

**Centennial Industrial Site**

***Habitat Management Plan for the***

***Pine Hill Flannelbush (*Fremontodendron decumbens*)***

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## TABLE OF CONTENTS

INFORMATION SUMMARY .....	iv
Habitat Management Plan Summary .....	v
1 INTRODUCTION.....	1-1
1.1 Pine Hill Flannelbush USFW Recovery Plan.....	1-1
1.2 Centennial Industrial Site in Nevada County .....	1-3
1.3 Project Understanding .....	1-4
1.4 Purpose of the Habitat Management Plan.....	1-5
2 SPECIES DESCRIPTION, IDENTIFICATION, DISTRIBUTION, AND ECOLOGY .....	2-1
2.1 Description and Identification.....	2-1
2.1.1 Taxonomy.....	2-1
2.1.2 Description .....	2-1
2.2 Historical and Current Distribution .....	2-2
2.2.1 Distribution within the Sierra Nevada Foothills.....	2-2
2.2.2 Pine Hill Flannelbush within the Centennial Industrial Site .....	2-3
3 REGULATORY OVERVIEW FOR PROTECTION OF ENDANGERED SPECIES .....	3-1
3.1 Federal Regulations.....	3-1
3.1.1 Endangered Species Act of 1973.....	3-1
3.2 State Regulations.....	3-1
3.2.1 California Endangered Species Act .....	3-1
3.2.2 California Environmental Quality Act Guidelines Section 15380 .....	3-2
3.3 Local Regulations .....	3-2
3.3.1 Rare, Threatened, and Endangered Species and Their Habitat .....	3-2
3.3.2 Nevada County General Plan .....	3-3
4 SITE DESCRIPTION .....	4-1
4.1 General Description .....	4-1
4.2 Centennial Site Soil Types.....	4-2
4.3 Centennial Site Vegetation Communities.....	4-3
5 GENERAL MANAGEMENT CONSIDERATIONS FOR THE SPECIES.....	5-1
5.1 Recovery Plan Goals.....	5-2
5.2 Threats to Species.....	5-3

5.3	Overall Management Approach.....	5-4
5.4	Goal 1: Eliminate or minimize potential direct and indirect impacts from Project Operations.....	5-4
5.5	Goal 2: On and Off-site habitat enhancement and restoration .....	5-5
5.5.1	Protect Existing Population and Adjacent Suitable Habitat .....	5-5
5.5.2	Enhance Habitat .....	5-6
5.6	Goal 3: Onsite enhancement and restoration of population.....	5-6
5.6.1	Ameliorate or eliminate existing threats .....	5-6
6	IMM PROJECT SPECIFIC CONSERVATION MEASURES AND SPECIES MANAGEMENT. 6-1	
6.1	Pre-Construction Surveys and Avoidance.....	6-1
6.2	Seed Collection and Propagation Techniques.....	6-1
6.2.1	Increase Natural Recruitment and Germination .....	6-3
6.3	Project Specific Mitigation Measures and Management .....	6-3
6.3.1	Transplantation and Monitoring for Direct and Indirect Impacts to Pine Hill Flannelbush .....	6-3
6.3.2	Monitoring Plan.....	6-4
7	REFERENCES.....	7-1
8	QUALIFICATIONS OF REPORT PREPARERS .....	8-1

## LIST OF TABLES

Table 1.0	Vegetation Communities Within the Project Area
Table 2.0	Special-Status Species Associated With Vegetation Community Types

## LIST OF APPENDICES

Appendix A	Centennial Site Overview Map
Appendix B	USDA Soils Map
Appendix C	Vegetation Community Map
Appendix D	Pine Hill flannelbush Map
Appendix E	Project Site Plan
Appendix F	Plant Species Observed During Site Surveys
Appendix G	Photo Log
Appendix H	CNDDDB 5-Mile Buffer Figure
Appendix I	USFWS iPac Reports

**INFORMATION SUMMARY**

Report Date: January 2021

Report Preparer: Mr. Greg Matuzak  
Greg Matuzak Environmental Consulting LLC

Project Site: Centennial Industrial Site

Project Site Location: SECTION 26, T.16N, R.8E

<b>CENTENNIAL INDUSTRIAL SITE</b>		
<b>Assessor Parcel Number</b>	<b>Site Address</b>	<b>Lot Size (Acres)</b>
009-550-032	N/A	20,908 SF (0.48 AC)
009-550-037	10344 Centennial Drive	4.47 AC
009-550-038	10350 Centennial Drive	40.1 AC
009-550-039	10344 Centennial Drive	42,668 SF (0.98 AC)
009-550-040	N/A	5,662 SF (0.13 AC)
009-560-036	10350 Centennial Drive	10.25 AC
<b>Centennial Industrial Site - Land Total:</b>		<b>56.41 AC</b>

Property Owner /  
Applicant: Rise Grass Valley, Inc.  
PO Box 271  
Grass Valley, CA 95945

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## Habitat Management Plan Summary

This Habitat Management Plan (HMP) includes the results of the background research, reconnaissance-level and protocol-level biological surveys, data analysis, and impact assessment for the Pine Hill flannelbush (*Fremontodendron decumbens*) within the Centennial Industrial Site.

Pine Hill flannelbush (*Fremontodendron decumbens*), a species listed on the federal Endangered Species Act (ESA), has been identified and mapped within the southern portion of the Centennial Site. Sixty individual mature and flowering plants occupy an absolute area of 0.22 acres over approximately 4.5 acres of the Centennial Site.

This HMP includes avoidance, minimization, and mitigation measures to protect the species. Recommendations are also provided for conducting regulatory agency permitting and consultations covering the species.

The 5-year review of the species covered under the USFWS Recovery Plan concluded for the Pine Hill flannelbush that results of subsequent genetic work by a University of California, Davis researcher, to determine if Nevada and Yuba County flannelbushes are Pine Hill flannelbush, were inconclusive; therefore, the USFWS continue under the assumption that these plants are not the listed entity (USFWS, 2019).

## 1 INTRODUCTION

### 1.1 Pine Hill Flannelbush USFW Recovery Plan

Pine Hill flannelbush (*Fremontodendron decumbens*) inhabits rocky ridges on gabbro and serpentine soils within chaparral and cismontane woodlands within the central Sierra Nevada foothills. This species is endemic to these soil types and is normally documented between 1,390 and 2,495 feet above Mean Sea Level ("MSL"). It is listed as endangered by the United States Fish and Wildlife Service ("USFWS") under the federal Endangered Species Act ("FESA") and is listed as Rare by the California Department of Fish and Wildlife ("CDFW"). Pine Hill flannelbush also has a California Rare Plant Rank ("CRPR") 1B.2 status on the California Native Plant Society's ("CNPS") *Inventory of Rare and Endangered Plants* (CNPS, 2019).

In 2002, USFWS published a Recovery Plan for five federally listed plant species and one additional species of concern that primarily occur on gabbroic substrates in the central Sierra Nevada foothills (USFWS, 2002). In 2019, the USFWS published their 5-year review of the species covered under the recovery plan, including the Pine Hill flannelbush (USFWS, 2019). Of the species covered under the Recovery Plan, only the Pine Hill flannelbush occurs within the Centennial Industrial Site ("Centennial Site"). Another FESA listed species covered under the Recovery Plan, Stebbins' morning-glory (*Calystegia stebbinsii*), was not documented within the Centennial Site and therefore, is not covered under this Habitat Management Plan ("HMP"). Federal recovery plans delineate reasonable actions that are believed to be required to recover and/or protect listed species. Recovery plans have no legal authority, but provide guidelines to federal, state, local, and private entities for management actions that will assist in preventing extinction of listed species and facilitating those species towards achieving recovery.

The Recovery Plan presents a community-level strategy for recovery and conservation of the six species as all six species co-occur in the same natural chaparral community within the Pine Hill formation in western El Dorado County, as well as where any of the species occur within their range. Therefore, the likelihood of successful recovery for these species is increased by protecting the entire community in which these species occur for the Pine Hill formation in western El Dorado County given the species almost exclusively occurs at that location. The federal Recovery Plan also considers the requirements of each individual species and presents individual recovery criteria for each species (USFWS, 2002).

The Recovery Plan identifies habitat loss, habitat fragmentation, alteration of natural fire regime, and suppression of disturbance necessary for reproduction, all ultimately tied to increasing urbanization within the species' range, as the primary reasons for the

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decline of, and ongoing threats, to all six species, including the Pine Hill flannelbush. Lesser threats to these species identified by the Recovery Plan include road widening and maintenance, off-road vehicle use, garbage dumping, horse paddocking, and competition with invasive non-native vegetation. The Recovery Plan notes that activities often associated with rural residential areas, such as clearing chaparral for fire protection around houses, bulldozing land (grading for houses or barns), planting fruit trees, and irrigation sometimes adversely modify habitat, rendering it unsuitable for Pine Hill flannelbush and the other five species.

Interim goals of the Recovery Plan include stabilizing and protecting populations, conducting research necessary to refine reclassification and recovery criteria, and reclassifying (i.e. downlisting) Pine Hill flannelbush from endangered to threatened. The Recovery Plan's ultimate goals include:

- (1) protect and restore sufficient habitat and numbers of populations; and
- (2) ameliorate both the threats that caused five of the gabbro soil plants to be listed and any other newly identified threats to warrant delisting of Stebbins' morning-glory and two of the other listed species and downlisting of Pine Hill flannelbush and one of the other listed species (USFWS, 2002).

Criteria used to evaluate when listed species are "recovered" include number and distribution of populations, population sizes, and probabilities of persistence over specific time periods. The Recovery Plan emphasizes the following recovery and long-term conservation tasks:

- (1) habitat protection and management;
- (2) surveying and monitoring;
- (3) research; and
- (4) public participation, outreach, and education.

The Recovery Plan specifically recommends that management plans be prepared for all populations recommended for protection and any adjacent areas identified as necessary for continued survival and recovery (USFWS, 2002). However, the 5-year review of the species covered under the Recovery Plan concluded for the Pine Hill flannelbush that results of subsequent genetic work by a University of California, Davis researcher, to determine if Nevada and Yuba County flannelbushes are Pine Hill flannelbush, were inconclusive; therefore, the USFWS continue under the assumption that these plants are not the listed entity (USFWS, 2019).

## 1.2 Centennial Industrial Site in Nevada County

At the request of Rise Grass Valley Inc. ("Rise Grass Valley" or "Rise"), Mr. Greg Matuzak was retained to prepare a Habitat Management Plan for the Pine Hill flannelbush. The HMP is specific for the Centennial Site and proposed Idaho-Maryland Mine Project ("IMM Project") located in Grass Valley, Nevada County, California (see Appendix A). The Centennial Site is a 56.41-acre property.

The Centennial Site is part of the original land holdings of the historic Idaho-Maryland Mine, which operated between approximately 1851 and 1956. The Centennial Site was the location of the mine tailings storage area for the larger mine site. The site discharged water into the main stem of Wolf Creek via a decant tower, which is still in place in the northwest portion of the site. During the 1930s, the Idaho-Maryland Mine operated a mineral processing plant, located adjacent and to the east of the Centennial Site. The results of historic mine tailing deposition in the Centennial Site can still be seen in the soils within the site, some of which have the appearance of many layers of deposited material of varying color.

The Centennial Site is located along Idaho Maryland Road on the northern boundary, Centennial Drive along the northeast boundary, DeMartini RV Sales along the western boundary, commercial development along the eastern boundary, and privately-owned industrial land along the southern boundary. Overall, the Centennial Site is surrounded by private commercial and industrial land use and zoning.

The Pine Hill flannelbush is listed within the California Natural Diversity Data Base ("CNDDDB") (CDFW, 2019) as potentially occurring within the southern section of the Centennial Site and within adjacent private lands to the south. Initially identified and mapped as Pine Hill flannelbush in 1999, 2008, and 2009; however, since the species was mapped by the CDDDB within the Centennial Site as the Pine Hill flannelbush, the identity of the plants has been questioned. The Centennial Site does contain the appropriate soils and vegetation community types required for the Pine Hill flannelbush (see Appendix B and Appendix C). Without further genetic identification of the plants, their identity within the Centennial Site can't be certain. CDFW assumes that the plants mapped within the Centennial Site are either a distinct population of Pine Hill flannelbush or a hybrid with the more common *Fremontodendron californicum* (CDFW, 2019; see attached Pine Hill flannelbush mapping within the Centennial Site in Appendix D). However, the 5-year review of the species covered under the Recovery Plan concluded for the Pine Hill flannelbush that results of subsequent genetic work by a University of California, Davis researcher, to determine if Nevada and Yuba County flannelbushes are Pine Hill flannelbush, were inconclusive; therefore, the USFWS continue under the assumption that these plants are not the listed entity (USFWS, 2019).

### 1.3 Project Understanding

Rise proposes to reinstate underground mining and ore processing of the Idaho-Maryland Mine in Nevada County, CA. The proposed facilities and operations to support underground mining will be located on the approximate 119-acre Brunswick Industrial Site. As a component of the mine project, Rise proposes to grade the Centennial Industrial Site to create usable industrial property for potential future development. Grading of the Centennial Site will utilize engineered fill material produced from mining operations at the Brunswick Industrial Site. Development of the Centennial Site into an industrial subdivision is not part of the proposed IMM Project and is not proposed by Rise.

The Centennial Site is located in Nevada County, CA and borders the City of Grass Valley city limits. Zones within the approximate 56-acre Centennial Site contain elevated metal concentrations from historical land use. Rise is working with the California Department of Toxic Substances Control (DTSC) to fully remediate the site by consolidating and capping the contaminated soils in a manner consistent with current federal and state regulations.

The environmental cleanup work at the Centennial Site will be completed under the DTSC voluntary cleanup program and is outside the scope of the IMM Project. It is estimated that the cleanup program will cause a surface disturbance of approximately 26.56 acres. The DTSC cleanup program will have no impact on the Pine Hill flannelbush given the proposed areas of disturbance (excavation and mine waste consolidation areas within the Centennial Site are located outside of any area containing a mapped Pine Hill flannelbush). See Appendix E for site plans showing the locations of the proposed excavation and mine waste consolidation areas in relation to the mapped locations of the Pine Hill flannelbush within the Centennial Site. Impacts to the Pine Hill flannelbush covered under this HMP will be limited to the IMM Project only.

After the environmental cleanup work at the Centennial Site is complete, Rise proposes to truck engineered fill from the Brunswick Industrial Site to the Centennial Site. The engineered fill, composed of barren rock and sand, will be placed, graded, and compacted. Concurrent with fill and grading activities, the fill slopes will be revegetated to control erosion and ensure slope stability. Grading activities associated with the IMM Project will cause a surface disturbance of 17.15 acres.

The base of the engineered fill will extend approximately 44 acres across the site, although much of the area will have experienced surface disturbance by site remediation efforts. Disturbance and engineered fill placement will be avoided on the remaining 12.7 acres, which includes the main stem of Wolf Creek, the 100-foot non-disturbance setback of the main stem of Wolf Creek, and an undisturbed and protected zone containing Pine Hill flannelbush (see the proposed IMM Project Site Plan in Appendix E).

The proposed placement of engineered fill at the Centennial Site will impact 18 Pine Hill flannelbush plants directly by requiring their removal as part of the IMM Project. The remaining forty-two (42) individual Pine Hill flannelbush plants are located outside of the proposed engineered fill areas and therefore, they will not be directly impacted by the IMM Project. However, four (4) individual Pine Hill flannelbush plants will be located within 30 feet of the edge of the engineered fill material and could be subject to indirect effects from changes in topography, runoff, etc. that could occur as an edge effect on those individual plants. The 4 individual plants are located approximately 27, 26, 28, and 29 feet from the edge of the engineered fill. Therefore, as part of this HMP it is estimated that 18 individual Pine Hill flannelbush plants will be directly impacted and potentially 4 additional Pine Hill flannelbush plants could be indirectly impacted by the IMM Project.

#### **1.4 Purpose of the Habitat Management Plan**

This HMP has been developed in compliance with the Nevada County Land Use and Development Code, Section L-II 4.3.12, which includes regulations intended to follow the federal and state Endangered Species Acts (FESA and CESA), by avoiding the impact to development on rare, threatened, endangered, and special status species and their habitat, or where avoidance is not possible, to minimize or compensate for such impacts and to retain their habitat as non-disturbance open space. The regulations indicate that a project may only be approved when it is determined by the Nevada County Planning Agency that it will not adversely affect rare, threatened, or endangered species or their occupied habitat and that it will result in no net loss of habitat function or value for the defined species. When it is determined that a project will adversely affect a defined species or their habitat, the regulations require that a site-specific habitat management plan consistent with state and federal requirements be prepared.

This HMP includes an evaluation of the Pine Hill flannelbush identified and mapped within the Centennial Site. The species is regulated by CDFW, USFWS, and Nevada County. Preparation of the HMP included background research, field reconnaissance-level biological resources surveys, protocol-level surveys, data analysis, and impact assessment for the Pine Hill flannelbush. Development of recommendations for the management of the species within the Centennial Site is based on the Recovery Plan and the expertise of botanists with the understanding of the species ecology. This HMP also includes recommended avoidance, minimization, and mitigation measures to ensure that any direct and indirect effects of the IMM Project on the species are fully mitigated.

This HMP references and incorporates the findings of a stand-alone botanical report developed for the Centennial Site (Boes, 2021) as well as the findings of the Biological Resources Assessment and IMM Project Impact Assessment Technical Memorandum developed for the Centennial Site (Matuzak, 2021a; Matuzak, 2021b).

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## 2 SPECIES DESCRIPTION, IDENTIFICATION, DISTRIBUTION, AND ECOLOGY

### 2.1 Description and Identification

#### 2.1.1 Taxonomy

Beecher Crampton made the first collection of *Fremontodendron californicum* ssp. *decumbens* in 1956. Robert M. Lloyd (1965) described *F. californicum* ssp. *decumbens* as *F. decumbens* based on the type specimen he collected in May 1964 from "California, El Dorado Co., Pine Hill, ca. 3 kilometers north of Rescue." Munz (1968) reduced *F. decumbens* to a subspecies of *F. californicum*. Kelman (1991), in his revision of *Fremontodendron*, recognized *F. californicum* ssp. *decumbens* as a full species based upon morphological variation. At the time of the publication of the Recovery Plan, this taxon was known as *Fremontodendron californicum* ssp. *decumbens* (Whetstone and Atkinson 1993); however, this taxon is now considered its own species and is known just as *Fremontodendron decumbens* (USFWS, 2002; CNPS, 2019; CDFW, 2019).

#### 2.1.2 Description

Pine Hill flannelbush is a branched spreading shrub of the cacao family (Sterculiaceae) growing to 1.3 meters (4 feet) tall. Dense star-shaped hairs cover the leaves and the younger twigs and branchlets. Its leaves are elliptic-ovate to ovate, shallowly or deeply palmately lobed with 5 to 7 lobes. Pine Hill flannelbush produces flower buds in late winter. Showy light-orange to reddish-brown flowers appear from late April to early July, though is at its peak in June. Its fruit is a capsule. *Fremontodendron decumbens* can be distinguished from *F. californicum* and *F. mexicanum* (Mexican flannelbush) by its decumbent growth habit (stems lying on the ground and growing upward only at the tip), its relatively long peduncles (stalks that support the inflorescence), and its copper-orange flowers. Pine Hill flannelbush is thought to be fire dependent, with studies resulting in only 2 percent of seed germination in the absence of fire (Boyd, 1987 in USFWS, 2002).

Boyd and Serafini (1992) summarized the life cycle of the Pine Hill flannelbush. Plants start producing flower buds in late winter. By the time the flowers open, most of the flower buds have been destroyed (Boyd and Serafini, 1992). Native solitary bees pollinate the flowers (Boyd, 1994). Seventy percent of the developing fruit is destroyed by insects prior to maturing. The remaining fruit dehisces (opens up) during summer and releases seeds onto the soil. The seeds are eaten by rodents and dispersed by harvester ants (*Messor andrei*) (Boyd, 1996; USFWS, 2002).

## 2.2 Historical and Current Distribution

### 2.2.1 Distribution within the Sierra Nevada Foothills

Pine Hill flannelbush is known to occur in serpentine and gabbro soils in chaparral and cismontane woodlands, at elevations ranging from 1,390 to 2,495 feet. It is known from twelve occurrences in Eldorado, Nevada and Yuba Counties in the foothills of the Sierra Nevada. It is threatened by development and alteration of the fire regime (CNPS, 2019).

Pine Hill flannelbush occurs on scattered rocky outcrops in chaparral on and in the vicinity of Pine Hill and in the black oak woodland on Pine Hill (L. Eng *in litt.* 1999). Community associates are *Pinus ponderosa* (ponderosa pine), *P. sabiniana* (foothill pine), *Adenostoma fasciculatum* (chamise), *Heteromeles arbutifolia* (toyon), and *Arctostaphylos glauca* (bigberry manzanita) (Kelman, 1991 & Boyd, 1996). The species largest identified and mapped population is from a localized area near Pine Hill in western El Dorado County, scattered within an area of approximately 2,000 hectares (5,000 acres; USFWS, 2019).

Although there are some reports of Pine Hill flannelbush occurring in some small scattered populations in Yuba or Nevada County, other reports describe these individuals as aberrant *F. californicum* (California flannelbush). Most occurrences of Pine Hill flannelbush are on private land (CDFW, 2019). One occurrence is on Bureau of Land Management land and one occurrence is on CDFW and California Department of Forestry and Fire Protection lands within the Pine Hill formation (CDFW, 2019). Presently, the majority of the Pine Hill flannelbush individuals are located on the parcel managed by the California Department of Forestry and Fire Protection on Pine Hill, and on a nearby private parcel.

The Recovery Plan states that the only verified location of this plant is near Pine Hill in western El Dorado County, and that the reported occurrences of this plant in Nevada County may be erroneous. It states:

“Although there are some reports of *F. californicum* ssp. *decumbens* occurring in some small scattered populations in Yuba or Nevada County, other reports describe these individuals as aberrant *F. californicum* ssp. *californicum* (California flannelbush).” (Recovery Plan pp. II-13). However, within the CNDDDB, CDFW documents several locations of the Pine Hill flannelbush (or hybrids of flannelbush species) in Nevada County (CDFW, 2019). Additionally, the 5-year review of the species covered under the Recovery Plan concluded for the Pine Hill flannelbush that results of subsequent genetic work by a University of California, Davis researcher, to determine if Nevada and Yuba County flannelbushes are Pine Hill flannelbush, were inconclusive; therefore, the USFWS continue under the assumption that these plants are not the listed entity (USFWS, 2019).

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### **2.2.2 Pine Hill Flannelbush within the Centennial Industrial Site**

Reconnaissance-level biological resources field surveys were conducted on foot for the entirety of the Centennial Site (56.41 acres) by Greg Matuzak, Principal Biologist and owner of Greg Matuzak Environmental Consulting LLC, and Wendy Boes, a local Nevada County botanist, on December 9<sup>th</sup> through 12<sup>th</sup> and 17<sup>th</sup> and 18<sup>th</sup>, 2018. Follow up reconnaissance-level biological resources field surveys were conducted by Greg Matuzak for potential special-status wildlife species habitats on December 30<sup>th</sup>, 2018 and by Wendy Boes for the CNPS ranked plants and special-status plant species habitat on January 3<sup>rd</sup>, 2019. The purpose of the surveys conducted in December 2018 and January 2019 was to identify habitat and vegetation types and to determine the potential for any CNPS ranked plants and special-status plant and wildlife species identified in the desktop analysis and background research to occur within the Centennial Site.

Further evaluation of the Centennial Site was conducted on July 1<sup>st</sup>, 10<sup>th</sup>, and 14<sup>th</sup>, 2019 by Ms. Boes who implemented protocol-level botanical surveys within the entirety of the Centennial Site during the time of year when the target CNPS ranked plants and special-status plant species with potential to occur within the Centennial Site are known to be in bloom and identification of each is most likely, including the Pine Hill flannelbush. Ms. Boes identified and mapped the population of Pine Hill flannelbush during the July 2019 surveys of the Centennial Site (see Appendix D).

The Centennial Site has suitable habitat for the Pine Hill flannelbush in the Dubekella and Secca-Rock Outcrop complex soil series, a soil derived from gabbrodiorite parent material (see Appendix B). The known occurrence of the previously mapped Pine Hill flannelbush population within and directly adjacent to the Centennial Site (CDFW, 2019) was initially located within the Centennial Site in December 2018 and tentatively identified due to it being a perennial shrubby plant with characteristics (leaf morphology, plant habit, seeds, fruits) that allowed it to be fairly confidently identified at that time of year. The identification was verified during its blooming period when species-specific surveys for Pine Hill flannelbush were implemented, and the whole of the population that occurs within the Centennial Site was mapped in July of 2019. Sixty individuals were counted within the Centennial Site, all mature, flowering plants. No seedling or juvenile individuals were encountered. They occupied an absolute area of 0.22 acres over approximately 4.5 acres in the southern portion of the Centennial Site, with one plant occurring disjunct from main population, in the center of the study area (see Appendix D for a map of the species locations within the Centennial Site). The population extends beyond the Centennial Site towards the south into adjacent private properties (previously mapped by CDFW 2019). The population was not mapped or documented beyond the edge of the Centennial Site.

### **3 REGULATORY OVERVIEW FOR PROTECTION OF ENDANGERED SPECIES**

#### **3.1 Federal Regulations**

##### **3.1.1 Endangered Species Act of 1973**

For the Centennial Site, consultation with the USFWS would be necessary if a proposed action may affect a federally listed species. This consultation would proceed under Section 7 of the Endangered Species Act (ESA) if a federal action is part of the proposed action or through Section 10 of the ESA if no such nexus were available (USFWS, 1973). There are three federally protected plant species listed under the ESA that have previously been documented within 5 miles of the Centennial Site (CDFW 2019). Scadden Flat checkerbloom (*Sidalcea stipularis*), Stebbins' morning glory (*Calystegia stebbinsii*), and Pine Hill flannelbush (*Fremontodendron decumbens*) are ESA listed species as Endangered.

Only the Pine Hill flannelbush is known to occur within the Centennial Site (see Appendix D and Appendix H).

#### **3.2 State Regulations**

##### **3.2.1 California Endangered Species Act**

The California Department of Fish and Wildlife (CDFW) has jurisdiction over plant and wildlife species listed as threatened or endangered under section 2080 of the California Fish and Game Code. The California Endangered Species Act (CESA) regulates take of state-listed threatened and endangered species. The state Act differs from the federal Act in that it does not include habitat destruction in its definition of *take*. The CDFW defines *take* as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." The CDFW may authorize *take* under the CESA through Sections 2081 permits. If the results of a biological survey indicate that a state-listed species would be affected by the project, the CDFW would issue a permit under Section 2081 of the CDFW Code. CDFW maintains lists for Candidate-Endangered Species and Candidate-Threatened Species. Scadden Flat checkerbloom (*Sidalcea stipularis*) and Stebbins' morning glory (*Calystegia stebbinsii*) are State ESA listed species as Endangered, while Pine Hill flannelbush (*Fremontodendron decumbens*) is designated as a State Rare Species. All three plants have been known to occur within 5 miles of the Centennial Site (CDFW 2019, Appendix H), however only the Pine Hill flannelbush has been potentially identified within the site.

Pine Hill flannelbush has been documented to occur within the southern and southwestern sections of the Centennial Site (see map in Appendix D). In addition, the

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foothill yellow-legged frog (*Rana boylei*) is a Candidate for listing as a Threatened species under the State ESA and, although not found at this site, it has been evaluated given the presence of several perennial, intermittent, and ephemeral streams within the Centennial Site. The California black rail (*Laterallus jamaicensis coturniculus*) has been previously documented within 5 miles of the Centennial Site and is listed as Threatened under CESA. This species is known to occur in freshwater marsh wetlands with a perennial water source. The Centennial Site contains only marginally suitable habitat for both species, and neither the foothill yellow-legged frog or the California black rail have been identified within the Centennial Site.

### **3.2.2 California Environmental Quality Act Guidelines Section 15380**

California Environmental Quality Act (CEQA) Guidelines section 15380(b) provides that a species not listed on the federal or state list of protected species may be considered rare or endangered if the species can be shown to meet certain specific criteria. This section was included in the guidelines to deal primarily with situations in which a public agency is reviewing a project that may have a significant effect on, for example a "candidate species" that has not yet been listed by the USFWS or CDFW. CEQA, therefore, enables an agency to protect a species from significant project impacts until the respective government agencies have had an opportunity to list the species as protected, if warranted (CNRA 2019).

Plants appearing on the California Native Plant Society (CNPS) California Rare Plant Rank (CRPR) are considered to meet CEQA's Section 15380 criteria. Ranks include: 1A) plants presumed extirpated in California and either rare or extinct elsewhere, 1B) plant rare, threatened, or endangered in California and elsewhere, 2A) plants presumed extirpated in California, but more common elsewhere, and 2B) plants rare, threatened, or endangered in California, but more common elsewhere. Impacts to these species could therefore be considered "significant" requiring mitigation, or less than significant depending on the circumstances.

## **3.3 Local Regulations**

### **3.3.1 Rare, Threatened, and Endangered Species and Their Habitat**

The Nevada County Land Use and Development Code, Section L-II 4.3.12, includes regulations intended to follow the federal and state Endangered Species Acts, by avoiding the impact to development on rare, threatened, endangered, and special status species and their habitat, or where avoidance is not possible, to minimize or compensate for such impacts and to retain their habitat as non-disturbance open space. The regulations indicate that a project may only be approved when it is determined by the Nevada County Planning Agency that it will not adversely affect rare, threatened, or

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endangered species or their occupied habitat and that it will result in no net loss of habitat function or value for the defined species. When it is determined that a project will adversely affect a defined species or their habitat, the regulations require that a site-specific habitat management plan consistent with state and federal requirements be prepared.

### **3.3.2 Nevada County General Plan**

Land use changes and/or any subsequent development on the Centennial Site would be required to comply with those goals and policies outlined in the Nevada County General Plan and thus are included here.

The following goals and policies regarding relevant biological resources are set forth in Chapter 13: Wildlife and Vegetation of the Nevada County General Plan.

**Goal 13.1** Identify and manage significant areas to achieve sustainable habitat.

**Objective 13.1** Discourage intrusion and encroachment by incompatible land uses in significant and sensitive habitats.

**Policy 13.1** Where significant environmental features, as defined in Policy 1.17, are identified during review of projects, the County shall require all portions of the project site that contain or influence said areas to be retained as non-disturbance open space through clustered development on suitable portions of the project site, or other means where mandatory clustering cannot be achieved. The intent and emphasis of such open space designation and non-disturbance is to promote continued viability of contiguous or inter-dependent habitats by avoiding fragmentation of existing habitat areas and preserving movement corridors between related habitats. Vegetation management for the benefit of habitat preservation or restoration shall be considered consistent with the intent of this policy.

**Policy 13.2** As part of the Comprehensive Site Development Standards, include standards to minimize removal of existing vegetation and require installation and long-term maintenance of landscaping in Chapter 13: Wildlife and Vegetation Element Nevada County General Plan Volume I - Page 13-5 setbacks and buffer areas. These standards shall be applicable to all discretionary projects and to all ministerial projects other than a single-family residence located on an individual lot. Tree removal may be allowed where necessary to comply with public right-of-way development or dedication, or development of required site access and public utilities. Individual trees or groups of trees shall be protected during construction to prevent damage to the trees and their root systems. Vegetation in proximity to structures shall conform to applicable fire protection standards.

**Policy 13.2A** Project review standards shall include a requirement to conduct a site-specific biological inventory to determine the presence of special status species or habitat for such species that may be affected by a proposed project. The results of the

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biological inventory shall be used as the basis for establishing land use siting and design tools required to achieve the objective of no net loss of habitat function or value for special status species. Where a Habitat Management Plan is deemed appropriate, the Plan shall be prepared to comply with the requirements of the Federal Endangered Species Act (FESA) and the California Endangered Species Act (CESA). The plan shall provide the background data, impact analysis, and mitigation programs necessary to obtain a FESA Section 10(a) and CESA Section 2081 permit authorizing incidental take of federal and state listed threatened and endangered species that occur in areas proposed for future development. Prior to implementation of an adopted Habitat Management Plan, project applicants proposing the development of a project that would impact a federal or state listed species, or a species that is proposed for listing, shall be individually responsible for obtaining federal and state incidental take permits on a project-by-project basis.

**Policy 13.3** As part of the Comprehensive Site Development Standards, require the maximum feasible use of drought tolerant native plant species for landscaping of all new multi-family residential, commercial, industrial, and public projects. Invasive, non-native plants, as determined by a landscape architect or other similar expert, that may displace native vegetation on adjoining undeveloped lands shall not be used. Landscaping with native trees and shrubs shall be encouraged to provide suitable habitat for native wildlife, particularly in proposed open space uses of future development.

**Policy 13.4** Encourage long-term sustainability and maintenance of landscaped areas.

**Policy 13.4A** No net loss of habitat functions or values shall be caused by development where rare and endangered species and wetlands of over 1 acre, in aggregate, are identified during the review of proposed projects. No net loss shall be achieved through avoidance of the resource, or through creation or restoration of habitat of superior or comparable quality, in accordance with guidelines of the U.S. Fish and Wildlife Service and the California Department of Fish and Game.

**Policy 13.4B** Habitat that is required to be protected, restored, or created as mitigation for a project's impacts shall be monitored and maintained in accord with a County-approved Habitat Management Plan.

**Objective 13.2** Minimize impacts to corridors to ensure movement of wildlife.

**Objective 13.3** Provide for the integrity and continuity of wildlife environments.

**Objective 13.5** Support, where feasible, the continued diversity and sustain ability of the habitat resource through restoration and protection.

## **4 SITE DESCRIPTION**

### **4.1 General Description**

The Centennial site has been disturbed by historic mining and lumber mill practices, public access, and ongoing management for many years. Within the Centennial Site, additional disturbance such as the dumping of soils, landscape materials, and other miscellaneous activities has also occurred for many years. Areas not subject to this regular type of disturbance are dominated by native habitat. Each of the vascular plant species identified within the Centennial Site were recorded using keys and descriptions in *The Jepson Manual* (Baldwin et al., 2012, see Appendix F).

The Centennial Site is located in Nevada County, CA in the northern-central Sierra Nevada foothills. The Sierra Nevada foothills lie between the western edge of the Sierra Nevada and the eastern border of the Central Valley. The foothills form a belt 10 to 30 miles wide that ranges from 500 to 5,000 feet in elevation in a series of northwest to north-northwest aligned ridges that decline in elevation from northeast to southwest. Many rapidly flowing rivers and streams run westerly in deeply incised canyons with bedrock channels to the Central Valley and eventually to the Pacific Ocean. Alluvial fans, floodplains, and terraces are not extensive; and all but the largest streams are generally dry during the summer. Dominant vegetation communities include grasslands, oak woodlands, and chaparral.

Vegetation communities within the Centennial Site are typical of the lower Sierra Nevada foothills. However, the terrain within the Centennial Site is not typical of the lower Sierra Nevada foothills that normally vary between flat ridges and valleys to gently and moderately sloping hillsides. The Centennial Site elevation ranges from approximately 2,500 to 2,600 feet above mean sea level (MSL) and much of the Centennial Site has been impacted due to historical mining and lumber mill practices, which has included the placement of large amounts of mine tailings within the Centennial Site and the removal of vegetation, among other disturbances. The Centennial Site is located along the main stem of Wolf Creek and the interior of the site is dominated by mixed hardwood-conifer forests, with areas of montane riparian woodland, mixed chaparral, mixed wetland types, and annual grassland.

Natural hydrological sources for the Centennial Site include precipitation and surface run-off from adjacent lands. Mean annual rainfall in the area is 53.74 inches (NRCS, 2018). The Centennial Site includes a perennial stream: the main stem of Wolf Creek. The main stem of Wolf Creek generally runs parallel to and immediately south of Idaho Maryland Road along the northern boundary of the Centennial Site. In addition, the Centennial Site contains several ephemeral and intermittent streams that connect directly and

indirectly with the main stem of Wolf Creek within the northwestern section of the Centennial Site.

## 4.2 Centennial Site Soil Types

The USDA identifies four soil types within the Centennial Site. USDA soil mapping for the Centennial Site area is included in Appendix B and the soil types are described in detail as follows:

- **Cut and fill land (Ct).** This soil type consists of areas that have been altered by activities other than mining such that there are no intact soil characteristics. This soil is not hydric.
- **Placer diggings (Pr).** The Placer diggings series consists of remnant tertiary river deposits associated with hydraulic mining and placer mining operations as well natural deposits within stream channels. Areas with this soil type are 90 to 100 percent rock, cobble or gravel. 50 to 75 percent of these lands have a mixture of rock, cobbles, gravel and soil. This soil contains unnamed hydric inclusions in drainages and depressions.
- **Rock outcrop-Dubakella complex on 5 to 50 percent slopes (RrE).** The Rock outcrop-Dubakella complex consists of well-drained soils on mountains. This complex is made up of 50 percent Dubakella gravelly loam, 40 percent rock outcrop and 10 percent included soils. These soils formed from weathered rocks with a large amount of serpentinitic minerals. Drainage is slow and runoff is very high. These soils are not hydric. A typical profile for this complex consists of dark brown (7.5 YR 3/2) gravelly loam from 0 to 2 inches underlain by a reddish brown (5YR 3/4) gravelly clay loam from 2 to 10 inches. This layer is underlain by a variegated yellowish brown (10YR 4/4) and reddish brown (7.5YR 4/4) very cobbly clay from 11 to 21 inches. This layer underlain by a blue green, hard, fractured and partly weathered serpentinitized layer at 21 inches. Several CNPS ranked plants and special-status plant species have the potential to occur on the gabbro soils of the Dubakella and Secca-Rock complex soils within the Centennial Site (Boes 2020, see Section 4.4 below).
- **Secca-Rock outcrop complex on 2 to 50 percent slopes (ScE).** This complex consists of moderately well-drained soils on gently sloping to steep mountain terrain. These soils formed from basic igneous and metamorphic rock. Drainage is slow and runoff is slow to rapid. These soils are not hydric. A typical profile for Secca-Rock outcrop complex consists of brown (5YR 3/4) gravelly silt loam from 0 to 6 inches. This layer is underlain by a reddish brown (5YR 3/4) gravelly silt loam from 6 to 15 inches. This layer is underlain by dark reddish brown (5YR 3/4) cobbly silty clay loam from 15 to 22 inches. From 22 to 36 inches is a strong brown (7.5YR

4/4) cobbly clay, which is underlain by a yellowish brown (10YR 5/6) cobbly clay from 36 to 45 inches. At 45 inches is weathered metabasic rock.

Within the Centennial Site, the population of Pine Hill flannelbush is located within the southern section of the site where Secca-Rock outcrop complex on 2 to 50 percent slopes (ScE) has been mapped. A single individual of the Pine Hill flannelbush has been identified and mapped within a Placer diggings (Pr) soil unit.

### **4.3 Centennial Site Vegetation Communities**

Vegetation communities within the Centennial Site include the following vegetation community types: montane hardwood, montane hardwood-conifer, annual grassland, montane riparian, wet meadow, and freshwater emergent marsh wetlands (see Appendix D for the Vegetation Community Map).

Approximately 16.24 acres of the Centennial Site has been mapped as mixed chaparral, the vegetation community that the Pine Hill flannelbush most associates with. Below is a description of the mixed chaparral habitat identified and mapped within the Centennial Site.

#### Mixed Chaparral

Mixed chaparral is identified within the Centennial Site. Mixed chaparral is primarily associated with the gabbro soils of the Secca and Dubekella complexes that are known to occur within the south and southwestern sections of the site. In the gabbro, this vegetation type is relatively intact and is characterized by whiteleaf manzanita, buck brush (*Ceanothus cuneatus*), Oregon white oak (*Quercus garryana* var. *semota*), chaparral pea (*Pickeringia montana*), and occasionally scattered foothill pine. McNab cypress (*Hesperocyparis macnabiana*) is occasional in the southwestern portions of the Centennial Site. Pine Hill flannelbush has also been identified and mapped within this vegetation community within the Centennial Site.

With the exception of occasional natural and manmade openings within this habitat type, mixed chaparral forms almost continuous stands within the southern portion of the Centennial Site. Mixed chaparral is also present in heavily disturbed areas, both recent and historic disturbances. In some of the more disturbed, ruderal habitats there is a scattered formation of chaparral, usually characterized by whiteleaf manzanita with buck brush and coyote brush (*Baccharis pilularis*).

## **5 GENERAL MANAGEMENT CONSIDERATIONS FOR THE SPECIES**

The Recovery Plan for the Pine Hill flannelbush (USFWS, 2002) reports that the habitat in which this plant occurs is naturally and artificially limited and conservation of not just the populations, but adjacent vacant habitat is beneficial to long-term persistence for this species. However, the 5-year review of the species covered under the USFWS Recovery Plan concluded for the Pine Hill flannelbush that results of subsequent genetic work by a University of California, Davis researcher, to determine if Nevada and Yuba County flannelbushes are Pine Hill flannelbush, were inconclusive; therefore, the USFWS continue under the assumption that these plants are not the listed entity (USFWS, 2019).

Therefore, given the species is protected under FESA and it is unknown whether the species will be impacted by the IMM Project given inconclusive genetic evidence that flannelbush in Nevada County are Pine Hill flannelbush, for the purposes of this HMP, it is assumed for the IMM Project that the individual plants identified within the Centennial Site may be the FESA listed Pine Hill flannelbush. Furthermore, as discussed below, coordination and consultation with the USFWS for this species within the Centennial Site will be ongoing and the results of the consultation will determine the level at which, if any, mitigation is applied to the potential impacts to flannelbush within the Centennial Site.

It is estimated 18 plants are located within the engineered fill area footprint of the Centennial Site (see Appendix E), the following management considerations of the species within the Centennial Site have been developed and are recommended. Additionally, another 4 individual Pine Hill flannelbush plants are located within 30 feet of the edge of the engineered fill material and could be temporarily and/or indirectly impacted through on-site construction and site disturbance. The DTSC cleanup project will have no impact on the Pine Hill flannelbush (see Appendix E for the site plan containing the extent of the proposed disturbance of the DTSC cleanup project in relation to individual Pine Hill flannelbush mapped within the Centennial Site) and therefore, the recommendations outlined within this HMP are included as part of the development of the IMM Project exclusively.

Pine Hill flannelbush within the Centennial Site have been confined to the southern section that has been mapped by USDA as Secca-Rock outcrop complex, 2 to 50 percent slopes (see Appendix B). A majority of this soil type will not be impacted by the IMM Project and the area of impact to this soil type will be limited to the southeastern portion of the Centennial Site where the soil type has been mapped and there has only been a single cluster of the plant in that area and proposed engineer fill will impact the mapped area containing the Secca-Rock outcrop complex, 2 to 50percent slopes (see Appendix E).

Furthermore, Appendix B contains mapping of USDA soils series within 6 miles of the Centennial Site that area known to contain gabbro parent material, the soil type required

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for the Pine Hill flannelbush. The soils series within Nevada County that are known to contain gabbro parent material include Secca, Sites, Boomer, and Chaix variants USDA soils series (from the Nevada County USDA Soils Series, see Appendix B). A majority of the mapped Secca-Rock outcrop complex, 2 to 50 percent slopes soil type is located to the southwest of the Centennial Site where the largest area of previously mapped flannelbush in Nevada County has occurred within and adjacent to the Nevada County transfer station off of McCourtney Road (CNDDDB, 2020). Within 6 miles of the Centennial Site, approximately 8,124 acres of Secca-Rock outcrop complex, 2 to 50 percent slopes have been mapped and a total of 30,741 acres of Secca, Sites, Boomer, and Chaix variants USDA soils series have been mapped within 6 miles of the Centennial Site. Therefore, gabbro soils are not a limiting factor within the region of the Centennial Site and proposed impacts to less than half of the Secca-Rock outcrop complex, 2 to 50 percent slopes soil type mapped within the Centennial Site (~5 acres) would not be a limiting factor for this species.

Therefore, avoidance, minimization, and mitigation measures associated with the overall management and persistence of the species shall be implemented to minimize potential impacts to the species and to mitigate for the direct and indirect effects the IMM Project may have on the species within the Centennial Site. The IMM Project-specific protection measures are identified and included within Section 6 below. This section includes the recommended general management of the Centennial Site for the persistence of the 42 Pine Hill flannelbush that will not be directly impacted by the IMM Project. The final avoidance, minimization, and mitigation measures required for the proposed IMM Project's Pine Hill flannelbush impacts will be developed in coordination and consultation with the USFWS, most likely under a Section 7 ESA consultation between the United States Army Corps of Engineers (Corps) and USFWS as outlined in Section 6 below.

## **5.1 Recovery Plan Goals**

The ultimate goals of the Pine Hill flannelbush Recovery Plan include the following:

- (1) protect and restore sufficient habitat and numbers of populations;
- (2) ameliorate both the threats and any other newly identified threats; and
- (3) downlist of the Pine Hill flannelbush.

Pine Hill flannelbush is not currently considered delistable (USFWS, 2002). Elements common to the recovery criteria of most listed species include:

- (1) protection from development and incompatible uses of the habitat of populations representing the full range of genetic and geographic variation in the species; and

(2) achievement of self-sustaining status in specified populations.

Recovery and long-term conservation tasks emphasized in the Recovery Plan are

- (1) habitat protection and management;
- (2) surveying and monitoring;
- (3) research; and
- (4) public participation, outreach, and education.

Management actions needed as identified in the Recovery Plan, which guide the habitat and population enhancement and restoration efforts include the following: burning; general surveys; baseline monitoring; monitoring for trends of populations, success of management actions and threats at all populations identified for protection; monitoring for habitat fragmentation, major shifts in vegetation type, and tracking of occurrence establishment, and extirpation; assessment of disease as threat; introduction; and seed banking.

## **5.2 Threats to Species**

Identified threats to the Pine Hill flannelbush, according to the Recovery Plan (USFWS, 2002):

- Habitat loss: development throughout the range;
- Habitat fragmentation;
- Clearing of chaparral;
- Small set-asides as project mitigation;
- Garbage dumping;
- Alteration of natural fire regime: too frequent or infrequent of fires;
- Suppression of disturbance requires scarification for germination of seeds; and
- Increased risk of extinction due to environmental, demographic or genetic random events.

Mitigation for development often is by small "set asides" (small natural areas within the development), which increase habitat fragmentation, are difficult to manage for fire, and are subject to edge effect problems. In some instances such as within the Centennial Site, the population of potential Pine Hill flannelbush is already small and isolated so the protection of the population within the southern section of the Centennial Site would be beneficial to the species.

Specific threats identified within the Centennial Site include:

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- Removal of vegetation by homeless to create camps at site may have resulted in individuals being removed;
- Foot traffic at site to access camps may have resulted in crushing young individual plants;
- Fire rings observed in camps that could result in fire;
- Invasive nonnative plant species;
- Garbage dumping; and

### 5.3 Overall Management Approach

#### 5.4 Goal 1: Eliminate or minimize potential direct and indirect impacts from Project Operations

Conduct full coverage pre-construction surveys in the appropriate phenological blooming period when detection is the most probable.

##### 1. Operation Actions Resulting in direct effects to Pine Hill flannelbush

- Engineered fill placement, clearing for reclamation, access, roads, etc. resulting in direct take of individuals of 18 individuals.

##### Mitigation:

- Flag and avoid all individuals where possible.
- Protection of individuals near project activities with fencing and other physical blockades as protective measures.
- Transplant individuals that will be taken. Develop a Transplantation Plan for 1) identifying location for dormant season relocation; 2) site selection for transplanting; and 3) metrics of successful establishment (see Section 6 below).

##### 2. Operation Actions resulting in indirect effects to Pine Hill flannelbush

- Dust resulting in reduced photosynthetic capacity, reduced visitation by pollinators have the potential to impact the 4 individual plants located within 30 feet of the southern edge of the engineered fill.

##### Mitigation:

- A Dust Control Management Plan during construction would assist with limiting the indirect impacts on the species for dust.
- Removal of habitat resulting in reduced capacity for recruitment and persistence.

Mitigation:

- Onsite habitat protection and enhancement – refer to Goal 2.
- Habitat fragmentation resulting in habitat too small to support the viability of the population and make it more vulnerable to increased disturbance regimes.

Mitigation:

- Offsite habitat protection and enhancement – refer to Goal 2.
- Long term indirect effect of increased access and disturbance of individuals due to increased accessibility.

Mitigation:

- Consider blockades and security measures to protect habitat.
- Increased introduction and abundance of invasive plant species resulting in increased competition with Pine Hill flannelbush.

Mitigation:

- Monitor and treat invasive plants annually until the success criteria as listed in Section 6.3.1 is met.
- Retain vegetation barriers between areas of disturbance and the population to act as a biological barrier to invasion
- Reduced habitat for harvester ants and other seed dispersal agents, and pollinators, especially native solitary bees.

Mitigation:

- Onsite habitat protection and enhancement – refer to Goal 2.

## **5.5 Goal 2: On and Off-site habitat enhancement and restoration**

### **5.5.1 Protect Existing Population and Adjacent Suitable Habitat**

Protect all individuals of Pine Hill flannelbush and their habitat that occur outside of the disturbance footprint. The Recovery Plan for Pine Hill flannelbush (USFWS, 2002) reports that the habitat in which this plant occurs is naturally and artificially limited, and conservation of not just the populations, but adjacent vacant habitat is beneficial to long-term persistence.

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- Map suitable onsite habitat contiguous with occurrence and preserve.

### **5.5.2 Enhance Habitat**

Measures should be taken to enhance Pine Hill flannelbush habitat outside the disturbance footprint, such as:

- Pilot Study: Collaborate with CalFire or other research facility to conduct prescribed fire in areas to enhance natural germination and recruitment. Pine Hill flannelbush needs fire for successful germination, and root sprouts.
- Removal of invasive plants.
- Prevention of trespassers who would remove vegetation.

## **5.6 Goal 3: Onsite enhancement and restoration of population.**

### **5.6.1 Ameliorate or eliminate existing threats**

Measures should be taken to ameliorate or eliminate existing threats to the Pine Hill flannelbush outside the disturbance footprint, such as:

- Prevent trespass and establishment of encampments to prevent accidental take of individuals.
- Removal of invasive plants.
- Clear vegetation overhanging existing individuals.

## **6 IMM PROJECT SPECIFIC CONSERVATION MEASURES AND SPECIES MANAGEMENT**

Coordination and consultation with CDFW and USFWS will be required given the Pine Hill flannelbush is listed under FESA and is identified as a Rare Species by CDFW. The applicant will require the development of a Biological Assessment (BA) that incorporates the background and findings of this HMP. The USFWS will develop a Biological Opinion (BO) if the IMM Project is covered under a Section 7 ESA consultation or if the IMM Project is covered under a Section 10 ESA consultation, a Habitat Conservation Plan ("HCP") for the Pine Hill flannelbush would most likely be required. The BO or HCP covering impacts to this species within the Centennial Site may contain additional requirements related to avoidance, minimization, and mitigation measures to ensure the IMM Project does not jeopardize the persistence of the species.

### **6.1 Pre-Construction Surveys and Avoidance**

Conduct pre-construction surveys for special status plants (any state or federally listed plant as well as any CNPS plant listed 1 or 2) in the appropriate phenological blooming period when each species is identifiable.

If any sensitive plants are identified during the pre-construction surveys, the following avoidance, minimization, and protection measures are recommended to avoid and minimize potential impacts to sensitive plants.

Avoid impacts to sensitive plants where identified within the proposed disturbance areas. However, if avoidance and preservation is not possible, consultation with CDFW and USFWS will be required for impacts to Pine Hill flannelbush (*Fremontodendron decurrens*). Based on the consultation with CDFW and USFWS for this species, mitigation requirements could include, but may not be limited to the following: appropriate onsite enhancement for the species, site restoration for the species, and/or offsite compensation of impacts for the species. Consultation with CDFW and USFWS is also recommended for the development and implementation of other state and federally listed plant species or CNPS list 1 and 2 species identified within the project disturbance areas.

### **6.2 Seed Collection and Propagation Techniques**

Seed collection was conducted on August 21, 2019 with Mr. Brett Hall<sup>1</sup> from the UC Santa Cruz Arboretum as a part of the UC Santa Cruz Native Plant Program. Four plants on the northern edge of the distributional limit of the population were selected for seed collection as there is the greatest potential for these individuals to be impacted. These

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<sup>1</sup> UCSC Arboretum has a MOU with CDFW permitting collecting of California Rare, Threatened, and Endangered Plants (10-01 M).

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are the plants within 30 feet of the southern edge of the engineered fill that could be impacted indirectly. These 4 plants will be included as part of the monitoring program outlined below and if the health of any of these 4 plants is identified to decline during monitoring, additional planting of propagated plants would be required as identified below for transplants.

The seed had largely dispersed, but approximately 30-100 seeds were collected per plant, which was approximately 1 to 2 seeds per fruit. The seeds will be cleaned and stored in the seedbank at UC Santa Cruz for either future propagation efforts, or as a part of seed banking efforts.

As the seed had largely dispersed for the 2019 collection cycle, additional seed will need to be collected in 2020 to have enough seed for growing and seed banking. There will need to be at a minimum, 100 seeds collected for each plant that will be destroyed or transplanted. It is recommended that up to 400 seeds should be collected from each plant to be destroyed or transplanted to have sufficient buffers for future propagation efforts and for seed banking. A minimum of 200 seeds per plant destroyed or transplanted should be stored for seed banking while the remaining 200 seeds would be propagated for germination and planting as required.

Seeds will be seed banked and grown out in accordance with the most recent and successful propagation techniques such as follows (Brett Hall, UC Santa Cruz Arboretum, personal communication, 2019):

1. Collect seed.
2. Clean and dry the seed at 20-25% humidity for 2 to 4 weeks and then freeze the seed for the seed bank. To seedbank, place in sealed envelopes and database with provenance etc. and given an accession number. Collect and process while tracking and storing by maternal lines to maintain accurate accounting of biodiversity.
3. Seeds would be given germination treatments in accordance with best available techniques:

([https://www.fs.fed.us/rm/pubs\\_other/wo\\_AgricHandbook727/wo\\_AgricHandbook727\\_544\\_546.pdf](https://www.fs.fed.us/rm/pubs_other/wo_AgricHandbook727/wo_AgricHandbook727_544_546.pdf))

4. Once germination occurs, grow on and upsize into containers then grow on and either plant out or upsize again into larger containers until planting. It is recommended to plant out sizable plants, say 4 inch to one-gallon size depending on the quantity. It is recommended to cage plants to protect against rodents and deer. Planting should occur in the fall/winter after good rains.

### **6.2.1 Increase Natural Recruitment and Germination**

As discussed above and as feasible, collaborate with research facility to study fire management. Controlled burning can be used for increased germination, without fire the germination rates are estimated at only 2%.

## **6.3 Project Specific Mitigation Measures and Management**

### **6.3.1 Transplantation and Monitoring for Direct and Indirect Impacts to Pine Hill Flannelbush**

Protect all individuals of Pine Hill flannelbush and their habitat that occur outside of the disturbance footprint. The Recovery Plan for Pine Hill flannelbush (USFWS 2002) reports that the habitat in which this plant occurs is naturally and artificially limited, and conservation of not just the populations, but adjacent vacant habitat is beneficial to long-term persistence. The following steps are recommended for the transplantation and monitoring of any individual Pine Hill flannelbush plants that can't be avoided from direct impacts to them. The following steps also incorporate the 4 individual plants within 30 feet of the southern edge of the engineered fill area, which will be included as part of the monitoring plan and assessed for their health through the length of monitoring required to meet the success criteria. Monitoring and success criteria are recommended below.

#### **STEP 1: Seed Collection**

Collect seed for seedbanking and for future replacement and recovery efforts (see Section 6.2 above).

#### **STEP 2: Develop Transplantation Plan and Monitoring Plan**

Prior to transplanting or monitoring: 1.) Develop a Transplantation Plan and model for site selection for transplanting; and 2.) Develop a Monitoring Plan with criteria for "aliveness" and metrics of establishment (see Section 6.3.2 below).

#### **STEP 3: Transplanting**

Attempt to move the individuals of Pine Hill flannelbush that fall within the disturbance footprint to another site with similar soil, hydrologic, vegetation type and aspect. The transplantation site(s) selected should extend the known population spatially, in other words, planting beyond the known perimeters of the existing population is preferable, to maintain population coverage.

**STEP 4: Transplant Monitoring**

Transplanting shall occur in the season deemed to have the greatest potential for success, generally the fall, after rains have commenced. Transplants will be monitored every month for the first six months, then subsequently, every two months for the first two years. After monitoring identifies successful establishment and flowering for the second season for each of the transplants, transplanting will have been deemed successful.

**STEP 5: Alternative Measures to Transplantation and Seed Collection**

If these measures are not successful in maintaining the Pine Hill flannelbush population numbers, then the following measures should be taken:

- Individuals will be grown from seed and transplanted out in a 100:1 ratio for those taken.
- Transplants of individuals grown from seed will be planted with similar soil, hydrologic, vegetation type and aspect.
- Transplanting shall occur in the season deemed to have the greatest potential for success, generally the fall, after rains have commenced.
- Transplants will be monitored every month for the first six months, then subsequently, every two months for the first two years.

**SUCCESS CRITERIA:**

After two summer seasons of monitoring identifies successful establishment of 25% of the initial transplants, transplant seedlings will have been deemed successful. See Section **6.3.2** for a description of the required monitoring and monitoring plan.

**6.3.2 Monitoring Plan**

Monitoring of the population should be conducted on an annual basis until the success criteria as listed above in Section 6.3.1 is met. As per the Recovery Plan (USFWS) monitoring shall include: (1) population counts and demographics including some estimate of seedbank dynamics; (2) photopoints; (3) existing or new threats; (4) co-occurring species especially invasive plant cover estimates; (5) density and estimates of acreage occupied; and (6) time since last disturbance.

Monitoring of the habitat will be conducted on an annual basis until the success criteria as listed above in Section 6.3.1 is met and will include (1) degree of habitat fragmentation; (2) shifts in vegetation type; (3) establishment and extirpation of plant occurrences on

the landscape (metapopulation dynamics and in the context of entire extent of this species). Aerial photographs may be used in ascertaining some of this information.

A report will be prepared by the end of each monitoring year and submitted to Nevada County and Partners (applicant, regulatory agencies, consultants, etc.) until the success criteria as listed above in Section 6.3.1 is met. The report shall be prepared by a qualified botanist or ecologist and include the following:

- Dates of monitoring and participants.
- Sampling procedures
- A literature review of any new research that may be applicable to this project.
- General condition of the site including any significant changes or new threats observed. General condition for the species.
- Raw data submitted electronically.
- Summarized results of the monitoring presented graphically or in tabular form and discussed.
- Immediate Actions Taken or Needed.
- Any changes in the sampling procedure or timing made or needed.
- Statement of the next monitoring session as per the prescribed time table.

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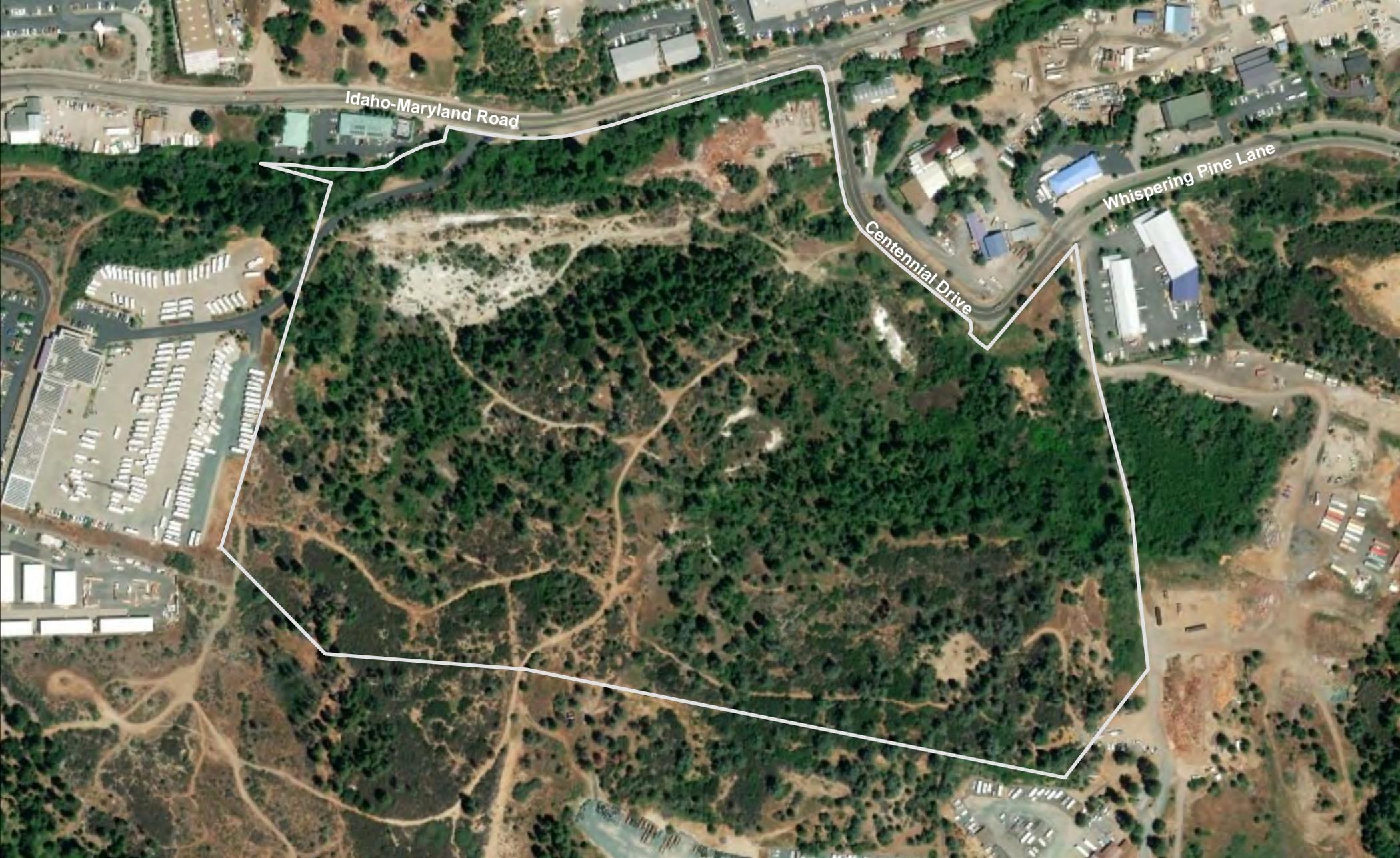
## **8 QUALIFICATIONS OF REPORT PREPARERS**

Mr. Greg Matuzak, Principal and owner of Greg Matuzak Environmental Consulting LLC is a wetlands ecologist and wildlife biologist with 20 years of experience conducting aquatic resources delineations and biological resources assessments in Northern California. Mr. Matuzak is 40-hour Wetland Delineation Certified (Wetland Training Institute) and has conducted aquatic resources delineations for 100's of linear miles of projects and 1000s of acres of site development projects. Additionally, Mr. Matuzak has implemented special-status biological resources surveys and developed biological resources assessments for dozens of projects in Nevada County. Mr. Matuzak has lived and worked in Nevada County for over 13 years.

Ms. Wendy Boes is a local Nevada County botanist and most recently worked for the Tahoe National Forest as a botanist. Ms. Boes is an independent consultant, GIS specialist, and conducts field data collection and GIS mapping for field related projects. Mr. Matuzak and Ms. Boes were responsible for the field data collection and assessment developed as part of the development of this Biological Report. Both Mr. Matuzak and Ms. Boes are on the Nevada County Planning Department's list of Qualified Biological Resources Consultants.

## Appendix A

### Centennial Site Map



Grass Valley, CA  
Grass Valley 7.5 minute USGS quadrangle  
T16N, R8E Section 26

Coordinate System: NAD 83 Zone 10N  
Projection: Transverse Mercator  
Datum: D\_North\_American\_1983

**Figure. Centennial Industrial Site**



SCALE: 1 inch = 300 feet

**Legend**

 Centennial Industrial Site  
Study Area, 56.41 ac.

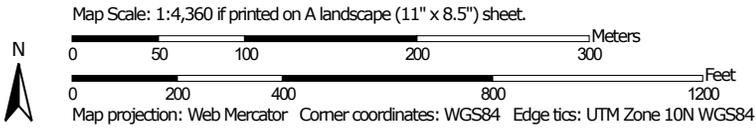
## Appendix B

### USDA Soils Maps

Soil Map—Nevada County Area, California



Soil Map may not be valid at this scale.



## MAP LEGEND

### Area of Interest (AOI)

 Area of Interest (AOI)

### Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

### Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

### Water Features



Streams and Canals

### Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

### Background



Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

**Warning:** Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Nevada County Area, California

Survey Area Data: Version 11, Sep 12, 2018

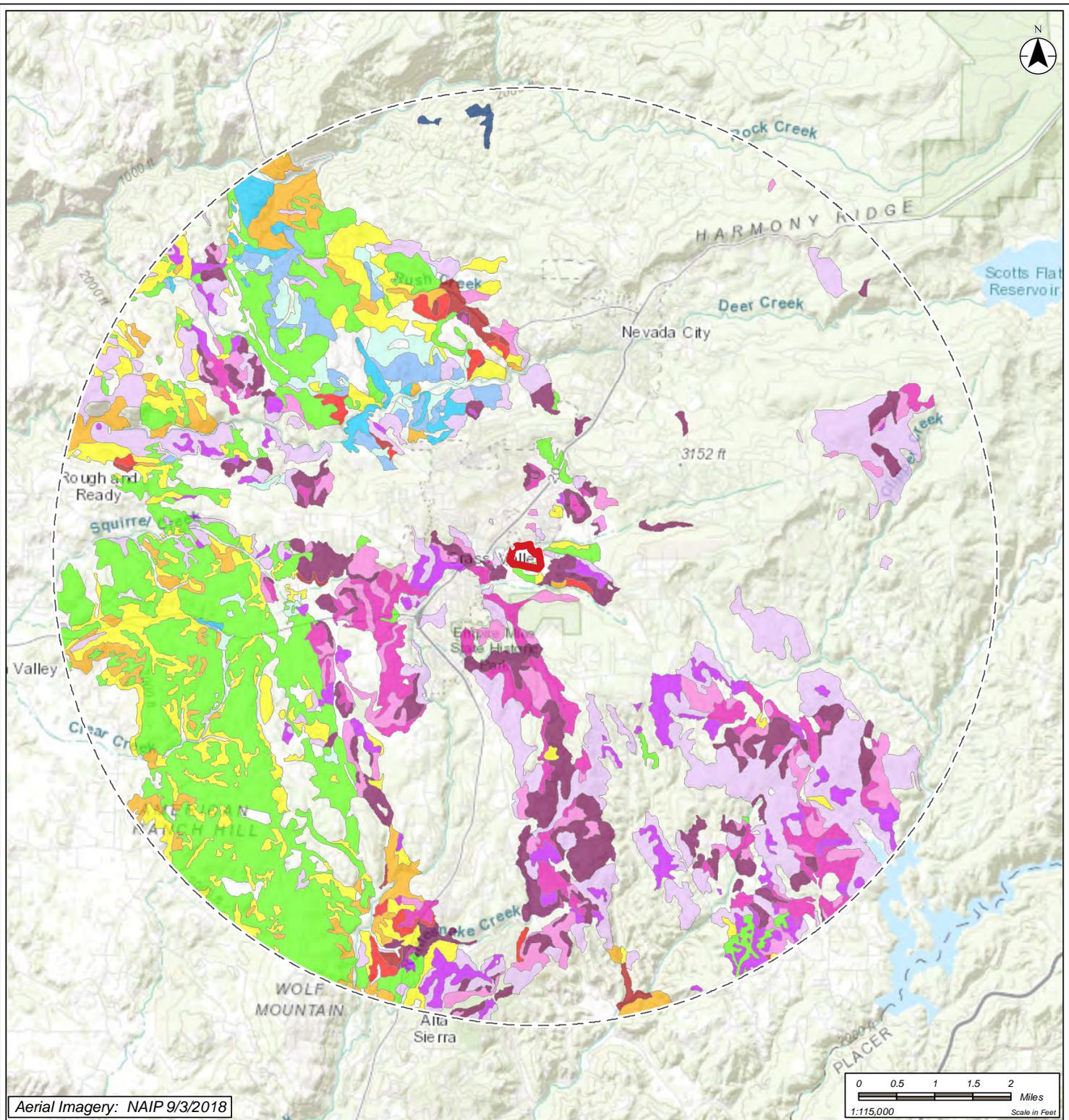
Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 20, 2017—Aug 8, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Ct	Cut and fill land	1.1	2.2%
Pr	Placer diggings	43.2	76.4%
RrE	Rock outcrop-Dubakella complex, 5 to 50 percent slopes	1.8	3.1%
ScE	Secca-Rock outcrop complex, 2 to 50 percent slopes	10.31	18.4%
<b>Totals for Area of Interest</b>		<b>56.41</b>	<b>100.0%</b>



Aerial Imagery: NAIP 9/3/2018

**Legend**

Project Boundary

6 mile Buffer on Project Boundary

**Soil Extent\***

Boomer loam, 5 to 15 percent slopes

Boomer loam, hard bedrock, 7 to 28 percent slopes

Boomer, hard bedrock - Rock outcrop complex, 15 to 60 percent slopes

Boomer, hard bedrock - Rock outcrop complex, 5 to 30 percent slopes

Chaix sandy loam, 15 to 50 percent slopes, eroded

Chaix very stony loam, thick solum variant, 15 to 30 percent slopes

Chaix very stony loam, thick solum variant, 30 to 50 percent slopes

Chaix very stony loam, thick solum variant, 5 to 15 percent slopes

Secca-Rock outcrop complex, 2 to 50 percent slopes

Sites silt loam, 15 to 30 percent slopes, N low montane

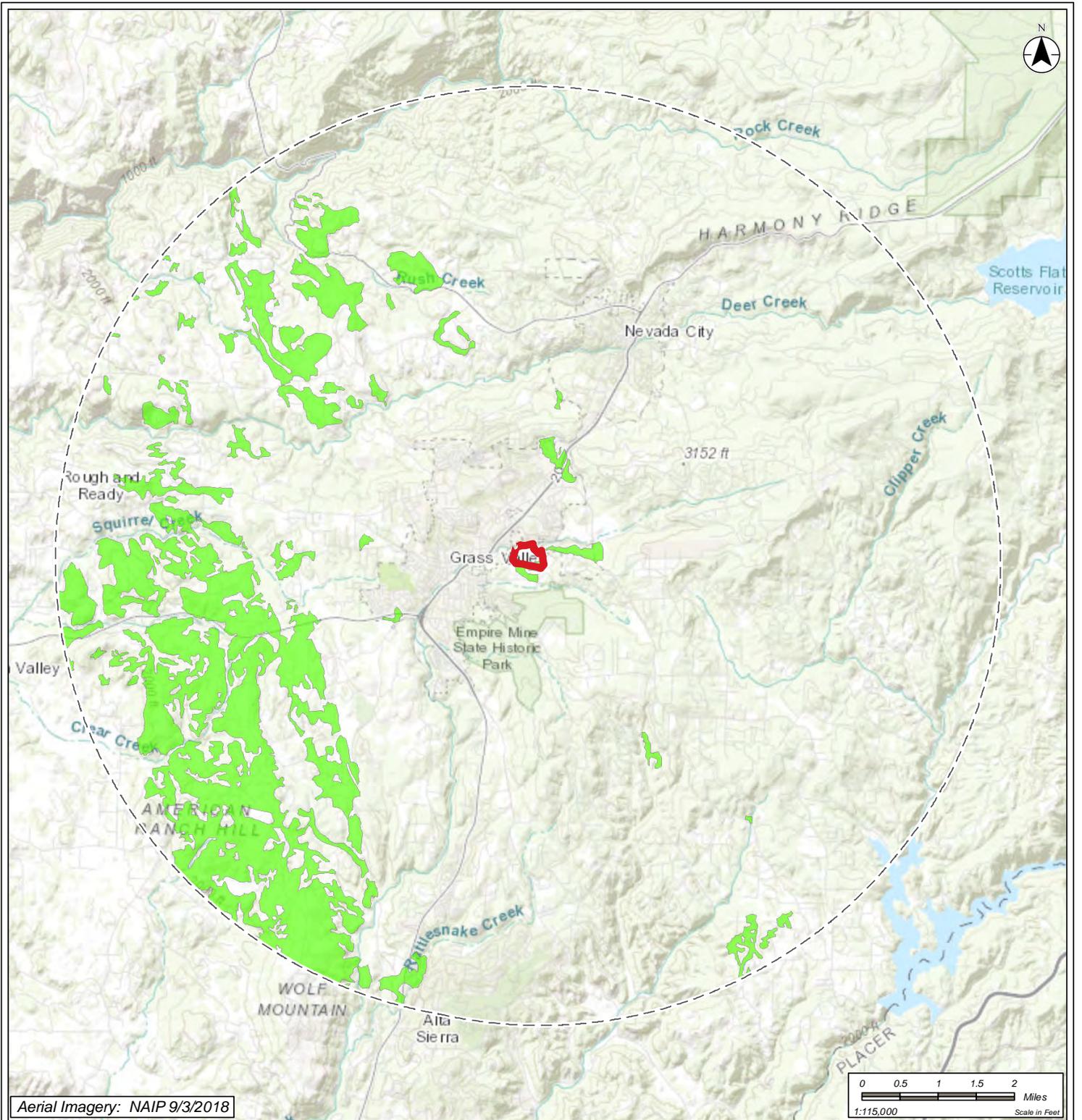
Sites silt loam, 2 to 9 percent slopes, N low montane

Sites silt loam, 9 to 15 percent slopes, N low montane

Sites very stony loam, 15 to 50 percent slopes

Sites very stony loam, 2 to 15 percent slopes

\* Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online. Accessed 11/11/2020



Aerial Imagery: NAIP 9/3/2018



**Legend**

- Project Boundary
- 6 mile Buffer on Project Boundary
- Soil Extent\***
- Secca-Rock outcrop complex, 2 to 50 percent slopes

\* Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online. Accessed 11/11/2020

**GREG MATUZAK**  
 Environmental Consulting LLC  
 Nevada City, CA

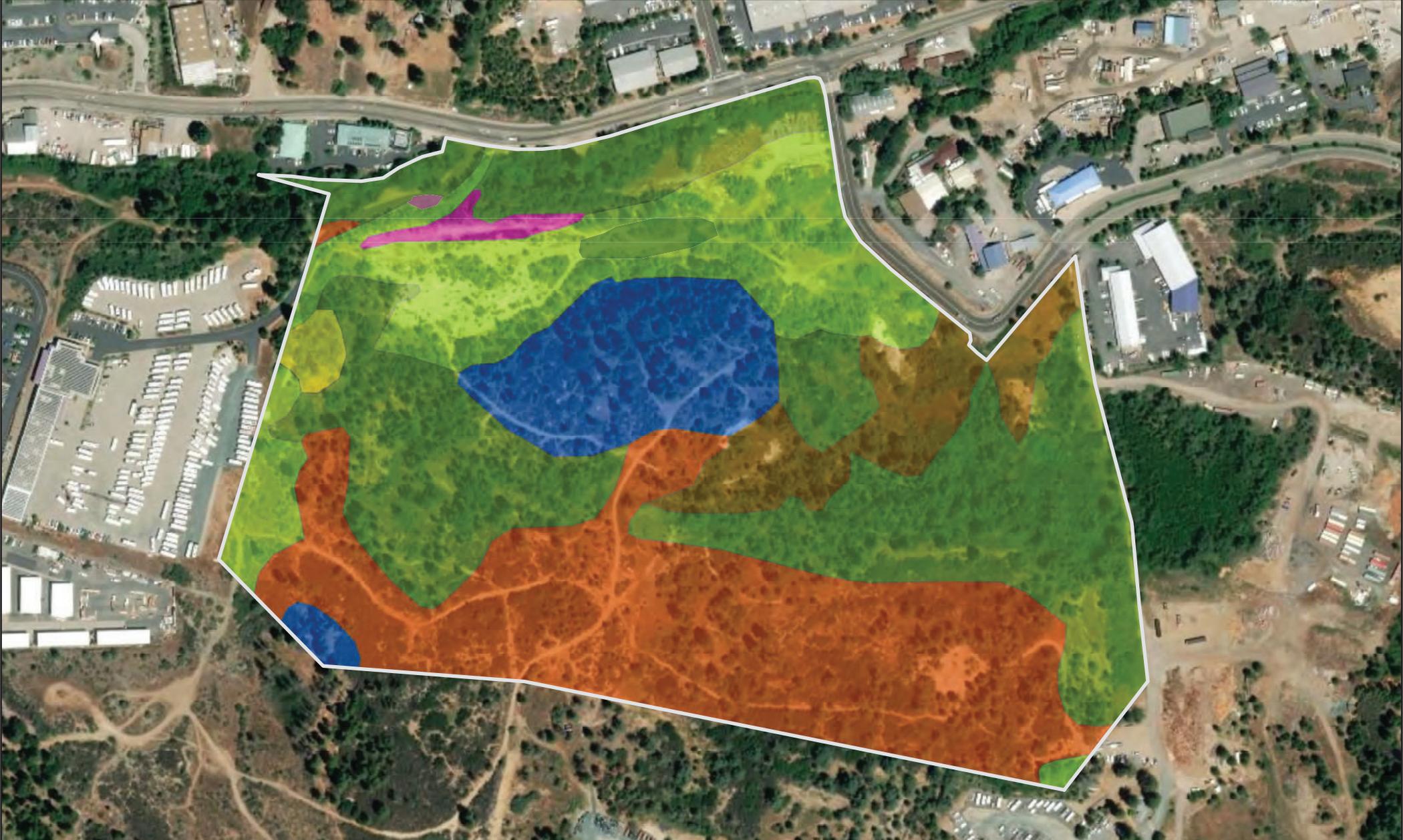
Centennial Industrial Site

**Soils Map - Secca-Rock outcrop complex, 2 to 50 percent slopes**

<i>Type of parent material</i>	<i>Soil series or land type name</i>
Stratified mixed alluvium (recent) Stratified mixed alluvium (Tertiary river gravels) Andesitic conglomerate (Mehrten formation) Granodiorite	Loamy and clayey alluvium Horseshoe Ailken, Cohasset, Iron Mountain, Josephine, McCarthy Ahwahnee, Auberry, Chaix, Hoda, Hotaw, Musick, Sierra, Shenadoah, Trabuco
Gabbrodiorite Serpentine Slate (Mariposa group) Metamorphosed volcanic rock, greenstone, amphibolite schist Slates and Schists (Calaveras group)	Boomer, Chaix variant, Secca, Sites Dubakella, Dubakella variant Mariposa, Josephine Auburn, Argonaut, Boomer, Cohasset, Josephine, Rescue, Secca, Sobrante, Sites Mariposo, Maymen, Sites, Josephine

## Appendix C

### Vegetation Community Map



**Figure. Vegetation Communities within the Centennial Industrial Site**

Grass Valley, CA  
 Grass Valley 7.5 minute USGS quadrangle  
 T16N, R8E Section 26

Coordinate System: NAD 83 Zone 10N  
 Projection: Transverse Mercator  
 Datum: D\_North\_American\_1983

**Legend**

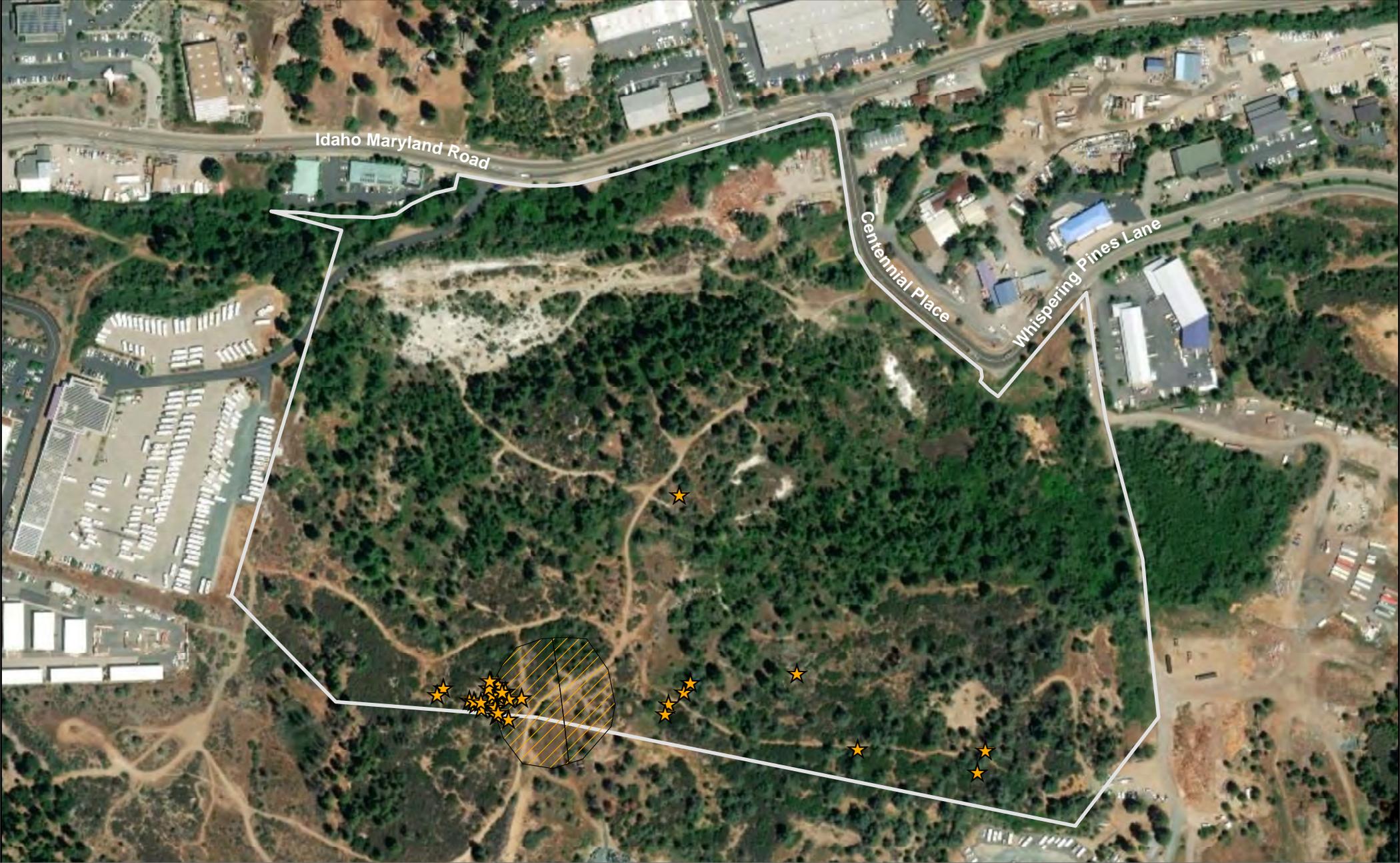
- |   |                                       |   |                          |
|---|---------------------------------------|---|--------------------------|
|  | Centennial Industrial Site Study Area |  | Montane Hardwood-Conifer |
| <b>Vegetation Type</b>  |                                       |  | Montane Hardwood         |
|  | Annual Grassland                      |  | Montane Riparian         |
|  | Fresh Emergent Wetland                |  | Wet Meadow               |
|  | Mixed Chaparral                       |   |                          |



**SCALE: 1 inch = 300 feet**

## Appendix D

### Pine Hill Flannelbush Locations Map



Grass Valley, CA  
 Grass Valley 7.5 minute USGS quadrangle  
 T16N, R8E Section 26

Coordinate System: NAD 83 Zone 10N  
 Projection: Transverse Mercator  
 Datum: D\_North\_American\_1983

**Figure. Pine Hill Flannelbush Occurrences  
 Within the Centennial Industrial Site**



SCALE: 1 inch = 300 feet

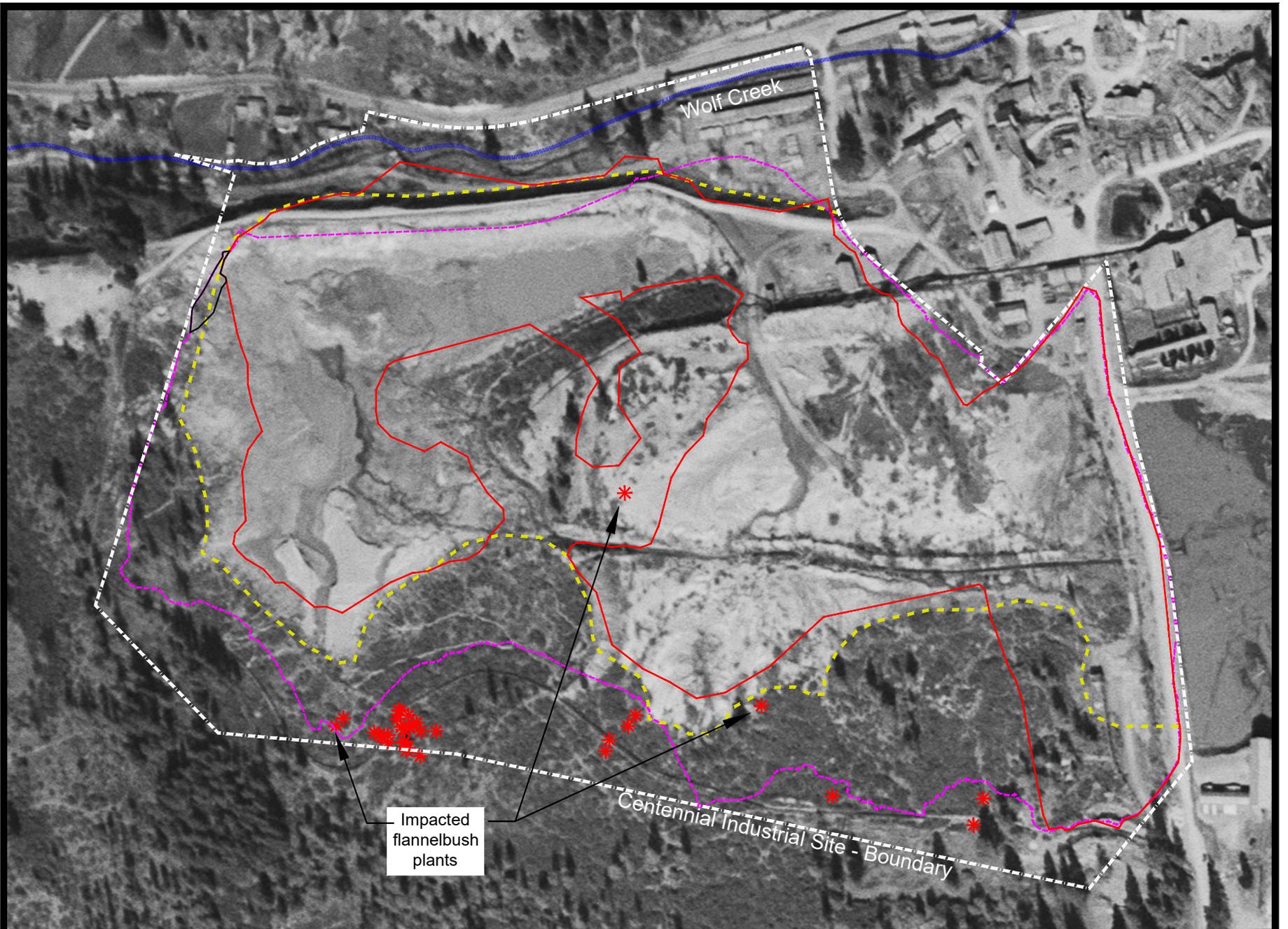
**Legend**

-  Pine Hill flannelbush (individuals or clusters)
-  CNDBB mapped extant of Pine Hill flannelbush\*
-  Centennial Industrial Site Study Area

\*The mapped extent from digitization of 1999 paper map by Karen Callahan is likely cause for part of discrepancy.

## Appendix E

### IMM Project **and DTSC Clean Up** Site Plans

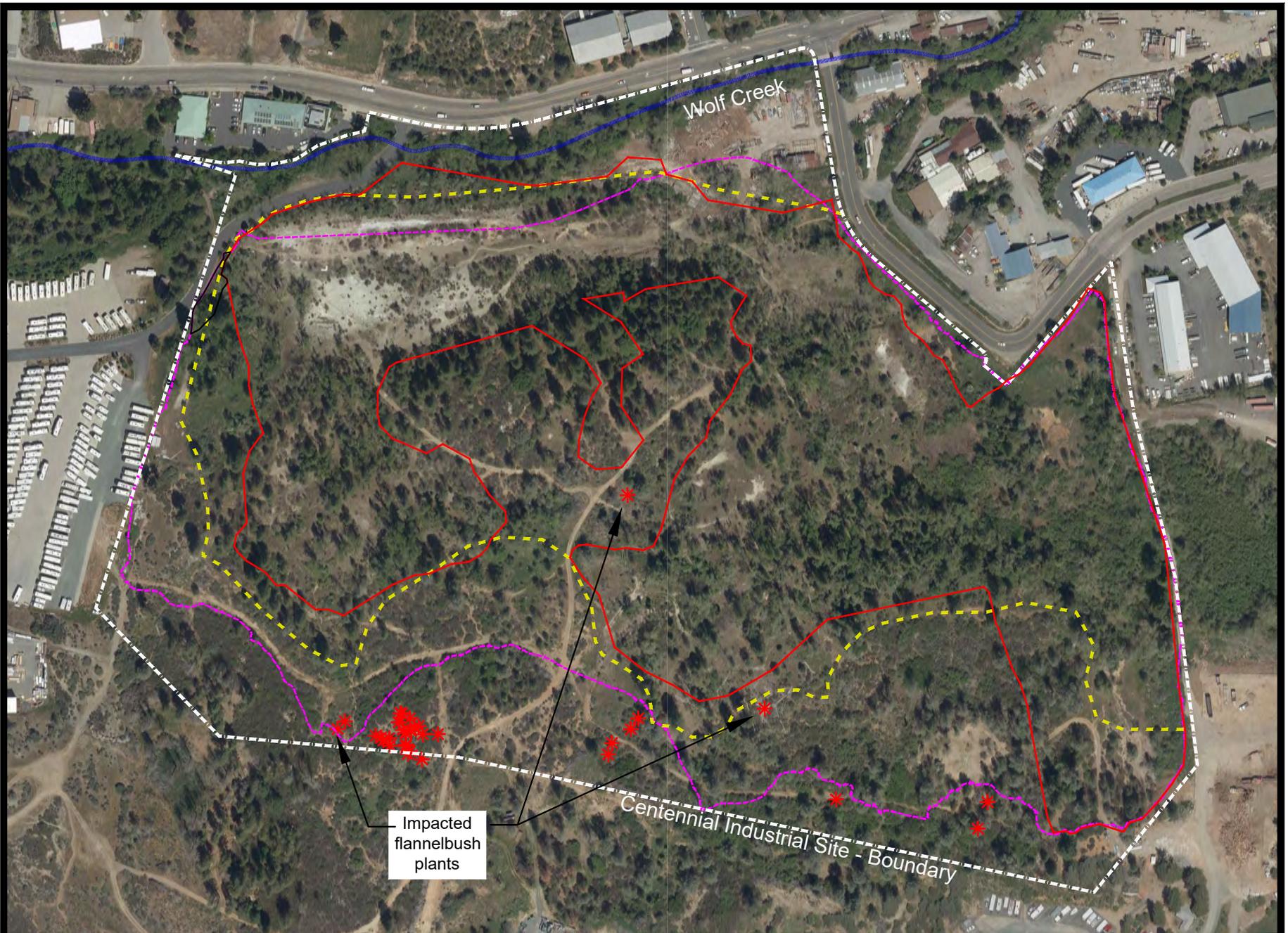


**LEGEND**

- Centennial Industrial Site - Boundary
- Boundary of historic tailings placement (approximate)
- Boundary of DTSC Clean-up Project (approximate)
- Boundary of IM Mine Project Engineered Fill placement
- \* Pine Hill Flannelbush

**FIGURE A  
DISTURBANCE AREA  
SHOWING 1947 AIR PHOTO**

Scale 1 inch = 300 ft

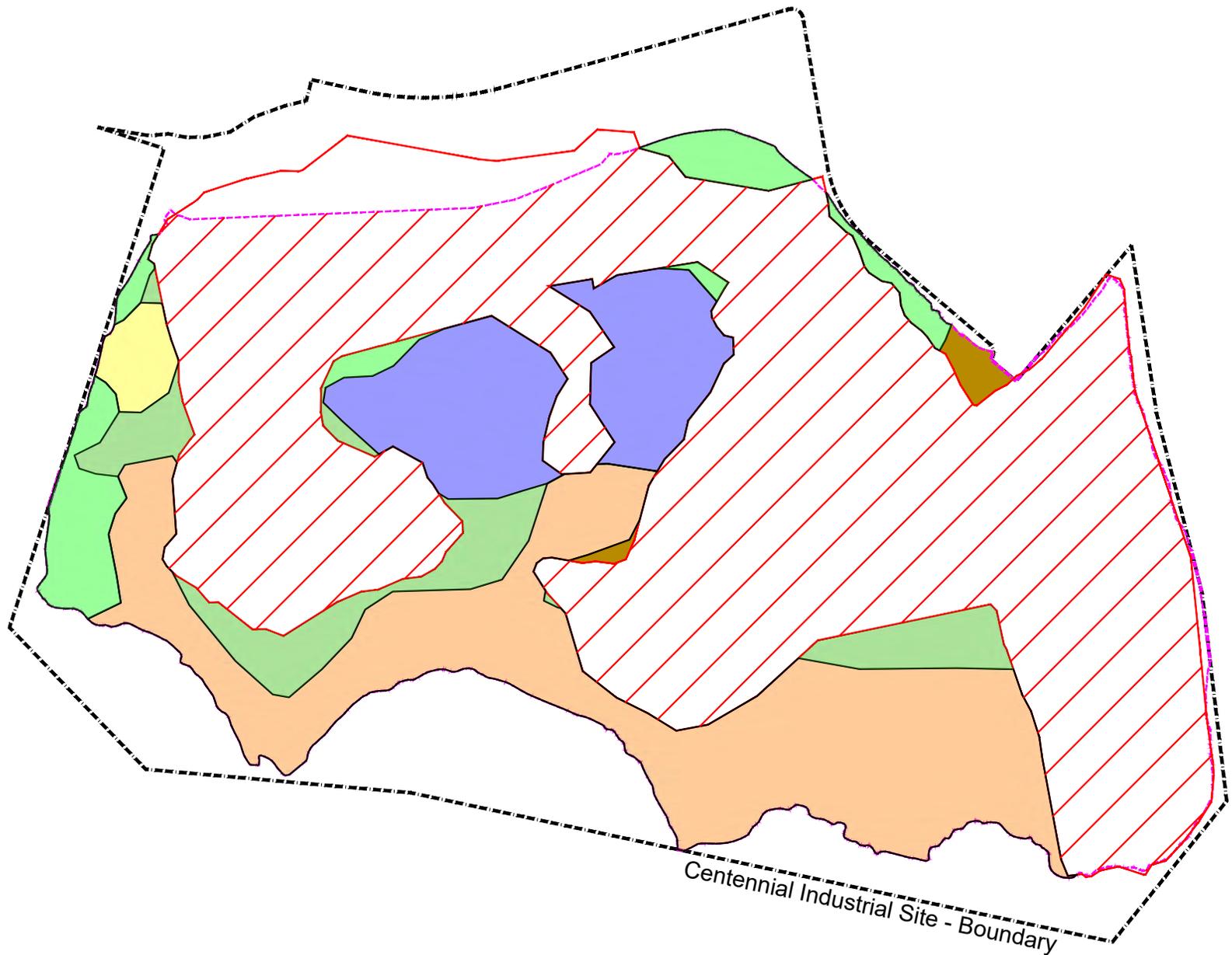


**LEGEND**

- Centennial Industrial Site - Boundary
- Boundary of historic tailings placement (approximate)
- Boundary of DTSC Clean-up Project (approximate)
- Boundary of IM Mine Project Engineered Fill placement
- \* Pine Hill Flannelbush

**FIGURE B  
DISTURBANCE AREA  
SHOWING 2017 AIR PHOTO**

Scale 1 inch = 300 ft



Centennial Industrial Site - Boundary

**LEGEND**

--- Centennial Site Boundary

- 26.56 Ac Area Previously Disturbed by DTSC clean-up project (Estimated) - (IM Mine Project Baseline)
- 1.84 Ac Annual Grassland
- 8.52 Ac Mixed Chaparral
- 3.67 Ac Montane Hardwood-Conifer
- 0.46 Ac Montane Hardwood
- 2.40 Ac Montane Riparian
- 0.26 Ac Wet Meadow

**FIGURE C**  
**DISTURBANCE AREA**  
**VEGETATION COMMUNITIES**

Scale 1 inch = 300 ft

## Appendix F

### Plants Observed During Site Surveys

## VASCULAR PLANTS OCCURRING IN THE CENTENNIAL INDUSTRIAL SITE

Scientific Name	Common Name	Origin	Form	Rarity Status	Wetland Status (WMVC 2014)	CAL-IPC Status
<i>Acer macrophyllum</i>	Bigleaf maple	native	Tree	-	FACU	-
<i>Agoseris retrorsa</i>	Spear leaved agoseris	native	perennial herb	-	-	-
<i>Agrostis gigantea</i>	Creeping bentgrass	non-native	perennial grass	-	FAC	-
<i>Ailanthus altissima</i>	Tree of heaven	non-native (invasive)	Tree	-	FACU	Moderate
<i>Aira caryophylla</i>	Silvery hairgrass	non-native (invasive)	annual grass	-	FACU	-
<i>Allium amplexans</i>	Narrow leaved onion	Native	perennial herb (bulb)	-	-	-
<i>Alnus rhombifolia</i>	White alder	Native	Tree	-	FACW	-
<i>Ammi visnaga</i>	Bisnaga	non-native	annual, biennial herb	-	-	-
<i>Anaphalis margaritacea</i>	Pearly everlasting	Native	perennial herb	-	FACU	-
<i>Andropogon virginicus</i> var. <i>virginicus</i>	Broomsedge bluestem	non-native	perennial grass	-	FAC	-
<i>Arbutus menziesii</i>	Madrono	Native	Tree	-	-	-
<i>Arctostaphylos mewukka</i> ssp. <i>mewukka</i>	Indian manzanita	Native	Shrub	-	-	-
<i>Arctostaphylos viscida</i> ssp. <i>viscida</i>	Smooth white leaf manzanita	Native	tree, shrub	-	-	-
<i>Artemisia douglasiana</i>	California mugwort	Native	perennial herb	-	FACW	-
<i>Asclepias</i> sp.	-	-	-	-	-	-
<i>Asclepias speciosa</i>	Showy milkweed	Native	perennial herb	-	FAC	-
<i>Avena</i> sp.	-	-	-	-	-	-
<i>Baccharis pilularis</i>	Coyote brush	Native	Shrub	-	-	-
<i>Berberis aquifolium</i> var. <i>repens</i>	Creeping oregon grape	Native	Shrub	-	FACU	-
<i>Brodiaea minor</i>	Low brodiaea	Native	perennial herb	-	-	-

Scientific Name	Common Name	Origin	Form	Rarity Status	Wetland Status (WMVC 2014)	CAL-IPC Status
<i>Brodiaea sierrae</i>	Sierra foothills brodiaea	Native	perennial herb	Rank 4.3	-	-
<i>Bromus hordeaceus</i>	Soft chess	non-native (invasive)	annual grass	-	FACU	Limited
<i>Bromus madritensis</i>	Foxtail chess, foxtail brome	non-native	annual grass	-	FACU	-
<i>Calocedrus decurrens</i>	Incense cedar	Native	Tree	-	-	-
<i>Calycadenia multiglandulosa</i>	Rosin weed	Native	annual herb	-	-	-
<i>Carex feta</i>	Green sheathed sedge	Native	perennial grasslike herb	-	FACW	-
<i>Ceanothus cuneatus</i>	Buck brush	Native	Shrub	-	-	-
<i>Ceanothus integerrimus</i>	Deer brush	Native	Shrub	-	-	-
<i>Ceanothus lemmonii</i>	Lemmon's ceanothus	Native	Shrub	-	-	-
<i>Centaurea solstitialis</i>	Yellow starthistle	non-native (invasive)	annual herb	-	-	High
<i>Centaureum tenuiflorum</i>	Slender centaury	non-native	annual herb	-	FACW	-
<i>Centranthus sp.</i>	-	-	-	-	-	-
<i>Centromadia fitchii</i>	Spikeweed	Native	annual herb	-	FACU	-
<i>Chlorogalum pomeridianum</i>	Amole	Native	perennial herb	-	-	-
<i>Chondrilla juncea</i>	Skeleton weed	non-native (invasive)	perennial herb	-	-	Moderate
<i>Cichorium intybus</i>	Chicory	non-native	perennial herb	-	FACU	-
<i>Cirsium vulgare</i>	Bullthistle	non-native (invasive)	perennial herb	-	FACU	Moderate
<i>Cornus nuttallii</i>	Mountain dogwood	Native	Shrub	-	FACU	-
<i>Cornus sericea</i>	American dogwood	Native	Shrub	-	FACW	-
<i>Cortaderia jubata</i>	Andean pampas grass	non-native (invasive)	perennial grass	-	FACU	High
<i>Crataegus monogyna</i>	Hawthorn	non-native (invasive)	Shrub	-	FAC	Limited
<i>Croton setiger</i>	Turkey-mullein	Native	perennial herb	-	-	-
<i>Cynodon dactylon</i>	Bermuda grass	non-native (invasive)	perennial grass	-	FACU	Moderate
<i>Cynosurus echinatus</i>	Dogtail grass	non-native (invasive)	annual grass	-	-	Moderate
<i>Cyperus eragrostis</i>	Tall cyperus	Native	perennial grasslike herb	-	FACW	-
<i>Dactylis glomerata</i>	Orchardgrass	non-native (invasive)	perennial grass	-	FACU	Limited

Scientific Name	Common Name	Origin	Form	Rarity Status	Wetland Status (WMVC 2014)	CAL-IPC Status
<i>Danthonia californica</i>	California oatgrass	Native	perennial grass	-	FAC	-
<i>Deschampsia elongata</i>	Hairgrass	Native	perennial grass	-	FACW	-
<i>Elymus caput-medusae</i>	Medusa head	non-native	annual grass	-	-	-
<i>Elymus elymoides</i>	Squirrel tail grass	Native	perennial grass	-	FACU	-
<i>Elymus hispidus</i>	Intermediate wheatgrass	non-native	perennial grass	-	-	-
<i>Epilobium sp.</i>	-	-	-	-	-	-
<i>Epipactis gigantea</i>	Stream orchid	Native	perennial herb	-	OBL	-
<i>Eriodictyon californicum</i>	Yerba santa	Native	Shrub	-	-	-
<i>Eriophyllum lanatum</i>	Wooly sunflower	Native	perennial herb	-	-	-
<i>Euthamia occidentalis</i>	Western goldenrod	Native	perennial herb	-	FACW	-
<i>Festuca arundinacea</i>	Reed fescue	non-native (invasive)	perennial grass	-	FAC	Moderate
<i>Festuca idahoensis</i>	Blue fescue	Native	perennial grass	-	FACU	-
<i>Festuca microstachys</i>	Small fescue	Native	annual grass	-	-	-
<i>Ficus sp.</i>	-	-	-	-	-	-
<i>Frangula californica ssp. tomentella</i>	Hoary coffeeberry	Native	Shrub	-	-	-
<i>Frangula rubra</i>	Red buckthorn	Native	Shrub	-	-	-
<i>Fremontodendron decumbens</i>	Pine hill flannelbush	Native	Shrub	FE, SR, Rank 1B.2	-	-
<i>Galium porrigens</i>	Climbing bedstraw	Native	vine, shrub	-	-	-
<i>Gamochaeta sp.</i>	-	-	-	-	-	-
<i>Garrya fremontii</i>	Fremont's silk tassel	Native	Shrub	-	-	-
<i>Grindelia camporum</i>	Gumweed	Native	perennial herb	-	FACW	-
<i>Grindelia sp.</i>	-	-	-	-	-	-
<i>Hedera helix</i>	English ivy	non-native (invasive)	vine, shrub	-	FACU	-

Scientific Name	Common Name	Origin	Form	Rarity Status	Wetland Status (WMVC 2014)	CAL-IPC Status
<i>Hemizonella minima</i>	Opposite leaved tarweed	Native	annual herb	-	-	-
<i>Hesperocyparis macnabiana</i>	Macnab cypress	Native	tree, shrub	-	-	-
<i>Hirschfeldia incana</i>	Mustard	non-native (invasive)	perennial herb	-	-	Moderate
<i>Holcus lanatus</i>	Common velvetgrass	non-native (invasive)	perennial grass	-	FAC	Moderate
<i>Hypericum perforatum ssp. perforatum</i>	Klamathweed	non-native	perennial herb	-	FACU	-
<i>Hypochaeris radicata</i>	Hairy cats ear	non-native (invasive)	perennial herb	-	FACU	Moderate
<i>Juncus articulatus ssp. articulatus</i>	Jointed rush	Native	perennial grasslike herb	-	OBL	-
<i>Juncus balticus ssp. ater</i>	Baltic rush	Native	perennial grasslike herb	-	FACW	-
<i>Juncus confusus</i>	Colorado rush	Native	perennial grasslike herb	-	FAC	-
<i>Juncus effusus ssp. pacificus</i>	Pacific rush	Native	perennial grasslike herb	-	FACW	-
<i>Juncus trilocularis</i>	-	Native	annual grasslike herb	-	-	-
<i>Lactuca serriola</i>	Prickly lettuce	non-native (invasive)	annual herb	-	FACU	-
<i>Lathyrus latifolius</i>	Sweet pea	non-native	perennial herb	-	-	-
<i>Leontodon saxatilis</i>	Hawkbit	non-native	annual herb	-	FACU	-
<i>Leucanthemum vulgare</i>	Oxe eye daisy	non-native (invasive)	perennial herb	-	FACU	Moderate
<i>Lilium humboldtii ssp. humboldtii</i>	Humboldt lily	Native	perennial herb	Rank 4.2	-	-
<i>Lonicera hispidula</i>	Pink honeysuckle	Native	vine, shrub	-	FACU	-
<i>Lonicera interrupta</i>	Chaparral honeysuckle	Native	vine, shrub	-	-	-
<i>Lotus corniculatus</i>	Bird's foot trefoil	non-native (invasive)	perennial herb	-	FAC	-
<i>Lysimachia arvensis</i>	Scarlet pimpernel	non-native	annual herb	-	FAC	-
<i>Madia gracilis</i>	Gumweed	Native	annual herb	-	-	-
<i>Melica californica</i>	California melic	Native	perennial grass	-	-	-
<i>Melilotus albus</i>	White sweetclover	non-native (invasive)	annual, biennial herb	-	-	-
<i>Muhlenbergia rigens</i>	Deergrass	Native	perennial grass	-	UPL	-

Scientific Name	Common Name	Origin	Form	Rarity Status	Wetland Status (WMVC 2014)	CAL-IPC Status
<i>Panicum sp.</i>	-	-	-	-	-	-
<i>Parthenocissus sp.</i>	-	-	-	-	-	-
<i>Penstemon heterophyllus</i>	Foothill penstemon	Native	perennial herb	-	-	-
<i>Pickeringia montana</i>	Chaparral pea	Native	Shrub	-	-	-
<i>Pinus ponderosa</i>	Yellow pine	Native	Tree	-	FACU	-
<i>Pinus sabiniana</i>	Bull pine	Native	Tree	-	-	-
<i>Plantago lanceolata</i>	Ribwort	non-native (invasive)	perennial herb	-	FACU	Limited
<i>Polygala cornuta</i>	Sierra milkwort	Native	perennial herb	-	FACW	-
<i>Polypogon sp.</i>	-	-	-	-	-	-
<i>Populus fremontii ssp. fremontii</i>	Cottonwood	Native	Tree	-	FAC	-
<i>Poterium sanguisorba</i>	Garden burnet	non-native	perennial herb	-	UPL	-
<i>Prunella vulgaris</i>	Self heal	Native	perennial herb	-	FACU	-
<i>Prunus subcordata</i>	Sierra plum	Native	tree, shrub	-	-	-
<i>Pyracantha sp.</i>	-	-	-	-	-	-
<i>Quercus garryana var. semota</i>	Oregon white oak	Native	Tree	-	FACU	-
<i>Rhamnus crocea</i>	Redberry	Native	Shrub	-	-	-
<i>Rosa canina</i>	Dog rose	non-native	Shrub	-	-	-
<i>Rubus armeniacus</i>	Himalayan blackberry	non-native (invasive)	Shrub	-	FACU	High
<i>Rubus leucodermis</i>	White bark raspberry	Native	Shrub	-	FACU	-
<i>Rumex crispus</i>	Curly dock	non-native (invasive)	perennial herb	-	FAC	Limited
<i>Salix exigua</i>	Narrowleaf willow	Native	tree, shrub	-	FACW	-
<i>Salix laevigata</i>	Polished willow	Native	Tree	-	FACW	-
<i>Salix lasiolepis</i>	Arroyo willow	Native	tree, shrub	-	FACW	-
<i>Salvia sonomensis</i>	Sonoma sage	Native	perennial herb	-	-	-
<i>Schoenoplectus acutus var. occidentalis</i>	Tule	Native	perennial grasslike herb	-	OBL	-

<b>Scientific Name</b>	<b>Common Name</b>	<b>Origin</b>	<b>Form</b>	<b>Rarity Status</b>	<b>Wetland Status (WMVC 2014)</b>	<b>CAL-IPC Status</b>
<i>Scutellaria tuberosa</i>	Dannie's scullcap	Native	perennial herb	-	-	-
<i>Solidago sp.</i>	-	-	-	-	-	-
<i>Toxicodendron diversilobum</i>	Poison oak	Native	vine, shrub	-	FAC	-
<i>Tragopogon dubius</i>	Goat's beard	non-native (invasive)	perennial herb	-	-	-
<i>Trichostema lanceolatum</i>	Vinegarweed	Native	annual herb	-	FACU	-
<i>Trifolium hirtum</i>	Rose clover	non-native (invasive)	annual herb	-	-	Limited
<i>Trifolium sp.</i>	-	-	-	-	-	-
<i>Triteleia hyacinthina</i>	Wild hyacinth	Native	perennial herb	-	FAC	-
<i>Typha domingensis</i>	Cattail	Native	perennial herb	-	OBL	-
<i>Verbascum blattaria</i>	Moth mullein	non-native	perennial herb	-	UPL	-
<i>Verbascum thapsus</i>	Woolly mullein	non-native (invasive)	perennial herb	-	FACU	Limited
<i>Vitis californica</i>	California wild grape	Native	vine, shrub	-	FACU	-
<i>Wyethia angustifolia</i>	Narrow leaved mule ears	Native	perennial herb	-	FACU	-
<i>Wyethia bolanderi</i>	Bolander's wyethia	Native	perennial herb	-	-	-

## Appendix G

### Photo Log

Photos of Field Surveys of the Centennial Industrial Site



Photo 1. Spring within the western section of the Centennial Industrial Site.



Photo 2. Annual grassland area within the northwestern section of the Centennial Industrial Site.



Photo 3. Mapped drainage with adjacent annual grassland in the northern/northwestern section of the Centennial Industrial Site.



Photo 4. Roadside wet meadow wetlands in the western section of the Centennial Industrial Site.



Photo 5. Wet meadow wetland and ephemeral drainage within the northwestern section of the Centennial Industrial Site.



Photo 6. Chaparral and annual grasslands in the western section of the Centennial Industrial Site.



Photo 7. Wetlands, woodlands, and annual grasslands in the central section of the Centennial Industrial Site.



Photo 8. Marsh wetland habitat for California red-legged frog, California black rail, and western pond turtle in the eastern section of the Centennial Industrial Site.



Photo 9. Ponded marsh wetland habitat for California red-legged frog, California black rail, and western pond turtle in the eastern section of the Centennial Industrial Site.



Photo 10. Wet meadow wetland area in the eastern section of the Centennial Industrial Site.



Photo 11. Large montane riparian area in the eastern section of the Centennial Industrial Site.



Photo 12. Edge of large montane riparian area in the eastern section of the Centennial Industrial Site.



Photo 13. Disturbed area in the western section of the Centennial Industrial Site.



Photo 14. Large area of montane riparian wetlands within the eastern section of the Centennial Industrial Site.



Photo 15. Mixed chaparral and montane hardwood-conifer vegetation communities within the southwestern section of the Centennial Industrial Site.



Photo 16. Mixed chaparral vegetation community within the southern section of the Centennial Industrial Site.



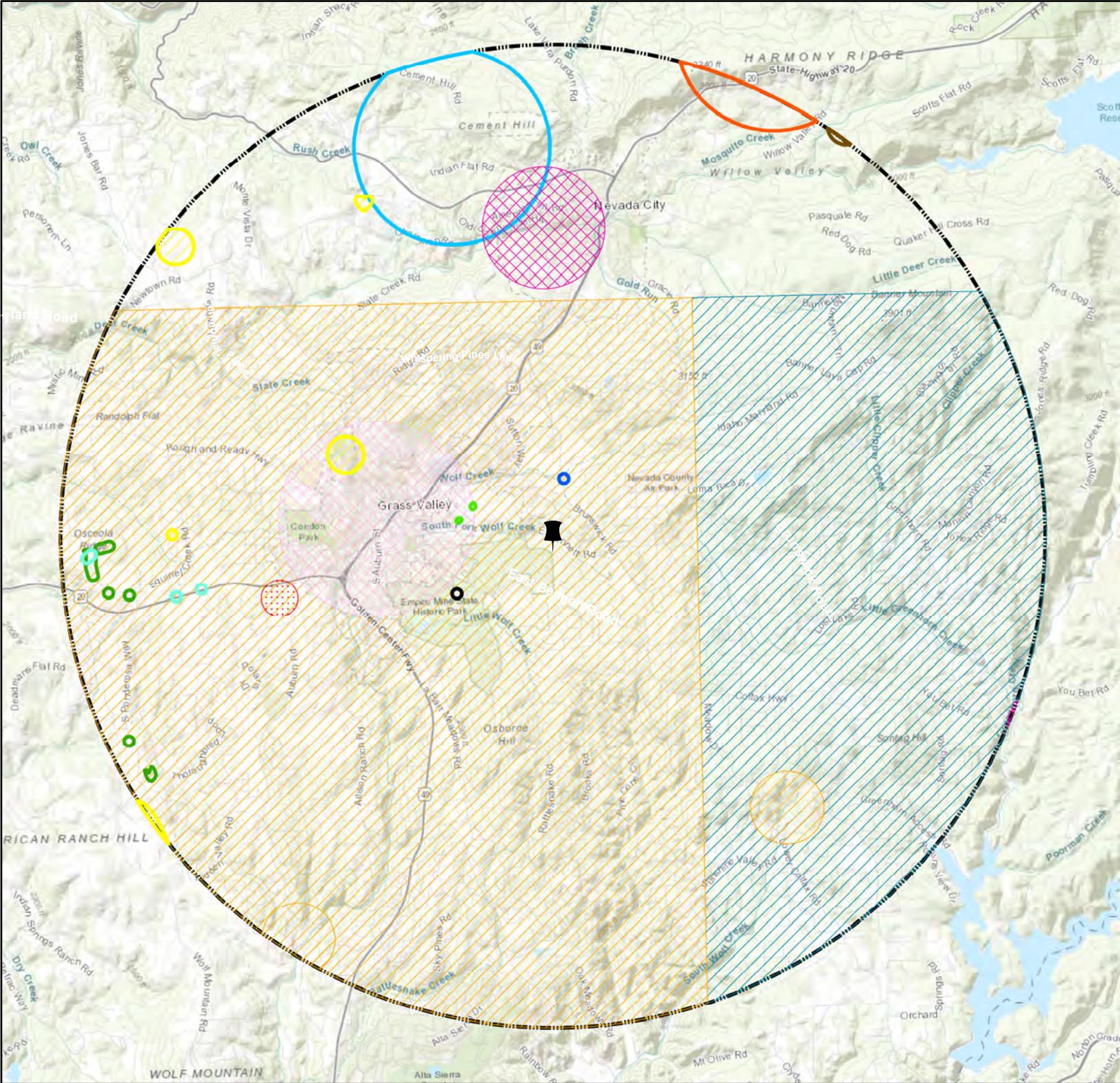
Photo 17. Mixed chaparral and montane hardwood-conifer vegetation communities within the southwestern section of the Centennial Industrial Site. Photo looking north.



Photo 18. Mixed chaparral and montane hardwood-conifer vegetation communities within the southwestern section of the Centennial Industrial Site. Photo looking northeast.

## Appendix H

### CNDDDB 5-Mile Buffer Figure



**Figure. Known Occurrences of Special Status Species within 5 Miles of the Centennial Site**

**Legend**

FiveMileProjectBuffer

Project Area

**Common Name, Scientific Name, FESA, CESA, CNPS**

	Brandegee's clarkia, <i>Clarkia biloba</i> ssp. <i>brandegeae</i> , none, none, 4.2		Townsend's big-eared bat, <i>Corynorhinus townsendii</i> , none, none
	California black rail, <i>Laterallus jamaicensis coturniculus</i> , none, Threatened		brownish beaked-rush, <i>Rynchospora capitellata</i> , none, none, 2B.2
	Cooper's hawk, <i>Accipiter cooperii</i> , none, none		chaparral sedge, <i>Carex xerophila</i> , none, none, 1B.2
	Pine Hill flannelbush, <i>Fremontodendron decumbens</i> , Endangered, Rare, 1B.2		coast horned lizard, <i>Phrynosoma blainvillii</i> , none, none
	Scadden Flat checkerbloom, <i>Sidalcea stipularis</i> , none, Endangered, 1B.1		dubious pea, <i>Lathyrus sulphureus</i> var. <i>argillaceus</i> , none, none, 3
	Stebbins' morning-glory, <i>Calystegia stebbinsii</i> , Endangered, Endangered, 1B.1		finger rush, <i>Juncus digitatus</i> , none, none, 1B1
			foothill yellow-legged frog, <i>Rana boylei</i> , none, Candidate Threatened
			western bumble bee, <i>Bombus occidentalis</i> , none, none

0 1 2 Miles

1 in = 1 miles

## Appendix I

### USFWS iPac Report

# IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

## Location

Nevada County, California



## Local office

Sacramento Fish And Wildlife Office

☎ (916) 414-6600

📅 (916) 414-6713

Federal Building  
2800 Cottage Way, Room W-2605  
Sacramento, CA 95825-1846

# Endangered species

**This resource list is for informational purposes only and does not constitute an analysis of project level impacts.**

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species<sup>1</sup> and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries<sup>2</sup>).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact [NOAA Fisheries](#) for [species under their jurisdiction](#).

1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information.
2. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

## Amphibians

NAME

STATUS

California Red-legged Frog *Rana draytonii*

Threatened

There is **final** critical habitat for this species. Your location is outside the critical habitat.

<https://ecos.fws.gov/ecp/species/2891>

## Fishes

NAME

STATUS

Delta Smelt *Hypomesus transpacificus*

Threatened

There is **final** critical habitat for this species. Your location is outside the critical habitat.

<https://ecos.fws.gov/ecp/species/321>

## Flowering Plants

NAME

STATUS

Pine Hill Flannelbush *Fremontodendron californicum* ssp. *decumbens*

Endangered

No critical habitat has been designated for this species.

<https://ecos.fws.gov/ecp/species/4818>

Stebbins' Morning-glory *Calystegia stebbinsii*

Endangered

No critical habitat has been designated for this species.

<https://ecos.fws.gov/ecp/species/3991>

## Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

## Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act<sup>1</sup> and the Bald and Golden Eagle Protection Act<sup>2</sup>.

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described [below](#).

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern <http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>
- Measures for avoiding and minimizing impacts to birds <http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>
- Nationwide conservation measures for birds <http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf>

The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern](#) (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME

BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)

Cassin's Finch *Carpodacus cassinii*

Breeds May 15 to Jul 15

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9462>

<p>Lewis's Woodpecker <i>Melanerpes lewis</i>  This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.  <a href="https://ecos.fws.gov/ecp/species/9408">https://ecos.fws.gov/ecp/species/9408</a></p>	Breeds Apr 20 to Sep 30
<p>Olive-sided Flycatcher <i>Contopus cooperi</i>  This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.  <a href="https://ecos.fws.gov/ecp/species/3914">https://ecos.fws.gov/ecp/species/3914</a></p>	Breeds May 20 to Aug 31
<p>Rufous Hummingbird <i>selasphorus rufus</i>  This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.  <a href="https://ecos.fws.gov/ecp/species/8002">https://ecos.fws.gov/ecp/species/8002</a></p>	Breeds elsewhere
<p>Willow Flycatcher <i>Empidonax traillii</i>  This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA  <a href="https://ecos.fws.gov/ecp/species/3482">https://ecos.fws.gov/ecp/species/3482</a></p>	Breeds May 20 to Aug 31

## Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

### Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is  $0.25/0.25 = 1$ ; at week 20 it is  $0.05/0.25 = 0.2$ .

3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

**Breeding Season (■)**

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

**Survey Effort (|)**

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

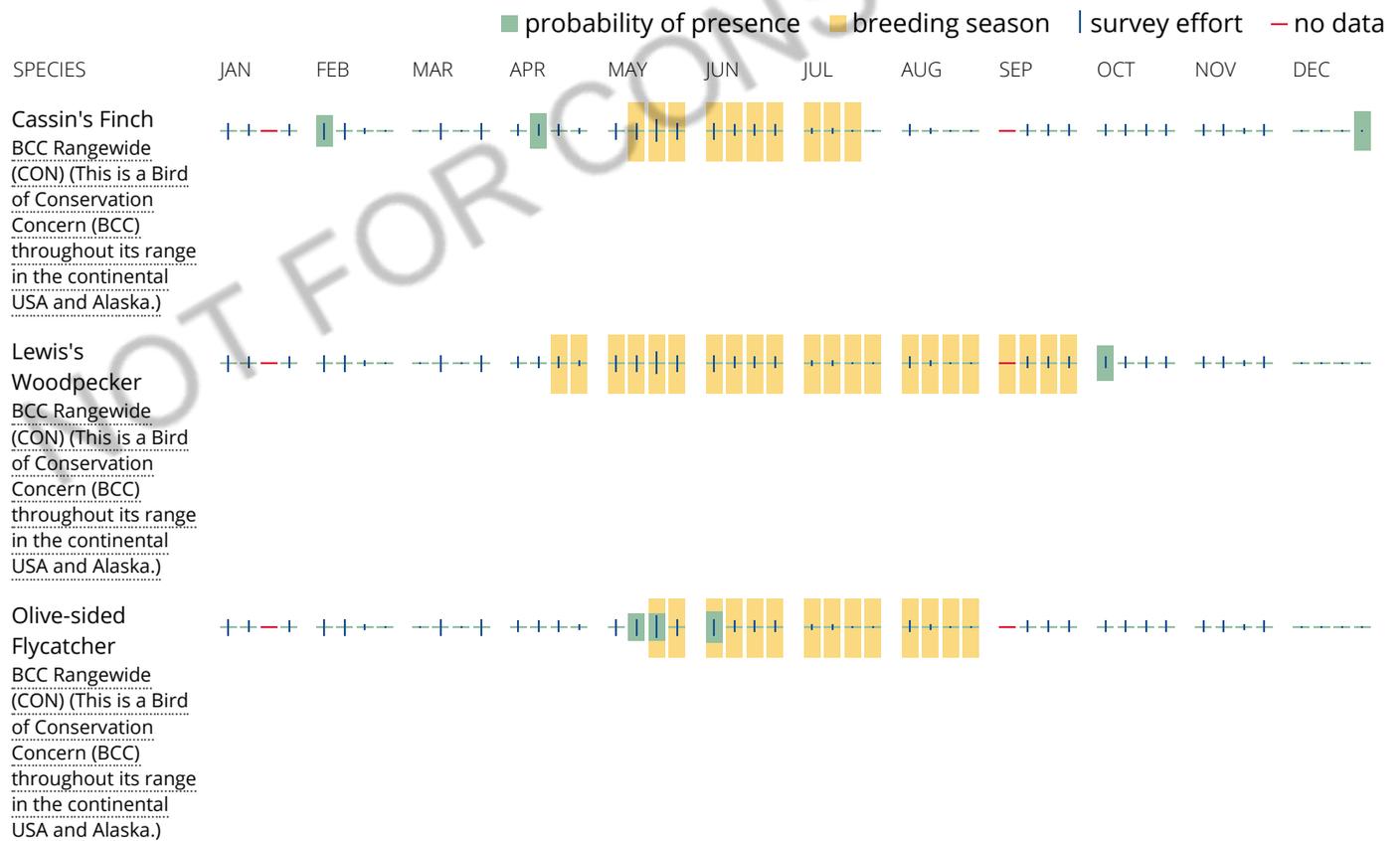
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

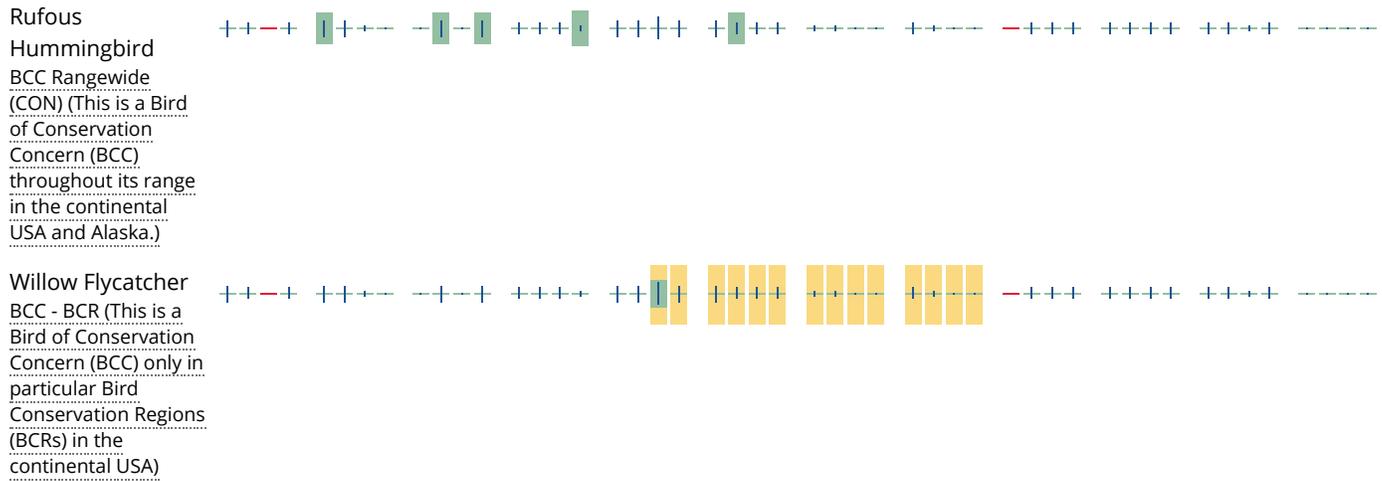
**No Data (-)**

A week is marked as having no data if there were no survey events for that week.

**Survey Timeframe**

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.





**Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.**

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) and/or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

**What does IPaC use to generate the migratory birds potentially occurring in my specified location?**

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [AKN Phenology Tool](#).

**What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?**

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

**How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?**

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: [The Cornell Lab of Ornithology All About Birds Bird Guide](#), or (if you are unsuccessful in locating the bird of interest there), the [Cornell Lab of Ornithology Neotropical Birds guide](#). If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

### What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

### Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

### What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

### Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to

confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

## Facilities

### National Wildlife Refuge lands

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

### Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

### Wetlands in the National Wetlands Inventory

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND

[PEM1A](#)

FRESHWATER FORESTED/SHRUB WETLAND

[PFOC](#)

FRESHWATER POND

[PUBK](#)

RIVERINE

## [R4SBC](#)

A full description for each wetland code can be found at the [National Wetlands Inventory website](#)

### Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

### Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

### Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.