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*Final Environmental Impact Statement*  
*Thacker Pass Lithium Mine Project*

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*Appendix H*

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Wildlife and Special Status Species Information

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## APPENDIX H. WILDLIFE INFORMATION

**Table H.1. Special Status Species Potentially Occurring in the Proposed Thacker Pass Lithium Project Area**

Species Common Name	Scientific Name	Protection Status <sup>1</sup>	Designation and Ranking <sup>2</sup>	Habitat Description	Potential for Occurrence
<b>Insects</b>					
Rice's Blue	<i>Euphilotes pallescens ricei</i>	BLM	NS (G3G4T1); NS-S (S1)	Known only from the sand dunes and sandy flats just north and west of Winnemucca, Nevada.	Low – no sand dunes occur within the Project area, and outside of known species range.
Denio Sandhill Skipper	<i>Polites sabuleti sinemaculata</i>	BLM	NS (G5T1); NS-S (S1)	The bleached sandhill skipper is known only from one location, at Baltazor Hot Spring near Denio Junction in Humboldt County, Nevada. The type locality is a salt flat with dense growth of <i>Distichlis spicata</i> (saltgrass), which probably serves as the larval hostplant.	Low – no salt flats within Project area, and outside of known species range.
Humboldt Serican Scarab	<i>Serica humboldti</i>	BLM	NS (G1); NS-S (S1)	Occurs in sand dune habitats that provide necessary requirements of an easily penetrable substrate with ready access to higher levels of moisture, as well as protection from temperature extremes.	Low – no sand dune habitat within Project area.
<b>Mollusks</b>					
Squat Mud Meadows Pyrg	<i>Pyrgulopsis limaria</i>	BLM	NS (G1); NS-S (S1); SWAP	Occurs in downstream habitats where comparatively swift water flows over cobble substrate. Endemic to Soldier Meadow Valley.	Low – outside known species range, and none detected within Project area during field surveys.
Western Lahontan Pyrg	<i>Pyrgulopsis longiglans</i>	BLM	NS (G2G3); NS-S (S2S3)	Occurs in freshwater benthic habitat including lakebeds, river beds, and the bottoms of all freshwater bodies.	Low – none detected within Project area during field surveys.
Northern Soldier Meadow Pyrg	<i>Pyrgulopsis militaris</i>	BLM	NS (G1); NS-S (S1); SWAP	Typically live in small, spring-fed habitats that occur in Soldier meadow valley in the Black Rock Desert in northwest Nevada. This species is known to occur in this area and a spring in Bog Hot Valley.	Low – outside known species range, and none detected within Project area during field surveys.
Sadas Pyrg	<i>Pyrgulopsis sadai</i>	BLM	NS (G1G2); NS-S (S1S2); SWAP	Occurs in freshwater benthic habitat including lakebeds, river beds, and the bottoms of all freshwater bodies.	Low – none detected within Project area during field surveys.

Species Common Name	Scientific Name	Protection Status <sup>1</sup>	Designation and Ranking <sup>2</sup>	Habitat Description	Potential for Occurrence
Southern Soldier Meadow Pyrg	<i>Pyrgulopsis umbilicata</i>	BLM	NS (G1Q); NS-S (S1); SWAP	Occurs only near the source of thermal springs in semi-aquatic habitat that is within 1 cm of water and in the splash zone at the base of riparian grasses and emergent rocks.	Low – outside known species range, and none detected within Project area during field surveys.
<b>Plants</b>					
Lahontan Milkvetch	<i>Astragalus porrectus</i>	BLM	NS (G3); NS-S (S3)	Open, calcareous or alkaline, sandy to gravelly washes, alluvium, or gullies on clay badlands, knolls, or playa edges in the shadscale zone.	Low – limited habitat within Project area. Species was not found during surveys.
Tonopah Milkvetch	<i>Astragalus pseudodanthus</i>	BLM	NS (G3Q); NS-S (S2)	Deep loose sandy soils of stabilized and active dune margins, old beaches, valley floors, or drainages, with <i>Sarcobatus vermiculatus</i> and other salt desert shrub taxa. West central Nevada, Nye, Mineral, and Lyon Counties with a small disjunct population in Desert Valley, about 40 miles to the east.	Low – Deep sands do not occur within the project area.
Lonesome Milkvetch	<i>Astragalus solitarius</i>	BLM	NS (G3); NS-S (S1)	Washes and banks of shallow soils on volcanic flat-rock with <i>Artemisia arbuscula</i> , <i>A. tridentata</i> , <i>Tetradymia glabrata</i> , <i>Poa sandbergii</i> , <i>Atriplex confertifolia</i> , <i>Chrysothamnus nauseosus</i> , etc.	Low – Potential habitat but species was not found within the project area.
Tiehm Milkvetch	<i>Astragalus tiehmii</i>	BLM	NS (G3); NS-S (S2)	Whitish fluviolacustrine volcanic ash deposits weathering to deep clay soils, generally on gentle slopes of any aspect, with <i>Chrysothamnus</i> , <i>Sphaeralcea</i> , <i>Stanleya viridiflora</i> , etc., and frequently with <i>Cryptantha schoolcraftii</i> and/or <i>Eriogonum crosbyae</i> . Elevation: 1,600-1,800 meters.	Low – White volcanic ash does not occur within the project area.
Osgood Mountains Milkvetch	<i>Astragalus yoder-williamsii</i>	BLM; SP	NS (G3); NS-S (S1)	Dry, open, coarse decomposed granodiorite soils among boulders on flats and gentle slopes (recently also found in loose silty soils on a moderate south slope) in healthy sagebrush steppe vegetation with <i>Artemisia arbuscula</i> , <i>A. tridentata</i> spp. <i>vaseyana</i> , <i>Chrysothamnus nauseosus</i> , <i>Poa secunda</i> var. <i>secunda</i> , <i>Agropyron spicatum</i> , <i>Stipa thurberiana</i> , <i>Stipa comata</i> , <i>Festuca idahoensis</i> , <i>Elymus cinereus</i> , etc. Knowledge of potential habitat parameters in Nevada is likely very incomplete.	Low – Granodiorite soils do not occur within the project area.

**Appendix H – Wildlife Information**

Species Common Name	Scientific Name	Protection Status <sup>1</sup>	Designation and Ranking <sup>2</sup>	Habitat Description	Potential for Occurrence
Dainty Moonwort	<i>Botrychium crenulatum</i>	BLM	NS (G3); NS-S (S1)?	Aquatic or wetland-dependent in Nevada. Elevation: 2,500-3,400 meters.	Low – Though wetland habitats do occur, this species has been found at higher elevations and the species was not found during field surveys.
Schoolcraft Catseye	<i>Cryptantha schoolcraftii</i>	BLM	NS (G3); NS-S (S3)	Whitish fluviolacustrine volcanic ash deposits weathering to deep clay soils, on gentle to steep slopes of mostly east, south, and west aspects, in the sagebrush steppe zone with <i>Chrysothamnus</i> , <i>Sphaeralcea</i> , <i>Stanleya viridiflora</i> , etc., and frequently with <i>Astragalus tiehmii</i> and/or <i>Eriogonum crosbyae</i> .	Low – White volcanic ash deposits do not occur within the project area.
Goodrich Biscuitroot	<i>Cymopterus goodrichii</i>	BLM; USFS	NS (G1); NS-S (S1)	Moderate to steep scree and talus slopes of dark angular slate or limestone in the upper subalpine and lower alpine zones. Elevation: 2,200-3,400 meters.	Low – Though scree fields do exist, the project area is lower than known occurrences. In addition, this species was not found within the project area.
Windloving Buckwheat	<i>Eriogonum anemophilum</i>	BLM	NS (G2G3); NS-S (S3)	At high elevations on dry, exposed, relatively barren and undisturbed, gravelly, limestone or volcanic ridges and ridgeline knolls, on outcrops or shallow rocky soils over bedrock, with <i>Artemisia arbuscula</i> , <i>Ericameria viscidiflora</i> , <i>Poa secunda</i> , <i>Elymus elymoides</i> , <i>Arenaria kingii</i> , etc. At low elevations on dry, relatively barren and undisturbed knolls and slopes of light-colored, platy volcanic tuff weathered to form stiff clay soils, on all aspects, with <i>Tetradymia canescens</i> , <i>Ericameria nauseosa</i> , <i>E. viscidiflora</i> , <i>Atriplex confertifolia</i> , <i>Elymus elymoides</i> , <i>Elymus cinereus</i> , <i>Astragalus calycosus</i> , etc.	Low – The habitat with relatively barren soils associated with this species was recently burned. In addition, the species was not found during field surveys.
Crosby Buckwheat	<i>Eriogonum crosbyae</i> <i>var. crosbyae</i>	BLM	NS (G3Q); NS-S (S3)	Outcrops of rhyolite or whitish fluviolacustrine volcanic ash deposits, and derived shallow sandy to clay soils, on gentle to steep slopes of all aspects, with <i>Chrysothamnus nauseosus</i> , <i>Tetradymia glabrata</i> , <i>Artemisia</i> spp., <i>Elymus cinereus</i> , <i>Stanleya viridiflora</i> , <i>Sphaeralcea</i> , <i>Ipomopsis congesta</i> , etc., and frequently with <i>Astragalus tiehmii</i> and/or <i>Eriogonum crosbyae</i> .	High/confirmed – This species was identified during field surveys in the southwest corner of the south Exploration area.

Species Common Name	Scientific Name	Protection Status <sup>1</sup>	Designation and Ranking <sup>2</sup>	Habitat Description	Potential for Occurrence
Prostrate Buckwheat	<i>Eriogonum prociduum</i>	BLM	NS (G3); NS-S (S1)	Basalt flows and occasionally on barren volcanic tuff. Elevation ranging from 4,600-8,320 feet. Associated vegetation cover is low.	Low – The species was not found during field surveys.
Sand Cholla	<i>Grusonia pulchella</i>	BLM; SP	NS (G4); NS-S (S3)	Sand of dunes, dry-lake borders, river bottoms, washes, valleys, and plains in the desert. Dependent on sand dunes or deep sand in Nevada. Elevation: 1,200-1,950 meters.	Low – sand dunes do not occur within the project area.
Grimy Mousetails	<i>Ivesia rhypara var. rhypara</i>	BLM	NS (G2T2); NS-S (S2)	Mostly on dry, relatively barren, yellowish or light-colored outcrops or badlands of welded, sometimes hydrothermally altered and re-cemented, ash-fall tuff, and on shallow gravel grus derived therefrom, in one case on unsorted cobbly riverbed deposits mixed with underlying volcanic ash, on gentle to steep side, shoulder, or toe slopes with east to south to west aspects, with few and sparse associated species such as <i>Trifolium andersonii</i> , <i>Poa secunda</i> , <i>Ericameria nauseosa</i> , and <i>Achnatherum hymenoides</i> .	Low – Light colored or yellow tuff or grus does not occur within the project area.
Davis Peppergrass	<i>Lepidium davisii</i>	BLM	NS (G3); NS-S (S1)	Hard-bottomed clay playas on volcanic plains in the sagebrush zone with sparse associated <i>Atriplex confertifolia</i> and <i>Artemisia cana</i> , surrounded by <i>Artemisia tridentata</i> vegetation. During spring, the playas are usually inundated up to a foot deep. Aquatic or wetland-dependent in Nevada. Elevation: 1,550-1,600 meters.	Low – hard-bottomed clay playas do not occur within the project area.
Pueblo Valley Peppergrass	<i>Lepidium montanum var. nevadense</i>	BLM	NS (G5T1); NS-S (S1)	Dependent on sand dunes or deep sand in Nevada. Elevation: 1,250-1,350 meters. Occurs in dunes west of Denio Junction, Nevada.	Low – the project area is outside of the known range for this species.
Owyhee Prickly Phlox	<i>Leptodactylon glabrum</i>	BLM	NS (G2); NS-S (S1)	Crevice in steep to vertical, coarse-crumbling volcanic canyon walls. Intolerant of water paths or seeps that may form in the rock crevices. 2,800-4,000 meters elevation. Only known populations occur on the far eastern border of Humboldt County, Nevada.	Low – steep rocky terrain does occur within the northern part of the project area, but Project area is outside of known species range.
Packard's Desert Parsley	<i>Lomatium packardiae</i>	BLM	NS (G2); NS-S (S1)	Dry, open, rocky clay soils derived from rhyolite or volcanic ash deposits in the sagebrush zone. Elevation: 1,300-2,350 meters.	Low – rocky rhyolitic deposits occur but this species was not found during field surveys.



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Adobe Parsley	<i>Lomatium roseanum</i>	BLM	NS (G2G3); NS-S (S2)	Open, dry, basalt talus stripes and scree fields overlying clay soils on gentle slopes in low sagebrush vegetation with <i>Artemisia arbuscula</i> , <i>Poa secunda</i> , <i>Elymus elymoides</i> , <i>Arenaria aculeata</i> , <i>Phlox</i> spp., <i>Erigeron linearis</i> , etc. Elevation: 1,768-1,879 meters.	Low – habitat exists in the Project area, but this species was not found during field surveys.
Smooth Stickleaf	<i>Mentzelia mollis</i>	BLM	NS (G2); NS-S (S2)	Dry, open, nearly barren, eroding shoulder and side slopes of brightly colored shrink-swell clay badlands formed by hydrothermal alteration and weathering of air-fall volcanic ash deposits, on all aspects with a very sparse cover of other annuals such as <i>Monolepis pusilla</i> , <i>Mentzelia albicaulis</i> , <i>Cleomella macbrideana</i> , and <i>Phacelia humilis</i> . Elevation: 1,300-1,600 meters.	Low – brightly colored badlands do not occur within the project area.
Oryctes	<i>Oryctes nevadensis</i>	BLM	NS (G3); NS-S (S2)	Deep loose sand of stabilized dunes, washes, and valley flats, on various slopes and aspects, variously associated with <i>Psorothamnus polydenius</i> , <i>Tetradymia tetrameres</i> , <i>T. glabrata</i> , <i>Sarcobatus vermiculatus</i> , <i>S. baileyi</i> , <i>Atriplex canescens</i> , <i>A. confertifolia</i> , <i>Krascheninnikovia lanata</i> , <i>Grayia spinosa</i> , <i>Eriogonum nummularia</i> , <i>Achnatherum hymenoides</i> , <i>Hesperostipa comata</i> , <i>Oenothera deltoides</i> , <i>Cymopterus corrugatus</i> , <i>Penstemon arenarius</i> , <i>Gilia micromeria</i> , <i>Astragalus geyeri</i> , <i>Phacelia bicolor</i> , <i>Nama densum</i> , <i>N. aretioides</i> , etc. Dependent on sand dunes or deep sand in Nevada. Elevation: 1,150-1,850 meters.	Low – Deep sand deposits do not occur within the project area.
Nevada Dune Beardtongue	<i>Penstemon arenarius</i>	BLM	NS (G2G3); NS-S (S2)	Deep loose sandy soils of valley bottoms, aeolian deposits, and dune skirts, often in alkaline areas, sometimes on road banks and other recovering disturbances crossing such soils, in the shadscale zone with <i>Psorothamnus polydenius</i> , <i>Achnatherum hymenoides</i> , <i>Astragalus geyeri</i> var. <i>geyeri</i> , <i>Atriplex canescens</i> , <i>A. confertifolia</i> , <i>Tetradymia glabrata</i> , <i>Gilia leptomeria</i> , <i>Tiquilia nuttallii</i> , <i>Sarcobatus baileyi</i> , <i>Chrysothamnus</i> , <i>Ephedra nevadensis</i> , etc. Dependent on sand dunes or deep sand. Elevation: 1,150-1,850 meters.	Low – deep sand deposits do not occur within the project area.
Cordelia Beardtongue	<i>Penstemon floribundus</i>	BLM	NS (G1); NS-S (S1)	Dry, open, mostly dark-colored volcanic talus, very rocky slopes, or alluvium derived therefrom, on all aspects but predominantly westerly, variously associated with <i>Juniperus osteosperma</i> , <i>Atriplex confertifolia</i> , <i>Sarcobatus vermiculatus</i> , <i>Artemisia spinescens</i> , <i>A. tridentata</i> , <i>Grayia spinosa</i> , <i>Ephedra nevadensis</i> , <i>Penstemon deustus</i> ,	Low – though dark talus was found within the project area, this species was not found during field surveys.

Species Common Name	Scientific Name	Protection Status <sup>1</sup>	Designation and Ranking <sup>2</sup>	Habitat Description	Potential for Occurrence
				<i>P. speciosus</i> , <i>Lewisia rediviva</i> , etc. Also reported but not confirmed on carbonate materials. Elevation: 1,250-2,300 meters.	
Lahontan Beardtongue	<i>Penstemon palmeri</i> <i>var. macranthus</i>	BLM	NS (G4G5T2?); NS-S (S2?)	Along washes, roadsides and canyon floors, particularly on carbonate-containing substrates, usually where subsurface moisture is available throughout most of the summer. Unknown if restricted to calcareous substrates. Elevation: 1,000-1,400 meters.	Low – though washes do occur within the project area, this species occurs far south of the site and the species was not found during field surveys.
Susanville Beardtongue	<i>Penstemon sudans</i>	BLM	NS (G3); NS-S (S1)	Open, sagebrush- or woodland-dominated, rocky slopes on volcanic or other igneous substrates. Elevation: 1,200-1,700 meters.	Low – Rocky slopes dominated by sagebrush do occur in the Project area, but the Project area is out of the known species range, and the species was not found during field surveys.
Reese River Phacelia	<i>Phacelia glaberrima</i>	BLM	NS (G3); NS-S (S3?)	Open, dry to moist, alkaline, nearly barren, sometimes scree-covered, whitish to brownish shrink-swell clay soils derived from fluvio-lacustrine volcanic ash and tuff deposits, generally on the steeper slopes of low hills, bluffs, and badlands in the shadscale-greasewood, sagebrush, and lower pinyon-juniper zones.	Low – preferred habitat is limited within the Project area, and this species was not found during field surveys.
Obscure Scorpionflower	<i>Phacelia inconspicua</i>	BLM; USFS; SP	NS (G2); NS-S (S1)	Relatively deep, undisturbed, organic-rich soils on fairly steep, concave, north to northeast-facing slopes where snow drifts persist well into spring, on small, otherwise barren soil terraces in small clearings in shrub fields dominated by <i>Artemisia tridentata vaseyana</i> in association with <i>Holodiscus microphyllus</i> , <i>Symphoricarpos rotundifolius</i> , and <i>Leymus cinereus</i> . Elevation: 1,500-2,550 meters.	Low – deep organic rich soils do not occur within the project area.
Playa Phacelia	<i>Phacelia inundata</i>	BLM	NS (G3); NS-S (S3?)	Grows in alkali playas and seasonally inundated areas with clay soils. Aquatic or wetland-dependent in Nevada. Elevation: 1,500-1,750 meters.	Low – Alkali playa does not occur within the project area.

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Species Common Name	Scientific Name	Protection Status <sup>1</sup>	Designation and Ranking <sup>2</sup>	Habitat Description	Potential for Occurrence
Whitebark Pine	<i>Pinus albicaulis</i>	FC, BLM	NS (G3G4); NS-S (S3)	Grows in dry, windy, and cold sites characterized by rocky, poorly developed soils and snowy, wind-swept exposures, it pioneers many harsh subalpine and alpine sites. Elevation: 1,300-3,700 meters.	Low – Subalpine and alpine sites do not occur within the project area.
Soldier Meadow Cinquefoil	<i>Potentilla basaltica</i>	BLM	NS (G2); NS-S (S1)	Moist salt-crusted clay in alkaline meadows above, and cooled outflow stream margins below, thermal springs, generally on slight southeast slopes, with <i>Juncus balticus</i> , <i>Scirpus maritimus</i> , <i>S. acutus</i> , <i>Triglochin maritima</i> , <i>Distichlis spicata</i> , <i>Sisyrinchium halophilum</i> , <i>Nitrophila occidentalis</i> , <i>Carex</i> spp., <i>Pyrrocoma racemosa</i> , <i>Solidago spectabilis</i> , <i>Sphaeromeria potentilloides</i> , <i>Astragalus argophyllus</i> , <i>Lotus purshianus</i> , <i>Ericameria nauseosa</i> , <i>Sarcobatus vermiculatus</i> , etc. Aquatic or wetland-dependent in Nevada. Elevation: 1,300-1,400 meters.	Low – Salt crusted alkaline meadows do occur within the project area, but this species was not found during field surveys.
Holmgren Smelowskia	<i>Smelowskia holmgrenii</i>	BLM	NS (G2G3); NS-S (S3)	Crevices, ledges, rubble, or small soils pockets on rock outcrops and cliffs, from high-elevation ridges to north-facing walls at lower elevations, on various rock types in the lower alpine, subalpine conifer, mountain sagebrush, and upper pinyon-juniper zones. Elevation: 1,950-3,500 meters.	Low – preferred habitat is limited within the Project area, and this species was not found during field surveys.
<b>Amphibians</b>					
Northern Leopard Frog	<i>Lithobates pipiens</i>	BLM, SP	NS (G5); NS-S (S2S3)	Northern leopard frogs require a mosaic of habitats, including aquatic overwintering and breeding habitats, as well as upland post-breeding habitats and the links between the two. Springs, slow streams, marshes, bogs, ponds, canals, flood plains, reservoirs, and lakes are used; usually permanent water with rooted aquatic vegetation. In summer, commonly inhabits wet meadows and fields. Takes cover underwater, in damp niches, or in caves when inactive. Overwinters usually underwater and requires well-oxygenated water that does not completely freeze. Eggs are laid and larvae typically develop in shallow, still, permanent water, generally in areas well exposed to sunlight. Generally eggs are attached to vegetation just below the surface of the water.	Low – limited habitat within Project are, and there are no records of occurrence for this species in the Project area or vicinity by NDOW or NNHP.

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Columbia Spotted Frog (Great Basin Pop)	<i>Rana luteiventris</i> pop. 3	FC, BLM, USFS(S), SP	NS (G4T2T3Q); NS-S (S2S3)	Columbia spotted frogs are closely associated with clear, slow-moving or ponded surface waters, with little shade, and relatively constant water temperatures. Breeding and egg-laying occurs in waters with floating vegetation and larger ponds such as oxbows, lakes, stock ponds, and beaver-created ponds. Females usually lay egg masses in the warmest areas of the pond, typically in shallow water. In some areas, spotted frogs are critically tied to beaver-created ponds; without these ponds, spotted frogs are typically not found. For overwintering, spotted frogs use areas that do not freeze, such as spring heads and deep undercuts with overhanging vegetation. However, they have also been observed overwintering underneath ice-covered deep ponds.	Low – limited habitat within Project area, and there are no records of occurrence for this species in the Project area or vicinity by NDOW or NNHP.
<b>Birds</b>					
Northern Goshawk	<i>Accipiter gentilis</i>	MBTA, BLM	USFS(S); NDOW (SB); NS-S (S2); NS (G5)	Nest in mature and old-growth forests with more than 60% closed canopy; often build nests near breaks in the canopy, such as a forest trail, jeep road, or opening created by a downed tree, and prefer sites with a creek, pond, or lake nearby; hunt in the forest, along riparian corridors, and in more open habitat, such as the sagebrush steppes.	Low – usually associated with close stand forests which do not occur in Project area. Not observed in surveys.
Sandhill Crane (both Greater and Lesser)	<i>Antigone canadensis</i>	MBTA, BLM	NS-S (S2B, S3M); NS (G5T5)	Breed in open wetland habitats surrounded by shrubs or trees; nest in marshes, bogs, wet meadows, prairies, burned-over aspen stands, and other moist habitats, preferring those with standing water; breeders gravitate toward the edges between wetland and upland habitats, while nonbreeders may prefer open, grassy sites; winter roosting on shallow lakes or rivers at night and spending the day in irrigated croplands, pastures, grasslands, or wetlands.	Low – Low density populations may occur in northern Nevada but no records of occurrence in this area. Usually prefers lush riparian habitats which do not occur in Project area.
Golden Eagle	<i>Aquila chrysaetos</i>	BGEPA, MBTA, BLM	NS-S (S4); NS (G5)	Open country, especially around mountains, hills, and cliffs; use a variety of habitats ranging from arctic to desert, including tundra, shrublands, grasslands, coniferous forests, farmland, and areas along rivers and streams.	High/confirmed – observed in surveys.

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Short-eared Owl	<i>Asio flammeus</i>	MBTA, BLM	NS-S (S4); NS (G5)	Live in large, open areas with low vegetation, including prairie and coastal grasslands, heathlands, meadows, shrubsteppe, savanna, tundra, marshes, dunes, and agricultural areas; winter habitat is similar, but is more likely to include large open areas within woodlots, stubble fields, fresh and saltwater marshes, weedy fields, dumps, gravel pits, rock quarries, and shrub thickets.; if food is plentiful, winter areas often become breeding areas.	High/confirmed – observed in surveys.
Burrowing Owl (includes Western Burrowing Owl)	<i>Athene cunicularia</i> ( <i>A. c. hypugaea</i> <i>Western Burrowing Owl</i> )	MBTA, BLM	NS-S (S3B); NS (G4); Western Burrowing Owl NS-S (S3B); NS (G4T4)	Live in open habitats with sparse vegetation such as prairie, pastures, desert or shrubsteppe, and airports. In parts of their range they are closely associated with prairie dogs and ground squirrels, whose burrows they use for nests; Western Burrowing Owls breed throughout Nevada in salt desert scrub, Mojave shrub, and some sagebrush habitat, as well as in agricultural landscapes; winters most frequently in the southern half of Nevada, but has been recorded throughout the state during all months.	High/confirmed – observed in surveys.
Ferruginous Hawk	<i>Buteo regalis</i>	MBTA, BLM	NS-S (S2); NS (G4)	Preferred habitat arid and semiarid grassland regions; open, level, or rolling prairies; foothills or middle elevation plateaus largely devoid of trees; and cultivated shelterbelts or riparian corridors.	High/confirmed – observed in surveys.
Swainson's Hawk	<i>Buteo swainsoni</i>	MBTA, BLM	NS-S (S2B); NS (G5)	Favor open habitats for foraging; hay and alfalfa fields, pastures, grain crops, and row crops, or perched atop adjacent fence posts and overhead sprinkler systems; they rely on scattered stands of trees near agricultural fields and grasslands for nesting sites.	High/confirmed – observed in surveys.
Greater Sage-grouse (including Bi-State DPS)	<i>Centrocercus urophasianus</i>	BLM, SP	NDOW (GB); NS-S (S3); NS (G3G4)	Sagebrush steppe; nest in areas with relatively dense cover from big sagebrush; may use areas with rabbitbrush, greasewood, and grassy areas; leks are located in clear areas such as broad ridgetops, grassy swales, dry lakebeds, and sometimes recently burned areas. chick rearing areas include irrigated pastures, wet meadows, and alfalfa fields, in addition to sagebrush.	High/confirmed – observed in surveys.
Western Snowy Plover (does not include the protected DPS found along the Pacific Coast)	<i>Charadrius nivosus nivosus</i>	MBTA, BLM	NS-S (S3B); NS (G3T3)	Barren to sparsely vegetated sand beaches, dry salt flats in lagoons, dredge spoils deposited on beach or dune habitat, levees and flats at salt-evaporation ponds, river bars, along alkaline or saline lakes, reservoirs, and ponds.	Low – habitat preferences not found in the Project area.

Species Common Name	Scientific Name	Protection Status <sup>1</sup>	Designation and Ranking <sup>2</sup>	Habitat Description	Potential for Occurrence
Black Tern	<i>Chlidonias niger</i>	MBTA	NS (G4G5); NS-S (S2S3B) SWAP; PIF	Breeds in marshes, rivers, lake shores, impoundments, or in wet meadows, typically in sites with mixture of emergent vegetation and open water. Cattails, bulrushes, burreed, or phragmites commonly are present in nesting areas.	Low – Suitable breeding habitat limited within Project area. Occurrence limited to migrating individuals.
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	BLM, USFS (T), SP	NS (G5); NS-S (S1B); SWAP; PIF	Riparian obligate species which requires dense cottonwood-willow forested tracts. In some areas, birds required 17+ ha (42 acres), including a minimum of 3+ ha (7.5) of closed-canopy, broad-leaved forest. Nests are placed in willows, but cottonwoods are used extensively for foraging.	Low – preferred habitat not found in Project area.
Prairie Falcon	<i>Falco mexicanus</i>	FWS (delisted 1999), MBTA, BLM, USFS	NDOW (EB); NS-S (S2); NS (G4)	Breed in open landscapes with cliffs (or skyscrapers) for nest sites; nesting at elevations up to about 12,000 feet, as well as along rivers and coastlines or in cities; migration and winter in nearly any open habitat, but with a greater likelihood along barrier islands, mudflats, coastlines, lake edges, and mountain chains.	High/confirmed – observed in surveys.
Pinyon Jay	<i>Gymnorhinus cyanocephalus</i>	MBTA, BLM	NS-S (S3S4); NS (G5)	Pinyon-juniper woodland, sagebrush, scrub oak, and chaparral communities, and sometimes in pine forests; specialized for feeding on pine seeds.	Low – Found in pinyon-juniper woodlands which do not occur in Project area.
Loggerhead Shrike	<i>Lanius ludovicianus</i>	MBTA, BLM	NDOW (SB); NS-S (S4); NS (G4)	Open country with short vegetation and well-spaced shrubs or low trees, particularly those with spines or thorns; frequent agricultural fields, pastures, old orchards, riparian areas, desert scrublands, savannas, prairies, golf courses, and cemeteries; are often seen along mowed roadsides with access to fence lines and utility poles.	High/confirmed – observed in surveys.
Black Rosy-Finch	<i>Leucosticte atrata</i>	MBTA, BLM	NDOW (SP); NS-S (S3); NS (G4)	Breeds in alpine areas, usually near rock piles, and cliffs; winters in open country, including mountain meadows, high deserts, valleys, and plains.	Moderate – Not observed but seasonal occurrence possible in winter.
Gray-crowned Rosy-Finch	<i>Leucosticte tephrocotis</i>	MBTA, BLM	NS-S (S3N); NS (G5)	Breeds in alpine areas, usually near snow fields or glaciers, talus, rockpiles, and cliffs; winters in open country, including mountain meadows, shrublands, roadsides, towns, cultivated areas, rocky hillsides, and margins of dry ditches.	Moderate – Not observed but seasonal occurrence possible in winter.

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Species Common Name	Scientific Name	Protection Status <sup>1</sup>	Designation and Ranking <sup>2</sup>	Habitat Description	Potential for Occurrence
Lewis's Woodpecker	<i>Melanerpes lewis</i>	MBTA, BLM	NS-S (S3); NS (G4)	Open pine woodlands, and other areas with scattered trees and snags; unlike other American woodpeckers, it enjoys sitting in the open as opposed to sitting in heavy tree cover.	Moderate – NDOW records indicate presence in vicinity but species is typically associated with forested areas, not occurring in Project area.
Long-billed Curlew	<i>Numenius americanus</i>	MBTA NDOW	NS (G5); NS-S (S2S3B); SWAP	Breeds in grassy meadows, generally near water. Nests in moist meadows, on ground usually in flat area with short grass, sometimes on more irregular terrain, often near rock or other conspicuous object. In Nevada, recent study documented nesting in unharvested wet meadows as well as in short grass adjacent to wet meadows when meadows were flooded. Broods move immediately into tall grass in wet meadows after hatching.	Low – suitable breeding habitat is limited, but exists within the Project area.
Mountain Quail	<i>Oreortyx pictus</i>	BLM, USFS (S), SP	NS (G5); NS-S (S3); SWAP; PIF	Brushy mountainsides, coniferous forest, forest and meadow edges, dense undergrowth, and chaparral. Favors areas with tall dense shrubs, close to water (Brennan et al. 1987). May move to areas with suitable mast crops in fall. Nests on the ground in a shallow scrape lined with plant material. Usually nests under protective cover of a tree, shrubs, fallen branches, etc., within a few hundred meters of water.	Low – suitable habitat limited within Project area.
Sage Thrasher	<i>Oreoscoptes montanus</i>	MBTA, BLM	NDOW (SB); NS-S (S5B); NS (G4)	Breeds exclusively in shrubsteppe habitats; require relatively dense ground cover for concealment, but also some bare ground for foraging and for getting around on their feet, which they often do in preference to flying; use arid or semiarid open country with scattered bushes, grasslands, and open pinyon-juniper woodlands.	High/confirmed – observed in surveys.
American White Pelican	<i>Pelecanus erythrorhynchos</i>	MBTA	NS (G4); NS-S (S2B); PIF	Habitat is primarily rivers, lakes, reservoirs, estuaries, and marshes. Rests and nests on islands and peninsulas in brackish or freshwater lakes, isolated from mammalian predators. In NV, Anaho Island is the site of one of the most important nesting colonies in the West. Nesting documented on Franklin Lake, northeast Nevada in wet years.	Low – suitable habitat limited within Project area.

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White-faced Ibis	<i>Plegadis chihi</i>	MBTA	NS (G5); NS-S (S3B); SWAP; PIF	Primary habitat is marshes, swamps, ponds and rivers, mostly in freshwater habitats. Nests in marshes; in low trees, on the ground in bulrushes or reeds, or on a floating mat.	Low – suitable habitat limited within Project area.
Flammulated Owl	<i>Psilosops flammeolus</i>	BLM; USFS (S); MBTA	NS (G4); NS-S (S3); SWAP (SCP); PIF	Open pine forest in mountains.	Low – usually associated with pinyon-juniper woodlands which do not occur in Project area. Not observed in surveys.
Brewer's Sparrow	<i>Spizella breweri</i>	MBTA, BLM	NDOW (SP); NS-S (S4B); NS (G5)	Arid sagebrush steppe; winter, occupy sagebrush shrublands similar to the breeding grounds, as well as a range of desert scrub habitats consisting mainly of saltbush and creosote.	High/confirmed – observed in surveys.
<b>Fish</b>					
Desert Dace	<i>Eremichthys acros</i>	FT; BLM, ST	NS (G1); NS-S (S1); SWAP	Desert dace occupy habitat in 10 thermal spring areas (two of which were introduced populations) and their outflow consisting of 3.1 miles total, in areas with temperatures of 18-40° C (64-104° F). They are most common in temperatures of 18-40.5° C (64-104° F), from spring pools and outflows. Desert dace have the highest temperature tolerance of any minnow in North America (Nyquist 1963). From recent survey work, desert dace occupy a variety of habitats in Soldier Meadow including; spring pools and outflows; artificial impoundments, earthen ditches and alkali marshes. Water temperature is a determining factor in desert dace distribution as it is a thermal obligate.	Low – outside species known range.
Lahontan Cutthroat Trout	<i>Oncorhynchus clarkii henshawi</i>	FT; BLM (S), USFS (T), SP	NS (G4T3); NS-S (S3); SWAP	The LCT inhabits lakes and streams and requires cool, well-oxygenated water. It is adapted to highly mineralized waters. In streams, the LCT uses rocky areas, riffles, deep pools, and areas under logs and overhanging banks. Optimally, cover should be available in at least 25% of the stream area. The LCT spawn in streams, generally in riffle areas over gravel substrate. Spawning and nursery habitat is characterized by cool water, approximate 1:1 pool-riffle ratio, well-vegetated and stable stream banks, and relatively silt-free rocky substrate in riffle-run areas (USFWS 1994f).	Moderate – within species historic range, but streams within project area not known to support species. Project related water depletions not projected to impact inhabited stream reaches.



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Species Common Name	Scientific Name	Protection Status <sup>1</sup>	Designation and Ranking <sup>2</sup>	Habitat Description	Potential for Occurrence
Alvord Chub	<i>Siphateles alvordensis</i>	BLM, SP	NS (G2); NS-S (S2); SWAP	Alvord chub occupy a wide variety of habitats from cool and warm springs and outflows to reservoirs and lakes devoid of other fish species. It was observed in a warm spring out flow (Bog Hot Springs). Fish were not found in the outflow above the 31.1°C thermal barrier.	Low – outside species known range.
<b>Mammals</b>					
Pallid Bat	<i>Antrozous pallidus</i>	BLM; USFS; NDOW	NS-S (S3); NS (G4)	Found throughout the state, primarily in the low and middle elevations (5,900 feet), although has been found at over 10,200 feet; variety of habitats from low desert to brushy terrain to coniferous forest and non-coniferous woodlands; in pinyon-juniper, blackbrush, creosote, sagebrush, and salt desert scrub habitats; ROOST SITES: Selects a variety of day roosts including rock outcrops, mines (maternity colonies have been found in geothermally-influenced adits), caves, hollow trees, buildings, and bridges. Night roosts very commonly under bridges, but also caves and mines. Intolerant of roosts in excess of 40° C; RESIDENT STATUS: year round resident WINTER STATUS: hibernates but periodically arouses to actively forage and drink in winter.	Moderate – occurs throughout Nevada.
Pygmy Rabbit	<i>Brachylagus idahoensis</i>	BLM, USFS (S), SG	NS (G4); NS-S (S3); SWAP	Found primarily on big sagebrush dominated plains, and alluvial fans where plants occur in tall, dense clumps. Deep, friable, loamy-type soils are required for burrow excavation. They may occasionally use burrows excavated by other species (e.g., yellow-bellied marmot), therefore, may occur in areas that support shallower, more compact soils as long as sufficient shrub cover is available. Dense stands of sage growing adjacent to permanent and intermittent streams, along fence rows, and ditches may be avenues of dispersal. Cover and height of woody vegetation appear to be critical habitat features; however, found that pygmy rabbits occupied clusters of sagebrush that were taller/higher than the sagebrush shrubs in the surrounding area (i.e., sagebrush islands which ranged from 12-117 cm in height).	Moderate – no detections during surveys but suitable habitat and historic burrows occur in Project area.

Species Common Name	Scientific Name	Protection Status <sup>1</sup>	Designation and Ranking <sup>2</sup>	Habitat Description	Potential for Occurrence
Townsend's Big-eared Bat	<i>Corynorhinus townsendii</i>	BLM; USFS; SP	NS (G4); NS-S (S2); SWAP	Roosting habitats are usually mines, caves, and other cave-like spaces with populations occurring in areas dominated by exposed, cavity forming rock and/or historic mining districts. Maternity and hibernation colonies typically are in caves and mine tunnels. Hibernacula are generally in relatively cold places, often near cave or mine entrances and in well-ventilated areas. This species does not use crevices or cracks; it hangs from the ceiling, generally near the zone of total darkness (Schmidly 1991). In Nevada, all known roosts sites are in abandoned mines. Found at elevations between 210 and 3,500 meters in pinyon-juniper-mahogany, white fir, blackbrush, sagebrush, salt desert scrub, agricultural, and occasionally urban habitats. Foraging associations include the edge of habitats along streams, adjacent to and within a variety of wooded habitats.	High/confirmed – forages in Project area.
Big Brown Bat	<i>Eptesicus fuscus</i>	BLM	NS (G5); NS-S (S3S4)	Habitats range from high mountains to low deserts, including cities. Summer roosts generally are in buildings, bridges, hollow trees, spaces behind exfoliating bark, rock crevices, tunnels, or cliff swallow nests, in sites that do not get too hot. Maternity colonies may form in attics, barns, rock crevices, or tree cavities. Most adult females return to the same maternity roost site in successive years. Caves, mines, and especially buildings and human-made structures are used for hibernation.	High – Likely to forage in or near Project area (frequency group detected).
Spotted Bat	<i>Euderma maculatum</i>	BLM; USFS (S), SP	NS (G4); NS-S (S2); SWAP	Spotted bats are found in a wide variety of habitats from low elevation desert scrub to high elevation coniferous forests if suitable roosting habitat exists. This species primarily roosts in cracks and crevices associated with cliff faces but there is some indication that mines and caves may be occasionally used, especially in winter. Spotted bats have occasionally been found roosting on or in buildings elsewhere in their range, but their reliance on such roosts is not well understood. An urban winter roost was documented in New Mexico, and the use of buildings as roost sites cannot be dismissed, particularly in urban settings with nearby, large cliff features. This species is a year round resident that hibernates during the winter but periodically arouses to forage and drink. Hibernacula	High – NDOW reported that species has been detected in Project area.

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Species Common Name	Scientific Name	Protection Status <sup>1</sup>	Designation and Ranking <sup>2</sup>	Habitat Description	Potential for Occurrence
				characteristics are completely unknown for this species in Nevada. Spotted bats tend to roost singly or in small clusters and are known to move among various cracks and crevices within large cliff features.	
Silver-haired Bat	<i>Lasionycteris noctivagans</i>	BLM	NS (G3G4); NS-S (S3); SWAP	Silver-haired bats are a forest-associated species and are more commonly found in mature forests. They are found primarily at higher latitudes and altitudes in coniferous and mixed deciduous/coniferous forests of pinyon-juniper, subalpine fir, white fir, limber pine, aspen, cottonwood, and, willow. In southern Nevada, they are usually found at lower elevations in association with riparian corridors. Current Nevada records indicate this species is distributed between 480-2,520 meters. In some areas there appears to be summer segregation of the sexes. Silver-haired bats migrate from the state during winter, and only recently have been documented to breed here. It was previously thought they only migrated through each year.	High – Likely to forage in or near Project area (frequency group detected).
Western Red Bat	<i>Lasiurus blossevillii</i>	BLM	NDOW (SM); NS-S (S1M); NS (G4)	Historically known from only two locations, one of which (Fallon area) yielded additional specimens in 1958; third location near Dyer was documented in September 1999; recent acoustic sampling in the Muddy River drainage in Clark County have yielded records of occurrence in late spring and early summer 2000, and three females and two males were captured between July and September in the same drainage; been detected acoustically in the northern portion of the Nevada Test Site during the summers of 1999 and 2000; two acoustic records were obtained near the Truckee River west of Fernley; aoustic records from two localities in Lincoln County were documented in 2003; found primarily in wooded habitats, including mesquite bosque and cottonwood/willow riparian areas; Current Nevada records indicate this species is distributed between 1,380-6,600 feet; ROOST HABITAT: solitary rooster; day roosts in trees, within the foliage and presumably in leaf litter on the ground; RESIDENT STATUS: thought to be a migrant but may be a summer resident in the Fallon and Muddy River areas; WINTER STATUS: winter behavior poorly understood; thought to be migratory in NV, although migratory patterns are not	Low – Not known to occur in area.

Species Common Name	Scientific Name	Protection Status <sup>1</sup>	Designation and Ranking <sup>2</sup>	Habitat Description	Potential for Occurrence
				well documented. This species is reported to be highly migratory throughout most of its range.	
Hoary Bat	<i>Lasiurus cinereus</i>	BLM	NS (G3G4); NS-S (S2S3); SWAP	Hoary bats are a tree-roosting species, found primarily in forested upland habitats such as pinyon-juniper and conifers, as well as in gallery forest riparian zones (e.g., in cottonwoods along the Colorado river drainage). Current Nevada records indicate this species is distributed between 570-2,520 meters. Hoary bats day roost in trees 3-12 meters above ground and are protected by good leaf cover, but open below to facilitate flying in/out of the roost. They are basically solitary, except for mother-young association; however, during migration, groups of up to hundreds of individuals may form. Some mother-young groups will often change roosts whereas others do not; movements generally are less than 100 meters from the previous roost. It is generally assumed that this species migrates from the state during winter, but wintering habits are not confirmed. Elsewhere hibernating individuals have been found on tree trunks, in a tree cavity, in a squirrel's nest, and in a clump of Spanish moss.	High/confirmed – forages in Project area.
California Myotis	<i>Myotis californicus</i>	BLM	NS-S (S4); NS (G5)	Found throughout Nevada, primarily at the low and middle elevations (to 6,000 feet), although occasionally found at higher elevations; more common in the southern half of the state; found in a variety of habitats from Lower Sonoran desert scrub to forests; current Nevada records indicate this species is distributed between 680-9,000 feet; ROOST HABITAT: crevice roosting; selects a variety of day roosts including mines, caves, buildings, rock crevices, hollow trees, and under exfoliating bark; night roosts in a wider variety of structures; generally roost singly or in small groups, although some mines in the Mojave Desert shelter colonies of over 100 in both the summer and winter; RESIDENT STATUS: year round resident; WINTER STATUS: hibernates but periodically arouses to actively forage and drink in the winter.	High – Likely to forage in or near Project area (frequency group detected).
Western Small-footed Myotis	<i>Myotis ciliolabrum</i>	BLM	NS-S (S3); NS (G5)	Found throughout the state; in the south, primarily found at the middle and higher elevations (> 5,900 feet), although occasionally found at lower elevations; in central	High/confirmed – forages in Project area.

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Species Common Name	Scientific Name	Protection Status <sup>1</sup>	Designation and Ranking <sup>2</sup>	Habitat Description	Potential for Occurrence
				and northern part of the State it is more common at valley bottoms (3,400-5,900 feet); inhabits a variety of habitats including desert scrub, grasslands, sagebrush steppe, and blackbrush, greasewood, pinyon-juniper woodlands, pine-fir forests, agriculture, and urban areas; current Nevada records indicate distribution between 1,600-9,000 feet; ROOST HABITAT: roosts have been found in caves, mines, and trees; roosting preferences expected to be similar to those for <i>Myotis californicus</i> ; RESIDENT STATUS: year round resident; WINTER STATUS: hibernates; in some areas may tolerate drier and colder hibernacula than some other species; hibernates individually or in large colonies. A large colony (>100 individuals) was found at a depth of 450 feet in an abandoned mine near Eureka.	
Long-eared Myotis	<i>Myotis evotis</i>	BLM	NS (G5); NS-S (S3)	Found throughout the state, primarily at the higher elevations associated with coniferous forest; more widespread and common in the northern half of the state; primarily a forest-associated species. In southern Nevada, only found in Ponderosa pine or above; found in pinyon-juniper in the northern portion of Nevada Test Site; in northern Nevada common in pinyon-juniper and above, but also found in sagebrush and desert scrub habitats; current Nevada records indicate this species is distributed between 2,300-10,100 feet; ROOST HABITAT: Day roosts in hollow trees, under exfoliating bark, crevices in small rock outcrops, and occasionally in mines, caves, and buildings; night roosts have been found in caves, mines, and under bridges. Generally roost singly or in small groups; RESIDENT STATUS: year round resident; WINTER STATUS; presumed to be non-migratory and to hibernate locally.	High/confirmed – forages in Project area.
Little Brown Myotis	<i>Myotis lucifugus</i>	BLM	NS-S (S3); NS (G3)	Found primarily throughout the northern part of the state, but little is known of its distribution and abundance. Found primarily at higher elevations and higher latitudes, often associated with coniferous forest; requires a nearby water source; occurrence in Dixie Valley, (4,400) has been documented acoustically: ROOST HABITAT: day roosts in hollow trees, rock outcrops, buildings, and occasionally	High – Likely to forage in or near Project area (frequency group detected).

Species Common Name	Scientific Name	Protection Status <sup>1</sup>	Designation and Ranking <sup>2</sup>	Habitat Description	Potential for Occurrence
				mines and caves; one of the species most commonly found in human structures; night roosts may be same structures used for day roost but locations nearest the entrance are preferred; hibernacula elsewhere are generally mines or caves; often found in the same roost sites with <i>Myotis yumanensis</i> . RESIDENT STATUS: probably a year round resident; WINTER STATUS: hibernates but no hibernating colonies have been found in Nevada. It is suspected that there are elevational movements between summer and winter roosts; no large aggregations of this species, like those known in the eastern U.S. have been found.	
Fringed Myotis	<i>Myotis thysanodes</i>	BLM; USFS; SP	NS (SG4); NS-S (S2)	Found throughout central and southern Nevada; probably occurs in northern Nevada, as well; found in a wide range of habitats from low desert scrub habitats to high elevation coniferous forests; found from upper elevation creosote bush desert to pinyon-juniper and white fir (7,000 feet) in the White Pine Range; current Nevada records indicate this species is distributed between 1,400-7,000 feet; ROOST HABITAT: day and night roosts in mines, caves, trees, and buildings; maternity colony of approximately 200 individuals was found in a mine in creosote bush scrub in the Mojave Desert; two maternity colonies have recently been found in mine adits on the Nevada Test Site in blackbrush habitat; has been radio tracked to tree hollows, particularly large conifer snags in Oregon and Arizona, and rock crevices in cliff faces in southern California; known hibernacula are generally mines or caves; RESIDENT STATUS: year round resident; WINTER STATUS: hibernates but capable of periodic winter activity.	High – Likely to forage in or near Project area (frequency group detected).
Long-legged Myotis	<i>Myotis volans</i>	BLM	NS-S (S4); NS (G4G5)	Found throughout the State but more widespread and common in the northern half; occurs from mid to high elevations. Absent from the low desert; found in pinyon-juniper, Joshua tree woodland, and montane coniferous forest habitats; occasionally found in Mojave and salt desert scrub, and blackbrush, mountainshrub, and sagebrush. Current Nevada records indicate this species is distributed between 930-3,420 meters; ROOST	High – Likely to forage in or near Project area (frequency group detected).

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Species Common Name	Scientific Name	Protection Status <sup>1</sup>	Designation and Ranking <sup>2</sup>	Habitat Description	Potential for Occurrence
				HABITAT: day roosts primarily in hollow trees, particularly large diameter snags or live trees with lightning scars; uses rock crevices, caves, mines, and buildings when available; caves and mines may be used for night roosts; hibernacula elsewhere are generally mines or caves; RESIDENT STATUS: probably a year round resident; WINTER STATUS: hibernates but has the capability of winter activity; it is suspected that there are elevational and latitudinal movements between summer and winter roosts; transient colonies in the spring on the east side of the Sierra Nevada.	
Yuma Myotis	<i>Myotis yumanensis</i>	BLM	NS-S (S3S4); NS (G5)	Found at least in the southern and western half of the state, primarily at low to middle elevations; recent collection in east central Nevada and a large colony near Rye Patch Reservoir suggests a wider distribution in the state; found in a wide variety of habitats from low to mid-elevations, including sagebrush, salt desert scrub, agriculture, playa, and riparian habitats; one of the species that is most tolerant of human habitation and one of the few that thrives in a relatively urbanized environment; often considered to be a “building” bat, it is also found in heavily forested settings elsewhere; current Nevada records indicate this species is distributed between 1,500-10,900 feet; ROOST HABITAT: day roosts in buildings, trees, mines, caves, bridges, and rock crevices; night roosts usually associated with buildings, bridges, or other man-made structures; RESIDENT STATUS: year round resident; WINTER STATUS: hibernates; no large winter aggregations have been found in Nevada.	High – Likely to forage in or near Project area (frequency group detected).
Humboldt Yellow-pine Chipmunk	<i>Neotamias amoenus celeris</i>	BLM	NS (G5T2); NS-S (S2); SWAP	Subalpine forest and alpine tundra. They generally occur in brushy areas interspersed with herbaceous vegetation and open conifer stands; shrubs typically present include snowberry, chinquapin, mountain mahogany, bitterbrush, currant, and ceanothus (Sutton 1992). They are found among logs, brush, and rocky outcrops, as well as in brushy areas between subalpine forest and alpine tundra, and sometimes in alpine areas themselves.	Low – no subalpine forest or alpine tundra habitat exists in the Project area.

Species Common Name	Scientific Name	Protection Status <sup>1</sup>	Designation and Ranking <sup>2</sup>	Habitat Description	Potential for Occurrence
American Pika	<i>Ochotona princeps</i>	BLM; SP	NS (G5); NS-S (S2); SWAP	Restricted to rocky talus slopes, or rimrocks with deep fissures and crevices, primarily the talus-meadow interface. The lower talus slopes at this interface (within the talus matrix below the surface rocks) has been shown to provide the coolest warm-season temperatures. They also maintain greater winter snow cover, insulating haypiles and reducing exposure to cold outside air (Millar 2011). Also occupy areas above the treeline up to limit of vegetation and lower elevations in rocky areas within forests or near lakes. Does not dig burrows but may enlarge den or nest site under rock. Recent surveys in CA and NV found pika at elevations between 1,827 and 3,887 meters (5,994-12,752 feet).	Low – occurs at higher elevations.
Canyon Bat (formerly Western Pipistrelle)	<i>Parastrellus hesperus</i>	BLM	NS-S (S4); NS (G4)	Found throughout most of the state, primarily in the southern and western portions; most common in low and middle elevation (6,000 feet), although occasionally found at higher elevations (>8,000 feet); lower and upper Sonoran desert habitats of blackbrush, creosote, salt desert shrub and sagebrush, with occasional occurrence in Ponderosa pine and pinyon-juniper, usually in association with rock features such as granite boulders and canyons; current Nevada records indicate this species is distributed between 690-8,400 feet; ROOST HABITAT: day roosts primarily in rock crevices but may include mines, caves, or occasionally in buildings and vegetation; generally roost singly or in small groups; RESIDENT STATUS: year round resident; WINTER STATUS: hibernates but periodically arouses to actively forage and drink in water.	High/confirmed – forages in Project area.
American Water Shrew	<i>Sorex palustris</i>	BLM	NS (G5); NS-S (S2); SWAP	Found in the vicinity of streams or other bodies of water. Water shrews require sufficient shelter such as dense vegetative cover, logs, rocks, crevices, etc. These areas provide overhead protection and high humidity. They use both terrestrial and aquatic habitat to find food and escape predators.	Low – suitable habitat and foraging vegetation is limited within the Project area.



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Species Common Name	Scientific Name	Protection Status <sup>1</sup>	Designation and Ranking <sup>2</sup>	Habitat Description	Potential for Occurrence
Preble's Shrew	<i>Sorex preblei</i>	BLM	NS (G4); NS-S (S1S2); SWAP	Likely habitat is ephemeral and perennial streams dominated by shrubs, primarily below 2,500 meters. Recorded habitats include arid and semiarid shrub-grass associations, openings in montane coniferous forests dominated by sagebrush, willow-fringed creeks, marshes, bunchgrass associations, sagebrush-aspen associations, sagebrush-grass associations, and alkaline shrubland.	Low – suitable habitat exists in the Project area, but outside of current known range.
Mexican Free-tailed Bat	<i>Tadarida brasiliensis</i>	BLM	NDOW (PM); NS-S (S3S4B); NS (G5)	Found through most of the state, ranging from low desert to high mountain habitats; found in a wide variety of habitats; although predominantly a lower elevation species has been found from 720 to > 11,480 feet in the Sierra Nevada; recent acoustic surveys reveal it is more widespread and common, at least in southern Nevada, than previously thought; current Nevada records indicate this species is distributed between 690-8,370 feet; ROOST HABITAT: selects a variety of day roosts including cliff faces, mines, caves, buildings, bridges, and hollow trees; although colonies number in the millions in some areas, colonies in Nevada are generally several hundred to several thousand (largest known colonies have been estimated at ca. 70,000-100,000); some caves may be used as long term transient stopover roosts during migration; some evidence suggests that the colony at Rose Cave arrives in July and departs in mid-October; RESIDENT STATUS: summer resident; recent observations suggest pockets of year-round residents in southern Nevada; WINTER STATUS: Migrations of 1,140 miles are documented for this species; migrates away from colder regions and winters in areas with predominantly non-freezing temperatures but has been found to hibernate in northern California; migratory animals appear to be active in the winter range; winter activity has been observed recently in the low desert of southern Nevada.	High/confirmed – forages in Project area.
Kit Fox	<i>Vulpes macrotis</i>	SP	NS (G4); NS-S (S3); SWAP	Primarily open desert, shrubby or shrub-grass habitat.	Moderate – suitable habitat exists in Project area.

Species Common Name	Scientific Name	Protection Status <sup>1</sup>	Designation and Ranking <sup>2</sup>	Habitat Description	Potential for Occurrence
Western Jumping Mouse	<i>Zapus princeps</i>	BLM	NS (G5); NS-S (S2); SWAP	Western jumping mice occur in mountain meadows, marshes, and along banks of streams and ponds, in dense cover of tall grasses and herbs. They nest in burrows in well-drained mound or elevated banks or on the surface among vegetation. Elevation: 1,612-3,121 meters.	Low – suitable habitat limited within Project area.
California Bighorn Sheep	<i>Ovis canadensis</i>	BL; NDOW; SP	NS (G4S4); SWAP	Occur in mesic to xeric, alpine to desert grasslands or shrub-steppe in mountains, foothills, or river canyons. Escape terrain is an important habitat feature. Dense forests and chaparral are avoided. Populations other than those in low deserts typically migrate between alpine or montane summer range and a lower elevation winter range.	Moderate – Suitable habitat adjacent to project area.
<b>Reptiles</b>					
Northern Rubber boa	<i>Charina bottae</i>	BLM	NS (G5); NS-S (S3S4); SWAP	Rubber boa habitat includes woodlands, forest clearings, patchy chaparral, meadows, and grassy savannas, generally not far from water; also riparian zones in arid canyons and sagebrush in some areas. Generally this snake is found in or under rotting logs or stumps, under rocks or in crevices, or under the bark of dead fallen trees. They are known to emerge early in the season when there is still snow on the ground.	Low – suitable habitat is limited in project area.
Great Basin Collared Lizard	<i>Crotaphytus bicinctores</i>	BLM	NS (G5); NS-S (S4); SWAP	Occurs mainly in xeric, sparsely vegetated, rocky areas on alluvial fans, lava flows, hillsides, rocky plains, and in canyons. It perches atop rocks and hides under rocks or in rodent burrows. It can be found from sea level to about 2,280 meters (7,500 feet).	Moderate – suitable habitat exists in Project area.
Shasta Alligator Lizard	<i>Elgaria coerulea shastensis</i>	SP	NS (G5T4); NS-S (S1); SWAP	Generally found in cooler, damper places in a variety of forested habitats and montane chaparral. Also found in grassy grown-over areas at margins of woodlands, in clearcuts, near streams, rock outcrops, and talus. Cover is provided by surface objects such as rocks, logs, dense vegetation, and human debris. Refuge may also be taken in crevices, rock fissures, and mammal burrows.	Low – preferred habitat does not exist, or is highly limited in Project area.

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Species Common Name	Scientific Name	Protection Status <sup>1</sup>	Designation and Ranking <sup>2</sup>	Habitat Description	Potential for Occurrence
Long-nosed Leopard Lizard	<i>Gambelia wislizenii</i>	BLM, SP	NS (G5); NS-S (S4); SWAP	This species is found in sandy and gravelly desert and semidesert areas with scattered shrubs or other low plants (e.g., bunch grass, alkali bush, sagebrush, creosote bush), especially areas with abundant rodent burrows. The long-nosed leopard lizard avoids densely vegetated areas that can interfere with running. Occurs from sea level to approximately 1,800 meters.	Moderate – suitable habitat exists in Project area.
Pygmy Short-horned Lizard	<i>Phrynosoma douglasii</i>	BLM	NS (G5); NS-S (SNR); SWAP	The pygmy short-horned lizard's habitat ranges from semiarid plains of sagebrush and bunch grass, to pinyon-juniper woodlands, to pine forests in high mountains. It is usually found in open, shrubby, or openly wooded areas with sparse vegetation at ground level. The soil may vary from rocky to sandy to hardpan, but pockets of fine loose soil or sand are typically present for burrowing. Occurs from 300 to 2,200 meters.	Moderate – suitable habitat exists in Project area.
Desert Horned Lizard	<i>Phrynosoma platyrhinos</i>	BLM, SP	NS (G5); NS-S (S4)	Found on sandy flats, alluvial fans, along washes, and at the edges of dunes. Sometimes found on hardpan or among rocks, but patches of sand are generally present. Associated with creosote bush, saltbush, greasewood, cactus, and ocotillo in the Mojave Desert and with sagebrush, saltbush, and greasewood in the Great Basin.	High/confirmed – suitable habitat exists in Project area, and species was incidentally observed during field surveys.

Sources: NV Natural Heritage Program; NatureServe; SWCA Botanical Survey Report

<sup>1</sup> BLM = Nevada BLM sensitive species, FC = Federally listed candidate, FE = Federally listed endangered, FT = Federally listed threatened, NDOW = Nevada Department of Wildlife Species of Concern; SP = State protected, USFS = United States Forest Service sensitive species

<sup>2</sup> NS = NatureServe global species rank, NS-S = NatureServe subnational species rank, PIF = Partners in Flight priority species; SWAP = Nevada State Wildlife Action Plan Species of Conservation Priority

**Table H.2. Migratory Bird Species Observed in the Project Area during Surveys**

Common Name	Scientific Name
American Coot	<i>Fulica americana</i>
American Crow	<i>Corvus brachyrhynchos</i>
American Robin	<i>Turdus migratorius</i>
Bank Swallow [c]	<i>Riparia riparia</i>
Barn Swallow	<i>Hirundo rustica</i>
Belted Kingfisher	<i>Megaceryle alcyon</i>
Black-billed Magpie	<i>Pica hudsonia</i>
Black-chinned Hummingbird	<i>Archilochus alexandri</i>
Black-crowned Night-Heron	<i>Nycticorax nycticorax</i>
Black-throated Sparrow	<i>Amphispiza bilineata</i>
Blue-gray Gnatcatcher	<i>Poliophtila caerulea</i>
Brewer's Blackbird	<i>Euphagus cyanocephalus</i>
Brewer's Sparrow [a][c]	<i>Spizella breweri</i>
Brown-headed Cowbird	<i>Molothrus ater</i>
Bullock's Oriole	<i>Icterus bullockii</i>
Bushtit	<i>Psaltriparus minimus</i>
Canada Goose	<i>Branta canadensis</i>
Canvasback [c]	<i>Aythya valisineria</i>
Canyon Wren	<i>Catherpes mexicanus</i>
Chipping Sparrow	<i>Spizella passerina</i>
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>
Common Nighthawk [c]	<i>Chordeiles minor</i>
Common Raven	<i>Corvus corax</i>
Gadwall	<i>Mareca strepera</i>
Grasshopper Sparrow	<i>Ammodramus savannarum</i>
Gray Flycatcher	<i>Empidonax wrightii</i>
Gray-headed Junco (Dark-eyed Junco)	<i>Junco hyemalis</i>
Great Egret	<i>Ardea alba</i>
Horned Lark	<i>Eremophila alpestris</i>
House Finch	<i>Haemorhous mexicanus</i>
Killdeer	<i>Charadrius vociferus</i>
Lark Sparrow	<i>Chondestes grammacus</i>
Lazuli Bunting	<i>Passerina amoena</i>
Lewis's Woodpecker [a][c]	<i>Melanerpes lewis</i>
Loggerhead Shrike [a][c]	<i>Lanius ludovicianus</i>
Long-billed Curlew [a][b][c]	<i>Numenius americanus</i>

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Common Name	Scientific Name
Mallard	<i>Anas platyrhynchos</i>
Mourning Dove	<i>Zenaida macroura</i>
Northern Flicker	<i>Colaptes auratus</i>
Northern Mockingbird	<i>Mimus polyglottos</i>
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>
Northern Shrike	<i>Lanius excubitor</i>
Redhead[c]	<i>Aythya americana</i>
Red-winged Blackbird	<i>Agelaius phoeniceus</i>
Rock Wren	<i>Salpinctes obsoletus</i>
Ruby-crowned Kinglet	<i>Regulus calendula</i>
Sage Thrasher [b][c]	<i>Oreoscoptes montanus</i>
Sagebrush Sparrow	<i>Artemisiospiza nevadensis</i>
Savannah Sparrow	<i>Passerculus sandwichensis,</i>
Say's Phoebe	<i>Sayornis saya</i>
Spotted Towhee	<i>Pipilo maculatus</i>
Vesper Sparrow	<i>Poocetes gramineus</i>
Violet-green Swallow	<i>Tachycineta thalassina</i>
Western Bluebird	<i>Sialia mexicana</i>
Western Kingbird	<i>Tyrannus verticalis</i>
Western Meadowlark	<i>Sturnella neglecta</i>
Western Tanager	<i>Piranga ludoviciana</i>
White-throated Swift	<i>Aeronautes saxatalis</i>
Willet	<i>Tringa semipalmata</i>
Wilson's Snipe	<i>Gallinago delicata</i>
Yellow Warbler	<i>Setophaga petechia</i>
Yellow-headed Blackbird	<i>Xanthocephalus xanthocephalus</i>

Sources: JBR 2012; SWCA 2019, NDOW 2018b

[a] BLM Special Status Species

[b] USFWS Bird of Conservation Concern

[c] NDOW species of concern

**Table H.3. Summary of Wildlife Surveys and Survey Results Conducted for the Thacker Pass Project**

Target Species	Reference Report	Survey Period(s)	Survey Results
Migratory Birds	Thacker Pass Project Wildlife Baseline Surveys, SWCA 2019	Avian point-count surveys were conducted over 10 consecutive days, consisting of two survey periods, from May 23 to June 1, 2018.	SWCA identified a total of 54 species of birds through landbird surveys. In total 1,228 individual birds were detected. Most detections (78%) were based on vocalizations. Forty-three species were identified in the first survey and 44 species were identified in the second survey.
Burrowing Owl	Thacker Pass Project Wildlife Baseline Surveys, SWCA 2019	Three survey sessions were conducted. Session 1 surveys took place April 22-25; session 2 took place May 10-13; and session 3 took place June 1-6.	Three complete surveys at 68 points were conducted. In total, 34 burrowing owls were detected during 26 of the 206 call surveys at 24 of the 68 points. The observations consisted primarily of individual adults (28) but included several adults observed in the same area (five group detections for a total of 12 owls) and one juvenile.
Bat Acoustic Monitoring	Thacker Pass Project Wildlife Baseline Surveys, SWCA 2019	SWCA conducted bat acoustic monitoring in the spring, early summer, and fall of 2018. To ensure that more than 4 consecutive nights representing spring migration and four consecutive nights representing summer resident use were sampled across the project area, detectors were deployed without interruption from May 13 through June 22.	Spring/Summer activity rates: A total of 930,744 bat calls were recorded, resulting in a spring activity rate of 8,251 bat calls/detector-night and a summer activity rate of 3,002 bat calls/detector-night. Fall activity rates: In all, 12,806 bat calls were recorded during the fall monitoring session, resulting in an activity rate of 610 bat calls/detector-night. Species detected during surveys include: Fringed myotis, long-eared myotis, silver-haired bat, big brown bat, little brown myotis, long-legged myotis, western small-footed myotis, Yuma myotis, California myotis, hoary bat, Mexican free-tailed bat, Canyon bat, Townsend’s big-eared bat.
Pygmy Rabbit	Thacker Pass Project Wildlife Baseline Surveys, SWCA 2019	Habitat surveys conducted in June 2018. Winter pygmy rabbit surveys conducted December 10-12, 2018.	3,561 acres were assessed to be suitable for pygmy rabbit. Of those 3,561.6 acres, 0 acres were found to be active and occupied pygmy rabbit habitat as a result of both the summer and winter surveys. Signs of pygmy rabbit use of the project area consist of 39 inactive burrows and 10 sightings of pellets unassociated with a burrow. Inactive burrows were further defined as intact inactive (11), historic (22), or collapsed (6). During winter surveys, biologists attempted to relocate all previously recorded burrows to look for signs of activity. Sixteen burrows were relocated and no signs of activity (pellets, tracks, fresh diggings, snow trails, or individuals) were found anywhere within the surveyed habitat.

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Target Species	Reference Report	Survey Period(s)	Survey Results
Golden Eagle and Raptors	Lithium Nevada Thacker Pass Project, 2018 Golden Eagle and Raptor Nesting Surveys, WRC 2018, rev. 2019	Ground surveys were conducted on January 20 and 21, and February 10, 2018. Two aerial surveys were conducted in 2019, separated by at least 30 days per USFWS guidance for occupancy surveys. The first was conducted on March 23-26, 2018 and the second flight was flown on May 30, 2018. Survey area included a 10-mile buffer around the project area boundary.	A total of 127 nests were observed in the survey area in 2018. There were 23 active nests. Nine active nests were occupied by Golden Eagles, 10 by Red-tailed Hawks ( <i>Buteo jamaicensis</i> ), two by Ferruginous Hawks ( <i>Buteo regalis</i> ), and two by Common Ravens ( <i>Corvus corvax</i> ).
	Lithium Nevada Thacker Pass Project, 2019 Golden Eagle and Raptor Nesting Surveys, WRC 2019	Ground surveys were conducted on January 26 and 27, and March 1 and 3, 2019. Two aerial surveys were conducted in 2019, separated by at least 30 days per USFWS guidance for occupancy surveys. The first was conducted on March 31 and April 1, 2019, during incubation. The second was conducted on May 30, during mid-brood rearing.	A total of 207 nests were observed in or near the 10-mile buffer around the project area in the 2019 survey. Seventy-six nests were classified as likely belonging to Golden Eagles. Compared to 2018 surveys, 80 additional nests were identified, and 17 of these were eagle nests. The increase in nests was primarily due to including the west slope of the Double H Mountains south of the project area in the survey area.
Sage Grouse	Winter Greater Sage-Grouse Survey Report, Western Lithium Corporation – Kings Valley Lithium Project, GBE 2012	Field surveys were conducted between February 13-17, 2012.	Surveys were performed in the project area in February 2012, July 2011, October 2009, and November 2008, and by NDOW in February 2009. No sage-grouse were detected during any of the surveys.
	2013 Winter Greater Sage-Grouse Survey Report, Kings Valley Clay Mine Project, GBE 2013	Field surveys were conducted between February 24-27, 2013.	No sage-grouse, sage-grouse droppings or signs of sage-grouse were observed during surveys.
Springsnails	Lithium Nevada 2019 Supplemental Springsnail Survey Report, WRC 2019	Wildlife Resource Consultants LLC conducted a survey for springsnails (genus: <i>Pyrgulopsis</i> ) in July 2018 for the Thacker Pass Project. During spring and seeps surveys conducted by Piteau in 2018, four additional seep/spring sites were identified. These additional sites were surveyed for spring snails by WRC in 2019.	Of the four sites visited during the survey, two were classified as Dry/Developed (SP-058 and SP-059) and two were classified as undeveloped (SP-060 and SP-061). No springsnails were detected.

Target Species	Reference Report	Survey Period(s)	Survey Results
	Lithium Nevada 2018 Springsnail Survey Report, WRC 2018	A reconnaissance survey of spring locations was conducted June 21 and 22, 2018 to assess access and spring status (e.g., dry, flowing). Based on the results of the reconnaissance survey, all sites with surface water expression and suitable springsnail habitat were surveyed for springsnails on July 1-3 and July 12-13, 2018.	52 seeps and springs were surveyed for springsnails. Sites included 36 seeps and springs previously inventoried by SRK Consulting in 2012 (Reno, Nevada) and 15 additional sites, 14 of which were surveyed by Piteau Associates in 2018 (Reno, Nevada). Of the 52 springs, 12 were classified as Dry, 10 were classified as Developed, 24 were classified as Undeveloped, and six were classified as Not a Spring. Springsnails were collected at thirteen of the springs in the survey area. All were Undeveloped Springs. With one exception, all the specimens were identified by DNA analysis as the Kings River pyrg. The turban pebblesnail was also identified at SP-48.
Plants	Thacker Pass Project Botanical Survey Report, SWCA 2018	Floristic survey was conducted between May 15 and June 15, 2018.	One sensitive species, Crosby’s buckwheat, was found within the Exploration Plan area. The population numbered roughly 50 to 100 plants distributed over approximately 5.3 acres. The population was located on north-facing volcanic slopes and outcrops (approximately 15 percent to 20 percent slope). Three other similar species of <i>Eriogonum</i> occur within or near the range of Crosby’s buckwheat in Nevada and Southern Oregon: Prostrate buckwheat ( <i>E. prociduum</i> ), Cusick’s buckwheat ( <i>E. cusickii</i> ), and whitewoolly buckwheat ( <i>E. ochrocephalum</i> var. <i>calcareum</i> ). Two other species, wind loving buckwheat ( <i>Eriogonum anemophilum</i> ) and lonesome milkvetch ( <i>Astragalus solitaries</i> ) were determined to have potential habitat within the Project area (SWCA 2018).