

BIOLOGICAL RESOURCES ASSESSMENT

WARD LAKE QUARRY PROPOSED MINE BOUNDARY EXPANSION
LASSEN COUNTY, CALIFORNIA

Prepared for

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1.0 INTRODUCTION

This biological assessment evaluates the impacts to plant and wildlife species of a proposed Reclamation Plan Amendment to expand the mining boundary for the Ward Lake Quarry to include approximately 78.6 acres to the north of the already-approved reclamation boundary. In addition, the Reclamation Plan Amendment includes extension of the life of the mine from 2030 to 2050 and increases in the volume of material extracted annually from 100,000 to 200,000 tons.

1.1 Project Location

The Ward Lake Quarry is located approximately three miles east of Ward Lake, off of Ward Lake Road, in Lassen County. The quarry is located in Section 32, Township 30 North, Range 14 East, MDBM. The latitude and longitude at the center of the existing quarry are 40.414478° and - 120.417222°. The general site location is shown on Figure 1.

The mine is located in a rural area of Lassen County. The site is bound by rural residential, large-parcel open space and cropland to the south and southwest and undeveloped open space to the west, north, and east.

1.2 Ownership

The project area includes an active mine operation area, area of proposed reclamation, area of proposed expansion, and buffer areas. TNT Enterprises owns approximately 682 acres in two parcels. Currently, mine operations occur on 138 acres of the property. The proposed Reclamation Plan Amendment would add an additional 78.6 acres of mine quarry area. The remaining 464.4 acres are undisturbed open space. The current processing and stockpile areas would remain. Previous quarry areas will be reclaimed. Site layout is shown on Figure 2.

Adjacent property ownership is shown on Figure 3, noting large, undeveloped parcels owned by the Bureau of Land Management (BLM) to the west, north, and east.

1.3 Topography

The topography of the study area is gentle slopes and rocky ridges. The property occurs at elevations between approximately 4200 feet to 4500 feet above sea level. Slope of the landscape drains to the west and north to the seasonal feature, Secret Creek, located north of the current operation. Current site topography is shown on Figure 4.

Precipitation occurs as rain and snow. Annual rainfall is estimated at 15 inches (Susanville Municipal Airport Station ID 048702, years of record 1893-2016).

1.4 Vegetation Communities

1.4.1 Regional Vegetation Communities

The site is located in a rural area of Lassen County dominated by sagebrush-steppe communities. The northeastern portion of the area has been mapped under the Vegetation Classification and

Mapping Program (VegCAMP) using associations and alliances based on a Manual of California Vegetation. The southwestern portion of the region around the site has yet to be mapped using the new system and only Classification and Assessment with Landsat of Visible Ecological Groupings (CALVEG) mapping is available. The VegCAMP associations and CALVEG habitat units are included for a ten-mile radius around the site on Figure 5.

The VegCAMP and CALVEG specific associations and types are included by acreage in Table 1.

Table 1 VegCAMP AND CALVEG ASSOCIATIONS AND TYPES BY ACREAGE 10-MILE RADIUS OF PROPOSED EXPANSION AREA	
Map Unit	Acres
VegCAMP	
Anthropogenic Areas of Little or No Vegetation	83.4
<i>Artemisia arbuscula</i> / <i>Bromus tectorum</i> Ruderal Shrubland	1,571.0
<i>Artemisia arbuscula</i> / <i>Poa secunda</i>	12,875.6
<i>Artemisia cana</i> (ssp. <i>bolanderi</i> , ssp. <i>viscidula</i>) / <i>Poa secunda</i> Wet Shrubland	144.1
<i>Artemisia nova</i> / <i>Poa secunda</i>	1.0
<i>Artemisia tridentata</i> - <i>Grayia spinosa</i> Shrubland	1,041.0
<i>Artemisia tridentata</i> – (<i>Ericameria nauseosa</i>) / <i>Bromus tectorum</i> Ruderal Shrubland	6,068.9
<i>Artemisia tridentata</i> – <i>Ephedra</i> spp. Shrubland	1,532.0
<i>Artemisia tridentata</i> / <i>Distichlis spicata</i> Provisional	235.3
<i>Artemisia tridentata</i> Shrubland	10,519.3
<i>Artemisia tridentata</i> ssp. <i>vaseyana</i> – <i>Symphoricarpos oreophilus</i> / <i>Bromus carinatus</i> Shrubland	705.6
<i>Artemisia tridentata</i> ssp. <i>vaseyana</i> / <i>Festuca idahoensis</i> Shrub Grassland	215.6
<i>Atriplex confertifolia</i> - <i>Picrothamnus desertorum</i> / <i>Krascheninnikovia lanata</i>	2.8
<i>Bromus tectorum</i> – <i>Elymus caput-medusae</i> Ruderal Annual Grassland Alliance	1,492.3
<i>Bromus tectorum</i> Ruderal Grassland	5,360.2
Built-up & Urban Disturbance	109.2
Californian Annual Grassland & Forb Meadow Group	19.3
Californian Vernal Pool Group	28.2
<i>Carex aquatilis</i> – <i>Carex lenticularis</i>	9.9
<i>Cercocarpus ledifolius</i> – <i>Artemisia tridentata</i> ssp. <i>vaseyana</i>	29.0
Columbia Plateau cliff, scree and rock mapping unit	48.5
<i>Danthonia unispicata</i> – <i>Poa secunda</i> Wet Meadow	70.8
<i>Eleocharis macrostachya</i> Vernal Pool Provisional	2.6
<i>Elymus caput-medusae</i> Intermontane Provisional	35.3
<i>Elymus cinereus</i> Bottomland Wet Meadow	30.0
<i>Elymus spicatus</i> – <i>Poa secunda</i> Grassland	3,790.9
<i>Elymus triticoides</i> – <i>Poa secunda</i> Wet Meadow	8.9
<i>Ephedra nevadensis</i> - <i>Lycium andersonii</i> - <i>Grayia spinosa</i>	129.2
<i>Ericameria nauseosa</i> / <i>Bromus tectorum</i> Ruderal Shrubland	6,044.8
<i>Ericameria nauseosa</i> Shrubland	6,327.3
<i>Eriogonum sphaerocephalum</i> / <i>Poa secunda</i> Dwarf-shrub Grassland	1.3
<i>Juncus balticus</i> Wet Meadow	67.0
<i>Juniperus occidentalis</i> – <i>Pinus jeffreyi</i> / (<i>Purshia tridentata</i> , <i>Prunus virginiana</i>)	1,287.3
<i>Juniperus occidentalis</i> / <i>Artemisia arbuscula</i> / <i>Poa secunda</i>	2,539.8
<i>Juniperus occidentalis</i> / <i>Artemisia tridentata</i> – <i>Purshia tridentata</i>	5,411.7
<i>Juniperus occidentalis</i> / <i>Cercocarpus ledifolius</i>	174.6
<i>Juniperus occidentalis</i> / <i>Pseudoroegneria spicata</i> Wooded Grassland	141.4
<i>Juniperus occidentalis</i> / <i>Purshia tridentata</i> / <i>Festuca idahoensis</i> – <i>Pseudoroegneria spicata</i>	21.6
<i>Krascheninnikovia lanata</i> Steppe & Dwarf-shrubland Alliance	6.6

<p align="center">Table 1 VegCAMP AND CALVEG ASSOCIATIONS AND TYPES BY ACREAGE 10-MILE RADIUS OF PROPOSED EXPANSION AREA</p>	
Map Unit	Acres
Non-woody Row and Field Agriculture	152.3
Perennial Stream Channel (Open Water)	1.4
<i>Pinus jeffreyi</i> – <i>Pinus washoensis</i> Mixed Conifer Woodland Alliance	834.5
Planted Trees and Shrubs	3.9
<i>Populus tremuloides</i> / <i>Symphoricarpos rotundifolius</i>	2.2
<i>Prunus emarginata</i> Sierran Chaparral Shrubland	1,132.6
<i>Prunus virginiana</i> / <i>Leymus cinereus</i> Shrubland	633.5
<i>Purshia tridentata</i> - <i>Artemisia tridentata</i> Mesic Steppe & Shrubland Alliance	2,525.0
<i>Purshia tridentata</i> – <i>Artemisia tridentata</i>	11,426.5
<i>Purshia tridentata</i> – <i>Artemisia tridentata</i> – <i>Tetradymia canescens</i>	8,349.7
<i>Purshia tridentata</i> – <i>Artemisia tridentata</i> / <i>Achnatherum hymenoides</i>	277.3
<i>Quercus kelloggii</i>	2.9
<i>Salix exigua</i> / Mesic Forbs Shrubland	17.3
<i>Salix lasiolepis</i> – <i>Rosa woodsii</i> / Mixed Herbs Shrubland	36.9
<i>Sarcobatus vermiculatus</i> – <i>Artemisia tridentata</i> Shrubland	5,041.6
<i>Schoenoplectus americanus</i> Western Marsh	31.2
Small Earthen-dammed Ponds & Natural Lakes	1.5
<i>Symphoricarpos oreophilus</i> Shrubland	3.1
<i>Taraxia tanacetifolia</i> – <i>Iva axillaris</i> Provisional	2,626.8
<i>Tetradymia canescens</i> Provisional	1,015.5
<i>Typha domingensis</i> Western Marsh	12.3
Vancouverian – Rocky Mountain Montane Wet Meadow & Marsh Group	156.1
Water	62.4
Western North American Ruderal Marsh, Wet Meadow & Shrubland Group	300.8
Western North American Sparsely Vegetated Rivershore mapping unit	15.7
Western North American Temperate Freshwater Aquatic Vegetation Group	10.8
Total	102,857.1
CALVEG	
CWHR_TYPE	Acres
AGS: Annual Grassland	3,031.1
ASC: Alkali Desert Scrub	4,642.6
ASP: Aspen	3.1
BAR: Barren	407.9
BBR: Bitterbrush	407.4
CRP: Cropland	35,760.1
EPN: Eastside Pine	1,422.2
JUN: Juniper	787.0
LAC: Lacustrine	6,768.5
LSG: Low Sage	243.9
MCP: Montane Chaparral	41.7
MHC: Montane Hardwood-Conifer	3.8
MRI: Montane Riparian	613.3
PGS: Perennial Grassland	279.7
SGB: Sagebrush	45,893.7
SMC: Sierran Mixed Conifer	19.2
URB: Urban	3.0
WTM: Wet Meadow	7,751.9
Total	108,080.1

In order to simplify the associated discussion, the VegCAMP data crosswalk to CALVEG type was used to show CALVEG-consistent vegetation types within the regional area of the site (see Figure 6), showing the areas to the west, north, and east generally owned and managed by BLM as being dominated by sagebrush communities.

1.4.2 Project Area Vegetation Communities

The site-specific vegetation communities have been mapped and are included in the VegCAMP database. The communities are shown on Figure 7. The western portion of the site has not been mapped to association, so CALVEG communities are included separately.

The associations presented within (the mapped) expansion area along with acreage for each association are included in Table 2.

<p>Table 2 VegCAMP ASSOCIATIONS BY ACREAGE PROPOSED EXPANSION AREA</p>	
Map Unit	Acres
<i>Artemisia tridentata</i> – (<i>Ericameria nauseosa</i>) / <i>Bromus tectorum</i> Ruderal Shrubland	13.7
<i>Ericameria nauseosa</i> / <i>Bromus tectorum</i> Ruderal Shrubland	0.2
<i>Purshia tridentata</i> – <i>Artemisia tridentata</i>	0.9
<i>Salix exigua</i> / Mesic Forbs Shrubland	0.1
Californian Annual Grassland & Forb Meadow Group	1.8
<i>Purshia tridentata</i> – <i>Artemisia tridentata</i> – <i>Tetradymia canescens</i>	17.0
<i>Artemisia tridentata</i> Shrubland	2.1
<i>Purshia tridentata</i> – <i>Artemisia tridentata</i> – <i>Tetradymia canescens</i>	14.7
<i>Artemisia tridentata</i> – (<i>Ericameria nauseosa</i>) / <i>Bromus tectorum</i> Ruderal Shrubland	17.7
<i>Artemisia tridentata</i> Shrubland	8.3
<i>Purshia tridentata</i> – <i>Artemisia tridentata</i>	2.3
Anthropogenic Areas of Little or No Vegetation	0.0
Total	78.6

As shown, the dominant associations represent sagebrush-steppe ecological systems dominated by *Artemisia* and *Purshia* species.

Sagebrush habitat borders the quarry operations area along the western and eastern edges. The proposed expansions area supports basin big sage (*Artemisia tridentata* ssp. *tridentata*). Within the expansion area, shrubs exhibit dense cover with very little bare ground in between and in some places the canopy overlaps, leaving little opportunity for forbs and grasses. Slopes surrounding the expansion area exhibit less dense cover. This supports a mix of basin big sage and mountain big sage (*A. tridentata* ssp. *vaseyana*). Openings between shrubs here have sparse to no ground cover; in areas with some ground cover present, forbs and grasses were present.

1.4.3 Sensitive Habitats

The California Sensitive Natural Communities List published on August 18, 2021, was reviewed due to the fact that big sage subspecies (*Artemisia tridentata* ssp.) are components of natural

communities that are listed as S1, S2, and S3, and therefore warrant consideration under CEQA. None of the California Sensitive Natural Communities listed are present within the proposed expansion area. Mountain big sage (*Artemisia tridentata* ssp. *vaseyana*) and Idaho fescue (*Festuca idahoensis*) are present in the surrounding area; these would not be disturbed by proposed activities. Additionally, the current mine area will be planted with these two species during reclamation, which will increase the presence of this community in the long term.

Portions of the mine site and the expansion areas have been identified as critical winter habitat for mule deer (Figure 8) and critical winter range habitat for pronghorn antelope (Figure 9).

1.5 Waters of the State/United States

The existing quarry contains several artificial ponds near the northern boundary of the existing mining area as well as near the entrance to the quarry. These ponds have been constructed to retain water from gravel washing and to capture stormwater runoff from the existing mining area. These ponds are not waters of the United States according to the *Navigable Waters Protection Rule: Definition of "Waters of the United States"* and are not waters of the State according to the State Wetland definition.

1.6 Previous Mitigation Considerations

No blasting, grading, or excavation is allowed from January 1 to March 31.

An Environmental Impact Report (EIR) was prepared in 1997 for an expansion of the Ward Lake Quarry (Oberholtzer 1997). The EIR focused on potential effects on deer and antelope herds. The project area falls within Deer Hunt Zone X5a, which is a zone within the greater Deer Assessment Unit (DAU) 2 – northeastern California; and the project is within Pronghorn Hunt Zone 4 – Lassen. The project area is on the edge of California Department of Fish and Wildlife (CDFW)-designated critical winter-range habitat for mule deer and winter-range habitat for pronghorn antelope (see Figures 8 and 9, respectively).

Mule deer numbers have increased since the 1997 EIR. In 1996, the population for DAU 2 was estimated to be 25,000; in 2017, the estimated population was 29,289 (CDFG et al. 1998; CDFW 2017). More specific to the project location, the mule deer population within Hunt Zone X5a has increased, with an estimated 544 animals in 2013 and 942 in 2017.

The 1997 EIR also addressed effects to Swainson's hawk and golden eagle. Potential effects of the project on these species were discounted because it involved only the removal of 40 acres of foraging habitat, but no nesting habitat removal. These effects to foraging habitat are determined to be mitigated through the required reclamation practices. Effects to other wildlife species were not discussed in detail but were deemed to be significant, although mitigatable, through the required reclamation practices.

An additional EIR (VESTRA 2019) was conducted in 2019 to address an increase in operating hours and nighttime operations. Mitigations included in the EIR were limiting nighttime operations from January 1 to March 31, no nighttime blasting, installation of noise barriers, limitation of Jake brake usage, and modification to lighting feature design to minimize the effects of artificial lighting during the nighttime periods. The County also requested limitation of

roadway speed, driver education, and signage for possible impacts to wildlife on roadways during nighttime operations.

1.7 Proposed Operations

Although the overall mine area increase will result in disturbance of 78.6 acres, the area will be mined in sections progressing north from the quarry area. Sections will be reclaimed when exhausted. Therefore, the total impacted acreage at any given time will be much less than 78.6 acres.

2.0 REGULATORY FRAMEWORK FOR BIOLOGICAL RESOURCES

This section describes the federal and state regulation of special-status species, waters of the United States, and other sensitive biological resources.

2.1 Federal Regulations

2.1.1 Federal Endangered Species Act

Section 9 of the federal Endangered Species Act of 1973 (ESA) prohibits acts that result in the “take” of threatened or endangered species. As defined by the federal ESA, “endangered” refers to any species that is in danger of extinction throughout all or a significant portion of its current range. The term “threatened” is applied to any species likely to become endangered within the foreseeable future throughout all or a significant portion of its current range. “Take” is defined as “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct.” Sections 7 and 10 of the federal ESA provide methods for permitting otherwise lawful actions that may result in “incidental take” of a federally listed species. Incidental take refers to take of a listed species that is incidental to, but not the primary purpose of, an otherwise lawful activity. Incidental take is permitted under Section 7 for projects on federal land or involving a federal action; Section 10 provides a process for non-federal actions. The act is administered by the USFWS for terrestrial species.

2.1.2 Clean Water Act

The objective of the Clean Water Act (1977, as amended) is to restore and maintain the chemical, physical, and biological integrity of the nation’s waters. Discharge of dredged or fill material into waters of the United States, including jurisdictional wetlands, is regulated by the Corps under Section 404 of the Clean Water Act (33 USC 1251-1376) under a permitting process. Applicants for Section 404 permits are also required to obtain water quality certification or waiver through the local Regional Water Quality Control Board under Section 401 of the Clean Water Act (33 USC 1341).

Corps regulations implementing Section 404 define waters of the United States to include intrastate waters, including lakes, rivers, streams, wetlands, and natural ponds, the use, degradation, or destruction of which could affect interstate or foreign commerce. Wetlands are defined for regulatory purposes as “areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (33 CFR 328.3; 40 CFR 230.3). To comply with the Corps policy of no net loss of wetlands, discharge into wetlands must be avoided and minimized to the extent practicable. For unavoidable impacts, compensatory mitigation is typically required to replace the loss of wetland functions in the watershed.

Because the project will not result in impacts on waters of the United States, which would require authorization under Section 404, an Army Corps 404 permit and Section 401 water quality certification will not be required.

2.1.3 Migratory Bird Treaty Act

Migratory birds are protected under the Migratory Bird Treaty Act (MBTA) of 1918 (16 USC 703-711). The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 CFR Part 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR 21). Mitigation measures can be identified to avoid or minimize adverse effects on migratory birds. Nesting habitat is present throughout the study area in juniper and willow trees, shrubs, ground, and other structures.

2.2 State Regulatory Requirements

2.2.1 California Endangered Species Act

The California Endangered Species Act (CESA) lists species of plants and animals as threatened or endangered. Projects that may have adverse effects on State-listed species require formal consultation with CDFW. “Take” of protected species incidental to otherwise lawful activities may be authorized under Section 2081 of the California Fish and Game Code. Authorization from the CDFW is in the form of an Incidental Take Permit which can identify measures to minimize take. CDFW Species of Special Concern are considered under the CESA. Species of Special Concern have the potential to occur within the project area.

2.2.2 Streambed Alteration Agreement

A Lake or Streambed Alteration Agreement (Sections 1600-1616 of the California Fish and Game Code) requires an entity to notify CDFW prior to commencing any activity that may substantially obstruct the natural flow or use any material from a river, stream, or lake, or deposit or dispose of debris where it may pass into any river, stream, or lake. The notification requirement applies to any ephemeral or perennial river, stream, or lake in California. The project will not occur within any river, stream, or lake and is not subject to a Lake or Streambed Alteration Agreement.

2.2.3 Birds of Prey

Under Section 3503.5 of the California Fish and Game Code, it is unlawful to take, possess, or destroy any birds in the orders of Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird, except as otherwise provided by this code or any regulation adopted pursuant thereto. Project features will be implemented to protect nesting migratory birds and birds of prey to comply with this code.

2.2.4 Migratory Birds

The California Fish and Game Code Section 3513 states that it is unlawful to take or possess any migratory nongame bird as designated in the MBTA or any part of such migratory nongame bird except as provided by rules and regulations adopted by the Secretary of the Interior under provisions of the MBTA. Project features will be implemented to protect nesting migratory birds and birds of prey to comply with this code.

2.2.5 Fully Protected Species

California statutes also accord “fully protected” status to a number of specifically identified birds, mammals, reptiles, amphibians, and fish. These species cannot be “taken,” even with an incidental take permit (California Fish and Game Code, Sections 3505, 3511, 4700, 5050, and 5515). No “fully protected species,” are expected to occur in the study area.

2.2.6 Surface Mining and Reclamation Act of 1975

The Surface Mining and Reclamation Act of 1975 (SMARA, Public Resources Code, Sections 2710-2796) provides a comprehensive surface mining and reclamation policy with the regulation of surface mining operations to assure that adverse environmental impacts are minimized and mined lands are reclaimed to a usable condition. SMARA requires that all surface mines in California have an approved Reclamation Plan and ensure financial assurance for the completion of reclamation activities upon closure of a mine site.

3.0 BIOLOGICAL SITE SURVEY

3.1 Pre-Survey Review

Special-status plant and animal species and sensitive habitats that have the potential to occur within the project area were determined, in part, by reviewing agency databases, literature, and other relevant sources. The following information sources were reviewed to aid this determination:

- Litchfield, California, USGS 7.5-minute quadrangle;
- Aerial photography of the project area and vicinity;
- The U.S. Fish and Wildlife Service (USFWS) official list of endangered and threatened species that may occur, or be affected by, projects, as provided by the Klamath, Sacramento, and Yreka Fish and Wildlife Office (Consultation Code 08ESMF00-2020-E-03301), included in Appendix B;
- CDFW California Natural Diversity Database (CNDDDB) (Nelson 2020) records for the Litchfield, California, USGS 7.5-minute quadrangle and the eight surrounding quadrangles;
- The California Native Plant Society (CNPS) online Inventory of Rare and Endangered Plants (California Native Plant Society 2015) records for the Litchfield, California, USGS 7.5-minute quadrangle and the eight surrounding quadrangles;
- California Wildlife Habitat Relationships (CWHR) System (California Department of Fish and Game 2020) including listing of species likely to occur.
- GIS shapefiles of designated critical habitat from the USFWS Critical Habitat Portal website;
- CDFW publications including State and Federally Listed Endangered, Threatened and Rare Plants of California (CDFW 2020a); State and Federally Listed and Threatened Animals of California (CDFW 2020b); and Special Animals List (CDFW 2020c); and
- Pertinent biological literature including Bird Species of Special Concern in California.

The CWHR database was used to generate a list of likely inhabitants within the vegetation types present in the vicinity of the site. CWHR types are shown on Figure 10. A list of likely inhabitants is included in Appendix A.

3.2 Animal Survey Methods and Results

Numerous pedestrian surveys have been completed onsite during site review for permitting and compliance purposes. Pedestrian transect surveys were completed in spring 2018 and spring 2020 to determine the habitat types present onsite and to detect any potential habitat for special-status flora or fauna.

3.2.1 Animal Field Survey Methods

2018 Survey

Previous surveys have been completed onsite during previous environmental review for the quarry.

A pedestrian survey was conducted on the night of April 24, 2018, from 1830 to 2300 hours and morning of April 25, 2018, from 0430 to 0900 hours to assess impacts of 24-hour mining work on diurnal and nocturnal wildlife, due to changes to the quarry's operating hours. During this survey, the entire current mine area was covered by walking transects spaced for full visual coverage of the site. Then, observations were made from select vantage points onsite. Simultaneously, a game camera was deployed at the northern end of the current mine area (now the southern end of the proposed expansion area) during the night to document nocturnal wildlife entering the site.

2020 Surveys

A protocol-level burrowing owl survey was completed on April 1, 2020, from 0815 to 1530 hours to determine the presence of burrows onsite. The area included the proposed expansion area and surrounding area to account for the standard burrowing owl buffer zone. Phase one of the survey protocol was completed, which consists of searching for burrows; transects were spaced to achieve full visual coverage throughout the surveys area. Transects were closer together when a site feature (i.e., berm or stockpile) presented a barrier to the surveyor's perception, or when an area required further observation.

A biological site assessment was completed on April 1, 2020, to determine the presence of special-status species or their habitat within the proposed expansion area as well as the surrounding areas that could be impacted indirectly by the proposed expansion. Visual and auditory observations were recorded following the pedestrian transects. Transects were walked at a slow pace with pauses for visual and auditory observation at points ranging from 0.15 to 0.25 miles apart. All wildlife and habitat characteristics were documented.

3.2.2 Animal Survey Results – April 24-25, 2018

Mammalian species observed or where sign was observed within or adjacent to the proposed project and expansion areas included:

- Striped skunk (*Mephitis mephitis*) *observed on game camera
- Black-tailed jackrabbit (*Lepus californicus*)
- Common raven (*Corvus corax*)
- Black-tailed deer (*Odocoileus hemionus*)
- Coyote (*Canis latrans*)
- Western fence lizard (*Sceloporus occidentalis*)
- Cottontail rabbit (*Sylvilagus bachmani*)

Amphibians observed included:

- Sierran treefrog (*Pseudacris sierrae*)
- American bullfrog (*Lithobates catesbeianus*)

Amphibians were observed at dusk and through the night in the northern and southern settling ponds. It was apparent by the number of frog calls that a larger population inhabits the southern settling ponds. Sierran treefrog populations are considered to have a stable conservation status. American bullfrogs are a non-native invasive species in western North America.

Bird species observed within or adjacent to the project area:

- Mourning dove (*Zenaida macroura*)
- Black-billed magpie (*Pica hudsonia*)
- California quail (*Callipepla californica*)
- Canada goose (*Branta canadensis*)
- Mallard (*Anas platyrhynchos*)
- Rock wren (*Salpinctes obsoletus*)
- House wren (*Troglodytes aedon*)
- Yellow-rumped warbler (*Setophaga coronata*)
- Red-winged blackbird (*Agelaius phoeniceus*)
- Great horned owl (*Bubo virginianus*)
- Killdeer (*Charadrius vociferus*)
- House sparrow (*Passer domesticus*)
- Turkey vulture (*Cathartes aura*)
- Barn swallow (*Hirundo rustica*)
- Western wood-pewee (*Contopus sordidulus*)

3.2.3 Animal Survey Results – April 1, 2020

Wildlife species presence was confirmed onsite if observations of the animal, or sign of the animal was observed onsite. The following species were determined to be present onsite:

- Black-tailed deer (*Odocoileus hemionus*)
- Coyote (*Canis latrans*)
- Western fence lizard (*Sceloporus occidentalis*)

The pair of great horned owls (GHO) observed in 2018 was not observed in 2020. The owls had been nesting in an abandoned water tower located to the west of the shop and concrete plant. Bird nests were again observed in willow trees next to one of the settling ponds.

No burrowing owl burrows, or owls, were found during the survey. The findings are shown in a Burrowing Owl Survey Report, included as Appendix B.

3.3 Plant Survey Methods and Results

3.3.1 Plant Survey Methods

Plant surveys completed onsite included a protocol-level rare plant survey completed outside of the proposed expansion area in 2018, transect pedestrian surveys completed within the proposed

expansion area in 2020, and vegetation characteristic data collection completed in support of the site Reclamation Plan in 2019.

2018

No protocol-level rare plant surveys have been completed within the proposed expansion area.

A protocol-level rare plant survey was completed within a different previously proposed expansion area on June 11, 2018, to determine the potential impacts of the expansion. The survey area is located adjacent to the current quarry's eastern boundary. The description of this survey is included herein this report due to the positive identification of Susanville beardtongue (*Penstemon sudans*) and spiny milkwort (*Polygala subspinos*a).

2019

The baseline survey was conducted on April 18, 2019, using Division of Mine Reclamation (DMR)-established protocol for measuring vegetation percent cover, density, and species richness of the natural vegetation community (DOC 2003). Data was collected using a 1m² quadrat. The initial plot location was determined by random point projection within an undisturbed reference area using a GPS device and subsequent plot end points were systematically placed 1m apart. Transects progressed in a northeast direction. Methods were repeated fourteen times via systematic sampling to achieve adequate confidence in results (>80 percent).

2020

During the biological site assessment completed on April 1, 2020, the vegetation communities and habitat types were classified onsite. Vegetation communities were compared to the CWHR map.

3.3.2 Plant Survey Results

2018

Susanville beardtongue (*Penstemon sudans*) was observed during the survey that was completed to the east of the current mining operations. The observed populations are well outside of the proposed expansion area and would not be affected by the proposed expansion through direct or indirect impacts.

2019

The initial plot start point was at coordinates 40.411800, -120.41357. Percent cover was quantified for the entire plant community (mean=86.42 percent) and for each growth type (shrub [mean=7.73%], forb [mean=4%], annual grass [mean=24.64%], and perennial grass [mean=6.19%]). The percent cover of the entire vegetative community is greater than the summated percent cover of each growth type due to overlap in canopy layers. Species richness was quantified within each plot (mean=4). For reclamation purposes the percentage of annual grass has been removed from the percent cover assessment as the annual grasses are both considered non-native invading species. The baseline data and reclamation success standards are included in the site reclamation plan.

The following plant species were observed during the baseline surveys:

- Antelope bitterbrush (*Purshia tridentata*)
- Rubber rabbitbrush (*Ericameria nauseosa*)
- Big sage brush (*Artemisia tridentata* spp.)
- Western juniper (*Juniperus occidentalis*)
- Mormon tea (*Ephedra viridis*)
- Hooker's balsamroot (*Balsamorhiza hookeri*)
- Bristly fiddleneck (*Amsinckia tessellata*)
- Redstem stork's bill (*Erodium cicutarium*)
- Medusahead (*Elymus caput medausa*)
- Cheatgrass (*Bromus tectorum*)
- Bluebunch wheatgrass (*Pseudoreogneria spicata*)
- Common wooly sunflower (*Eriophyllum lanatum*)

4.0 POTENTIAL IMPACTS TO BIOLOGICAL RESOURCES

4.1 Special-Status Species

For each special-status wildlife species, habitat and other ecological requirements were evaluated and compared to the habitats in the study area and immediate vicinity to assess the presence of potential habitat. The habitat assessment is provided in Table 3. The CNDDDB query results are included as Figure 11.

4.1.1 Special Status Wildlife Species

An assessment of special-status species was conducted for the proposed amendment to examine potential effects of expanding the project area. Special-status species considered in this assessment meet one of the following criteria:

- Listed, proposed for listing, or candidates for listing as threatened or endangered under the Federal ESA (50 Code of Federal Regulations [CFR] Part 17.12 [listed plants], 50 CFR Part 17.11 [listed animals], 67 Federal Register [FR] 40657 [candidate species]);
- Listed or proposed for listing by the State of California as threatened or endangered under the CESA (CDFW 2017a);
- Identified by the CDFW as fully protected species, including fish and wildlife that do not have State or Federal threatened or endangered status but may still be threatened with extinction (CDFW 2017b); and
- California Species of Special Concern: vertebrate species that have been designated as “species of special concern” by the CDFW because declining population levels, limited range, and/or continuing threats have made them vulnerable to extinction (CDFW 2017b);

A list and summary of wildlife species identified by a CNDDDB search within five miles of the project, CWHR analysis or literature review, and descriptions of their potential to occur within the project area are included in Table 3. Federally listed species which may occur in the project area was obtained from the USFWS.

Table 3 POTENTIALLY OCCURRING SPECIAL-STATUS WILDLIFE SPECIES			
Common and Scientific Names	Status Fed/State	Preferred Habitats	Known and Potential Occurrence in Project Area
Invertebrates			
Carson wandering skipper <i>Pseudocopaeodes eunus obscurus</i>	FE/--	Occurs east of the Sierra Nevada at elevation less than 5,000 feet; presence of salt grass; near nectar sources; near springs or other water bodies; and possibly near geothermal activity	No potential for occurrence due to lack of suitable habitat; habitat known nearby at Honey Lake (alkali flat that supports salt grass); alkali soils and geothermal activity not present onsite

<p align="center">Table 3 POTENTIALLY OCCURRING SPECIAL-STATUS WILDLIFE SPECIES</p>			
Common and Scientific Names	Status Fed/State	Preferred Habitats	Known and Potential Occurrence in Project Area
Monarch Butterfly <i>Danaus plexippus</i>	CE/--	Migratory; overwinter in central to south CA coast; breed through summer; breed throughout CA only where milkweed is found.	Potential for occurrence due to potential habitat for milkweed (<i>Asclepias</i> spp.)
Amphibians			
Foothill yellow-legged frog <i>Rana boylei</i>	--/CSC	Slow-moving, gravelly streams and rivers with sunny banks in forests and chaparral	No potential for occurrence due to lack of gravelly streams or water bodies
Birds			
Tricolored blackbird <i>Agelaius tricolor</i>	--/CE	Nest near fresh water in adjacent vegetation, especially near marshes. Forage in grasslands and croplands	No potential for occurrence due to lack of suitable habitat
Golden eagle <i>Aquila chrysaetos</i>	--/CFP	Needs open terrain for hunting – grassland, desert, savannah, shrub. Nests on cliffs and in large trees	Potential for occurrence due to suitable foraging habitat
Northern harrier <i>Circus cyaneus</i>	--/CSC	Grasslands, fields, and marshes	Potential for occurrence due to suitable foraging habitat
Swainson's hawk <i>Buteo swainsoni</i>	--/CT	Large, open grasslands in riparian systems	Potential for occurrence due to some suitable foraging habitat
Greater sandhill crane <i>Grus canadensis tabida</i>	--/CT	Shortgrass plains, grain fields and open wetlands for foraging. Nests in wetlands	No potential for occurrence due to lack of suitable habitat
Greater sage-grouse <i>Centrocercus urophasianus</i>	--/CSC	Open, continuous sagebrush communities	Potential for occurrence due to suitable habitat
Burrowing owl <i>Athene cunicularia</i>	--/CSC	Open, dry grassland, desert, and shrub	None found during April 2020 survey. Potential for occurrence due to suitable habitat
Long-eared owl <i>Asio otus</i>	--/CSC	Roost in dense vegetation and forage in open grasslands or shrublands	Potential for occurrence due to suitable foraging habitat
Short-eared owl <i>Asio flammeus</i>	--/CSC	Large, open areas with low vegetation including prairie, grassland, shrubsteppe, agricultural areas	Potential for occurrence due to suitable habitat
Loggerhead shrike <i>Lanius ludovicianus</i>	--/CSC	Open areas with short vegetation and well-spaced shrubs or low trees	Potential for occurrence due to suitable habitat
Mammals			
Pallid bat <i>Antrozous pallidus</i>	--/CSC	Forages over many habitats; roosts in buildings, trees, rocky outcrops and crevices in mines and caves; also in oak and pine forested areas, usually near a source of water	Potential for occurrence due to suitable habitat
Townsend's big-eared bat <i>Corynorhinus townsendii</i>	--/CSC	Found in all but subalpine and alpine habitats. Requires mines, caves, rock piles, and lava tubes for roosting	No potential for occurrence due to lack of suitable habitat

<p style="text-align: center;">Table 3 POTENTIALLY OCCURRING SPECIAL-STATUS WILDLIFE SPECIES</p>			
Common and Scientific Names	Status Fed/State	Preferred Habitats	Known and Potential Occurrence in Project Area
Gray wolf <i>Canis lupus</i>	FE/CE	Highly variable	No records in project vicinity in 93 years; has been located recently in other areas of Lassen County
North American wolverine <i>Gulo gulo luscus</i>	PFT/CT	Arctic, boreal, and alpine habitats. South of the Canadian border, restricted to high mountain environments near the treeline	No potential for occurrence due to lack of suitable habitat
American badger <i>Taxidea taxus</i>	--/CSC	Dry, open stages of shrub and forest with friable soils	Potential for occurrence due to suitable habitat
Pygmy rabbit <i>Brachylagus idahoensis</i>	--/CSC	Sagebrush, bitterbrush, and pinyon-juniper	Potential for occurrence due to suitable habitat
White-tailed jackrabbit <i>Lepus townsendii townsendii</i>	--/CSC	Sagebrush, subalpine conifer, juniper, alpine dwarf-shrub, and perennial grassland	Potential for occurrence due to suitable habitat
Key: Federally Endangered (FE), Proposed Federally Endangered (PFE); Federally Threatened (FT); Proposed Federally Threatened (PFT); California Endangered (CE); California Threatened (CT); California Fully Protected (CFP); California Species of Special Concern by DFG (CSC)			

Special-status wildlife species that are known to occur, or have the potential to occur, within the project area include:

- Monarch Butterfly (*Danaus plexippus*)
- Golden eagle (*Aquila chrysaetos*)
- Northern harrier (*Circus cyaneus*)
- Swainson's hawk (*Buteo swainsoni*)
- Greater sage-grouse (*Centrocercus urophasianus*)
- Burrowing owl (*Athene cunicularia*)
- Long-eared owl (*Asio otus*)
- Short-eared owl (*Asio flammeus*)
- Loggerhead shrike (*Lanius ludovicianus*)
- Gray wolf (*Canis lupus*)
- American badger (*Taxidea taxus*)
- Pallid bat (*Antrozous pallidus*)
- Pygmy rabbit (*Brachylagus idahoensis*)
- White-tailed jackrabbit (*Lepus townsendii townsendii*)

Of the 19 special-status species evaluated, 13 were determined to have a potential to occur, while the rest were determined to have no potential to occur. Species determined to have potential to occur within the project area are discussed below, while species that were determined to be absent are not discussed further.

Invertebrates

Monarch Butterfly

Danaus plexippus

Candidate ESA

Monarch butterflies have several life forms that make up their life history: egg, caterpillar (larvae), chrysalis, and adult stage. This species is migratory, with a well-known migratory path that can extend as far as 3,000 miles. Monarch butterflies in Western North America overwinter in California, with most occurring along the central coast from Santa Cruz south to San Diego, California. Monarchs rely on their host plant species, milkweed (*Asclepias* sp.). These plants can grow in a variety of habitats. There is potential for milkweed to occur in grassy openings within shrubland. There is little open grassland in the proposed expansion area. However, there is potential for recruitment following vegetation removal. If milkweed is observed onsite, mitigation measures in Section 5.4 will be implemented such that impacts will be reduced to less than significant.

Birds

Golden Eagle

Aquila chrysaetos

California Fully Protected

The golden eagle is listed by the State of California as Fully Protected, which prohibits take or possession of the species. Golden eagles are short-distance migrants, particularly in the western United States. This species is a year-round resident throughout California; limited migration occurs to the Central Valley during the winter. These birds typically hunt over the open terrain of grasslands, deserts, savannah, shrub, and early successional forests. They nest on cliffs of variable heights and in large trees in open habitats where perches on rock ledges, trees, or other tall objects provide good vantage for hunting. Common prey for golden eagles includes small mammals, birds, and reptiles. They sometimes take advantage of carrion, in such cases they can outcompete other scavengers for carcasses. Threats to this species include loss of foraging areas, loss of nesting habitat, pesticide poisoning, and collision with man-made structures such as wind turbines.

The site was assessed for potential nesting habitat as described in the USFWS “Protocol for Golden Eagle Occupancy and Reproduction Assessment”. No golden eagles were observed onsite. No trees occur onsite that could provide nesting habitat for golden eagles where the active nest indicators would be observed. Potential foraging habitat exists in the open sagebrush areas of the project area. Golden eagles have been observed (per CNDDB) within five miles of the site.

There is foraging habitat within the expansion area as the sagebrush onsite is inhabited by prey species. The proposed expansion would result in the loss of portions of sagebrush habitat during the life of the mine until reclamation is completed in 2050. A total of 78 acres will be impacted; however, with scheduled reclamation, the actual acres impacted at any time should be less than ten: five acres reclaimed and returned to mature sage community and five acres undergoing initial reclamation. Mine areas will be reclaimed when removal is complete in five-acre increments (see Mitigation Measure MM-6), reducing potential impacts to foraging raptors. In

addition, the juvenile plants in reclaimed areas will likely attract more prey species (i.e. rabbit, hare, and squirrel). Mitigation measure (MM-7) will limit the area of disturbed foraging habitat. Based on the large regional expanse of suitable habitats, the loss of foraging habitat is not likely to be significant assuming reclamation is conducted in a timely manner to reduce foraging habitat impacts. Mitigation has been recommended to require reclamation within two years of final mineral removal and to be completed in a minimum acreage of 5 acres.

The areas that will be reclaimed within the current mine boundary will be reclaimed to the following palette:

Common Name	Scientific Name	Growth Habit	Broadcast Seed Rate (lbs PLS per acre)	Plug Planting Rate (plugs per acre)
Quarry Face and Bench Areas				
Sagebrush	<i>Artemisia tridentata</i>	Shrub	1.5	--
Bitterbrush	<i>Purshia tridentata</i>	Shrub	--	26
Rabbitbrush	<i>Ericameria nauseosa</i>	Shrub	3	--
Bluebunch wheatgrass	<i>Pseudoregneria spicata</i>	Grass	3	--
Bottlebrush squirreltail	<i>Elymus elymoides</i>	Grass	10	--
Green ephedra	<i>Ephedra viridis</i>	Shrub/Subshrub	1	--
Remainder of Site				
Sagebrush	<i>Artemisia tridentata</i>	Shrub	2	--
Bitterbrush	<i>Purshia tridentata</i>	Shrub	--	26
Rabbitbrush	<i>Ericameria nauseosa</i>	Shrub	4	--

Northern Harrier

Circus cyaneus

State Species of Special Concern

The northern harrier is listed by the State of California as a Species of Special Concern. This species is a common winter resident and occurs in greater numbers in California during migration and winter, as many populations travel farther north to breed. Some populations remain in California and the historic breeding range extended from the Modoc Plateau south to San Diego. Breeding in California has greatly declined due to loss of suitable wetland habitats. Although most suitable habitat has been destroyed or degraded, the Central Valley still supports the majority of nesting in California. Northern harriers inhabit a variety of open habitats that provide vegetative cover including grasslands, coastal ponds/sloughs, coastal marshes, coastal wetlands, salt marshes, and sagebrush areas.

The proposed project area is not a known foraging or breeding location for northern harriers; according to CNDDB, there are no known occurrences within five miles of the proposed expansion area. Potential foraging habitat for northern harriers exists in the proposed expansion area. Disturbance of an additional 78.6 acres of land may result in the loss of foraging area for this species.

There is potential foraging habitat within the expansion area as the sagebrush onsite is inhabited by prey species. The proposed expansion would result in the loss of portions of sagebrush habitat during the life of the mine until reclamation is completed in 2050. Mine areas will be reclaimed when removal is complete, reducing potential impacts to foraging raptors. In addition, the juvenile plants in reclaimed areas will likely attract more prey species (i.e. rabbit, hare, and

squirrel). Based on the large regional expanse of suitable habitats, the loss of foraging habitat is not likely to be significant assuming reclamation is conducted in a timely manner to reduce foraging habitat impacts. Mitigation (MM-6) has been recommended to require reclamation within two years of final mineral removal and to be completed in a minimum acreage of 5 acres. Mitigation (MM-7) has also been included to minimize the area of ground disturbance.

Swainson's Hawk

Buteo swainsoni

State Threatened

The Swainson's hawk was listed as a threatened species in 1983. This species breeds in the western United States and Canada and winters in isolated areas in California, Mexico, and Central and South America, though only a small number have been documented to overwinter in California. Historically found throughout California except in the Sierra Nevada, North Coast Ranges and Klamath Mountains, loss of suitable habitat has now restricted breeding areas to the Great Basin and the Central Valley. Nesting Swainson's hawks require large open areas of grassland for foraging adjacent to riparian forests or corridors, juniper-sage flats, or oak savannah for nesting. The main cause of the decline of this species in California is the significant loss and degradation of open areas, such as agricultural lands and grasslands, due to urban development.

There are no records of Swainson's hawks within the project area in the CNDDDB, but there are three records of nesting hawks within five miles of the project area. All of these records are located in irrigated farmland; there is no irrigated agricultural habitat suitable for nesting within the project area. Disturbance of an additional 78.6 acres of land may result in the loss of foraging habitat for this species.

There is potential foraging habitat within the expansion area as the sagebrush onsite is inhabited by prey species. The proposed expansion would result in the loss of portions of sagebrush habitat during the life of the mine until reclamation is completed in 2050. Mine areas will be reclaimed when removal is complete, reducing potential impacts to foraging raptors. In addition, the juvenile plants in reclaimed areas will likely attract more prey species (i.e. rabbit, hare, and squirrel). Based on the large regional expanse of suitable habitats, the loss of foraging habitat is not likely to be significant assuming reclamation is conducted in a timely manner to reduce foraging habitat impacts. Mitigation (MM-6) has been recommended to require reclamation within two years of final mineral removal and to be completed in a minimum acreage of 5 acres. Mitigation (MM-7) has also been included to minimize the area of ground disturbance.

Greater Sage-Grouse

Centrocercus urophasianus

State Species of Special Concern

The greater sage-grouse is listed by the State of California as a Species of Special Concern. The species was considered for listing under the ESA as Endangered or Threatened in 2015, but the USFWS found that listing was not warranted. This species is a permanent resident in northeastern California and ranges from the Oregon border along the east side of the Cascade Range and Sierra Nevada to northern Inyo County. Lassen and Mono Counties have the most stable populations in California. Greater sage-grouse inhabit open areas with a combination of sagebrush, perennial grassland and wet meadow; large, continuous tracts of sagebrush habitat are

required for courtship displays. Declining population numbers are due mostly to habitat loss, impacts of non-native invasive species, and overgrazing.

There are no records of greater sage-grouse within five miles of the project area in the CNDDDB; the closest record is 58 miles to the north. Potential breeding and nesting habitat exists in the open sagebrush areas of the project area. Although there are no nearby records, there is suitable habitat within the project area and surrounding areas. Disturbance of an additional 78.6 acres of land may result in the loss of habitat for this species. No leks or signs of sage grouse activity were observed in the proposed project area.

No adverse project impacts to greater sage-grouse are anticipated; however, there is potential foraging habitat within the expansion area as the sagebrush onsite is inhabited by prey species. The proposed expansion would result in the loss of portions of sagebrush habitat during the life of the mine until reclamation is completed in 2050. Mine areas will be reclaimed when removal is complete, reducing potential impacts to foraging raptors. In addition, the juvenile plants in reclaimed areas will likely attract more prey species (i.e. rabbit, hare, and squirrel). Based on the large regional expanse of suitable habitats, the loss of foraging habitat is not likely to be significant assuming reclamation is conducted in a timely manner to reduce foraging habitat impacts. Mitigation (MM-6) has been recommended to require reclamation within two years of final mineral removal and to be completed in a minimum acreage of 5 acres. Mitigation (MM-7) has also been included to minimize the area of ground disturbance.

Burrowing Owl

Athene cunicularia

State Species of Special Concern

The burrowing owl (BUOW) is listed by the State of California as a Species of Special Concern. This species is a permanent resident in the central valley and southern California. These birds inhabit northeastern California during the summer breeding season. Burrowing owl habitat typically consists of open grasslands and shrublands with perches for hunting and burrows for nesting. Nesting usually occurs in vacant mammal burrows but, where burrows are scarce, these owls may use human structures or dig their own burrows in soft soil. This species exhibits strong site fidelity. These owls forage at all hours of the day and night. Populations are still stable but have been declining, mostly due to habitat loss from agriculture and development and poisoning of ground squirrels.

There are no records of BUOW within five miles of the project area in the CNDDDB. During previous consultation with CDFW regarding the Ward Lake Quarry, CDFW recommended BUOW surveys because potentially suitable habitat for the species exists within the current mine site. No BUOW burrows or individual owls were detected during the resulting survey completed in 2019.

Similarly, potential habitat for BUOW was considered to be potentially present during review of the proposed expansion area. A protocol-level survey was completed in 2020; the survey followed the *Burrowing Owl Survey Protocol and Mitigation Guidelines*, published by the California Burrowing Owl Consortium. The first step of the protocol consists of searching for burrow structures that may be inhabited by owls. The survey found that no burrows that meet the characteristics for BUOW habitat are present onsite. Due to ongoing potential for recruitment,

mitigation measures designed to avoid nesting birds prior to new area disturbance will be implemented to minimize any disturbance if burrowing owls are ever observed onsite.

Long-Eared Owl

Asio otus

State Species of Special Concern

The long-eared owl is listed by the State of California as a Species of Special Concern. This species is a permanent resident throughout California, except the central valley and southern California. Long-eared owls roost and nest in dense vegetation, typically live oak thickets and other dense tree stands, especially in riparian areas. These owls hunt in open grasslands and shrublands. This species does not build their own nests; nesting usually occurs in old bird and squirrel nests. These are nocturnal owls that forage during nighttime hours. Resident populations have been slowly declining since the 1940s due mainly to habitat loss and fragmentation.

There are no records of long-eared owls within five miles of the project area in the CNDDB. Although there are no nearby records, there is suitable foraging habitat within the project area and surrounding areas. The project area will likely disturb foraging habitat for this species. There are currently no known nesting sites located in or near the project area, and there is no suitable dense nesting vegetation for the long-eared owl in the area.

No project impacts to long-eared owls are anticipated; however, there is potential foraging habitat within the expansion area as the sagebrush onsite is inhabited by prey species. The proposed expansion would result in the loss of portions of sagebrush habitat during the life of the mine until reclamation is completed in 2050. Mine areas will be reclaimed when removal is complete, reducing potential impacts to foraging raptors. In addition, the juvenile plants in reclaimed areas will likely attract more prey species (i.e. rabbit, hare, and squirrel). Based on the large regional expanse of suitable habitats, the loss of foraging habitat is not likely to be significant assuming reclamation is conducted in a timely manner to reduce foraging habitat impacts. Mitigation (MM-6) has been recommended to require reclamation within two years of final mineral removal and to be completed in a minimum acreage of 5 acres. Mitigation (MM-7) has also been included to minimize the area of ground disturbance.

Short-Eared Owl

Asio flammeus

State Species of Special Concern

The short-eared owl is listed by the State of California as a Species of Special Concern. This species is a permanent resident in northeastern California and a widespread winter migrant in the central valley and western Sierra Nevada. Short-eared owls roost on the ground in dense, low vegetation, typically tall grasses, brush, or wetlands. Nests are made on dry ground concealed in vegetation. These owls hunt in open areas including annual and perennial grasslands, shrublands, marshes, and agricultural fields; grasslands are most preferred. Short-eared owls are active mostly at twilight and nighttime hours, but are often active during the day in the breeding season. There is not a lot of available data on short-eared owl populations, but populations appear to be declining over most of the range because of habitat loss and fragmentation, and overgrazing.

There are no records of short-eared owls within five miles of the project area in the CNDDDB. Although there are no nearby records, there is some suitable habitat within the open shrubland of the project area and surrounding areas. There are currently no known nesting sites located in or near the project area, and there is not enough suitable grassland within the area for nesting.

No project impacts to short-eared owls are anticipated; however, there is potential foraging habitat within the expansion area as the sagebrush onsite is inhabited by prey species. The proposed expansion would result in the loss of portions of sagebrush habitat during the life of the mine until reclamation is completed in 2050. Mine areas will be reclaimed when removal is complete, reducing potential impacts to foraging raptors. In addition, the juvenile plants in reclaimed areas will likely attract more prey species (i.e. rabbit, hare, and squirrel). Based on the large regional expanse of suitable habitats, the loss of foraging habitat is not likely to be significant assuming reclamation is conducted in a timely manner to reduce foraging habitat impacts. Mitigation (MM-6) has been recommended to require reclamation within two years of final mineral removal and to be completed in a minimum acreage of 5 acres. Mitigation (MM-7) has also been included to minimize the area of ground disturbance.

Loggerhead Shrike

Lanius ludovicianus

State Species of Special Concern

The loggerhead shrike is listed by the State of California as a Species of Special Concern. This species is a permanent resident and winter migrant in lowland and foothill areas throughout California. This species typically inhabits open areas with scattered shrubs, trees and perches, including agricultural fields, pastures, orchards, scrublands, and riparian areas. These birds roost and nest in shrubs or small trees. Loggerhead shrikes are diurnally active. Populations in the Pacific states have remained fairly stable, but numbers have declined elsewhere in their range. Declines are likely due to increased use of pesticides.

There are no records of loggerhead shrikes within five miles of the project area in the CNDDDB. Although there are no nearby records, there is suitable habitat within the open shrubland of the project area and surrounding areas. There are currently no known nest occurrences located in or near the project area, and nesting birds will likely avoid the area to utilize adjacent undisturbed sagebrush habitat.

No project impacts to loggerhead shrikes are anticipated; however, there is potential foraging habitat within the expansion area as the sagebrush onsite is inhabited by prey species. The proposed expansion would result in the loss of portions of sagebrush habitat during the life of the mine until reclamation is completed in 2050. Mine areas will be reclaimed when removal is complete, reducing potential impacts to foraging raptors. In addition, the juvenile plants in reclaimed areas will likely attract more prey species (i.e. rabbit, hare, and squirrel). Based on the large regional expanse of suitable habitats, the loss of foraging habitat is not likely to be significant assuming reclamation is conducted in a timely manner to reduce foraging habitat impacts. Mitigation (MM-6) has been recommended to require reclamation within two years of final mineral removal and to be completed in a minimum acreage of 5 acres. Mitigation (MM-7) has also been included to minimize the area of ground disturbance.

Mammals

Gray Wolf

Canis lupus

Federally Endangered; California Endangered

The gray wolf was listed as endangered on March 9, 1978 (USDI FWS 1978). Gray wolves are habitat generalists and can potentially occur in a wide range of habitats including temperate forest, mountains, tundra, taiga, and grasslands, so long as there is suitable prey. Prey species primarily include ungulates, such as moose, caribou, deer, and elk, but they will also take smaller prey such as beaver and small mammals and will readily scavenge.

This species is highly territorial and defends territories in packs. Territory size is a function of prey density and can range from 25 to 1,500 square miles. Both male and female wolves disperse at equal rate and equal distances, sometimes more than 600 miles. Gray wolves once ranged throughout the northern hemisphere, but widespread trapping and extermination efforts severely reduced their distribution and caused dramatic population declines. Current threats to the gray wolf include continued conflict with humans, primarily resulting from livestock depredation, and habitat loss, degradation and fragmentation due to land development.

The last recorded observation of gray wolf in the project vicinity was in 1924 near Litchfield, California. However, it has a large home range and range expansion is documented and could result in wolves reinhabiting the area at some point. CDFW has collected evidence (GPS tracking collar and remote trail camera images in 2016) that suggests that a small number of wolves have traveled into Lassen County (CDFW 2017).

Due to the small project footprint relative to the large home range size of the gray wolf, the proposed project will not alter an amount of habitat significant enough to have any impact on the species. Further, gray wolves are highly mobile and capable of avoiding project-related disturbance. Therefore, the proposed expansion will have no effect on the gray wolf.

American Badger

Taxidea taxus

State Species of Special Concern

The American badger is listed by the State of California as a Species of Special Concern. These animals are permanent residents throughout most of California, except for the far northern North Coast area. Suitable habitat for this species is characterized by herbaceous, shrub, and open stages of most habitats with dry, friable soils. Dry, friable soils, often sandy, are required because badgers eat mostly fossorial (i.e., occurring underground) rodents, and they also take cover and reproduce in burrows. Badgers are active both day and night, and they may undergo periods of torpor in the winter. Populations are considered fairly stable but have declined due to historical trapping, conversion of habitat to intensive agriculture, and rodent poisoning.

There are no records of American badgers within five miles of the project area in the CNDDDB; however, there is suitable habitat within the open shrubland of the project area and surrounding areas. No American badgers, signs of badgers, or burrows were observed during the site surveys. Due to sensitivity to noise, badgers in surrounding areas likely avoid the project area due to a close proximity to ongoing operations in the current mining area. Project impacts to American badgers are anticipated to be less than significant.

Pygmy Rabbit

Brachylagus idahoensis

State Species of Special Concern

The pygmy rabbit is listed by the State of California as a Species of Special Concern. In California, this species is uncommon in the Great Basin areas of Modoc, Lassen, and Mono Counties; however, these rabbits can be found in sagebrush, bitterbrush, and pinyon-juniper habitats, and they prefer big sagebrush because it makes up the majority of their winter diet. Pygmy rabbits dig burrow for food storage and reproduction. This species is crepuscular and sometimes active during the day. Populations exhibit patchy distributions and are extremely varied across the species range. Because the species is dependent on big sagebrush it is vulnerable to habitat loss and fragmentation from habitat conversion and fire.

There are no CNDDDB records of these rabbits within five miles of the project area; however, there is suitable sagebrush habitat for this species, so they could potentially occur. No pygmy rabbits were observed during site surveys. Prior to new ground disturbance and annually thereafter, additional mammal surveys should be implemented to determine the presence of pygmy rabbits onsite. Project operations would result in temporary loss of additional habitat for pygmy rabbits, although this would be restored upon site reclamation. See additional mitigation included in Section 5.4 for reclamation schedule.

White-Tailed Jackrabbit

Lepus townsendii townsendii

State Species of Special Concern

The white-tailed jackrabbit is listed by the State of California as a Species of Special Concern. This species is an uncommon, permanent resident of northeastern California and the upper eastern slopes of the Sierra Nevada. These rabbits prefer open areas with scattered shrubs, including sagebrush, subalpine conifer, juniper, alpine dwarf-shrub, and perennial grassland, but are also found in wet meadow habitat and early successional stages of conifer forests. These animals move seasonally from higher to lower elevations in winter. Sagebrush is an important part of the winter diet. This species is primarily nocturnal and sometimes crepuscular. There is little available data on the status of populations in California, but evidence indicates sharp declines. It is thought that white-tailed jackrabbits may now be absent from large tracts of its previous range. Overgrazing is thought to be the main cause of habitat fragmentation.

There are no CNDDDB records of these rabbits within five miles of the project area; however, there is suitable sagebrush habitat for this species, so they could potentially occur. The disturbance of an additional 78.6 acres could result in the loss of habitat for this species. No white-tailed jackrabbits were observed during site surveys. Prior to new ground disturbance and annually thereafter, additional mammal surveys should be implemented to determine the presence of white-tailed jackrabbits onsite. Project operations would result in temporary loss of additional habitat for white-tailed jackrabbits; however, this would be restored upon site reclamation. See additional mitigation included in Section 5.4 for reclamation schedule.

Pallid Bat

Antrozous pallidus

State Species of Special Concern

The pallid bat is listed by the State of California as a Species of Special Concern. These are crevice-roosting bats of arid and semi-arid regions across much of the American west. They are

a locally common species of low elevations. This species is not known to migrate long distances and they likely hibernate close to summer roosts. They are found in a variety of habitats such as grasslands, shrublands, and woodlands, but are most common in open, dry regions with rocky outcroppings or sparsely vegetated grasslands. Water must be available close by to all sites. They typically will use three different types of roosts: a day roost which can be a warm, horizontal opening such as in attics, shutters or crevices; the night roost is in the open, but with foliage nearby; and the hibernation roost mentioned above, which is often in buildings, caves, or cracks in rocks (Brylski et al. 1998). These bats are very sensitive to roosting site disturbance.

There are no records of pallid bats within five miles of the project area in the CNDDB; however, there is suitable foraging habitat within the open shrubland of the project area and surrounding areas and rock outcroppings in the proposed project area could provide roosting habitat. No bats or sign of bats were observed in rock outcroppings during the site survey. No other potential habitat was identified onsite. No project impacts to pallid bats are anticipated.

4.1.2 Other Mammals

Potential Effects to Deer and Pronghorn

The sagebrush habitat surrounding the project area provides habitat for mule deer (*Odocoileus hemionus*) and American pronghorn (*Antilocapra americana*). The project area falls within Deer Hunt Zone X5a, which is a zone within the greater DAU 2 – encompassing northeastern California; and the project is within Pronghorn Hunt Zone 4 – Lassen. The project area is on the edge of CDFW-designated critical winter-range habitat for mule deer (Figure 8) and winter-range habitat for pronghorn antelope (Figure 9). The mule deer population within Hunt Zone X5a has increased, with an estimated 544 animals in 2013 and 942 in 2017. Previous mitigation measures were discussed in Section 5.4.

Site visit found potential noise impacts due to proximity to a canyon which leads to kidding grounds. The project boundary was designed to keep a natural berm at that end of the quarry in order to minimize noise impacts to the pronghorn kidding grounds. Noise should be contained within Ball's Canyon, approximately 4 miles south of the kidding grounds (see Figure 9). The project could result in direct impacts mule deer and American pronghorn from direct loss of habitat and displacement due to mining operations and the associated, noise, vibration, and light occurring over a larger area. Mitigation measures relating to reclamation schedule and additional area disturbance should reduce impacts to less than significant.

4.1.3 Raptors and Migratory Birds

Raptor species (birds of prey) and migratory birds may nest in trees and other vegetation located within or in the immediate vicinity of the study area. All raptors and migratory birds, including common species and their nests, are protected from “take” under the California Fish and Game Code, Section 3503 and 3503.5, and the Federal Migratory Bird Treaty Act. Large trees onsite and in the surrounding forest provide potential nesting habitat for raptors and migratory birds.

Implementation of the conservation measures described in Section 5.4 would reduce potential impacts on nesting migratory birds and raptors. Mining activities during the nesting season (February 1 through August 31), such as tree removal and blasting activities that disturb a nesting bird or destroy active nests, could result in impacts to nesting birds. Should a site survey detect nesting raptors in close proximity to the project area, appropriate spatial and temporal

buffers will be implemented. Based on mitigation measures for reclamation schedule and residual habitat protection, the project is not anticipated to have a direct effect on raptors or migratory birds or their habitat.

4.1.4 Special-Status Plants

Special-status plant species include plants that are (1) designated as rare by CDFW or USFWS or are listed as threatened or endangered under the CESA or ESA; (2) proposed for designation as rare or listing as threatened or endangered; (3) designated as state or federal candidate species for listing as threatened or endangered; and/or (4) ranked as California Rare Plant Rank (RPR) 1A, 1B, 2A, 2B, or 3. A list of regionally occurring special-status plant species was compiled based on a review of pertinent literature, the results of the field surveys, and a review of the USFWS species list and CNDDDB and a nine-quad search (Tunnison Mountain, Petes Valley, Karlo, Johnstonville, Litchfield, Shaffer Mountain, Janesville, Standish, and Wendel Hot Springs) of CNPS database records.

The results of a habitat assessment is provided in Table 4. Six plants ranked 1B or 2B by the CNPS California Rare Plant Ranking (CRPR) are recorded in the CNDDDB within five miles of the proposed expansion area. Plant species listed on the CNPS CRPR are considered during this assessment as they meet the definition of Threatened or Endangered under sections 2062 and 2067 of the California Fish and Game code (CRPR listed as 1, 2, or 3 meet definition of Threatened/Endangered under CESA). The six CRPR plants species and a summary of their potential to occur within the proposed project area are included in Table 4. Consultations found no records of Federally or State-listed threatened or endangered plant species within five miles of the project area.

Table 4 POTENTIALLY OCCURRING SPECIAL-STATUS PLANT SPECIES				
Species	CRPR Status	Flowering Period	Habitat	Potentially Occurring
Winged dock (<i>Rumex venosus</i>)	2B.3	May-June	Great Basin scrub (sandy); 1200-1800 m	No
Western seablite (<i>Suaeda occidentalis</i>)	2B.3	July-September	Great Basin scrub (alkaline, mesic); usually in wetlands; 1200-1500 m	No
Playa phacelia (<i>Phacelia inundata</i>)	1B.3	May-August	Usually in wetlands; sagebrush scrub, lower montane coniferous forest; 1350-2000 m	No
Ornate dalea (<i>Dalea ornata</i>)	2B.1	June	Pinion-Juniper woodland; 1365-1700 m	Yes
Spiny milkwort (<i>Polygala subspinososa</i>)	2B.2	May-August	Sagebrush scrub, Pinion-Juniper woodland, gravelly, rocky; 1330-1705 m	Yes
Susanville beardtongue (<i>Penstemon sudans</i>)	4.3	June-July	Great Basin scrub, lower montane coniferous forest (openings), Pinyon-Juniper woodland; volcanic, rocky, sometimes roadsides; 1200-2425 m	Yes
Key: 1B.2: “moderately” rare, threatened, or endangered in California and elsewhere; 1B.3: “not very” rare, threatened, or endangered in California and elsewhere; 2B.1: “seriously” rare, threatened, or endangered in California but more common elsewhere; 2B.2: “moderately” rare, threatened, or endangered in California but more common elsewhere; 2B.3: “not very” rare, threatened, or endangered in California but more common elsewhere.				

Susanville Beardtongue

Penstemon sudans

CRPR 4.3

Susanville beardtongue is a perennial herb/subshrub that is native to California and is also found in Nevada. It is adapted to open rocky, igneous soils in sagebrush scrub and montane forest habitats between 1200 and 2200 meters. The species is ranked by the CNPS as 4.3, plants of limited distribution in California. The nearest documented observation of Susanville beardtongue was approximately seven miles from the Ward Lake Quarry, on the northeast side of Shaffer Mountain. This species has the potential to occur within the proposed additional project area due to the rocky slopes within the appropriate elevation range.

A site survey was completed during preliminary biological surveys within an area located to the east of the existing quarry in August 2019. Susanville beardtongue was observed during this survey. The observed populations are well outside of the proposed expansion area and would not be affected by the proposed expansion through direct or indirect impacts.

A survey was completed within the proposed expansion area in the spring of 2020. The survey focused on the plant in its vegetative state since the survey was not conducted during the flowering period (June-July) for this species. The off-season survey was possible due to its perennial growth habit. Other than the off-season timing, the botanical survey for this species conducted in accordance with CDFW protocols. Additional surveying will be conducted according to CDFW protocol prior to new areas of disturbance in appropriate habitat within the expansion area to determine if this species is present. If detected, measures implemented in Section 5.4 will be implemented.

Spiny Milkwort

Polygala subspinososa

CRPR 2B.2

Spiny milkwort is a perennial herb native to California, though original observations were in the Southwestern United States. It grows in gravelly or rocky soils found in desert scrub and volcanic mesas from 1350 to 2285 meters in elevation. This species is ranked by the CNPS as 2B.2, classified as moderately rare, threatened or endangered in California but more common elsewhere. The nearest documented observation of this plant was in a gravelly wash located six miles east of the Ward Lake Quarry. Spiny milkwort has the potential to occur within the project area due to the gravelly and rocky soils that exist in the proposed expansion area.

The 2019 site survey determined the presence of spiny milkwort (*Polygala subspinososa*) due east of the current operations. The plant was observed growing on a southwest-facing slope along the southern border of the site near the BLM property. The observed habitat was on steep, rocky slopes growing among other vegetation including perennial grasses and annual forbs. The species was not detected in 2019 or 2020 surveys. A botanical survey for this species in accordance with CDFW protocols will be conducted prior to vegetation removal activities within the expansion area to determine the presence of this species. If detected, measures implemented in Section 5.4 will be implemented.

Ornate Dalea

Dalea ornata

CRPR 2B.1

Ornate dalea is a perennial forb that is native to California that commonly grows on open, rocky hillsides at elevations between 1365 and 1700 meters. This species is known to occur on the Modoc Plateau. The 2018 survey conducted for ornate dalea found no observations of the species. The nearest sighting was approximately two miles from the proposed expansion area. Previous observations of ornate dalea have occurred within one mile of hydrological drainages. Ornate dalea was not observed within the proposed project area or surrounding areas during the site survey. A botanical survey for this species conducted in accordance with CDFW protocols will be conducted prior to vegetation removal activities within the expansion area to determine if this species is present. If detected, measures implemented in Section 5.4 will be implemented.

5.0 POTENTIAL EFFECTS

The proposed Reclamation Plan Amendment would expand the project area to include an additional 78.6 acres of land to be used as a rock quarry, extend the life of the quarry to 2050, and increase activities within the existing quarry area. Potential effects to biological resources will be addressed through avoidance and mitigation measures to minimize adverse impacts to special-status species and their habitat.

5.1 Direct Effects

Direct effects of the proposed project are those immediate impacts resulting from the proposed expansion. Potential direct effects of the proposed project to special-status wildlife species are the loss of habitat due to ground disturbance, vegetation removal, blasting, and operation of heavy equipment.

The proposed quarry will involve disturbance of native vegetation and reconfiguration of slopes within the proposed project area. Such a change in topography will cause a loss of habitat in portions of the area for the 30-year duration of the project. A portion of the proposed expansion area has historically been disturbed; the grading from an old access road, possibly from public land use, is observable through aerial imagery and onsite. Otherwise, vegetation onsite is intact and currently provides foraging and migration habitat for wildlife species.

5.1.1 Direct Effects to Birds

The proposed expansion will result in the loss of 78.6 acres of available sagebrush habitat over the course of the project. Bird species which utilize sagebrush shrub habitat for foraging or nesting will likely avoid the site and seek adjacent areas with undisturbed land. However, there is potential for direct mortality or injury to occur if nests are present in the expansion area during initial vegetation removal and ground-disturbing activities. Measures to avoid impacts to nesting birds are included in Section 5.4.

Areas of the quarry will be reclaimed upon mineral removal which will restore habitats. As described in the Reclamation Plan, reclamation is to be completed at the time of mine closure unless possible to conduct concurrently with mining operations. Reclamation of the mine area will allow for recruitment of bird species once foraging opportunities are restored. The quarry floor and benches in the expansion area will be seeded with a mix of sagebrush (*Artemisia tridentata* ssp.), rabbitbrush (*Ericameria nauseosa*), bitterbrush (*Purshia tridentata*) and blue bunch wheat grass (*Elymus spicatus*). The existing mining area will be seeded with a mix of sagebrush, rabbitbrush, bitterbrush, bluebunch wheatgrass, bottlebrush squirreltail (*Elymus elymoides*), and green ephedra (*Ephedra viridis*). Additional mitigation requiring an increased schedule of reclamation and protection of undisturbed areas during the mine period will result in no significant effects to birds as a result of the proposed site expansion. See Section 5.4.

5.1.2 Direct Effects to Mammals

The proposed expansion will result in the loss of 78.6 acres of available sagebrush habitat during the course of the project. This could mean a loss of foraging and breeding habitats. Mammalian

species which utilize sagebrush shrub habitat will likely avoid the site and seek adjacent undisturbed open space which consists of large expanses of sage brush habitat. Areas of the current quarry will be reclaimed, which will restore the cover and food source for mammals. In addition, habitat enhancement and non-native species control will be undertaken in non-disturbed areas. No significant effects to special-status mammals are expected as a result of the project site expansion.

The sagebrush habitat surrounding the project area provides habitat for mule deer (*Odocoileus hemionus*) and American pronghorn (*Antilocapra americana*). The project includes spatial expansion of the existing mining boundary that would physically disturb and reduce an additional 78.6 acres of important winter habitat and important vegetation for mule deer and pronghorn antelope. As discussed in the Deer Impact Analysis prepared for the 1997 EIR, loss of vegetation would be non-significant with an appropriate reclamation plan including re-planting with bitterbrush, sagebrush, and native grasses, all from local sources, and protection from grazing and browsing by both wildlife and livestock until the plants are well established, as well as monitoring to ensure compliance.

Following mining activities, the site will be reclaimed and the habitat will be restored. The seed mix proposed for reclamation in the expansion area is similar to the seed mix approved by CDFW for the existing quarry and includes essential forage species. Reclamation of the mining area following mining activities will restore the sagebrush habitat and provide forage for mule deer and American pronghorn. Additional mitigation requiring an increased schedule of reclamation and protection of undisturbed areas during the mine period will result in no significant effects to mule deer and American pronghorn as a result of the proposed site expansion. Impacts related to temporary habitat loss will be reduced by mitigation measures to mandate reclamation in five-acre sections (see Section 5.4).

5.1.3 Direct Effects to Plants

A loss of vegetation within the proposed expansion area will occur during the course of the project. The project site contains suitable habitat for three special-status plant species that are known to occur in the project vicinity. These include ornate dalea (*Dalea ornata*), spiny milkwort (*Polygala subspinoso*), and Susanville beardtongue (*Penstemon sudans*). Ground disturbance within the expansion area will result in elimination of habitat for these species prior to reclamation. Surveys of the project site were conducted outside of the bloom period for some species. Protocol-level botanical surveys will be completed within proposed disturbance areas prior to vegetation removal. If no special-status plants are observed during the recommended botanical surveys, no additional measures are recommended. If special-status plant species are identified within the expansion area, mitigation measures included in Section 5.4 will be implemented to avoid or reduce such impacts to the plant populations.

5.2 Indirect Effects

Indirect effects are those that are caused by or will result from the proposed action and are expected to occur later in time. Effects could be both short- and/or long-term in nature. Material extraction and possible use of a portable crusher will result in increased noise in the expansion area as well as the surrounding areas. The increase in processing at the site will require

increased use of the primary crusher (estimated 33 percent annual increase in use). The project will also extend the life of the mine to 2050 which will increase the duration of impacts from the existing mining operation. The project will result in an increase in human presence within the area for a 30-year period, which could potentially result in increased disturbance or stress to special-status wildlife. Increased human presence, noise and vibration from equipment operation, and light within the project area could result in displacement of wildlife from the project site and surrounding areas for the duration of the project.

Measures included in Section 5.4 include continued seasonal operating restriction and light and noise reductions (as included in previous use permits for operations at the project site), additional surveys, increased schedule of reclamation, and protection of unmined areas. These operational limits and restrictions will be applied within the existing quarry as well as mining activities within the 78.6-acre expansion area and will reduce the indirect impacts of the project.

5.2.1 Indirect Effects to Birds

Noise and vibrations generated by heavy equipment operation may cause a disturbance to nesting and foraging birds. However, noise and vibrations associated with mining work already occur in the active project area and any birds in the area are likely acclimated to these noise levels. Foraging birds will avoid the site by changing flight patterns while project work occurs. The proposed quarry expansion would likely result in the loss of potential foraging habitat for passerines and raptors. This would be a temporary but significant impact. A total of 78 acres will be impacted; however, with scheduled reclamation, the actual acres impacted at any time should be less than ten: five acres reclaimed and returned to mature sage community and five acres undergoing initial reclamation. Mine areas will be reclaimed when removal is complete in five-acre increments (see Mitigation Measure MM-6), reducing potential impacts to foraging raptors. In addition, the juvenile plants in reclaimed areas will likely attract more prey species (i.e. rabbit, hare, and squirrel). Mitigation measure (MM-7) will limit the area of disturbed foraging habitat.

5.2.2 Indirect Effects to Mammals

Noise and vibrations generated by heavy equipment operation may cause a disturbance to mammals. Expansion of the mining area by an additional 78.6 acres will increase the area over which light and noise impacts will occur. However, noise and vibrations associated with mining work already occur in the active project area and any many mammals in the area are likely acclimated to these noise levels.

The project would cause additional displacement of mule deer and American pronghorn from noise and human activity. As discussed in the 1997 Deer Impact Analysis, human activity in the project area would displace animals escaping mid-winter snow as well as taking advantage of late-winter and early spring plant phenology or the spring green-up due to noise and activity at the site. The project will result in these impacts occurring over a larger area than the current mining operation and for a longer duration (until 2050). Mule deer commonly use the areas around the mine site.

The project will continue to comply with the conditions of approval for Use Permit Amendment #2018-003 limiting mining activities from January 1 to March 31 each year, limiting activities occurring during nighttime hours, as well as requiring lighting to be downward facing and fully-

shielded. These operating conditions will decrease the lighting and noise impacts within the expansion area. However, as discussed in previous CEQA review for the Project, a seasonal closure from at least December through March was determined to be necessary to reduce the impacts due to displacement from noise and human activity to a less than significant level. The Project will result in additional disturbance to pronghorn and mule deer. Human disturbance during a time of particular nutritional stress may effectively remove a portion of their winter range (Kucera, 1999). See mitigation in Section 5.4. Because several hundred deer would potentially be affected and impacts will last for an additional 30 years (until 2050), this is a significant and unavoidable impact.

5.2.3 Indirect Effects to Sensitive Natural Communities

The California Sensitive Natural Communities List published on August 18, 2021, was reviewed due to the fact that big sage subspecies (*Artemisia tridentata* ssp.) are components of natural communities that are listed as S1, S2, and S3, and therefore warrant consideration under CEQA. None of the California Sensitive Natural Communities listed are present within the proposed expansion area. Mountain big sage (*Artemisia tridentata* ssp. *vaseyana*) and Idaho fescue (*Festuca idahoensis*) are present in the surrounding area but these plant species would not be disturbed by proposed activities. Additionally, the current mine area will be planted with these two species during reclamation, which will increase the presence of this community in the long term.

5.3 Cumulative Effects

Cumulative effects include the total impact on a resource due to past, present, and future activities. The Ward Lake Quarry has been in operation since 1980 for rock, sand, and gravel removal and processing operations. The project area is zoned as an upland conservation/resource management district by Lassen County, so this consistent disturbance is anticipated. These previous uses have changed the topography and vegetation of the site, thus changing available habitat within the project area on an annual basis. The proposed expansion would cause additional ground disturbance but would enhance the brush communities, including sagebrush, bitterbrush, and rabbitbrush, on the site following conclusion of the project and site reclamation. Many of the surrounding parcels are zoned as open space or upland conservation district, so reclamation of the site will create contiguous open space and wildlife habitat.

5.4 Mitigation Measures

The following measures are recommended in order to avoid and minimize potential impacts of the project.

Monarch Butterfly

MM-1 Throughout the life of the mine, if milkweed (*Asclepias* spp.) is observed onsite during breeding season/pupae development season (spring-summer), the plant should be inspected for caterpillars. If developing monarch caterpillars are present, the plant should be avoided until butterflies have emerged and the plant is no longer in use.

Birds

- MM-2 Bird nest avoidance. Vegetation will be removed outside of the bird nesting season to (February through August) to the extent possible to avoid impacts to nesting birds.
- MM-3 Nesting bird surveys. If activities that may cause adverse impacts to potential breeding habitat for any shrub or ground nesting bird species occurs during the nesting season (March 1 through August 21) a survey for active bird nests will be completed. If any active nests are observed, CDFW will be consulted to determine the appropriate buffer. Buffers can range from fifty to three hundred or more feet, depending on the sensitivity of the species. The nest should be monitored until young birds have fledged and the nest is considered to be no longer active.
- MM-4 Burrowing owl surveys (*A. cunicularia*) will be completed prior to additional ground disturbance and annually during nesting season.
- MM-5 If burrowing owl is ever observed within the project area, CDFW should be contacted to determine avoidance measures and determine if nest burrows occur onsite.
- MM-6 To reduce foraging habitat loss, a condition will be added to the use permit to require reclamation of each 5 acres of mine area. Reclamation as referenced in the Mine Reclamation Plan will be required to be initiated within two years on each 5-acre area in order to minimize the total area disturbed at any given time. This includes seeding the quarry floor and benches with a mix of sagebrush (*Artemisia tridentate*) at two pounds of PLS per acre, rabbitbrush (*Ericameria nauseosa*) at four pounds of PLS per acre, bitterbrush (*Purshia tridentate*) at one pound of pure seed per acre, and blue bunch wheat grass (*Elymus spicatus*) at three pounds per acre.
- MM-7 To ensure no additional foraging habitat loss, all remaining areas of the mine parcels will remain undisturbed for the duration of mining. This includes remaining portions of APN 109-100-59 and APN 109-100-60.

Mammals

- MM-8 Limits on operation. The operator shall continue limits on operations from January 1 to March 31. Impacts can be lessened through continuing seasonal operating restrictions included in the Condition of Approval for Use Permit No. 96056, which states “*Except in a state of emergency, as declared by the local Emergency Services Director and/or the Board of Supervisors and/or the City of Susanville, no grading, excavating, or blasting on the site shall be allowed between January 1 and March 31 Annually*”;
- MM-9 Operating conditions of Use Permit #2018-003. The operator shall continue the Conditions of Approval for Use Permit Amendment #2018-003. Indirect impacts of the project can be lessened with the seasonal operating restrictions and light and noise reductions included in the Conditions of Approval for Use Permit Amendment No. 2018-003. The Conditions of approval are as follow:

- *Operator shall conduct no nighttime operations (7:00 p.m. to 6:00 a.m.) during the period of January 1 to March 31. Applying the existing operational restrict to the proposed nighttime operations would eliminate additional disturbance/displacement of pronghorn antelope and mule deer utilizing the winter habitat during the winter months.*
- *Year-round nighttime restrictions. No grading, blasting, or excavating shall be allowed onsite between the hours of 6:00 p.m. and 7:00 a.m.*
- *Lighting fixture design. To minimize the effects of lighting of artificial light on wildlife, lighting fixtures associated with nighttime project work shall be downward facing and fully shielded. Lighting equipment should be designed and installed to minimize light pollution.*
- *Noise reduction barriers. Adverse effects from noise may be reduced through installation of noise berms constructed around the project area where heavy machinery is in use. Barriers can eliminate or minimize the impacts of vibrations that may result from nighttime operations.*
- *No “jake brake” usage. This option can significantly reduce the noise impacts from the increased traffic volume. “No use of jake brake” signs shall be posted on the access road and at the Center Road (A27) and Ward Lake Road intersection.*
- *Wildlife crossing signage on roadways. This option would educate drivers about the potential for wildlife encounters on roads during the nighttime hours. Signage will be permanent. This measure can prevent direct mortalities to nocturnal wildlife. Signs will be added along Center Road and Ward Lake Road with County approval.*
- *Reduce traffic speed on roadways. This mitigation would reduce the speed limit in order to minimize traffic impacts to wildlife. “Reduce speed to 25 MPH” signs would reduce the speed limit on Ward Lake Road during nighttime hours, granting a longer reaction time should any wildlife be encountered on a roadway.*
- *Driver education. Hat Creek Construction will conduct education events to increase driver awareness to avoid wildlife vehicle impacts.*

MM-10 Pygmy rabbit surveys should be completed prior to additional ground disturbance and annually during breeding season (February to May).

MM-11 White-tailed jackrabbit transect surveys will be completed prior to additional ground disturbance.

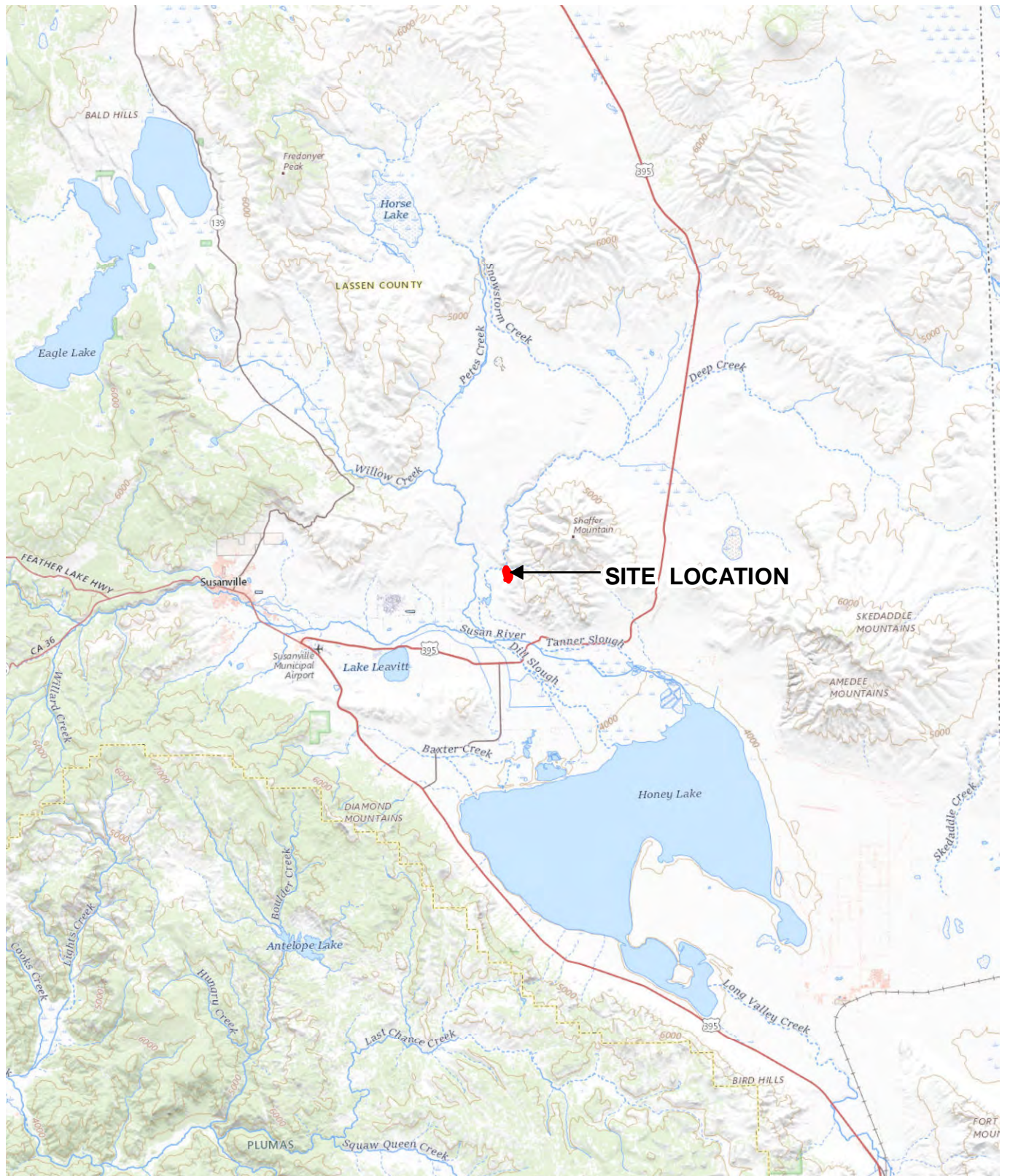
Special-Status Plant Species and Sensitive Plant Communities

MM-12 Prior to vegetation removal activities within previously undisturbed areas, appropriately timed surveys for special-status plant species with potential to occur on the project site (*Dalea ornate*, *Polygala subspinoso*, *Penstemon sudans*) will be conducted before soil disturbance. Surveys will be conducted in accordance with CDFW’s “Protocols for Surveying and Evaluating Impacts to Special Status Native, Plant Populations, and Sensitive Natural Communities.” Rare plants detected during these surveys shall be flagged and avoided. If rare plants cannot be avoided, the applicant shall provide compensatory mitigation as deemed appropriate by CDFW.

6.0 REFERENCES

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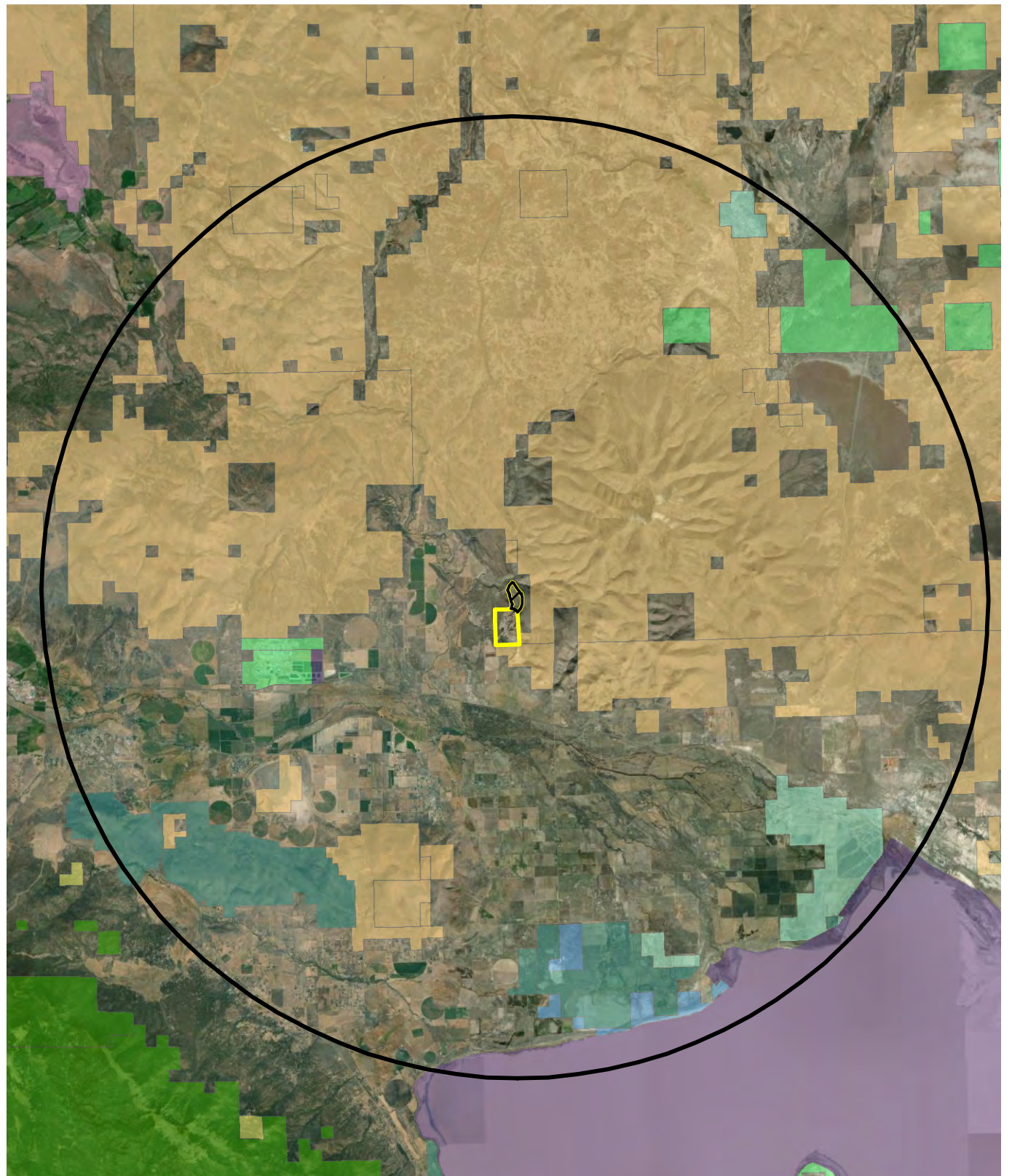
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0 2.5 5 10 Miles

FIGURE 1
GENERAL SITE LOCATION
WARD LAKE QUARRY
LASSEN COUNTY, CALIFORNIA





- | | | |
|---|---------------------------|--------------------------------|
| Proposed Expansion Area | USFWS | CA Dept. of Parks and Rec. |
| Project Site | CDFW | CA Wildlife Conservation Board |
| 10-Mile Buffer Around Proposed Expansion Area | CA State Lands Commission | UND |
| BLM | State of CA | USFS |

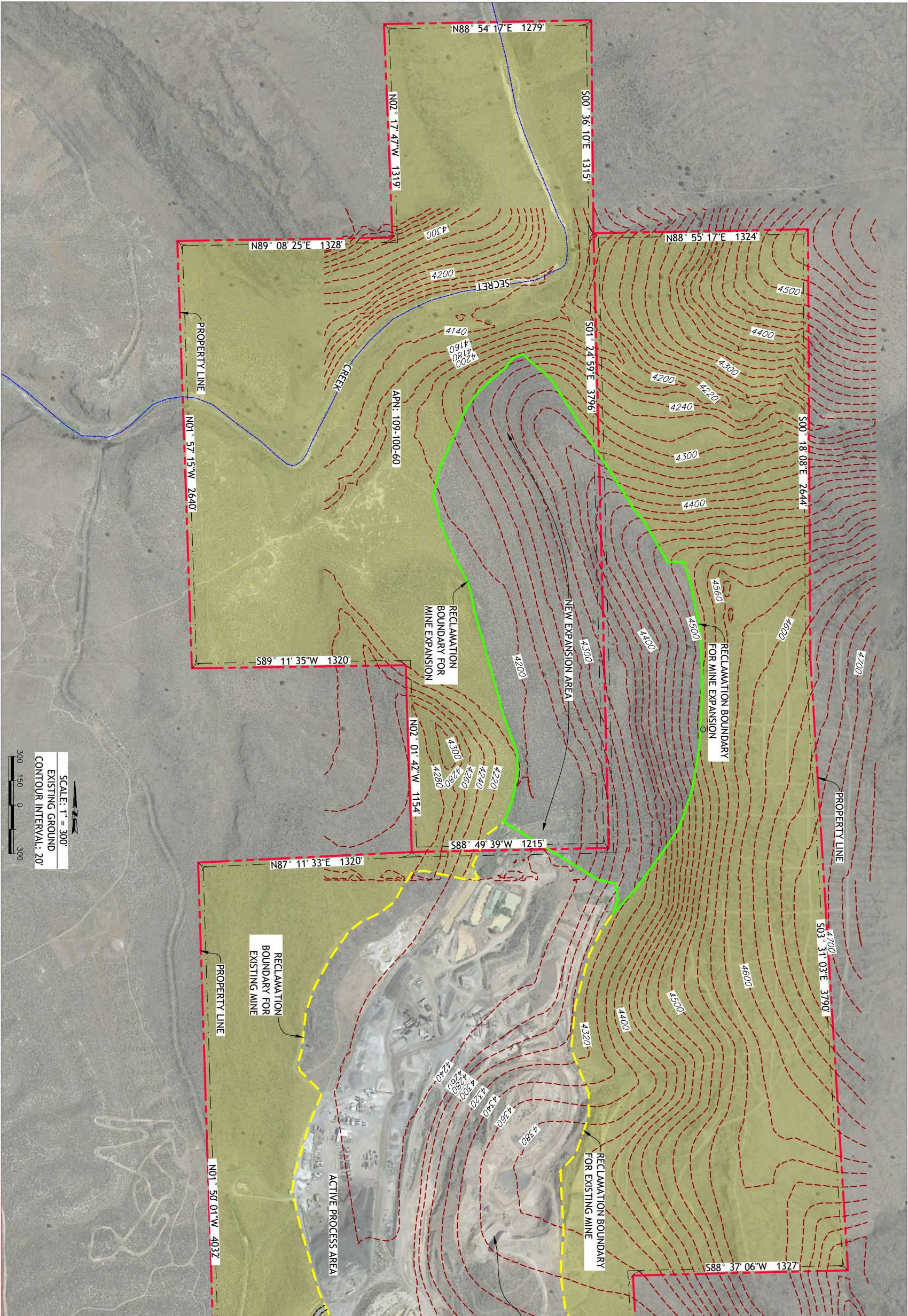


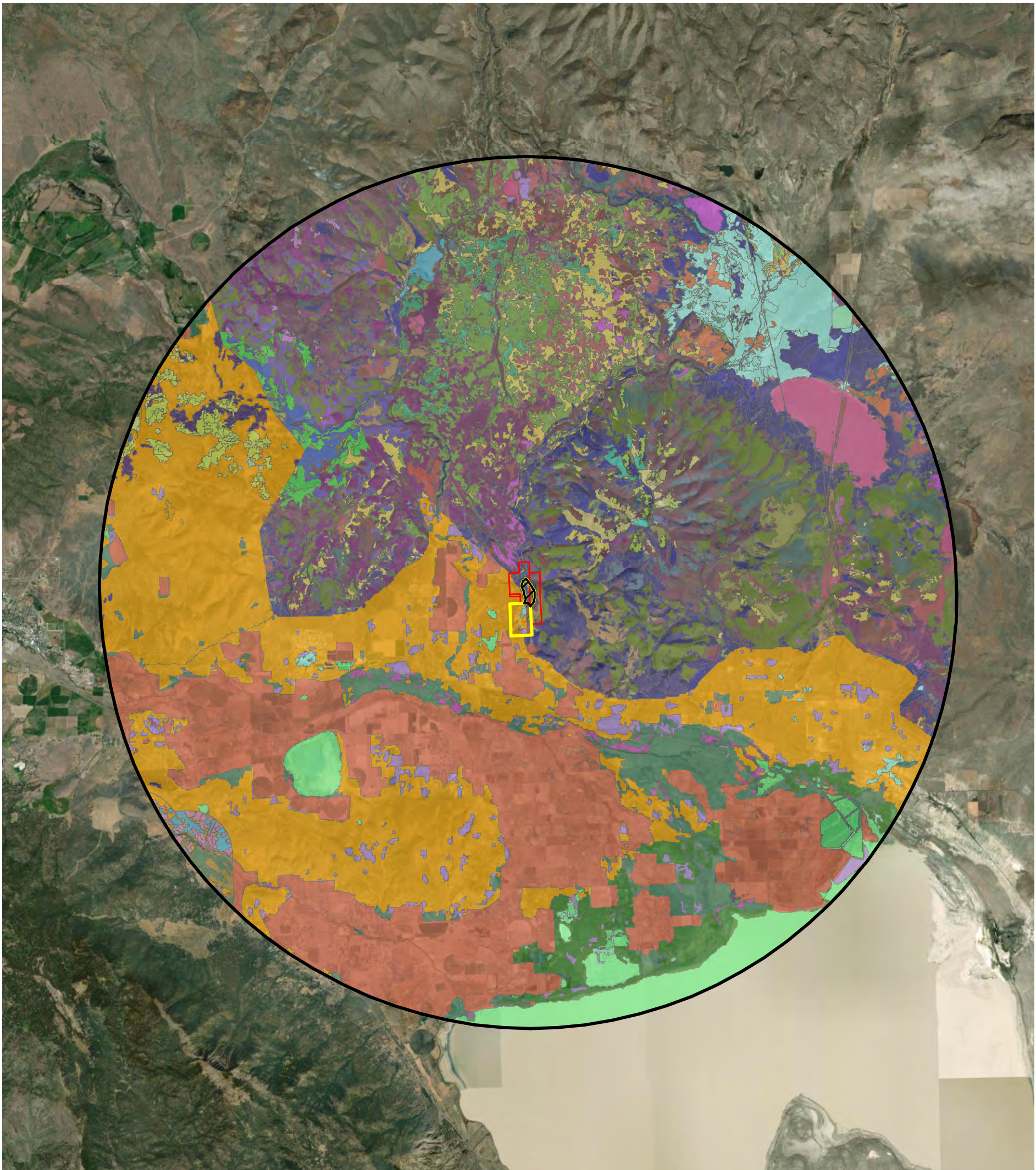
SOURCE: BLM 2018

0 1.5 3 6 Miles



FIGURE 3
GOVERNMENT OWNERSHIP
WARD LAKE QUARRY
LASSEN COUNTY, CALIFORNIA





Proposed Expansion Area

Project Site

10-Mile Buffer Around Proposed Expansion Area

Approximate Parcel Boundary

Vegetation Classification and Mapping Program

Anthropogenic Areas of Little or No Vegetation

Artemisia arbuscula / Bromus tectorum Ruderal Shrubland

Artemisia arbuscula / Poa secunda

Artemisia cana (ssp. bolanderi, ssp. viscidula) / Poa secunda Wet Shrubland

Artemisia nova / Poa secunda

Artemisia tridentata - Grayia spinosa Shrubland

Artemisia tridentata / Distichlis spicata Provisional

Artemisia tridentata Shrubland

Artemisia tridentata ssp. vaseyana / Festuca idahoensis Shrub Grassland

Artemisia tridentata ssp. vaseyana - Symphoricarpos oreophilus / Bromus carinatus Shrubland

Artemisia tridentata - (Ericameria nauseosa) / Bromus tectorum Ruderal Shrubland

Artemisia tridentata - Ephedra spp. Shrubland

Atriplex confertifolia - Picrothamnus desertorum / Krascheninnikovia lanata

Bromus tectorum Ruderal Grassland

Bromus tectorum - Elymus caput-medusae Ruderal Annual Grassland Alliance

Built-up & Urban Disturbance

Californian Annual Grassland & Forb Meadow Group

Californian Vernal Pool Group

Carex aquatilis - Carex lenticularis

Cercocarpus ledifolius - Artemisia tridentata ssp. vaseyana

Columbia Plateau cliff, scree and rock mapping unit

Danthonia unispicata - Poa secunda Wet Meadow

Eleocharis macrostachya Vernal Pool Provisional

Elymus caput-medusae Intermontane Provisional

Elymus cinereus Bottomland Wet Meadow

Elymus spicatus - Poa secunda Grassland

Elymus triticoides - Poa secunda Wet Meadow

Ephedra nevadensis - Lycium andersonii - Grayia spinosa

Ericameria nauseosa / Bromus tectorum Ruderal Shrubland

Ericameria nauseosa Shrubland

Eriogonum sphaerocephalum / Poa secunda Dwarf-shrub Grassland

Juncus balticus Wet Meadow

Juniperus occidentalis / Artemisia arbuscula / Poa secunda

Juniperus occidentalis / Artemisia tridentata - Purshia tridentata

Juniperus occidentalis / Cercocarpus ledifolius

Juniperus occidentalis / Pseudoroegneria spicata Wooded Grassland

Juniperus occidentalis / Purshia tridentata / Festuca idahoensis - Pseudoroegneria spicata

Juniperus occidentalis - Pinus jeffreyi / (Purshia tridentata, Prunus virginiana)

Krascheninnikovia lanata Steppe & Dwarf-shrubland Alliance

Non-woody Row and Field Agriculture

Perennial Stream Channel (Open Water)

Pinus jeffreyi - Pinus washoensis Mixed Conifer Woodland Alliance

Planted Trees and Shrubs

Populus tremuloides / Symphoricarpos rotundifolius

Prunus emarginata Sierran Chaparral Shrubland

Prunus virginiana / Leymus cinereus Shrubland

Purshia tridentata - Artemisia tridentata Mesic Steppe & Shrubland Alliance

Purshia tridentata - Artemisia tridentata

Purshia tridentata - Artemisia tridentata / Achnatherum hymenoides

Purshia tridentata - Artemisia tridentata - Tetradymia canescens

Quercus kelloggii

Salix exigua / Mesic Forbs Shrubland

Salix lasiolepis - Rosa woodsii / Mixed Herbs Shrubland

Sarcobatus vermiculatus - Artemisia tridentata Shrubland

Schoenoplectus americanus Western Marsh

Small Earthen-dammed Ponds & Natural Lakes

Symphoricarpos oreophilus Shrubland

Taraxia tanacetifolia - Iva axillaris Provisional

Tetradymia canescens Provisional

Typha domingensis Western Marsh

Vancouverian - Rocky Mountain Montane Wet Meadow & Marsh Group

Water

Western North American Ruderal Marsh, Wet Meadow & Shrubland Group

Western North American Sparsely Vegetated Rivershore mapping unit

Western North American Temperate Freshwater Aquatic Vegetation Group

Calveg Data

AGS: Annual Grassland

ASC: Alkali Desert Scrub

ASP: Aspen

BAR: Barren

BBR: Bitterbrush

CRP: Cropland

EPN: Eastside Pine

JUN: Juniper

LAC: Lacustrine

LSG: Low Sage

MCP: Montane Chaparral

MHC: Montane Hardwood-Conifer

MR: Montane Riparian

PGS: Perennial Grassland

SGB: Sagebrush

SMC: Sierran Mixed Conifer

WTM: Wet Meadow

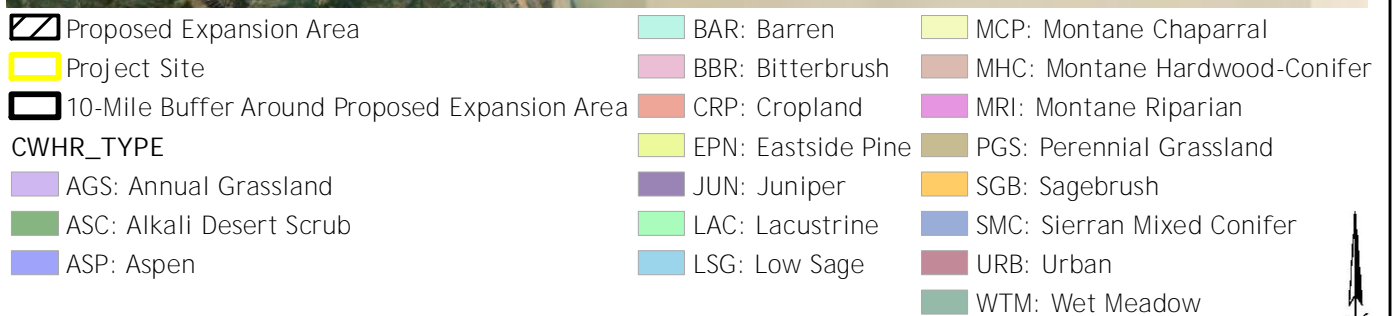
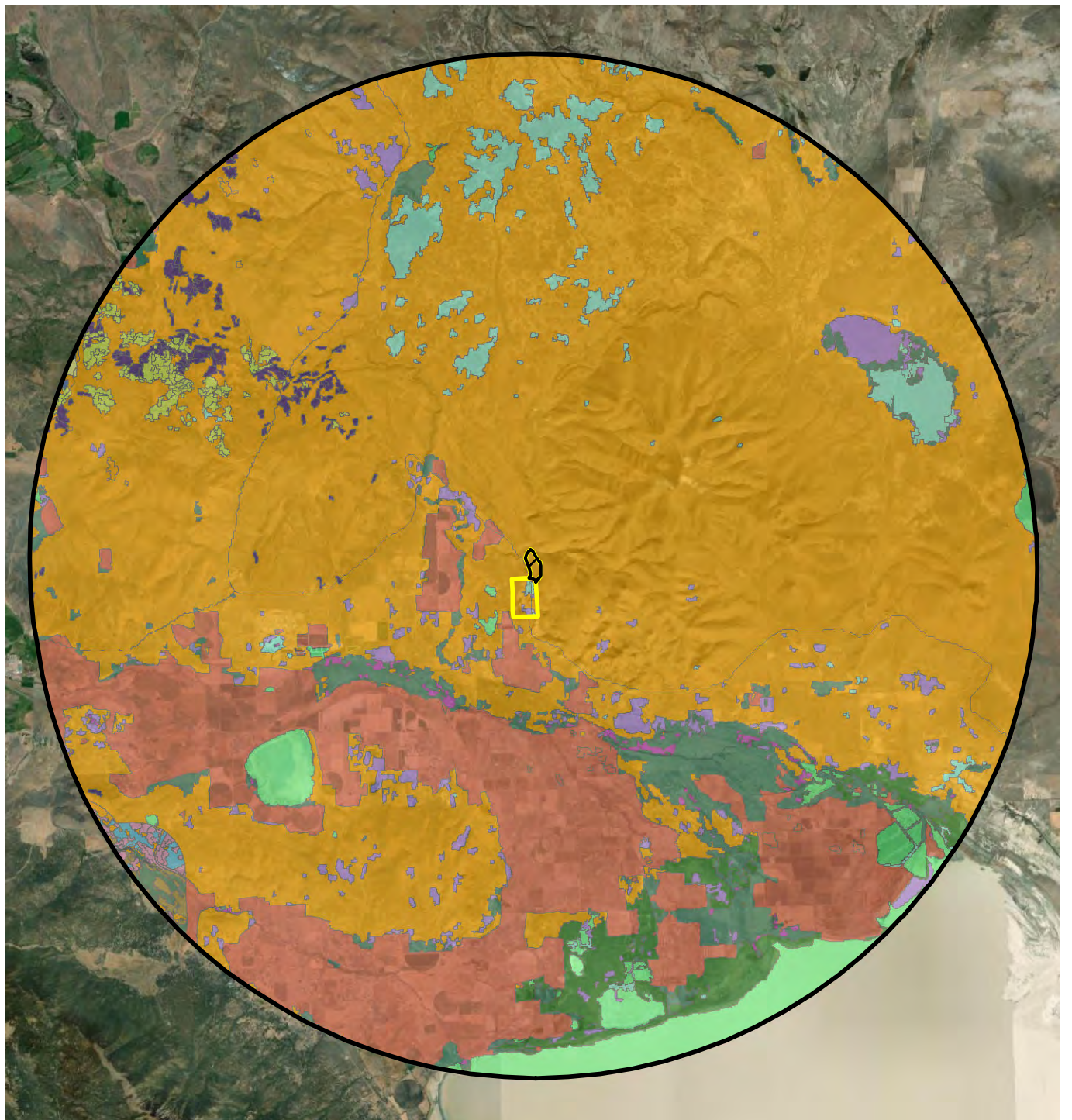


SOURCE: CDFW 2021; USFS 2014

0 1.25 2.5 5 Miles



FIGURE 5
VEGCAMP/CALVEG WITHIN
10-MILE RADIUS
WARD LAKE QUARRY
LASSEN COUNTY, CALIFORNIA



SOURCE: USFS 2014

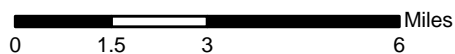
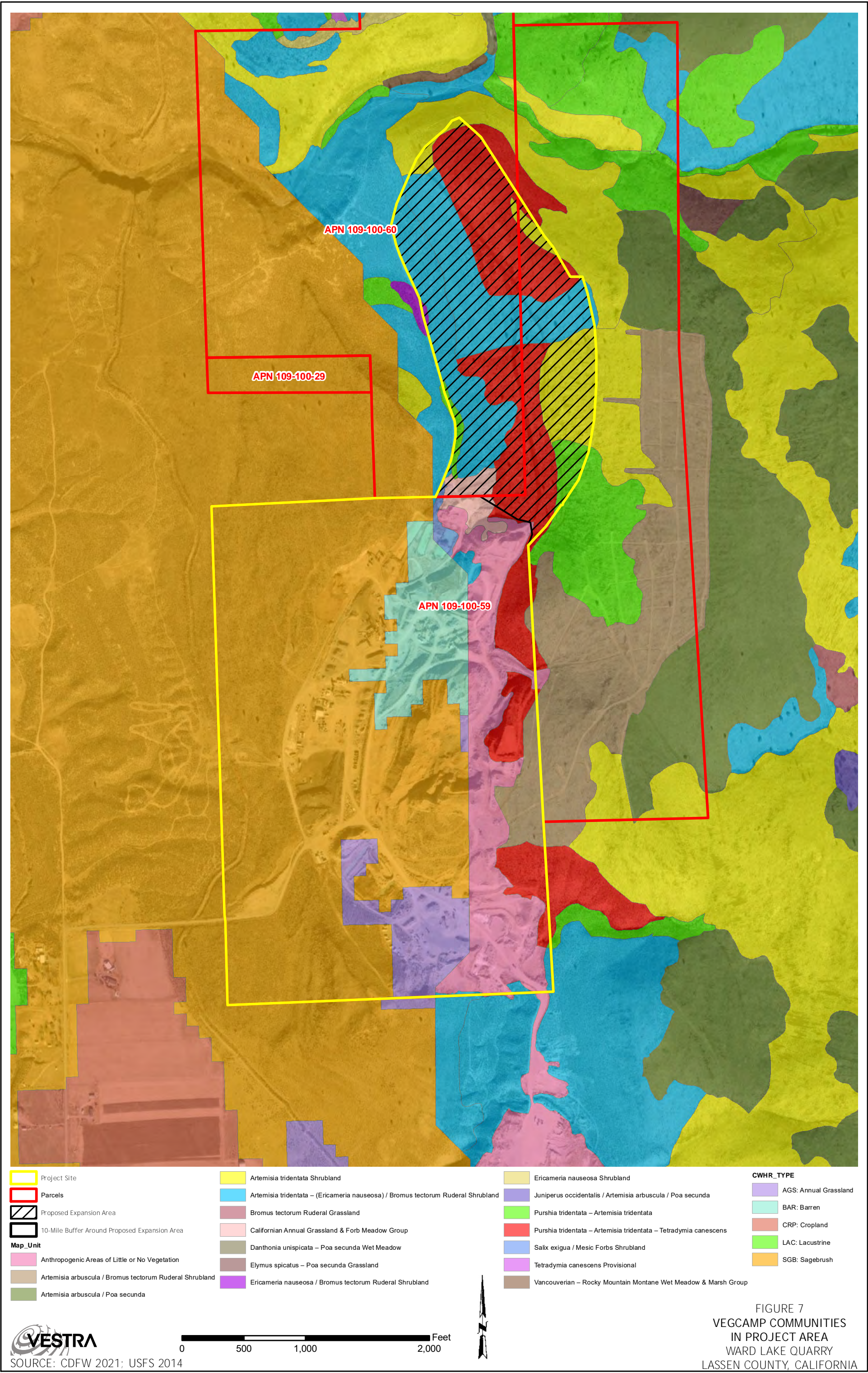
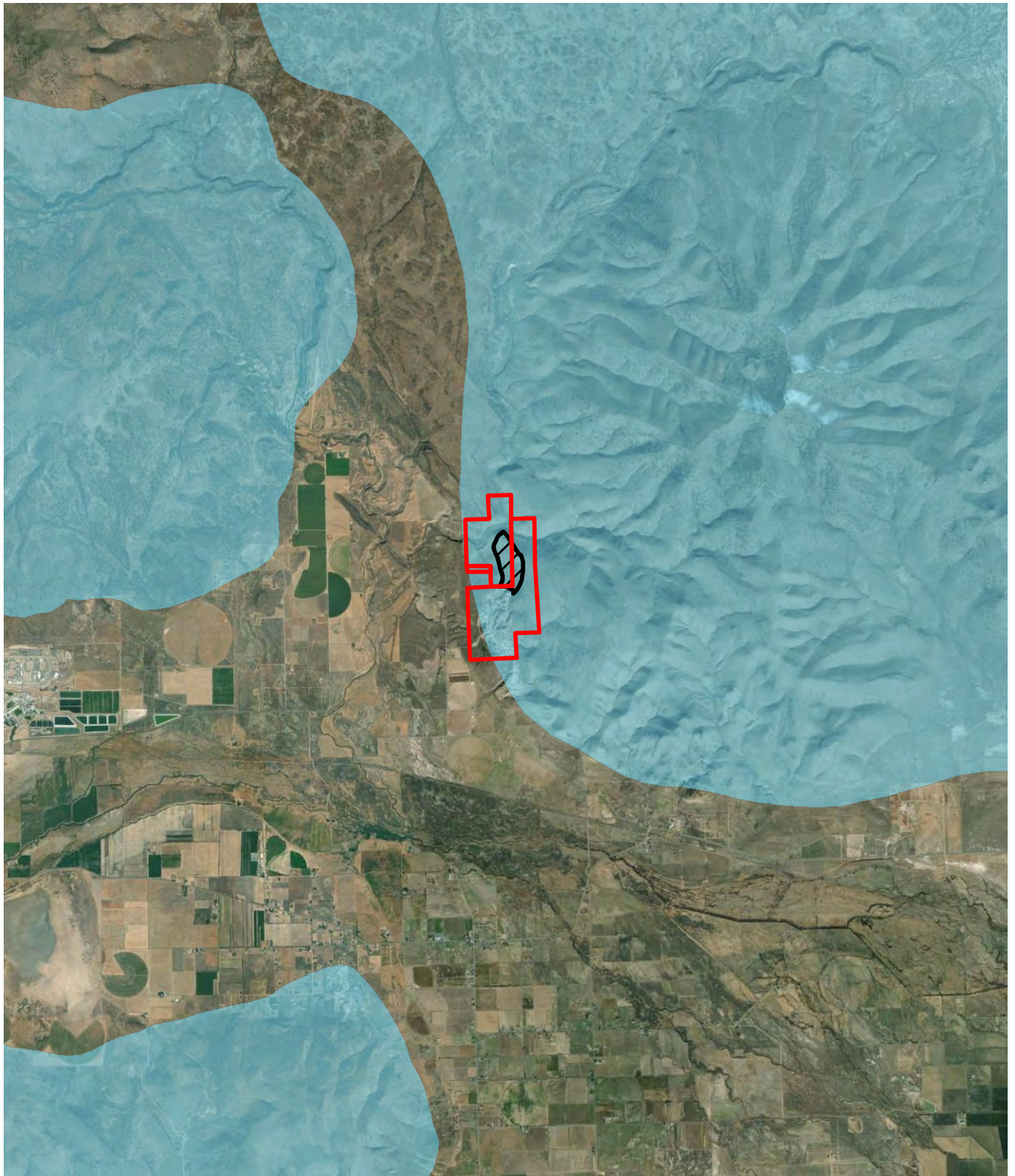





FIGURE 6
REGIONAL CALVEG
WARD LAKE QUARRY
LASSEN COUNTY, CALIFORNIA





-  Approximate Parcel Boundary
-  Proposed Expansion Area
-  Critical Winter Range

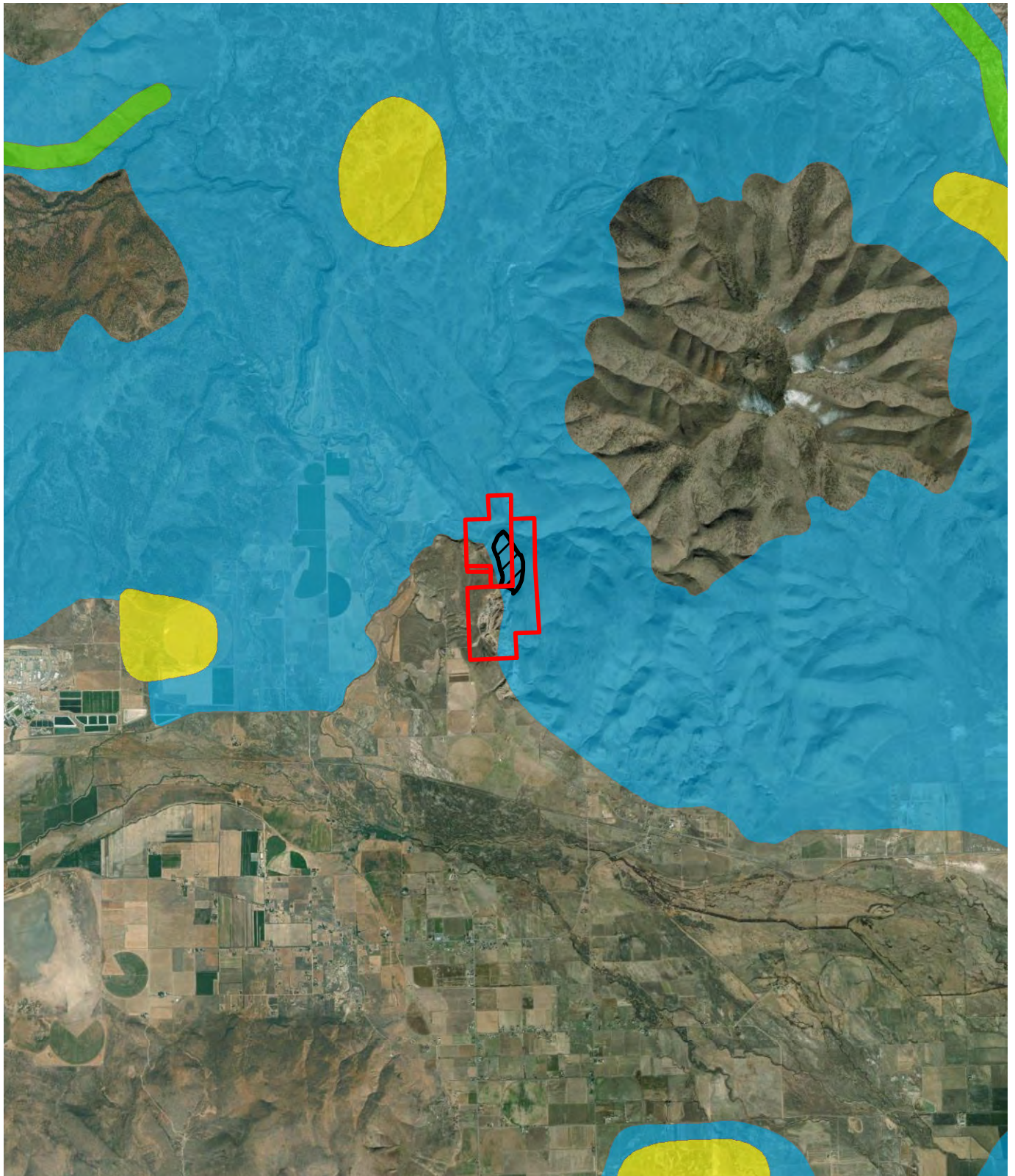


0 0.75 1.5 3 Miles



SOURCE: USDA NAIP 2016 AERIAL PHOTOGRAPH; USFS 2009

FIGURE 8
MULE DEER HABITAT
WARD LAKE QUARRY
LASSEN COUNTY, CALIFORNIA



Approximate Parcel Boundary



Proposed Expansion Area



Kidding Grounds



Migration Corridor



Winter Range

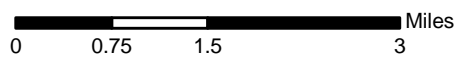
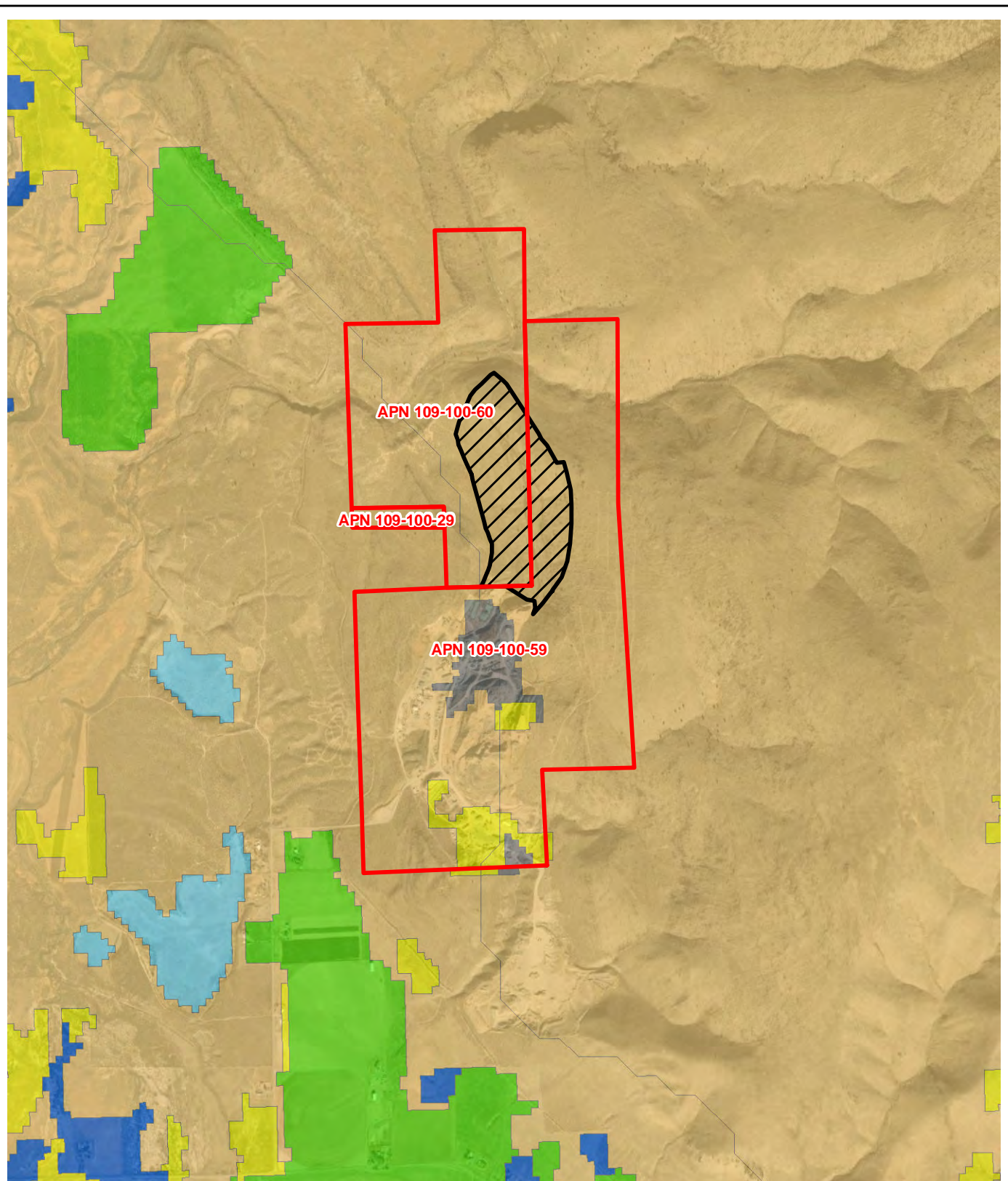







FIGURE 9
PRONGHORN ANTELOPE HABITAT
WARD LAKE QUARRY
LASSEN COUNTY, CALIFORNIA

SOURCE: USDA NAIP 2016 AERIAL PHOTOGRAPH; USFS 2009



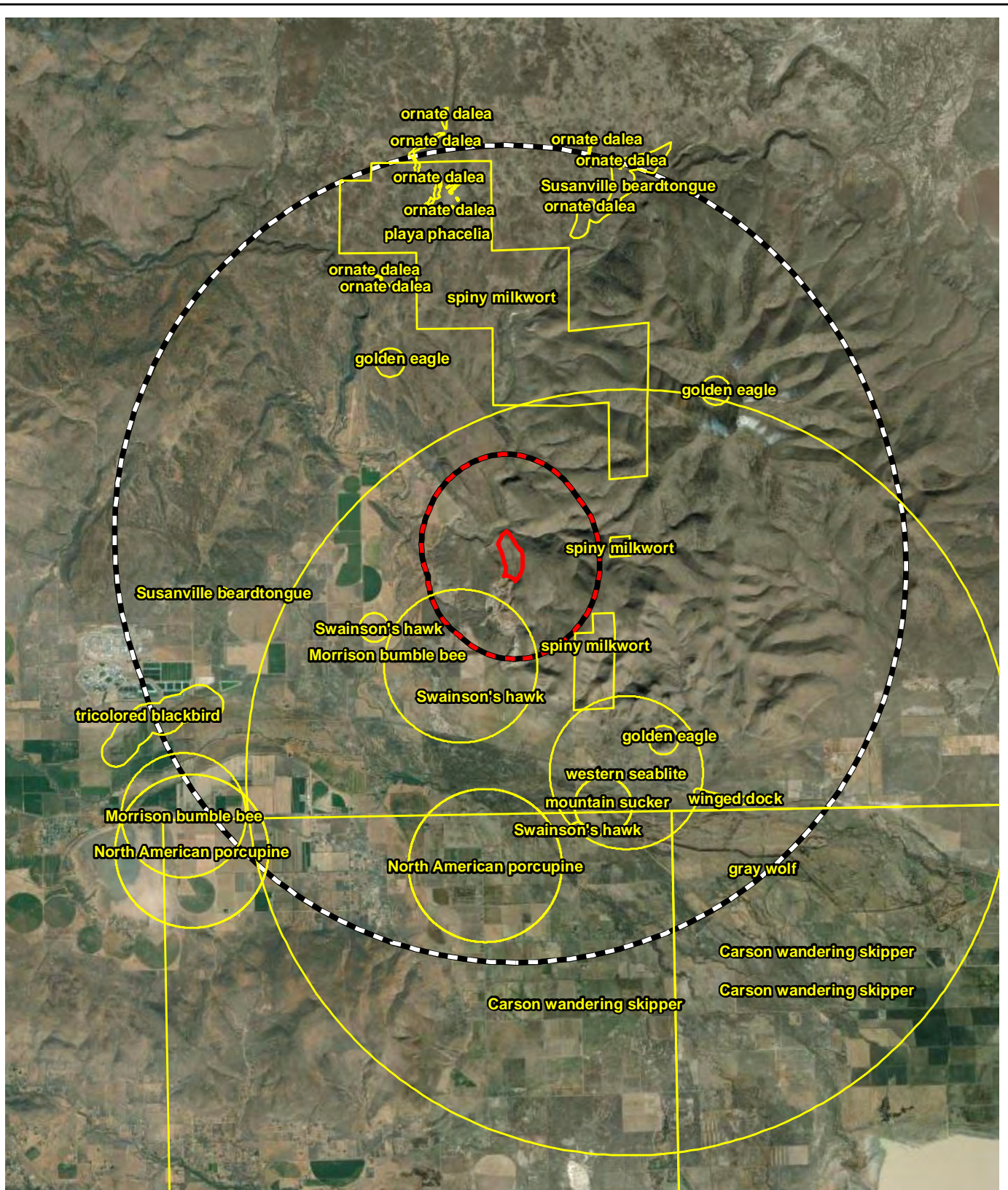
- | | | | | | |
|---|-----------------------------|---|------------|--|------------|
|  | Approximate Parcel Boundary |  | Barren |  | Sagebrush |
|  | Proposed Expansion Area |  | Cropland |  | Wet Meadow |
|  | Annual Grassland |  | Lacustrine | | |



0 1,000 2,000 4,000 Feet

SOURCE: USDA NAIP 2016 AERIAL PHOTOGRAPH; USFS 2009

FIGURE 10
CWHR HABITAT TYPES
WARD LAKE QUARRY
LASSEN COUNTY, CALIFORNIA



- | | |
|---|---|
| CNDDDB Occurrence | 1-Mile Buffer Around Proposed Expansion Area |
| Proposed Expansion Area | 5-Mile Buffer Around Proposed Expansion Area |



0 0.75 1.5 3 Miles

SOURCE: MAXAR 2019 AERIAL PHOTOGRAPH; CNDDDB AUGUST 2020

FIGURE 11
CNDDDB OCCURRENCES
WARD LAKE QUARRY
LASSEN COUNTY, CALIFORNIA

CWHR ID	NAME	SCI_NAME
A029	GREAT BASIN SPADEFOOT	<i>Spea intermontana</i>
A032	WESTERN TOAD	<i>Anaxyrus boreas</i>
A046	AMERICAN BULLFROG	<i>Lithobates catesbeianus</i>
A077	SIERRAN TREEFROG	<i>Pseudacris sierra</i>
B006	PIED-BILLED GREBE	<i>Podilymbus podiceps</i>
B009	EARED GREBE	<i>Podiceps nigricollis</i>
B010	WESTERN GREBE	<i>Aechmophorus occidentalis</i>
B042	AMERICAN WHITE PELICAN	<i>Pelecanus erythrorhynchos</i>
B049	AMERICAN BITTERN	<i>Botaurus lentiginosus</i>
B051	GREAT BLUE HERON	<i>Ardea herodias</i>
B053	SNOWY EGRET	<i>Egretta thula</i>
B059	BLACK-CROWNED NIGHT HERON	<i>Nycticorax nycticorax</i>
B067	TUNDRA SWAN	<i>Cygnus columbianus</i>
B070	GREATER WHITE-FRONTED GOOSE	<i>Anser albifrons</i>
B071	SNOW GOOSE	<i>Chen caerulescens</i>
B072	ROSS' S GOOSE	<i>Chen rossii</i>
B075	CANADA GOOSE	<i>Branta canadensis</i>
B077	GREEN-WINGED TEAL	<i>Anas crecca</i>
B079	MALLARD	<i>Anas platyrhynchos</i>
B080	NORTHERN PINTAIL	<i>Anas acuta</i>
B082	BLUE-WINGED TEAL	<i>Anas discors</i>
B083	CINNAMON TEAL	<i>Anas cyanoptera</i>
B084	NORTHERN SHOVELER	<i>Anas clypeata</i>
B085	GADWALL	<i>Anas strepera</i>
B087	AMERICAN WIGEON	<i>Anas americana</i>
B089	CANVASBACK	<i>Aythya valisineria</i>
B090	REDHEAD	<i>Aythya americana</i>
B091	RING-NECKED DUCK	<i>Aythya collaris</i>
B094	LESSER SCAUP	<i>Aythya affinis</i>
B101	COMMON GOLDENEYE	<i>Bucephala clangula</i>
B103	BUFFLEHEAD	<i>Bucephala albeola</i>
B104	HOODED MERGANSER	<i>Lophodytes cucullatus</i>
B105	COMMON MERGANSER	<i>Mergus merganser</i>
B107	RUDDY DUCK	<i>Oxyura jamaicensis</i>
B108	TURKEY VULTURE	<i>Cathartes aura</i>
B113	BALD EAGLE	<i>Haliaeetus leucocephalus</i>
B114	NORTHERN HARRIER	<i>Circus cyaneus</i>
B115	SHARP-SHINNED HAWK	<i>Accipiter striatus</i>
B116	COOPER'S HAWK	<i>Accipiter cooperii</i>
B117	NORTHERN GOSHAWK	<i>Accipiter gentilis</i>
B121	SWAINSON'S HAWK	<i>Buteo swainsoni</i>
B123	RED-TAILED HAWK	<i>Buteo jamaicensis</i>
B124	FERRUGINOUS HAWK	<i>Buteo regalis</i>
B125	ROUGH-LEGGED HAWK	<i>Buteo lagopus</i>
B126	GOLDEN EAGLE	<i>Aquila chrysaetos</i>
B127	AMERICAN KESTREL	<i>Falco sparverius</i>
B128	MERLIN	<i>Falco columbarius</i>
B129	PEREGRINE FALCON	<i>Falco peregrinus</i>
B131	PRAIRIE FALCON	<i>Falco mexicanus</i>

B132	CHUKAR	<i>Alectoris chukar</i>
B133	RING-NECKED PHEASANT	<i>Phasianus colchicus</i>
B137	GREATER SAGE-GROUSE	<i>Centrocercus urophasianus</i>
B140	CALIFORNIA QUAIL	<i>Callipepla californica</i>
B145	VIRGINIA RAIL	<i>Rallus limicola</i>
B146	SORA	<i>Porzana carolina</i>
B149	AMERICAN COOT	<i>Fulica americana</i>
B150	SANDHILL CRANE	<i>Grus canadensis</i>
B158	KILLDEER	<i>Charadrius vociferus</i>
B163	BLACK-NECKED STILT	<i>Himantopus mexicanus</i>
B164	AMERICAN AVOCET	<i>Recurvirostra americana</i>
B168	WILLET	<i>Tringa semipalmata</i>
B170	SPOTTED SANDPIPER	<i>Actitis macularius</i>
B173	LONG-BILLED CURLEW	<i>Numenius americanus</i>
B199	WILSON'S SNIPE	<i>Gallinago delicata</i>
B200	WILSON'S PHALAROPE	<i>Phalaropus tricolor</i>
B214	RING-BILLED GULL	<i>Larus delawarensis</i>
B215	CALIFORNIA GULL	<i>Larus californicus</i>
B227	CASPIAN TERN	<i>Hydroprogne caspia</i>
B233	FORSTER'S TERN	<i>Sterna forsteri</i>
B235	BLACK TERN	<i>Chlidonias niger</i>
B250	ROCK PIGEON	<i>Columba livia</i>
B255	MOURNING DOVE	<i>Zenaida macroura</i>
B262	BARN OWL	<i>Tyto alba</i>
B265	GREAT HORNED OWL	<i>Bubo virginianus</i>
B269	BURROWING OWL	<i>Athene cunicularia</i>
B272	LONG-EARED OWL	<i>Asio otus</i>
B273	SHORT-EARED OWL	<i>Asio flammeus</i>
B276	COMMON NIGHTHAWK	<i>Chordeiles minor</i>
B277	COMMON POORWILL	<i>Phalaenoptilus nuttallii</i>
B286	BLACK-CHINNED HUMMINGBIRD	<i>Archilochus alexandri</i>
B289	CALLIOPE HUMMINGBIRD	<i>Selasphorus calliope</i>
B293	BELTED KINGFISHER	<i>Megaceryle alcyon</i>
B294	LEWIS' S WOODPECKER	<i>Melanerpes lewis</i>
B298	RED-NAPED SAPSUCKER	<i>Sphyrapicus nuchalis</i>
B299	RED-BREASTED SAPSUCKER	<i>Sphyrapicus ruber</i>
B303	DOWNY WOODPECKER	<i>Picoides pubescens</i>
B307	NORTHERN FLICKER	<i>Colaptes auratus</i>
B319	GRAY FLYCATCHER	<i>Empidonax wrightii</i>
B323	SAY'S PHOEBE	<i>Sayornis saya</i>
B326	ASH-THROATED FLYCATCHER	<i>Myiarchus cinerascens</i>
B333	WESTERN KINGBIRD	<i>Tyrannus verticalis</i>
B334	EASTERN KINGBIRD	<i>Tyrannus tyrannus</i>
B340	VIOLET-GREEN SWALLOW	<i>Tachycineta thalassina</i>
B341	NORTHERN ROUGH-WINGED SWALLOW	<i>Stelgidopteryx serripennis</i>
B342	BANK SWALLOW	<i>Riparia riparia</i>
B343	CLIFF SWALLOW	<i>Petrochelidon pyrrhonota</i>
B344	BARN SWALLOW	<i>Hirundo rustica</i>
B348	WESTERN SCRUB-JAY	<i>Aphelocoma californica</i>
B349	PINYON JAY	<i>Gymnorhinus cyanocephalus</i>

B351	BLACK-BILLED MAGPIE	<i>Pica hudsonia</i>
B353	AMERICAN CROW	<i>Corvus brachyrhynchos</i>
B354	COMMON RAVEN	<i>Corvus corax</i>
B358	OAK TITMOUSE	<i>Baeolophus inornatus</i>
B360	BUSHTIT	<i>Psaltiriparus minimus</i>
B366	ROCK WREN	<i>Salpinctes obsoletus</i>
B368	BEWICK'S WREN	<i>Thryomanes bewickii</i>
B370	PACIFIC WREN	<i>Troglodytes pacificus</i>
B372	MARSH WREN	<i>Cistothorus palustris</i>
B375	GOLDEN-CROWNED KINGLET	<i>Regulus satrapa</i>
B376	RUBY-CROWNED KINGLET	<i>Regulus calendula</i>
B381	MOUNTAIN BLUEBIRD	<i>Sialia currucoides</i>
B382	TOWNSEND'S SOLITAIRE	<i>Myadestes townsendi</i>
B389	AMERICAN ROBIN	<i>Turdus migratorius</i>
B393	NORTHERN MOCKINGBIRD	<i>Mimus polyglottos</i>
B394	SAGE THRASHER	<i>Oreoscoptes montanus</i>
B404	AMERICAN PIPIT	<i>Anthus rubescens</i>
B407	CEDAR WAXWING	<i>Bombycilla cedrorum</i>
B409	NORTHERN SHRIKE	<i>Lanius excubitor</i>
B410	LOGGERHEAD SHRIKE	<i>Lanius ludovicianus</i>
B411	EUROPEAN STARLING	<i>Sturnus vulgaris</i>
B430	YELLOW WARBLER	<i>Setophaga petechia</i>
B435	YELLOW-RUMPED WARBLER	<i>Setophaga coronata</i>
B461	COMMON YELLOWTHROAT	<i>Geothlypis trichas</i>
B471	WESTERN Tanager	<i>Piranga ludoviciana</i>
B475	BLACK-HEADED GROSBEAK	<i>Pheucticus melanocephalus</i>
B477	LAZULI BUNTING	<i>Passerina amoena</i>
B483	SPOTTED TOWHEE	<i>Pipilo maculatus</i>
B489	CHIPPING SPARROW	<i>Spizella passerina</i>
B491	BREWER'S SPARROW	<i>Spizella breweri</i>
B494	VESPER SPARROW	<i>Poocetes gramineus</i>
B495	LARK SPARROW	<i>Chondestes grammacus</i>
B496	BLACK-THROATED SPARROW	<i>Amphispiza bilineata</i>
B497	BELL'S SPARROW	<i>Artemisiospiza belli</i>
B499	SAVANNAH SPARROW	<i>Passerculus sandwichensis</i>
B504	FOX SPARROW	<i>Passerella iliaca</i>
B505	SONG SPARROW	<i>Melospiza melodia</i>
B509	GOLDEN-CROWNED SPARROW	<i>Zonotrichia atricapilla</i>
B510	WHITE-CROWNED SPARROW	<i>Zonotrichia leucophrys</i>
B512	DARK-EYED JUNCO	<i>Junco hyemalis</i>
B514	LAPLAND LONGSPUR	<i>Calcarius lapponicus</i>
B519	RED-WINGED BLACKBIRD	<i>Agelaius phoeniceus</i>
B520	TRICOLORED BLACKBIRD	<i>Agelaius tricolor</i>
B521	WESTERN MEADOWLARK	<i>Sturnella neglecta</i>
B522	YELLOW-HEADED BLACKBIRD	<i>Xanthocephalus xanthocephalus</i>
B524	BREWER'S BLACKBIRD	<i>Euphagus cyanocephalus</i>
B528	BROWN-HEADED COWBIRD	<i>Molothrus ater</i>
B532	BULLOCK'S ORIOLE	<i>Icterus bullockii</i>
B537	CASSIN'S FINCH	<i>Haemorhous cassinii</i>
B538	HOUSE FINCH	<i>Haemorhous mexicanus</i>

B543	LESSER GOLDFINCH	<i>Spinus psaltria</i>
B545	AMERICAN GOLDFINCH	<i>Spinus tristis</i>
B546	EVENING GROSBEAK	<i>Coccothraustes vespertinus</i>
B547	HOUSE SPARROW	<i>Passer domesticus</i>
B548	CLARK'S GREBE	<i>Aechmophorus clarkii</i>
B552	JUNIPER TITMOUSE	<i>Baeolophus ridgewayi</i>
B648	BAIRD'S SANDPIPER	<i>Calidris bairdii</i>
B773	AMERICAN REDSTART	<i>Setophaga ruticilla</i>
B798	WHITE-THROATED SPARROW	<i>Zonotrichia albicollis</i>
B799	HARRIS'S SPARROW	<i>Zonotrichia querula</i>
B809	INDIGO BUNTING	<i>Passerina cyanea</i>
M013	MERRIAM'S SHREW	<i>Sorex merriami</i>
M021	LITTLE BROWN BAT	<i>Myotis lucifugus</i>
M023	YUMA MYOTIS	<i>Myotis yumanensis</i>
M025	LONG-EARED MYOTIS	<i>Myotis evotis</i>
M026	FRINGED MYOTIS	<i>Myotis thysanodes</i>
M027	LONG-LEGGED MYOTIS	<i>Myotis volans</i>
M028	CALIFORNIA MYOTIS	<i>Myotis californicus</i>
M029	SMALL-FOOTED MYOTIS	<i>Myotis ciliolabrum</i>
M030	SILVER-HAIRED BAT	<i>Lasionycteris noctivagans</i>
M032	BIG BROWN BAT	<i>Eptesicus fuscus</i>
M034	HOARY BAT	<i>Lasiurus cinereus</i>
M036	SPOTTED BAT	<i>Euderma maculatum</i>
M037	TOWNSEND'S BIG-EARED BAT	<i>Corynorhinus townsendii</i>
M038	PALLID BAT	<i>Antrozous pallidus</i>
M039	BRAZILIAN FREE-TAILED BAT	<i>Tadarida brasiliensis</i>
M044	PYGMY RABBIT	<i>Brachylagus idahoensis</i>
M046	NUTTALL'S COTTONTAIL	<i>Sylvilagus nuttallii</i>
M050	WHITE-TAILED JACKRABBIT	<i>Lepus townsendii</i>
M051	BLACK-TAILED JACKRABBIT	<i>Lepus californicus</i>
M054	LEAST CHIPMUNK	<i>Tamias minimus</i>
M066	YELLOW-BELLIED MARMOT	<i>Marmota flaviventris</i>
M067	WHITE-TAILED ANTELOPE GROUND SQUIRREL	<i>Ammospermophilus leucurus</i>
M069	PIUTE GROUND SQUIRREL	<i>Uroditellus mollis</i>
M072	CALIFORNIA GROUND SQUIRREL	<i>Ostospermophilus beecheyi</i>
M081	BOTTA'S POCKET GOPHER	<i>Thomomys bottae</i>
M082	TOWNSEND'S POCKET GOPHER	<i>Thomomys townsendii</i>
M083	NORTHERN POCKET GOPHER	<i>Thomomys talpoides</i>
M088	GREAT BASIN POCKET MOUSE	<i>Perognathus parvus</i>
M091	LONG-TAILED POCKET MOUSE	<i>Chaetodipus formosus</i>
M097	DARK KANGAROO MOUSE	<i>Microdipodops megacephalus</i>
M099	ORD'S KANGAROO RAT	<i>Dipodomys ordii</i>
M100	CHISEL-TOOTHED KANGAROO RAT	<i>Dipodomys microps</i>
M112	AMERICAN BEAVER	<i>Castor canadensis</i>
M113	WESTERN HARVEST MOUSE	<i>Reithrodontomys megalotis</i>
M117	DEER MOUSE	<i>Peromyscus maniculatus</i>
M118	CANYON MOUSE	<i>Peromyscus crinitus</i>
M119	BRUSH MOUSE	<i>Peromyscus boylii</i>
M120	PINYON MOUSE	<i>Peromyscus truei</i>
M121	NORTHERN GRASSHOPPER MOUSE	<i>Onychomys leucogaster</i>

M126	DESERT WOODRAT	<i>Neotoma lepida</i>
M128	BUSHY-TAILED WOODRAT	<i>Neotoma cinerea</i>
M133	MONTANE VOLE	<i>Microtus montanus</i>
M138	SAGEBRUSH VOLE	<i>Lemmys curtatus</i>
M139	COMMON MUSKRAT	<i>Ondatra zibethicus</i>
M142	HOUSE MOUSE	<i>Mus musculus</i>
M145	COMMON PORCUPINE	<i>Erethizon dorsatum</i>
M146	COYOTE	<i>Canis latrans</i>
M153	RACCOON	<i>Procyon lotor</i>
M157	LONG-TAILED WEASEL	<i>Mustela frenata</i>
M160	AMERICAN BADGER	<i>Taxidea taxus</i>
M161	WESTERN SPOTTED SKUNK	<i>Spilogale gracilis</i>
M162	STRIPED SKUNK	<i>Mephitis mephitis</i>
M165	MOUNTAIN LION	<i>Puma concolor</i>
M166	BOBCAT	<i>Lynx rufus</i>
M174	FERAL HORSE	<i>Equus caballus</i>
M181	MULE DEER	<i>Odocoileus hemionus</i>
M182	PRONGHORN	<i>Antilocapra americana</i>
R004	WESTERN POND TURTLE	<i>Actinemys marmorata</i>
R017	GREAT BASIN COLLARED LIZARD	<i>Crotaphytus bicinctores</i>
R018	LONG-NOSED LEOPARD LIZARD	<i>Gambelia wislizenii</i>
R022	WESTERN FENCE LIZARD	<i>Sceloporus occidentalis</i>
R023	COMMON SAGEBRUSH LIZARD	<i>Sceloporus graciosus</i>
R024	COMMON SIDE-BLOTCHED LIZARD	<i>Uta stansburiana</i>
R030	DESERT HORNED LIZARD	<i>Phrynosoma platyrhinos</i>
R036	WESTERN SKINK	<i>Plestiodon skiltonianus</i>
R039	TIGER WHIPTAIL	<i>Aspidoscelis tigris</i>
R051	NORTH AMERICAN RACER	<i>Coluber constrictor</i>
R054	STRIPED WHIPSNAKE	<i>Coluber taeniatus</i>
R055	WESTERN PATCH-NOSED SNAKE	<i>Salvadora hexalepis</i>
R057	GOPHERSNAKE	<i>Pituophis catenifer</i>
R060	LONG-NOSED SNAKE	<i>Rhinocheilus lecontei</i>
R061	COMMON GARTERSNAKE	<i>Thamnophis sirtalis</i>
R062	TERRESTRIAL GARTERSNAKE	<i>Thamnophis elegans</i>
R076	WESTERN RATTLESNAKE	<i>Crotalus oreganus</i>



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Reno Fish And Wildlife Office

1340 Financial Boulevard, Suite 234

Reno, NV 89502-7147

Phone: (775) 861-6300 Fax: (775) 861-6301

<http://www.fws.gov/nevada/>



In Reply Refer To:

June 29, 2018

Consultation Code: 08ENV000-2018-SLI-0675

Event Code: 08ENV000-2018-E-01540

Project Name: Ward Lake Expansion

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The attached species list indicates threatened, endangered, proposed, and candidate species and designated or proposed critical habitat that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act of 1973, as amended (ESA, 16 U.S.C. 1531 *et seq.*), for projects that are authorized, funded, or carried out by a Federal agency. Candidate species have no protection under the ESA but are included for consideration because they could be listed prior to the completion of your project. Consideration of these species during project planning may assist species conservation efforts and may prevent the need for future listing actions. For additional information regarding species that may be found in the proposed project area, visit <http://www.fws.gov/nevada/es/ipac.html>.

The purpose of the ESA is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the ESA and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or

designated or proposed critical habitat. Guidelines for preparing a Biological Assessment can be found at: http://www.fws.gov/midwest/endangered/section7/ba_guide.html.

If a Federal action agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species, and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>.

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this species list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally listed, proposed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the ESA, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally, as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation, for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the attached list.

The Nevada Fish and Wildlife Office (NFWO) no longer provides species of concern lists. Most of these species for which we have concern are also on the Animal and Plant At-Risk Tracking List for Nevada (At-Risk list) maintained by the State of Nevada's Natural Heritage Program (Heritage). Instead of maintaining our own list, we adopted Heritage's At-Risk list and are partnering with them to provide distribution data and information on the conservation needs for at-risk species to agencies or project proponents. The mission of Heritage is to continually evaluate the conservation priorities of native plants, animals, and their habitats, particularly those most vulnerable to extinction or in serious decline. In addition, in order to avoid future conflicts, we ask that you consider these at-risk species early in your project planning and explore management alternatives that provide for their long-term conservation.

For a list of at-risk species by county, visit Heritage's website (<http://heritage.nv.gov>). For a specific list of at-risk species that may occur in the project area, you can obtain a data request form from the website (http://heritage.nv.gov/get_data) or by contacting the Administrator of Heritage at 901 South Stewart Street, Suite 5002, Carson City, Nevada 89701-5245, (775) 684-2900. Please indicate on the form that your request is being obtained as part of your coordination with the Service under the ESA. During your project analysis, if you obtain new information or data for any Nevada sensitive species, we request that you provide the information to Heritage at the above address.

Furthermore, certain species of fish and wildlife are classified as protected by the State of Nevada (<http://www.leg.state.nv.us/NAC/NAC-503.html>). You must first obtain the appropriate license, permit, or written authorization from the Nevada Department of Wildlife (NDOW) to take, or possess any parts of protected fish and wildlife species. Please visit <http://www.ndow.org> or contact NDOW in northern Nevada (775) 688-1500, in southern Nevada (702) 486-5127, or in eastern Nevada (775) 777-2300.

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the Service's wind energy guidelines (<http://www.fws.gov/windenergy/>) for minimizing impacts to migratory birds and bats.

The Service's Pacific Southwest Region developed the *Interim Guidelines for the Development of a Project Specific Avian and Bat Protection Plan for Wind Energy Facilities* (Interim Guidelines). This document provides energy facility developers with a tool for assessing the risk of potential impacts to wildlife resources and delineates how best to design and operate a bird- and bat-friendly wind facility. These Interim Guidelines are available upon request from the NFWO. The intent of a Bird and Bat Conservation Strategy is to conserve wildlife resources while supporting project developers through: (1) establishing project development in an adaptive management framework; (2) identifying proper siting and project design strategies; (3) designing and implementing pre-construction surveys; (4) implementing appropriate conservation measures for each development phase; (5) designing and implementing appropriate post-construction monitoring strategies; (6) using post-construction studies to better understand the dynamics of mortality reduction (*e.g.*, changes in blade cut-in speed, assessments of blade "feathering" success, and studies on the effects of visual and acoustic deterrents) including efforts tied into Before-After/Control-Impact analysis; and (7) conducting a thorough risk assessment and validation leading to adjustments in management and mitigation actions.

The template and recommendations set forth in the Interim Guidelines were based upon the Avian Powerline Interaction Committee's Avian Protection Plan template (<http://www.aplic.org/>) developed for electric utilities and modified accordingly to address the unique concerns of wind energy facilities. These recommendations are also consistent with the Service's wind energy guidelines. We recommend contacting us as early as possible in the planning process to discuss the need and process for developing a site-specific Bird and Bat Conservation Strategy.

The Service has also developed guidance regarding wind power development in relation to prairie grouse leks (sage-grouse are included in this). This document can be found at: http://www.fws.gov/southwest/es/Oklahoma/documents/te_species/wind%20power/prairie%20grouse%20lek%205%20mile%20public.pdf.

Migratory Birds are a Service Trust Resource. Based on the Service's conservation responsibilities and management authority for migratory birds under the Migratory Bird Treaty Act of 1918, as amended (MBTA; 16 U.S.C. 703 *et seq.*), we recommend that any land clearing or other surface disturbance associated with proposed actions within the project area be timed to

avoid potential destruction of bird nests or young, or birds that breed in the area. Such destruction may be in violation of the MBTA. Under the MBTA, nests with eggs or young of migratory birds may not be harmed, nor may migratory birds be killed. Therefore, we recommend land clearing be conducted outside the avian breeding season. If this is not feasible, we recommend a qualified biologist survey the area prior to land clearing. If nests are located, or if other evidence of nesting (*i.e.*, mated pairs, territorial defense, carrying nesting material, transporting food) is observed, a protective buffer (the size depending on the habitat requirements of the species) should be delineated and the entire area avoided to prevent destruction or disturbance to nests until they are no longer active.

Guidance for minimizing impacts to migratory birds for projects involving communications towers (*e.g.*, cellular, digital television, radio, and emergency broadcast) can be found at: <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm>; <http://www.towerkill.com>; and <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html>.

If wetlands, springs, or streams are known to occur in the project area or are present in the vicinity of the project area, we ask that you be aware of potential impacts project activities may have on these habitats. Discharge of fill material into wetlands or waters of the United States is regulated by the U.S. Army Corps of Engineers (ACOE) pursuant to section 404 of the Clean Water Act of 1972, as amended. We recommend you contact the ACOE's Regulatory Section regarding the possible need for a permit. For projects located in northern Nevada (Carson City, Churchill, Douglas, Elko, Esmeralda, Eureka, Humboldt, Lander, Lyon, Mineral, Pershing, Storey, and Washoe Counties) contact the Reno Regulatory Office at 300 Booth Street, Room 3060, Reno, Nevada 89509, (775) 784-5304; in southern Nevada (Clark, Lincoln, Nye, and White Pine Counties) contact the St. George Regulatory Office at 321 North Mall Drive, Suite L-101, St. George, Utah 84790-7314, (435) 986-3979; or in California along the eastern Sierra contact the Sacramento Regulatory Office at 650 Capitol Mall, Suite 5-200, Sacramento, California 95814, (916) 557-5250.

We appreciate your concern for threatened and endangered species. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

The table below outlines lead FWS field offices by county and land ownership/project type. Please refer to this table when you are ready to coordinate (including requests for section 7 consultation) with the field office corresponding to your project, and send any documentation regarding your project to that corresponding office. Therefore, the lead FWS field office may not be the office listed above in the letterhead.

Lead FWS offices by County and Ownership/Program

County	Ownership/Program	Species	Office Lead*
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Alameda	Tidal wetlands/marsh adjacent to Bays	Salt marsh species, delta smelt	BDFWO
Alameda	All ownerships but tidal/estuarine	All	SFWO
Alpine	Humboldt Toiyabe National Forest	All	RFWO
Alpine	Lake Tahoe Basin Management Unit	All	RFWO
Alpine	Stanislaus National Forest	All	SFWO
Alpine	El Dorado National Forest	All	SFWO
Colusa	Mendocino National Forest	All	AFWO
Colusa	Other	All	By jurisdiction (see map)
Contra Costa	Legal Delta (Excluding ECCHCP)	All	BDFWO
Contra Costa	Antioch Dunes NWR	All	BDFWO
Contra Costa	Tidal wetlands/marsh adjacent to Bays	Salt marsh species, delta smelt	BDFWO
Contra Costa	All ownerships but tidal/estuarine	All	SFWO
Del Norte	All	All	AFWO
El Dorado	El Dorado National Forest	All	SFWO
El Dorado	LakeTahoe Basin Management Unit		RFWO
Glenn	Mendocino National Forest	All	AFWO
Glenn	Other	All	By jurisdiction (see map)
Humboldt	All except Shasta Trinity National Forest	All	AFWO

Humboldt	Shasta Trinity National Forest	All	YFWO
Lake	Mendocino National Forest	All	AFWO
Lake	Other	All	By jurisdiction (see map)
Lassen	Modoc National Forest	All	KFWO
Lassen	Lassen National Forest	All	SFWO
Lassen	Toiyabe National Forest	All	RFWO
Lassen	BLM Surprise and Eagle Lake Resource Areas	All	RFWO
Lassen	BLM Alturas Resource Area	All	KFWO
Lassen	Lassen Volcanic National Park	All (includes Eagle Lake trout on all ownerships)	SFWO
Lassen	All other ownerships	All	By jurisdiction (see map)
Marin	Tidal wetlands/marsh adjacent to Bays	Salt marsh species, delta smelt	BDFWO
Marin	All ownerships but tidal/estuarine	All	SFWO
Mendocino	Russian River watershed	All	SFWO
Mendocino	All except Russian River watershed	All	AFWO
Modoc	Modoc National Forest	All	KFWO
Modoc	BLM Alturas Resource Area	All	KFWO
Modoc	Klamath Basin National Wildlife Refuge Complex	All	KFWO
Modoc	BLM Surprise and Eagle Lake Resource Areas	All	RFWO

Modoc	All other ownerships	All	By jurisdiction (See map)
Mono	Inyo National Forest	All	RFWO
Mono	Humboldt Toiyabe National Forest	All	RFWO
Napa	All ownerships but tidal/estuarine	All	SFWO
Napa	Tidal wetlands/marsh adjacent to San Pablo Bay	Salt marsh species, delta smelt	BDFWO
Nevada	Humboldt Toiyabe National Forest	All	RFWO
Nevada	All other ownerships	All	By jurisdiction (See map)
Placer	Lake Tahoe Basin Management Unit	All	RFWO
Placer	All other ownerships	All	SFWO
Sacramento	Legal Delta	Delta Smelt	BDFWO
Sacramento	Other	All	By jurisdiction (see map)
San Francisco	Tidal wetlands/marsh adjacent to San Francisco Bay	Salt marsh species, delta smelt	BDFWO
San Francisco	All ownerships but tidal/estuarine	All	SFWO
San Mateo	Tidal wetlands/marsh adjacent to San Francisco Bay	Salt marsh species, delta smelt	BDFWO
San Mateo	All ownerships but tidal/estuarine	All	SFWO
San Joaquin	Legal Delta excluding San Joaquin HCP	All	BDFWO

San Joaquin	Other	All	SFWO
Santa Clara	Tidal wetlands/marsh adjacent to San Francisco Bay	Salt marsh species, delta smelt	BDFWO
Santa Clara	All ownerships but tidal/estuarine	All	SFWO
Shasta	Shasta Trinity National Forest except Hat Creek Ranger District (administered by Lassen National Forest)	All	YFWO
Shasta	Hat Creek Ranger District	All	SFWO
Shasta	Bureau of Reclamation (Central Valley Project)	All	BDFWO
Shasta	Whiskeytown National Recreation Area	All	YFWO
Shasta	BLM Alturas Resource Area	All	KFWO
Shasta	Caltrans	By jurisdiction	SFWO/AFWO
Shasta	Ahjumawi Lava Springs State Park	Shasta crayfish	SFWO
Shasta	All other ownerships	All	By jurisdiction (see map)
Shasta	Natural Resource Damage Assessment, all lands	All	SFWO/BDFWO
Sierra	Humboldt Toiyabe National Forest	All	RFWO
Sierra	All other ownerships	All	SFWO
Siskiyou	Klamath National Forest (except Ukonom District)	All	YFWO
Siskiyou	Six Rivers National Forest and Ukonom District	All	AFWO
Siskiyou	Shasta Trinity National Forest	All	YFWO

Siskiyou	Lassen National Forest	All	SFWO
Siskiyou	Modoc National Forest	All	KFWO
Siskiyou	Lava Beds National Volcanic Monument	All	KFWO
Siskiyou	BLM Alturas Resource Area	All	KFWO
Siskiyou	Klamath Basin National Wildlife Refuge Complex	All	KFWO
Siskiyou	All other ownerships	All	By jurisdiction (see map)
Solano	Suisun Marsh	All	BDFWO
Solano	Tidal wetlands/marsh adjacent to San Pablo Bay	Salt marsh species, delta smelt	BDFWO
Solano	All ownerships but tidal/estuarine	All	SFWO
Solano	Other	All	By jurisdiction (see map)
Sonoma	Tidal wetlands/marsh adjacent to San Pablo Bay	Salt marsh species, delta smelt	BDFWO
Sonoma	All ownerships but tidal/estuarine	All	SFWO
Tehama	Mendocino National Forest	All	AFWO
Tehama	Shasta Trinity National Forest except Hat Creek Ranger District (administered by Lassen National Forest)	All	YFWO
Tehama	All other ownerships	All	By jurisdiction (see map)
Trinity	BLM	All	AFWO
Trinity	Six Rivers National Forest	All	AFWO
Trinity	Shasta Trinity National Forest	All	YFWO

Trinity	Mendocino National Forest	All	AFWO
Trinity	BIA (Tribal Trust Lands)	All	AFWO
Trinity	County Government	All	AFWO
Trinity	All other ownerships	All	By jurisdiction (See map)
Yolo	Yolo Bypass	All	BDFWO
Yolo	Other	All	By jurisdiction (see map)
All	FERC-ESA	All	By jurisdiction (see map)
All	FERC-ESA	Shasta crayfish	SFWO
All	FERC-Relicensing (non-ESA)	All	BDFWO

***Office Leads:**

AFWO=Arcata Fish and Wildlife Office

BDFWO=Bay Delta Fish and Wildlife Office

KFWO=Klamath Falls Fish and Wildlife Office

RFWO=Reno Fish and Wildlife Office

YFWO=Yreka Fish and Wildlife Office

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Migratory Birds
- Wetlands

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Reno Fish And Wildlife Office
1340 Financial Boulevard, Suite 234
Reno, NV 89502-7147
(775) 861-6300

Project Summary

Consultation Code: 08ENVD00-2018-SLI-0675

Event Code: 08ENVD00-2018-E-01540

Project Name: Ward Lake Expansion

Project Type: MINING

Project Description: Proposed addition of thirty acres to Ward Lake Mine operations.

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/place/40.41384728734229N120.41205623177353W>



Counties: Lassen, CA

Endangered Species Act Species

There is a total of 1 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

-
1. 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.

Mammals

NAME	STATUS
North American Wolverine <i>Gulo gulo luscus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5123	Proposed Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS National Wildlife Refuge Lands And Fish Hatcheries

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 OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

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.
 3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

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
Bald Eagle <i>Haliaeetus leucocephalus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Dec 1 to Aug 31
Clark's Grebe <i>Aechmophorus clarkii</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jan 1 to Dec 31

NAME	BREEDING SEASON
Golden Eagle <i>Aquila chrysaetos</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/1680	Breeds Dec 1 to Aug 31
Lesser Yellowlegs <i>Tringa flavipes</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Long-billed Curlew <i>Numenius americanus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/5511	Breeds Apr 1 to Jul 31
Marbled Godwit <i>Limosa fedoa</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9481	Breeds elsewhere
Sage Thrasher <i>Oreoscoptes montanus</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9433	Breeds Apr 15 to Aug 10
Tricolored Blackbird <i>Agelaius tricolor</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3910	Breeds Mar 15 to Aug 10
Willet <i>Tringa semipalmata</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 5

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.

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.

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.

■ probability of presence ■ breeding season | survey effort — no data



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>

Migratory Birds FAQ

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 E-bird Explore Data 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.

Wetlands

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.

THERE ARE NO WETLANDS WITHIN YOUR PROJECT AREA.

BURROWING OWL SURVEY

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INTRODUCTION

The Ward Lake Quarry is located approximately three miles east of Ward Lake off of Ward Lake Road in Lassen County. The site is located in Section 32, Township 30 North, Range 14 East, MDBM. The coordinates at the center of the project are 40.414478, -120.417222.

The current Ward Lake mine area is approximately 160 acres, 100 acres of which are used for quarry operations. The facility includes the mining of rock, crushing, scales, office, truck shop, cement plant, asphalt plant, settling ponds, fuel storage, and material stockpiles. The project also includes various sediment control structures. The area surrounding the site is used for agriculture, mineral extraction, and open space.

The proposed expansion of Ward Lake Quarry includes the addition of approximately 78.6 acres to the mine boundary, a portion of which would be used for quarry operations. Access roads currently exist within the remaining area. The proposed expansion area is shown in Figure 1.

BURROWING OWL LIFE HISTORY

Burrowing owls (*Athene cunicularia*) inhabit areas of short grasses or other sparse vegetation, but their most basic habitat requirement is a burrow. Burrows provide protection from many predators, a relatively constant microclimate for nesting and thermoregulation, protection from hazardous or inclement weather, and an area in which to cache prey items. Burrowing owls hunt in both day and night. They perch on prairie dog mounds or other high spots on the ground. Prey is either run down on foot or caught by hovering and swooping. Burrowing owls prey on insects, small mammals, lizards, and birds.

Although its status in northeastern California is poorly known, the species appears to be scarce and may have been so historically. Burrowing owls may currently nest in small numbers in the Honey Lake Basin of Lassen County and in the Plumas County portion of Sierra Valley, and they have been reported from most other large valleys in the region, including Big Valley, Lassen and Modoc counties, and at Modoc National Wildlife Refuge and Surprise Valley in Modoc County (Shuford et al. 2008). Nesting generally occurs between March and September.

Intensive agriculture or development results in loss of burrows which leads to reduced prey availability and creation of suboptimal nesting habitat. Decreased density of adequate burrows may lead to reduced chances for unpaired owls to find mates. Loss of habitat has been cited as factor of decline in California. Due to the declining number of burrowing owls, CDFW has listed the species as a Bird Species of Special Concern.

BURROWING OWL SURVEY

The burrowing owl survey was completed according to the *Burrowing Owl Survey Protocol and Mitigation Guidelines* published by the California Burrowing Owl Consortium. This four-phase survey protocol is intended to help evaluate potential utilization of the Action Area by the species. For purposes of this report, the Action Area is defined as the area within which Project operations could impact an owl. At Ward Lake Quarry, the Action Area includes the proposed

expansion area and within 500 feet of the proposed boundary, to account for the standard species buffer for burrowing owls (Figure 1).

Phase I: Habitat Assessment

A desktop pre-survey review of the California Natural Diversity Database (CNDDB) was conducted to determine the potential for burrowing owls to occur within the Action Area. There are two documented occurrences of the burrowing owl in Lassen County; the nearest was approximately ten miles east of the Action Area. There are no previous records of the species within 5 miles of the Action Area.

The Action Area is comprised of grazing land identified through the California Wildlife Habitat Relationships (CWHR) classification as Sagebrush (SGB) habitat type. Sagebrush habitat is typically large, open, and often discontinuous, and stands are dominated by big sagebrush (*Artemisia tridentata*). This habitat occurs over a range of middle and high elevations. Sagebrush is mixed with other similar shrub species, such as rabbitbrush (*Chrysothamnus* spp.), horsebrush (*Tetradymia* spp.), and bitterbrush (*Purshia* spp.). The understory onsite consists of perennial grasses, annual grasses, and forbs. Vegetation observed at Ward Lake Quarry includes the following:

- Rubber rabbitbrush (*Ericameria nauseosa*)
- Sagebrush (*Artemisia tridentata* ssp.)
- Mormon tea (*Ephedra viridis*)
- Hooker's balsamroot (*Balsamorhiza hookeri*)
- Bristly fiddleneck (*Amsinckia tessellata*)
- Redstem stork's bill (*Erodium cicutarium*)
- Cheatgrass (*Bromus tectorum*)
- Bluebunch wheatgrass (*Pseudoreogneria spicata*)
- Common wooly sunflower (*Eriophyllum lanatum*)

Common wildlife generally associated with the sagebrush habitat type include mule deer (*Odocoileus hemionus californicus*), black-tailed deer (*Odocoileus hemionus columbianus*), pronghorn (*Antilocapra americana*), coyote (*Canis latrans*), jackrabbit (*Lepus californicus*), and Pacific gopher snake (*Pituophis catenifer*). The following wildlife species, or signs of the species, were observed during the survey:

- Cottontail rabbit (*Sylvilagus bachmani*)
- Chipmunk (*Tamias* sp.)
- Sierran treefrog (*Pseudacris sierrae*)
- Mourning dove (*Zenaida macroura*)
- Black-billed magpie (*Pica hudsonia*)
- California quail (*Callipepla californica*)
- Great horned owl (*Bubo virginianus*)
- Western meadowlark (*Sturnella neglecta*)
- Turkey vulture (*Cathartes aura*)

The habitat assessment found that the Action Area is located within the burrowing owl species range and sagebrush habitat in the area may have the potential to support burrowing owl nesting and foraging. A survey was conducted to assess burrowing owl habitat onsite.

Phase II: Burrow Pedestrian Survey

A pedestrian transect survey was completed throughout the Action Area on March 31, 2020, to determine the presence of burrows onsite. The survey began at 1330 and concluded at 1630. Weather was sunny with approximately 50 percent cloud cover and moderate wind speeds. Ambient temperatures were between 45 and 55 degrees Fahrenheit during the survey period.

Transects were walked within the Action Area in an east-west orientation. Transect spacing was selected to achieve full visual coverage of the ground within any potential burrowing habitat onsite. Habitat quality factors that were considered included topography and soil depth that could potentially support burrows. Transect spacing depended on vegetation density, slope, and the occurrence of large rock outcroppings. Tracks, feathers, pellets, and other sign items that may indicators of a burrow were considered during the survey.

Within the Action Area, soil in areas with slopes between 0 percent and ten percent showed little development with soil depth typically less than three inches and non-friable soils. Slopes greater than ten percent exhibit deep, friable soil with sparse sagebrush shrubs.



Photo: Proposed expansion area (facing east from western boundary)



Photo: Topography of the site (facing NE)



Photo: Shallow soils area



Photo: Deep friable soils area

Results

No burrows were observed that appeared to be able to accommodate an animal the size of a burrowing owl. Several small holes were observed in the ground within the friable soils onsite, though none exceeded 2.5 inches in diameter. The size of the entrance suggests that the burrows were likely created by a snake or chipmunk.

Burrow selection by burrowing owls has been studied by examining global burrowing owl burrow characteristics. The study found that burrowing owls select burrows with an entrance size of 15 centimeters (5.9 inches) or larger in diameter (Johnson et al. 2010). This suggests that the holes observed onsite do not provide habitat for burrowing owls. Additionally, burrowing owls have been observed inhabiting areas with a high density of burrows; this is not the case at the Ward Lake Quarry. Therefore, this assessment finds that no burrowing owl habitat occurs within the Action Area at Ward Lake Quarry.



Photo: Ground hole observed onsite

Phase III: Burrowing Owl Survey, Census, and Mapping

Due to the negative results found in the Phase II of the Burrowing Owl survey, there was no need to implement Phase III of the Burrowing Owl Survey Protocol and Mitigation Guidelines.

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- Johnson, David. Gillis, Donald. Gregg, Michael. Rebholz, James. Lincer, James. Belthoff, James. 2010. Users Guide to Installation of Burrows for Burrowing Owls. Tree Top Inc. PP 6.
- Shuford, W. D., and Gardali, T., editors. 2008. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.
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