? ☐ yes ☒ no ☐ unsure

Is there more potential habitat in the area that hasn't been surveyed? ☒ yes ☐ no ☐ unsure

Suggestions for other areas to survey: Populations are likely located on steep slopes found at alpine tree lines and sub-alpine elevations surrounding the Golden Meadows Project.

The survey was: ☐ very thorough ☐ fairly thorough ☒ cursory ☐ incidental observation

Collector/Collection #: Herbarium:

Photo attached? ☒ yes ☐ no If photos are located elsewhere, where are they?

See photos in Appendix C of Baseline Study.

Monitoring or research needs for this population:

Management needs for this population: The forest plan emphasizes conservation and recovery of USFWS candidate and Region 4 Sensitive Species that are at risk where quantity and quality of habitat needed support viability is a concern. Mitigation measures and management requirements have been put in place to ensure the continued viability of whitebark pine.

Additional population comments: In addition to exposed sub-alpine slopes surrounding the Golden Meadows project, the survey took place at areas where Forest Service mapping showed whitebark pine cover. Generally, whitebark pine populations in the area appear to be mostly intact with some areas of disturbance from past wildfires.

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Native plant community within the population is:

☐ A. intact with zero to low non-native plant cover and/or minimal anthropogenic disturbance.

☒ B. intact with low to moderate non-native plant cover and/or low to moderate anthropogenic disturbance.

☐ C. partially intact with moderate to high non-native plant cover and/or mod. to high anthropogenic disturbance.

☐ D. almost gone with high non-native plant species cover and/or high anthropogenic disturbance.

Is this rank based on all known subpopulations? ☐ yes ☐ no ☒ unsure

Additional comments on condition of the population: Some whitebark pine populations were disturbed from past wildfire activity.

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Landscape surrounding the population is:

☐ A. unfragmented, with ecological and hydrological processes intact.

☒ B. partially fragmented, with ecological and hydrological processes intact.

☐ C. moderately fragmented, with ecological and hydrological processes intact.

☐ D. fragmented, with many ecological and hydrological processes no longer intact.

Is this rank based on all known subpopulations? ☐ yes ☐ no ☒ unsure

Additional comments on landscape surrounding the population: The surrounding landscape has been impacted by past mining activities and numerous access roads that exist throughout the area.

# Appendix C:
# Botanical Resource Site Photographs

# RARE PLANT SURVEY PHOTOGRAPHS

*Pinus albicaulis*

**Photo 1** – Whitebark pine stand near the drill area known as Ridgetop facing west.

**Photo 2** – Whitebark pine stand near the drill area known as Ridgetop facing west.

**Photo 3** – Whitebark pine stand near the drill area known as Ridgetop facing northwest.

**Photo 4** – Whitebark pine stand near the drill area known as Ridgetop facing east.


**Photo 5** – Whitebark pine stand near the drill area known as Ridgetop facing southwest.


**Photo 6** – Whitebark pine stand near the drill area known as Ridgetop facing north.

# RARE PLANT SURVEY PHOTOGRAPHS

*Pinus albicaulis*


**Photo 7 –** Whitebark pine stand near the drill area known as Saddle facing west.


**Photo 8 –** Whitebark pine stand near the drill area known as Saddle facing southwest.


**Photo 9 –** Whitebark pine stand near the drill area known as Saddle facing southwest.


**Photo 10 –** Whitebark pine stand near the drill area known as Saddle facing northwest.

**Photo 11 –** Whitebark pine stand near the drill area known as Doris K facing west.

**Photo 12 –** Whitebark pine stand near the drill area known as Doris K facing southwest.

# RARE PLANT SURVEY PHOTOGRAPHS

*Pinus albicaulis*


**Photo 13** – Whitebark pine stand near the drill area known as Doris K facing southwest.


**Photo 14** – Whitebark pine stand near the drill area known as Doris K facing south.

**Photo 15** – Whitebark pine stand near the drill area known as Doris K facing north.

**Photo 16** – Whitebark pine stand near the drill area known as Doris K facing south.

**Photo 17** – Whitebark pine stand near the drill area known as Doris K facing northwest.

**Photo 18** – Whitebark pine stand near the drill area known as Doris K facing west.

# RARE PLANT SURVEY PHOTOGRAPHS

*Pinus albicaulis*

**Photo 19** – Whitebark pine stand on ridgeline above Fiddle Creek drainage facing west.


**Photo 20** – Whitebark pine tree on ridgeline above Fiddle Creek drainage facing west.

**Photo 21** – Whitebark pine stand on ridgeline above Fiddle Creek drainage facing west.

**Photo 22** – Whitebark pine stand on ridgeline above Fiddle Creek drainage facing west.


**Photo 23** – Whitebark pine saplings on ridgeline above Fiddle Creek drainage facing north.

**Photo 24** – Whitebark pine stand on ridgeline above Fiddle Creek drainage facing north.

# RARE PLANT SURVEY PHOTOGRAPHS

*Pinus albicaulis*


**Photo 25** – Whitebark pine stand on ridgeline above West End Creek drainage facing northeast.


**Photo 26** – Whitebark pine stand on ridgeline above West End Creek drainage facing east.

**Photo 27** – Whitebark pine along Burntlog Road facing north.

**Photo 28** – Close-up of whitebark pine needles.

**Photo 29** – Whitebark pine saplings along Burntlog Road facing south.

**Photo 30** – Whitebark pine saplings along Burntlog Road facing north.

# RARE PLANT SURVEY PHOTOGRAPHS

*Pinus albicaulis*

**Photo 31** – Whitebark pine saplings along Burntlog Road facing East.

**Photo 32** – Whitebark pine stand observed on both sides of Cabin Creek Road facing south.

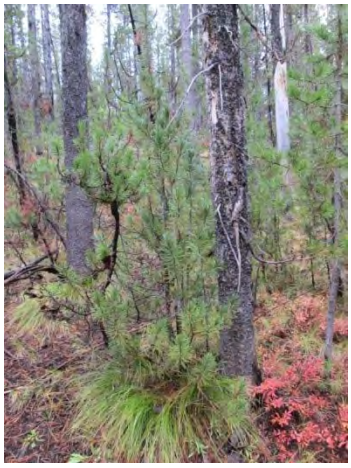

**Photo 33** – Whitebark pine saplings along Cabin Creek Road facing west.

**Photo 34** – Close-up of whitebark pine saplings adjacent to Cabin Creek Road.

# RARE PLANT SURVEY PHOTOGRAPHS

*Astragalus vexiliflexus var. vexiliflexus*


**Photo 1** – Bentflowered milkvetch population near Cinnabar peak.


**Photo 2** – The population in this area was vigorous.


**Photo 3** – Close-up image of bentflowered milkvech.


**Photo 4** – Typical habitat for bentflowered milkvetch near Cinnabar facing southast.


**Photo 5** – Populations of bentflowered milkvetch have spread to old cut/fill access roads.


**Photo 6** – Bentflowered milkvetch population near Cinnabar peak facing northwest.

# RARE PLANT SURVEY PHOTOGRAPHS

*Astragalus vexiliflexus var. vexiliflexus*


**Photo 7** – Example of soils near a single bentflowered milkvetch plant.


**Photo 8** – Bentflowered milkvetch on old roadbed near drill area known as Saddle, facing south.


**Photo 9** – Bentflowered milkvetch on old roadbed near drill area known as Saddle.


**Photo 10** – Bentflowered milkvetch habitat.


**Photo 11** – Rocky soils near surrounding bentflowered milkvetch plants.


**Photo 12** – Close-up image of bentflowered milkvetch.

# RARE PLANT SURVEY PHOTOGRAPHS

*Astragalus vexiliflexus var. vexiliflexus*


**Photo 13** – Soils near the drill area known as Doris K had a gray color.


**Photo 14** – Bentflowered milkvetch near drill area known as Doris K.


**Photo 15** – Bentflowered milkvetch habitat near the drill area known as Doris K.


**Photo 16** – Bentflowered milkvetch on access road leading out of Cinnabar Creek facing east.


**Photo 17** – Bentflowered milkvetch was vigorous on portions of the access road out of Cinnabar Creek.


**Photo 18** – Close-up of bentflowered milkvetch along access road.