



# **APPENDIX H**

## **BIOLOGICAL RESOURCES**



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## H.1 RARE PLANT SPECIES

Rare plant species that are federally listed, state listed or protected, or of special interest to cooperating agencies are listed in Table H-1. (Species in **bold-type** have been observed in or near the Study Areas.)

**Table H-1. Federally Listed State Listed or Protected, or of Special Interest to Cooperating Agencies**

Scientific Name Common Name	Status* USWFS/Nevada/ Other Heritage Rank	Description/Habitat	Occurrence in the Study Area
<i>Arctomecon californica</i>  Las Vegas Bearpoppy	--/CE/BLM-S G3/S3	Cespitose perennial forb; blooms mostly from March to May. It grows in gypsum-rich, hummocked soils with well-developed soil crust open soil surfaces with sparse populations of competing plants; 1,060 to 3,642 feet.	This species occurs on NAFB, 33 miles south of the NTTR. No populations have been found within the study areas as of 2016.
<i>Astragalus geyeri</i> var. <i>triquetrus</i>  Threecorner Milkvetch	--/CE/BLM-S G4T2T3/S2S3	Annual forb. Prefers open, deep sandy soil or dunes, generally stabilized by vegetation and/or a gravel veneer; 1,100 to 2,400 feet.	To date, no observations of this species have been made within the study area.
<b><i>Astragalus gillmanii</i></b>  <b>Gilman's Milkvetch</b>	--/--/BLM-S G2/S1	Annual forb. Has been found in gravelly areas in Pinyon-Juniper Woodland and light-colored volcanic slopes that are composed of tuff; 5,300 to 6,200 feet.	This species has been observed in the study area north of the Timber Mountains between Thirsty Canyon and Parachute Canyon, Cedar Pass in the Kawich Mountain Range, and multiple locations in the Groom Mountain Range.
<b><i>Astragalus inyoensis</i></b>  <b>Inyo Milkvetch</b>	--/--/-- S1	Mat-forming perennial herb. Grows on sandy and gravelly clay soils, mostly derived from carbonate parent rock, in open Pinyon-Juniper woodland, often associated with sagebrush; 4,900 to 7,500 feet.	This plant was located within the study area on the western slope of the Groom Mountain Range near Cattle Springs around 6,400 feet elevation.

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Scientific Name Common Name	Status* USWFS/Nevada/ Other Heritage Rank	Description/Habitat	Occurrence in the Study Area
<i>Chrysothamnus eremobious</i>  Remote (or Pintwater) Rabbitbrush	--/--/-- G1/S1	Low-growing perennial bush blooms August to September. Often found within crevices or rubble of north-facing carbonate cliffs; 4,850 to 6,400 feet.	Previously noted on the South Range Study Area in Pintwater Mountain Range and near Sand Spring. No recent observations in the study areas as of 2016.
<i>Cryptantha insolita</i>  Las Vegas Catseye	--/CE/-- GHQ/SH	Perennial herb endemic to Nevada; blooms April to June. Occurs on light-colored, alkaline clay flats and low hills in creosote bush; 1,000 to 2,000 feet	To date, no observations of this species have been made within the study area.
<i>Echinocereus englemanii</i> var. <i>armatus</i>  <b>Armored Hedgehog Cactus</b>	--/CY/-- G5/T2S1	Perennial cactus. Found on gravel, sand, and rocky hills in creosote bush scrub, pinyon juniper woodland, and Joshua Tree woodlands; elevation 3,000 to 4,000 feet.	This variety was recorded 1976 on the western portion of the study area along the Pahute Mesa near Black Mountain.
<i>Eriogonum corymbosum</i> var. <i>nilesii</i>  Las Vegas Buckwheat	FC/--/BLM-S G5T2/S1S2	Woody perennial shrub; flowers late September to early October. Occurs in soils with high gypsum content, clay beds, and high boron shale, usually in sparsely vegetated areas with cryptogammic crust.	This species occurs on NAFB, 33 miles south of the NTTR. No populations have been found within the study areas as of 2016.
<i>Eriogonum mensicola</i>  Pinyon Mesa Buckwheat	--/--/-- G2G3/S1	Perennial herb. Found on rocky to gravelly flats and slopes within sagebrush, mountain mahogany, pinyon-juniper, and montane coniferous woodlands; 6,000 to 9,000 feet.	To date, no observations of this species have been made within the study area. There are records of the species southeast of the study area boundary line in the Sheep Mountain Range near Bootleg, Yellowjacket, and Basin Springs.
<i>Escobaria vivipara</i> var. <i>rosacea</i>  <b>Clokey Pincushion</b>	--/CY/-- G5T3/S3	Small perennial cactus; blooms May to June. Occurs in dry valleys, plains, foothills and on open, gentle to steep rocky	Present in the Study area, including historic observations in the Groom Mountain Range and around

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		slopes and flats, with sagebrush or conifer species and grasslands; 5,000 to 9,000 feet.	Yucca Flat, Pahute Mesa, and Timber Mountain, and recent observations (between 2008 to 2016) in the Spotted Range, Desert Range, Sheep Range, and southern end of the Kawich Range.
<i>Galium hilendiae</i> spp. <i>kingstonense</i>  Kingston Mountains Bedstraw	--/--/-- G4T2/S1	Matted perennial herb. Prefers dry, rocky to gravelly soils derived from rhyolitic tuff on steep northeast to south aspects, mostly under trees and shrubs in the pinyon-juniper-Gambel oak plant community; 5,200 to 5,640 feet.	This species has been observed in the South Range Study Area and along the study area border, including near Oak Spring Butte.
<i>Grindelia fraxinoprattensis</i> Ash Meadows Gumplant	FT/CE/BLM-S G2/S1	Perennial herb, blooms July to October. Endemic to Ash Meadows, although it has been observed elsewhere. It is a wetland endemic species, occurring in alkaline clay soils in meadows along stream channels, shallow pools, and in drainages near seeps and springs.	To date, no observations of this species have been made within the study area.
<i>Ivesia arizonica</i> var. <i>saxosa</i>  Rock Purpusia	--/--/BLM-S S1	Perennial herb endemic to Nevada; blooms May to August. Grows in crevices of cliffs and boulders on volcanic carbonate rocks in the upper mixed-shrub, sagebrush, and pinyon-juniper communities and also on bare rock, talus, and scree in conifer woodlands and chaparral shrublands; 4,900 to 6,890 feet.	To date, no observations of this species have been made within the study area, although it occurs in the vicinity.
<i>Mentzelia leucophylla</i>  Ash Meadows	FT/CE/BLM-S G1Q/S1	Biennial herb, endemic to Ash Meadows. It occurs in sandy to gravelly alkali soils in drainages and low bluffs	To date, no observations of this species have been made within the study

**Table H-1. Federally Listed State Listed or Protected, or of Special Interest to Cooperating Agencies**

Scientific Name Common Name	Status* USFWS/Nevada/ Other Heritage Rank	Description/Habitat	Occurrence in the Study Area
Blazingstar		and swales, 2,200 to 2,350 feet.	area.
<i>Penstemon albomarginatus</i> White Margined Beardtongue	--/CE?/BLM-S G2/S1	Low-growing perennial herb, blooms March to May. Requires deep stand and is found on stabilized sand dunes and Mojave Desert scrub with alluvial sandy soils.	To date, no observations of this species have been made within the study area.
<i>Penstemon pudicus</i> Bashful beardtongue	--/--/BLM-S/USFWS-S G1/S1	Perennial herb, blooms June and July. Known to occur only in the north Kawich Range in Nye County, in crevices, soil pockets, and coarse rocky soils of felsic volcanic outcrops, boulder piles, steep protected slopes, and drainage bottoms, mostly on north and east aspects, in subalpine sagebrush, mountain mahogany, and upper pinyon-juniper plant zones; 7,500 to 9,000 feet.	To date, no observations of this species have been made within the study area.
<i>Piptatherum shoshoneanum</i> Cliff Needlegrass	--/--/-- G2G3/S1	Perennial bunchgrass. Occurs in moist cracks and crevices of intrusive or extrusive igneous, metamorphic, or west facing sedimentary cliffs and rock walls in the montane conifer and pinyon-juniper vegetation communities.	Reported near Cliff Spring on the western slopes of the Belted Range and on the southeast side of the Kawich range northeast of Trailer Pass in the North Range Study Area.
<i>Polycytenium williamsiae</i> Williams Combleaf	--/CE/BLM-S/USFS-S G2Q/S2	Perennial herb; flowers May and June. Occurs in barren, sandy to sandy-clay or mud margins and bottoms of non-alkaline seasonal lakes and playas perched over siliceous volcanic bedrock in silver sagebrush, mountain big sagebrush and juniper woodlands; 4,200 to 9,000 feet.	To date, no observations of this species have been made within the study area.

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Scientific Name Common Name	Status* USFWS/Nevada/ Other Heritage Rank	Description/Habitat	Occurrence in the Study Area
<i>Sclerocactus polyancistrus</i> <b>Hermit Cactus</b>	--/CY/-- G4/S2S3	Perennial cactus. Grows in rocky, alluvial, often alkaline soils, within the Mojave Desert scrub community; 1,640 to 8,200 feet.	Hermit cactus is widely distributed across the North Range Study Area as well as a few locations in the central and southern portions of the study area.
<i>Entosthodon planoconvexus</i> Planoconvex cordmoss	--/-- G1/S1	Ephemeral moss (bryophyte) known from 3 locations world-wide, occurs above 3,970 feet MSL.	The only report of this species is outside the study area in Mercury Valley/Rock Valley in the north-facing foothills of the Specter Mountains. No observations of this species have been made within the study area.

Sources: U.S. Air Force, 2016. Rare Plants of the Nevada Test and Training Range and Proposed Expansion Areas Report. Prepared by Adams Ecology for the U.S. Air Force, through the U.S. Army Corps of Engineers, Contract No. W9126G-14-0014, Delivery Order No. DS01, Leidos Subcontract No. P010176987. December.

U.S. Air Force, 2017. Special Status Species of the Nevada Test and Training Range and Proposed Expansion Areas Report. Prepared by Adams Ecology for the U.S. Air Force, through the U.S. Army Corps of Engineers, Contract No. W9126G-14-0014, Delivery Order No. DS01, Leidos Subcontract No. P010176987. December.

\*Status:

USFWS = Species listed by the USFWS under the Endangered Species Act

FE – Federally Listed Endangered – in danger of extinction in all or a significant portion of its range.

FT – Federally Listed Threatened – likely to be classified as Endangered in the foreseeable future if threats continue.

FC – Federal Candidate for listing as Threatened or Endangered

State = Species listed by the State of Nevada

CE – Critically Endangered Plant

CY – Protected as a cactus, yucca, or Christmas tree

BLM-S = Sensitive, which include USFWS species and those protected by Nevada state law on BLM managed lands

USFS-S = Sensitive Species

Heritage Rank: G = Global rank indicator, based on worldwide distribution at the species level; T = Global trinomial rank indicator based on worldwide distribution at the infraspecific level; S = State rank indicator, based on distribution within Nevada at the lowest taxonomic level.

1 – Critically imperiled and especially vulnerable to extinction or extirpation due to extreme rarity, threats, or other factors

2 – Imperiled due to rarity or other demonstrable factors

3 – Vulnerable to decline because rare and local throughout range, or with very restricted range

4 – Long term concern, though now apparently secure; usually rare in parts of its range, especially at its periphery

H – Possibly Extinct, known from only historical occurrences but still some hope of rediscovery

Other rare plant species of special interest to cooperating agencies and may be found within the Study Areas are listed in Table H-2. (Species in **bold-type** have been observed in the Study Areas)

**Table H-2. Other Rare Plant Species of Special Interest to Cooperating Agencies**

Scientific Name Common Name	Heritage Rank BLM/USFS
<b><i>Abronia nana ssp. covillei</i></b> Coville Abronia	G4T3/S1? --/R4S
<b><i>Agave utahensis var. eborispina</i></b> Ivory-spined Agave	G4T3Q/S3 --/--
<i>Anulocaulis leiosolenus var. leiosolenus</i> Ringstem	G4T3/S2 S/--
<b><i>Arctomecon merriamii</i></b> White Bearpoppy	G3/S3 S/--
<b><i>Asclepias eastwoodiana</i></b> Eastwood Milkweed	G2Q/S2S3 S/R4S
<b><i>Astragalus ackermanii</i></b> Sheep Range Milkvetch	--/-- G2/S2
<b><i>Astragalus amphioxys var. musimonum</i></b> Sheep Range Milkvetch	G5T2/S2 --/--
<b><i>Astragalus beatleyae</i></b> Beatley Milkvetch	G2/S2 --/--
<i>Astragalus calycosus var. monophyllidius</i> One-leaflet Torrey Milkvetch	G5T2Q/S2 S/--
<b><i>Astragalus funereus</i></b> Black Woollypod	G2/S2 S/--
<b><i>Astragalus mohavensis var. hemigyris</i></b> Halfring Milkvetch	G3G4T2T3/S2S3 S/--
<i>Astragalus mohavensis var. mohavensis</i> Mojave Milkvetch	G3G4T3T4/S2S3 --/--
<b><i>Astragalus nyensis</i></b> Nye Milkvetch	G3/S3 --/--
<b><i>Astragalus oophorus var. clokeyanus</i></b> Clokey Eggvetch	G4T2/S2 --/R4S
<b><i>Astragalus pseudodanthus</i></b> Tonopah Milkvetch	G2Q/S2 S/--
<b><i>Boechera dispar</i></b> Pinyon Rockcress	G3/S1S2 --/--
<b><i>Boechera shockleyi</i></b> Shockley Rockcress	G3/S3 --/R5S
<b><i>Camissonia megalantha</i></b> Cane Spring Suncup	G3Q/S3 --/--
<b><i>Castilleja martinii var. clokeyi</i></b> Clokey Paintbrush	G5T3Q/S3 --/--
<i>Cirsium arizonicum var. tenuisectum</i> Keystone Canyon Thistle	G5G2/S1S2 --/--
<b><i>Cryptantha tumulosa</i></b> New York Mountains Catseye	G4?/S2 --/--
<b><i>Cymopterus ripleyi var. ripleyi</i></b> Ripley Biscuitroot	G3G4T2?Q/S2? --/--
<b><i>Cymopterus ripleyi var. saniculoides</i></b> Sanicle Biscuitroot	G3G4T3Q/S3 --/--



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Scientific Name Common Name	Heritage Rank BLM/USFS
<i>Dudleya pulverulenta</i> ssp. <i>arizonica</i> Chalk Liveforever	G4G5T4T5/S3 --/--
<i>Ephedra funerea</i> Death Valley Mormon Tea	G2/S2 --/--
<i>Ericameria cervina</i> Antelope Canyon Goldenbush	G3?/S1 S/--
<i>Ericameria compacta</i> Charleston Goldenbush	G2?/S2? --/R4S
<i>Ericameria watsonii</i> Watson Goldenbush	G3G4/S3 --/--
<i>Erigeron ovinus</i> Sheep Fleabane	G2/S2 S/--
<i>Eriogonum concinnum</i> Darin Buckwheat	G2/S2 S/--
<i>Eriogonum darrovii</i> Darrow Buckwheat	G2/S2 --/--
<i>Eriogonum heermannii</i> var. <i>clokeyi</i> Clokey Buckwheat	G5T2/S2 S/R4S
<i>Eremogone congesta</i> var. <i>charlestonensis</i> Mount Charleston Sandwort	G5T2?/S2? --/--
<i>Eremogone stenomeris</i> Meadow Valley Sandwort	G2/S2 --/--
<i>Frasera pahutensis</i> Pahute Green Gentian	G3Q/S3 --/--
<i>Gilia heterostyla</i> Cochrane Gilia	G3G4/S3S4 --/--
<i>Gilia nyensis</i> Nye Gilia	G3/S3 --/--
<i>Gilia ripleyi</i> Ripley Gilia	G3/S3 --/--
<i>Glossopetalon pungens</i> var. <i>glabrum</i> Smooth Dwarf Greasebush	G2G3T1Q/S1 S/S
<i>Glossopetalon pungens</i> var. <i>pungens</i> Rough Dwarf Greasebush	G2G3T2Q/S2 S/--
<i>Hulsea vestita</i> ssp. <i>inyoensis</i> Inyo Hulsea	G5T2T3/S2 --/--
<i>Lathyrus hitchcockianus</i> Bullfrog Hills Sweetpea	G2/S2 S/--S
<i>Machaeranthera grindelioides</i> var. <i>depressa</i> Rayless Tansy Aster	G5T3T4/S3 --/--
<i>Mirabilis pudica</i> Bashful Four-o'clock	G3/S3 --/--
<i>Pedicularis semibarbata</i> var. <i>charlestonensis</i> Charleston Pinewood Lousewort	G4T3Q/S3 --/--
<i>Pediomelum castoreum</i> Beaver Dam Breadroot	G3/S3 S/--
<i>Penstemon arenarius</i> Nevada Dune Beardtongue	G2G3/S2 S/R4S
<i>Penstemon bicolor</i> ssp. <i>bicolor</i> Yellow Twotone Beardtongue	G3T2Q/S2 S/--

**Table H-2. Other Rare Plant Species of Special Interest to Cooperating Agencies**

Scientific Name Common Name	Heritage Rank BLM/USFS
<i>Penstemon bicolor</i> ssp. <i>roseus</i> Rosy Twotone Beardtongue	G3T3Q/S3 S/--
<i>Penstemon fruticiformis</i> ssp. <i>amargosae</i> Death Valley Beardtongue	G4T3/S2 S/--
<i>Penstemon pahutensis</i> Pahute Mesa Beardtongue	G3/S3 S/--
<i>Penstemon thompsoniae</i> ssp. <i>jaegeri</i> Jaeger Beardtongue	G4T2/S2 S/R4S
<i>Perityle intricata</i> Desert Rockdaisy	G3/S3 --/--
<i>Phacelia beatleyae</i> Beatley Scorpionflower	G3/S3 S/--
<i>Phacelia filiae</i> Clarke Phacelia	G2/S2 S/--
<i>Phacelia geraniifolia</i> Jaeger Phacelia	G2Q/S2 --/--
<i>Phacelia mustelina</i> Weasel Phacelia	G2/S2 C/--
<i>Phacelia parishii</i> Parish Phacelia	G2G3/S2S3 S/--
<i>Phacelia petrosa</i> Rock Phacelia	G3G4/S2 --/--
<i>Physaria hitchcockii</i> var. <i>hitchcockii</i> Hitchcock Bladderpod	G3T2/S2 --/R4S
<i>Polygala heterorhyncha</i> Notch-beak Milkwort	G3/S3 --/--
<i>Porophyllum pygmaeum</i> Pygmy Poreleaf	G2/S2 --/--
<i>Salvia dorrii</i> var. <i>clokeyi</i> Clokey Mountain Sage	G5T3/S3 --/--
<i>Townsendia jonesii</i> var. <i>tumulosa</i> Charleston Grounddaisy	G4T3/S3 --/R4S
<i>Xanthisma grindelioides</i> var. <i>depressum</i> Rayless Tansy Aster	G5T3T4/S3 --/--

Source: (U.S. Air Force, 2016a)

Heritage Rank:

G = Global rank indicator, based on worldwide distribution at the species level

T = Global trinomial rank indicator based on worldwide distribution at the infraspecific level

S = State rank indicator, based on distribution within Nevada at the lowest taxonomic level

1 – Critically imperiled and especially vulnerable to extinction or extirpation due to extreme rarity, threats, or other factors

2 – Imperiled due to rarity or other demonstrable factors

3 – Vulnerable to decline because rare and local throughout range, or with very restricted range

4 – Long term concern, though now apparently secure; usually rare in parts of its range, especially at its periphery

H – Possibly Extinct, known from only historical occurrences but still some hope of rediscovery

S – Secure, at very low or no risk of extirpation in the jurisdiction due to a very extensive range, abundant populations or occurrences, with little to no concern from declines or threats

Q – Taxonomic status uncertain

? – Unranked (rank not yet assessed)

BLM-S = Species identified as Sensitive by the BLM, which include Nevada Special Status Species, USFWS listed, proposed, candidate species or otherwise protected by Nevada state law on BLM managed lands

USFS: S = Sensitive Species, W = Watch List, R4S = Region 4 (Humboldt-Toiyabe National Forest) Sensitive

## H.2 SPECIAL STATUS WILDLIFE SPECIES

Special status wildlife species that are of special interest to cooperating agencies and ranked by the State of Nevada as imperiled or vulnerable to decline are listed in Table H-3.

**Table H-3. Special Status Wildlife Species of Special Interest to Cooperating Agencies**

Scientific Name	Common Name	Status <sup>1</sup> BLM/USFS/ NDOW Wildlife Action Plan	Heritage Rank <sup>2</sup> State/Global
<b>AMPHIBIANS</b>			
<i>Anaxyrus cognatus</i>	Great Plains toad	--/--/SOCP	S2/G5
<b>REPTILES</b>			
<i>Arizona elegans</i>	Glossy snake	S/--/--	S4/G5
<i>Chionactis occipitalis</i>	Western shovelnose snake	S/--/SOCP	S4/G5
<i>Coleonyx variegatus</i>	Western banded gecko	--/--/SOCP	S4/G5
<i>Crotalus cerastes</i>	Sidewinder	S/--SOCP	S4/G5
<i>Crotaphytus bicinctores</i>	Great Basin collared lizard	--/--/SOCP	S4/G5
<i>Diadophis punctatus</i>	Ring-necked snake	--/--/SOCP	S3/G5
<i>Dipsosaurus dorsalis</i>	Desert iguana	--/--/SOCP	S3/G5
<i>Gambelia wislizenii</i>	Longnose leopard lizard	--/--/SOCP	S4/G5
<i>Phrynosoma platyrhinos</i>	Desert horned lizard	--/--/SOCP	S4/G5
<i>Phyllorhynchus decurtatus</i>	Spotted leafnose	--/--/SOCP	S4/G5
<i>Rena humilis</i>	Western blind snake	--/--/SOCP	S4/G5
<i>Plestiodon gilberti rubricaudatus</i>	Western red-tailed skink	--/-- /SOCP	S2S3/G5T4Q
<i>Sauromalus ater</i>	Chuckwalla	S/-- /SOCP	S3/G5
<i>Tantilla hobartsmithi</i>	Smith's black-headed snake	--/--/SOCP	--
<i>Xantusia vigilis</i>	Desert night lizard	--/-- /SOCP	S4/G5
<b>BIRDS</b>			
<i>Amphispiza belli</i>	Sage sparrow	--/--/SOCP	S4B, S4N/G5
<i>Athene cunicularia hypugea</i>	Western burrowing owl	S/--/SOCP	S3B/G4T4
<i>Buteo regalis</i>	Ferruginous Hawk	S/--/SOCP	S2/G4
<i>Charadrius nivosus nivosus</i>	Western snowy plover	S/--/SOCP	S3B/G3T3
<i>Chordeiles minor</i>	Common nighthawk	--/--/SOCP	S5B/G5
<i>Falco mexicanus</i>	Prairie falcon	S/--/SOCP	S4/G5
<i>Falco peregrinus</i>	Peregrine falcon	S/S/SOCP	S2/G4
<i>Gymnorhinus cyanocephalus</i>	Pinyon jay	S/--/SOCP	S3S4/G5
<i>Icterus parisorum</i>	Scott's oriole	--/--/SOCP	S4B
<i>Lanius ludovicianus</i>	Loggerhead shrike	S/--/SOCP	S4SB/G4
<i>Numenius americanus</i>	Long-billed curlew	--/--/SOCP	S2S3B/G5
<i>Oreoscoptes montanus</i>	Sage thrasher	--/--/SOCP	G5/S5B
<i>Otus flammeolus</i>	Flammulated owl	--/S/SOCP	G4/S4B
<i>Phainopepla nitens</i>	Phainopepla	--/--/--	G5/S2B
<i>Sorex tenellus</i>	Inyo shrew	--/--/SOCP	S2/G4
<i>Spizella atrogularis</i>	Black-chinned sparrow	--/--/SOCP	S3B/G5
<i>Toxostoma bendirei</i>	Bendire's thrasher	S/--/SOCP	S1/G4
<i>Toxostoma crissale</i>	Crissal thrasher	--/--/SOCP	S3/G5
<i>Toxostoma lecontei</i>	Le Conte's thrasher	S/--/SOCP	S2/G4

**Table H-3. Special Status Wildlife Species of Special Interest to Cooperating Agencies**

Scientific Name	Common Name	Status <sup>1</sup> BLM/USFS/ NDOW Wildlife Action Plan	Heritage Rank <sup>2</sup> State/Global
<i>Vireo vicinior</i>	Gray vireo	--/--/--	G4/S3B
<b>MAMMALS</b>			
<i>Dipodomys deserti</i>	Desert kangaroo rat	--/--/SOCP	S2S3/G5
<i>Eptesicus fuscus</i>	Big brown bat	S/--/--	S4/G5
<i>Euderma maculatum</i>	Spotted bat	--/--/--	S2/G4
<i>Lasiurus cinereus</i>	Hoary bat	S/--/SOCP	S3N/G5
<i>Lasionycteris noctivagans</i>	Silver-haired bat	S/--/SOCP	S3B/G5
<i>Lemmiscus curtatus</i>	Sagebrush vole	--/--/SOCP	S3
<i>Myotis californicus</i>	California myotis	S/--/--	S4/G5
<i>Myotis ciliolabrum</i>	Western small-footed myotis	S/--/SOCP	S3/G5
<i>Myotis evotis</i>	Long-eared myotis	S/--/SOCP	S4/G5
<i>Myotis volans</i>	Long-legged myotis	S/--/--	S4/G5
<i>Myotis yumanensis</i>	Yuma myotis	S/--/--	S3S4/G5
<i>Notiosorex crawfordi</i>	Crawford's desert shrew	--/--/--	S3/G5
<i>Parastrellus hesperus</i>	Western pipistrelle	S/--/--	S4/G5
<i>Sorex merriami</i>	Merriam's shrew	--/--/SOCP	S3/G5
<i>Thomomys bottae</i>	Botta's pocket gopher	S/--/SOCP	SNR/G5
<b>GASTROPODS</b>			
<i>Pyrgulopsis micrococcus</i>	Oasis Valley pyrg	S/--/SOCP	S2/G3
<i>Pyrgulopsis turbatrix</i>	Southeast Nevada pyrg	S/--/SOCP	S2/G2
<b>INSECTS</b>			
<i>Perdita cephalotes</i>	Big-headed perdita	--/--/--	SNR/G1G3
<i>Euphilotes bernardino inyomontana</i>	Bret's blue (Spring Mtns phenotype)	--/--/--	S2/G3G4T3T4
<i>Andrena balsamorhizae</i>	Mojave gypsum bee	S/--/--	S2/G2
<i>Limenitis weidemeyerii nevadae</i>	Nevada admiral	--/--/--	S2S3/G5T2T3
<i>Megandrena mentzeliae</i>	Red-tailed blazing star bee	--/--/--	S2/G2
<i>Perdita meconis</i>	Mojave poppy bee	S/--/--	S2/G2

Sources: (Nevada Natural Heritage Program, 2017; Kleiber, 2017; U.S. Air Force, 2016b; U.S. Forest Service, 2016)

BLM = Bureau of Land Management; NDOW = Nevada Department of Wildlife; USFS = U.S. Forest Service

Notes:

<sup>1</sup> Status (-- = No status):

BLM = S – Sensitive, which include U.S. Fish and Wildlife Service (USFWS) species, and those protected by Nevada state law on BLM managed lands

USFS = S – Sensitive Species

NDOW Wildlife Action Plan - SOCP = Species of Conservation Priority

<sup>2</sup> Heritage Rank: S = State rank indicator, based on distribution within Nevada at the lowest taxonomic level; G = Global rank indicator, based on worldwide distribution at the species level; T = Global trinomial rank indicator based on worldwide distribution at the infraspecific level; B = Breeding – Conservation status refers to the breeding population of the element in the nation or state/province

1 – Critically imperiled and especially vulnerable to extinction or extirpation due to extreme rarity, threats, or other factors

2 – Imperiled due to rarity or other demonstrable factors

3 – Vulnerable to decline because rare and local throughout range, or with very restricted range

4 – Long term concern, though now apparently secure; usually rare in parts of its range, especially at its periphery

5 – Secure, at very low or no risk of extirpation in the jurisdiction due to a very extensive range, abundant populations or occurrences, with little to no concern from declines or threats

### H.3 MITIGATION MEASURES FOR DESERT TORTOISE

Mitigation measures for desert tortoise are presented in this section and are subject to revision upon coordination with the U.S. Fish and Wildlife Service (USFWS) during development of a Biological Assessment pursuant to Section 7 of the Endangered Species Act.

These mitigation measures for Desert Tortoise are derived from the Desert Tortoise Management Plan:

1. An Official Representative and Authorized Biologist shall be assigned responsible for implementation and oversight of compliance with recommendations, mitigation measures, reasonable and prudent requirements associated with the USFWS Biological Opinions (BOs), review and reporting requirements, and any re-initiation requirements of regulatory procedures or documents. The Authorized Biologist will be responsible for interagency cooperation among (but not limited to) private contractors, the USFWS, base personnel, and the U.S. Air Force.
2. A form for all desert tortoise that are handled (live and dead) shall be developed and the qualified representative shall be responsible for the handling, storage, and updating of completed forms. Data sheets for handling desert tortoise as well as measurement and observation forms have been previously developed and can be referenced in Guidelines for Handling Desert Tortoise during Construction Projects (Desert Tortoise Council, 1999).
3. Desert tortoise–proof fencing should be erected (or remain in place where already erected) in areas known or suspected to support populations of desert tortoise and monitored on a quarterly basis to ensure that fences remain in good condition. Fencing should be repaired promptly to ensure zero ground clearance at all times.
4. Following the installation of new fencing on project areas (i.e., around vehicle demolition areas, explosives demolition ranges, or other facilities or areas requiring fencing), enclosures shall be searched for presence of desert tortoise or their sign using 100 percent coverage techniques. Any identified desert tortoise burrow will be examined (i.e., with fiber optic scopes) to determine occupancy. Surveys will be conducted for enclosed areas unless a prohibitive risk to surveyors from explosive ordnance or demolitions activities impedes surveying activities. Enclosed areas will be surveyed a total of three times unless the results of the second survey determine conclusively that desert tortoise are not present within enclosures.

At some of the targets located in the South Range, there is excessive damage and difficulty in maintaining fences around live munitions targets. Desert tortoise should be removed from harm's way following standard

procedures. With respect to boundary fencing, direct removal of vegetation and ground disturbance should be minimized. Bulldozer clearing or other major soil disturbing methods should be avoided. In areas with heavy vegetation, irregularly shaped fence line clearings should be used rather than fence lines with uniform clearing widths. Mechanical clearing can be used if accompanied by actions that minimize soil loss and allow restoration of native vegetation.

Periodic monitoring of the fence and maintaining the fence in a usable condition, consistent with the original as-built standards, could be conducted. In addition, the fence line and access roads should be monitored for invasive plant species and appropriate invasive plant control measures should be implemented when required. Measures to decrease use of fences for perching of predators should be implemented where required.

5. Operators and facility personnel should check under their vehicles prior to moving if the vehicle has been parked for more than a few minutes in desert tortoise habitat. Additionally, signs in parking areas of projects or facilities located within desert tortoise habitat should be posted to remind personnel to check under their vehicles prior to moving them. Also, hang tags (i.e., from rearview mirrors), windshield decals or other signage should be used to remind personnel to check for desert tortoise beneath vehicles. Relocation of live desert tortoise will be conducted according to the recommendations found in Guidelines for Handling Desert Tortoise during Construction Projects (Desert Tortoise Council, 1999).

6. If desert tortoise or their sign are observed within the boundaries of NTTR, facility personnel or operations contractors should immediately call the 99 CES/CEIEA Natural Resources Manager to request a biologist for further evaluation.

7. Any desert tortoise found during clearance surveys (i.e., for construction projects) may be relocated up to 1,000 feet from the area of impact. Relocation of live desert tortoise will be conducted according to the recommendations found in Guidelines for Handling Desert Tortoise during Construction Projects . Following inspection of burrows for desert tortoise, all burrows must be collapsed to prevent future use.

8. In areas where potential impacts are likely to persist over a long period of time, the project site should be cleared of desert tortoise prior to construction. Preconstruction desert tortoise clearance surveys should be conducted no more than 48 hours prior to earth-moving or vegetation-disturbing activities, unless the impacted area is secured in a way that prevents desert tortoise entry. Clearance surveys should be coordinated with the 99 CES/CEIEA Natural Resources Manager well in advance of any project. In addition, a perimeter around project areas should be cleared, as determined by the NTTR Natural Resources Manager and the

USFWS. The determination to conduct perimeter clearance and the width of the perimeter will be made by the 99 CES/CEIEA Natural Resources Manager and will be based on the quality of desert tortoise habitat in the project area and/or the likelihood of desert tortoise appearing on a project site. A desert tortoise monitor will be present on the project sites during all project construction/earth-moving activities until the project is completed. Any desert tortoise or eggs found within the project area will be removed by a qualified desert tortoise biologist in accordance with the guidance document, Guidelines for Handling Desert Tortoise during Construction Projects (Desert Tortoise Council, 1999).

9. Desert tortoise that are moved offsite and released into undisturbed habitat must be placed in the shade of a shrub, in a natural unoccupied burrow similar to the hibernaculum in which it was found, or in an artificially constructed burrow (as constructed under the guidelines provided in Guidelines for Handling Desert Tortoise during Construction Projects), depending upon the time of year and ambient temperatures (Desert Tortoise Council, 1999).

10. Desert tortoise moved in the winter (November 1 through March 1) or those in hibernation regardless of date must be placed into an adequate burrow. If one is not available, one will be constructed utilizing the protocol for burrow construction in section B.5.f. of the USFWS-approved guidelines. During mild temperature periods in the spring and fall, desert tortoise removed will not necessarily be placed in a burrow.

11. Desert tortoise encountered experiencing heat stress will be placed in a tub, by an authorized desert tortoise biologist, with 1 inch of water in an environment with a temperature between 76 degrees Fahrenheit (°F) and 95°F for several hours, until heat stress symptoms are no longer evident.

12. The Air Force will implement best management practices during construction, such as erosion and sediment control, minimizing soil compaction, and crushing of vegetation to reduce impacts from construction activities.

13. Construction of roads, blading of existing roads, or other surface disturbance associated activities will be confined to the locations authorized by the 99 CES/CEIEA Natural Resources Manager and will not exceed the minimum size required for safe usage.

14. Air Force activities that may endanger a desert tortoise will cease if a desert tortoise is found in harm's way as a result of the activity. Project activities will resume after the 99 CES/CEIEA Natural Resources Manager has been contacted and evaluated. If needed, an authorized biologist will remove the desert tortoise from danger or to a safe area. Relocation of live desert tortoise will be conducted according to the recommendations

found in Guidelines for Handling Desert Tortoise during Construction Projects (Desert Tortoise Council, 1999).

15. Disturbance of desert tortoise burrows will be avoided from May 15 to September 30 to prevent impacts to buried egg clutches and emerging hatchlings. If this is not possible, active burrows impacted by the action must be carefully excavated or inspected with a fiber optic scope to determine if eggs are present. Eggs found in burrows must be removed and placed in a new burrow in suitable habitat according to the recommendations found in Guidelines for Handling Desert Tortoise during Construction Projects (Desert Tortoise Council, 1999). Following the inspection of burrows for desert tortoise, all burrows must be collapsed to prevent future use.

16. Speed limit of 35 miles per hour (mph) will be maintained on paved roads in DT Habitat. Speed limits of 25 mph will be maintained for all regular vehicle travel on gravel roads in desert tortoise habitat. Speed limit of 15 mph will be maintained on two-track roads and trails. Air Force personnel, contractors, and other personnel should check under their vehicles prior to moving, if the vehicle has been parked for more than a few minutes in desert tortoise habitat.

17. Signage should be posted to clearly delineate areas within potential or known desert tortoise habitat where off-road vehicle use is prohibited. Signs in parking areas of projects or facilities located within desert tortoise habitat should be posted to remind personnel to check under their vehicles. Signage will be posted to clearly delineate areas within potential or known desert tortoise habitat where off-road vehicle use is prohibited. These areas should also be incorporated into maps of the NTTR. If necessary, fences with appropriate signage should be implemented in problem areas. Signs should be posted no further than 300 feet apart and facing outward from restricted areas.

18. Employees on site will be provided with desert tortoise awareness training to recognize desert tortoise and desert tortoise sign. The program will be presented by an authorized desert tortoise biologist for projects causing the greatest potential for destruction of desert tortoise habitat. A video or fact sheet, as approved by the USFWS, may be presented or provided in lieu of a presentation for projects with low impact potential as determined by the Natural Resources Manager. Contact information for the Natural Resources Manager and Authorized Biologist shall be included on any fact sheets or handout materials. This contact information should include, at a minimum, phone numbers for the Natural Resources Manager and the Authorized Biologist.



19. The training program will include:

- General provisions of the Endangered Species Act
- Necessity for adhering to the provisions of the Act
- Potential for civil and criminal penalties associated with violating the provisions of the Act.
- Terms and conditions of the USFWS BO that are applicable to the activity
- The definition of “take”
- The exact boundaries of the site within which the project activities may be accomplished
- General behavior and ecology of the desert tortoise and its sensitivity to human activities
- Measures to protect desert tortoise
- Proper disposal of food and trash to avoid attracting predators of desert tortoise
- Personal measures employees can take to promote the conservation of desert tortoise
- Specific and detailed instructions will be provided on the proper techniques (preferably by a qualified biologist, if practicable) to capture and move a desert tortoise that may be in imminent danger (on a heavily traveled road, on an active project site, or under a vehicle) in accordance with the USFWS-approved protocol.
- Instructions for personnel to inspect beneath their vehicles while in desert tortoise habitat prior to moving the vehicle. If a desert tortoise is found beneath the vehicle, it will be moved by environmental staff or by project personnel in accordance with guidelines provided to them during the awareness briefings.
- Reporting requirements when desert tortoise are observed, moved, injured, or killed

20. Upon locating dead, injured, or sick desert tortoise, proper notification shall be filed with the USFWS Las Vegas office. Only qualified biologists should handle live, sick, or injured desert tortoise, and dead desert tortoise should be handled with care so that they are in good condition for subsequent analyses of cause of death. Sick or injured desert tortoise will be delivered to any qualified veterinarians for treatment or disposal.

21. All trash and debris will be regularly collected and contained to minimize attracting potential predators of the desert tortoise (i.e., ravens). This program will include the use of covered, predator-proof trash receptacles and proper disposal of trash in a designated solid waste

disposal facility. Vehicles hauling trash to the landfill and leaving the landfill must be secured to prevent litter from blowing out along the road. Signage, fencing, power poles, and antennas will only be installed where required to minimize elevated perches for predators.

22. Any areas temporarily impacted by excavation and other activities will be returned to original contours and planted in native vegetation to allow for recovery to the natural state. Native plants may be seeded for germination following the first storm event after project completion. Initial irrigation may be used to stimulate germination of seedling plants but should not be continued to prevent adaptation of the plants to an artificially wet environment with shallow surface moisture. If nursery stock is used for replanting, all plants should be native and endemic to the specific area. Natural recovery of areas is preferred to seeding and planting. Remuneration fees or habitat restoration will only be required for new areas of soil disturbance. If logistics do not allow this, the Air Force will pay the remuneration fee for destruction of habitat based on the current rates determined by the Clark County desert tortoise Habitat Conservation Fund.

23. The Air Force will minimize and avoid excessive noise and vibration associated with various construction and military operations where possible.

24. The Air Force will comply with all regulations required for construction and military activities to minimize production of dust and other particulates into the air. The use of water to decrease dust production can inadvertently attract desert tortoise to roads and construction sites. However, current particulate pollution standards require that dust be contained on construction sites and along roads. Therefore, the Air Force will minimize use of water where practicable. When water is used for dust control, it will be used sparingly to avoid puddling and accumulation of water in a manner that attracts desert tortoise. Alternatives for dust control will also be explored and include implementation of dust abatement measures using a soil stabilizer (e.g., application of dust palliatives [e.g., polymer emulsion or synthetic fluid]) to reduce impacts from dust.

25. The Air Force will comply with all state and federal regulations to accommodate or remove hazardous materials and depleted uranium from target sites, construction sites, etc.

26. The Air Force will incorporate all desert tortoise population surveys and habitat information into the Natural Resources Geographic Information System database to facilitate planning and cooperative regional desert tortoise management initiatives.

27. Measures shall be taken to minimize destruction of desert tortoise habitat, such as soil compaction, erosion, or crushed vegetation, due to weapons testing and training activities.

28. The Air Force will provide the USFWS an annual report documenting any actions taken in compliance with the conservation measures and terms and conditions included in the final BO for this action. Any actions resulting in “take” of desert tortoise will be reported to the USFWS within 24 hours. If a dead, injured, or diseased desert tortoise is found, the Las Vegas Office of the USFWS Ecological Services should be notified as soon as possible.

29. Measures shall be taken to ensure compliance with the reasonable and prudent measures, terms and conditions, reporting requirements, and re-initiation requirements contained in the issued USFWS BOs.

### **H.3.1 Desert Tortoise Suitable Habitat**

No formal desert tortoise surveys have been conducted on the proposed expansion areas. A desert tortoise habitat range model for all expansion alternatives based on vegetation, soils, and other factors has been developed and further details can be found in the *Desert Tortoise Habitat Model Report* (U.S. Air Force, 2017). Figure H-1 and Figure H-2 depict potentially suitable habitat as presented in that report.

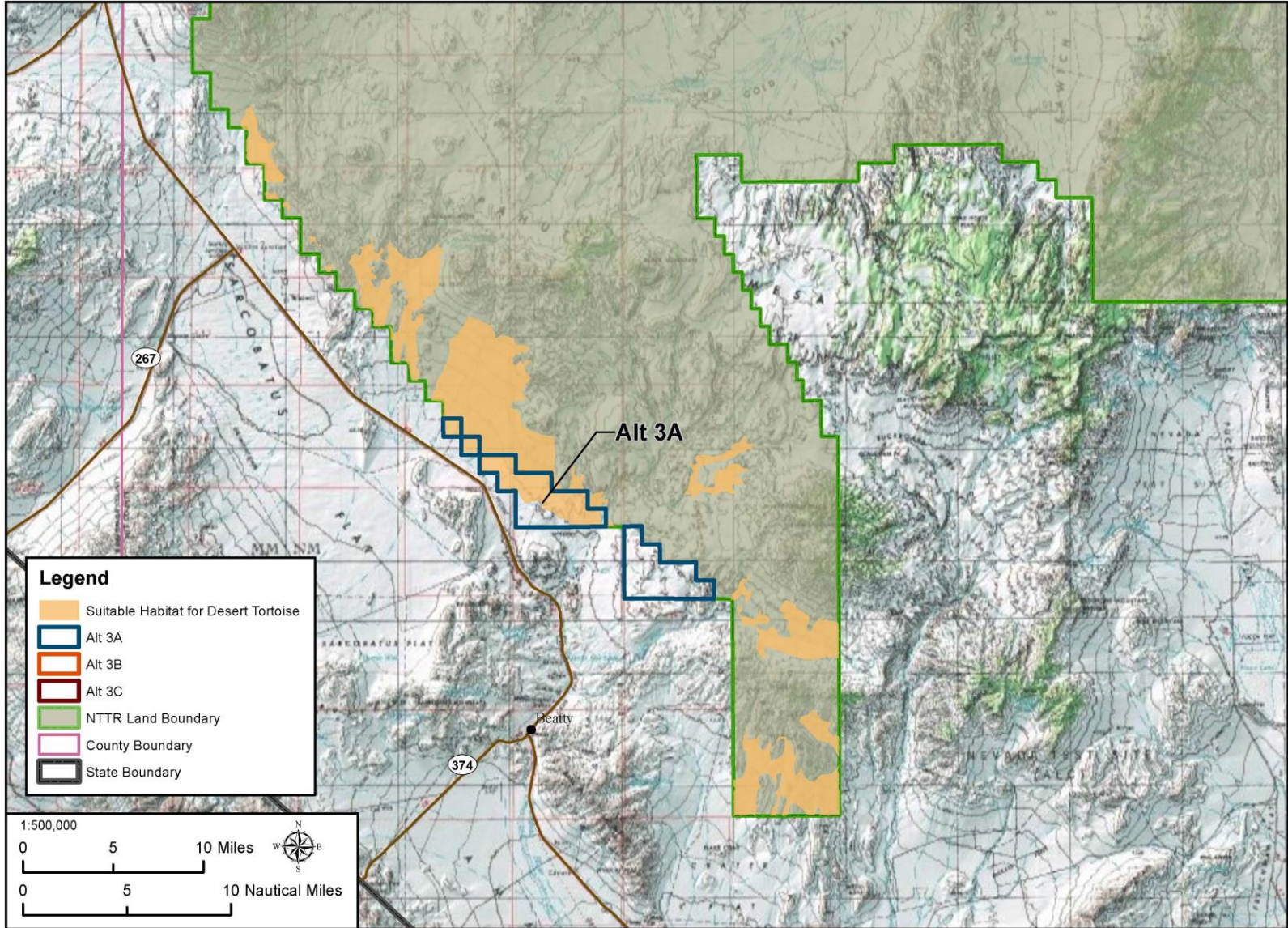


Figure H-1. Suitable Habitat for Desert Tortoise in Vicinity of Alternative 3A Proposed Expansion Areas

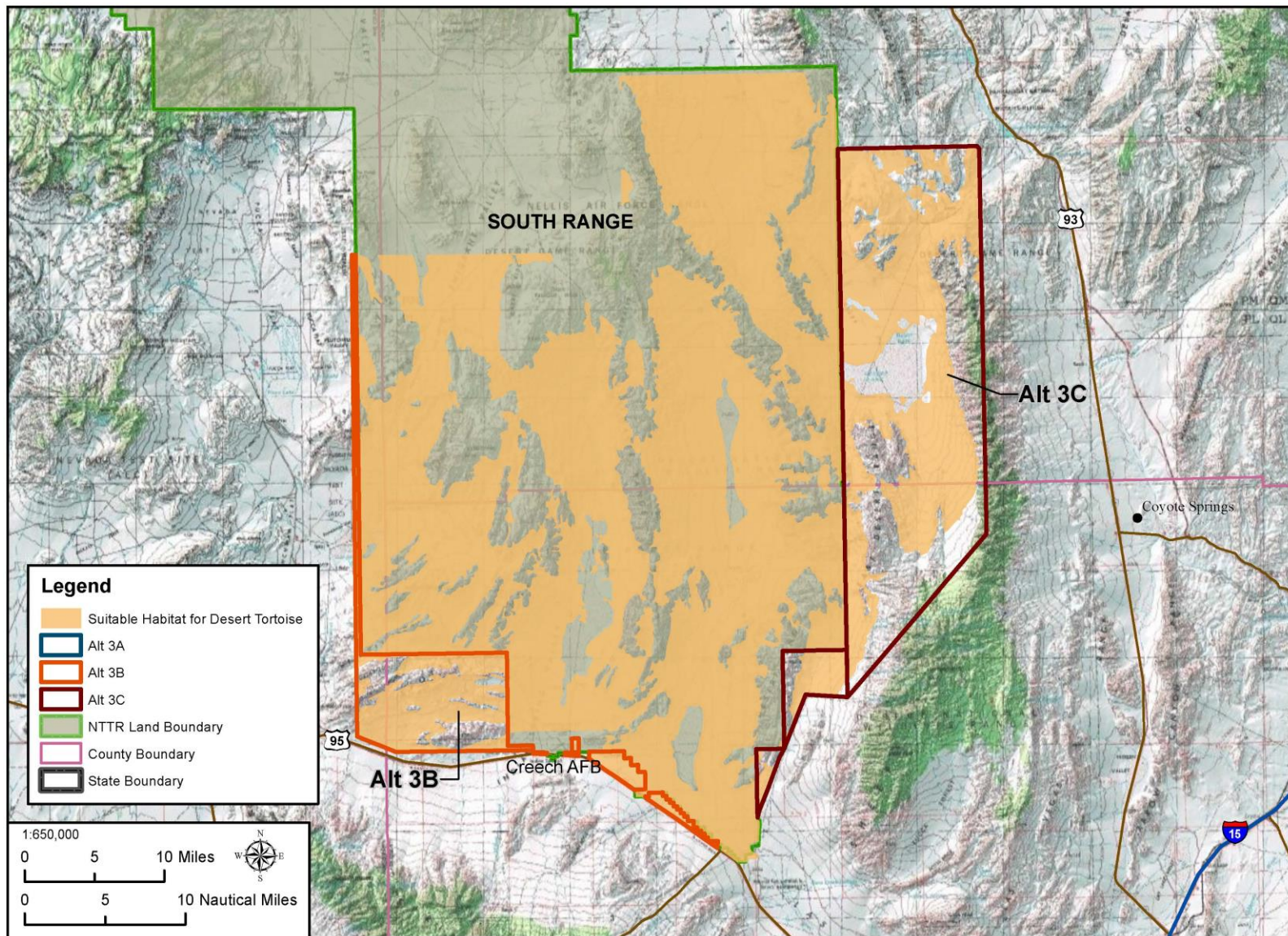


Figure H-2. Suitable Habitat for Desert Tortoise in Vicinity of Alternatives 3B and 3C Proposed Expansion Areas

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## H.4 SUPPORTING INFORMATION

### H.4.1 Gila Monster

The Nevada Department of Wildlife (NDOW) protocol for protection of the banded Gila monster is derived from the Gila Monster Status, Identification and Reporting Protocol for Observations, dated September 7, 2012:

#### **Gila Monster Status**

- Per Nevada Administrative Code 503.080, the Gila monster (*Heloderma suspectum*) is classified as a Protected reptile.
- Per Nevada Administrative Codes 503.090, and 503.093, no person shall capture, kill, or possess any part thereof of Protected wildlife without the prior written permission by the NDOW.
- Per Nevada Revised Statute (NRS) 503.597, written consent and approval by NDOW is needed to handle protected wildlife.

This species is rarely observed relative to other species which is the primary reason for its Protected classification by the State of Nevada. The U.S. Department of the Interior's Bureau of Land Management has recognized this lizard as a sensitive species since 1978. Most recently, the Gila monster was designated as an *Evaluation* species under Clark County's Multiple Species Habitat Conservation Plan (MSHCP). The evaluation designation was warranted because inadequate information exists to determine if mitigation facilitated by the MSHCP would demonstrably cover conservation actions necessary to insure the species' persistence without protective intervention as provided under the federal Endangered Species Act.

The banded Gila monster (*H.s. cinctum*) is the subspecies that occurs in Clark, Lincoln, and Nye Counties of Nevada. Found mainly below 5,000 feet elevation, its geographic range approximates that of the desert tortoise (*Gopherus agasizii*) and is coincident to the Colorado River drainage. Gila monster habitat requirements center on desert wash, spring and riparian habitats that inter-digitate primarily with complex rocky landscapes of upland desert scrub.

They will use and are occasionally encountered out in gentler terrain of alluvial fans (bajadas). Hence, Gila monster habitat bridges and overlaps that of both the desert tortoise and chuckwalla (*Sauromalus ater*). Gila monsters are secretive and difficult to locate, spending more than 95 percent of their lives underground.

The Gila monster is the only venomous lizard endemic to the United States. Its behavioral disposition is somewhat docile and avoids

confrontation. But it will readily defend itself if threatened. Most bites are considered consequential to harassment or careless handling. These lizards are not dangerous unless molested or handled and should not be killed.

Scant information exists on detailed distribution and relative abundance in Nevada. The NDOW has ongoing management investigations addressing the Gila monster's status and distribution, hence additional distribution, habitat, and biological information is of utmost interest. In assistance to gathering additional information about Gila monsters in Nevada, NDOW will be notified whenever a Gila monster is encountered or observed, and under what circumstances (see Reporting Protocol below).

### Identification

The Gila monster is recognizable by its striking black and orange-pink coloration and bumpy, or beaded, skin. In keeping with its namesake, the banded Gila monster retains a black chain-link, banded appearance into adulthood. Other lizard species are often mistaken for the Gila monster. Of these, the non-venomous western banded gecko (*Coleonyx variegatus*) and non-venomous chuckwalla are most frequently confused with the Gila monster. All three species share the same habitats.



The western banded gecko is often mistakenly identified as a baby or juvenile Gila monster. Western banded geckos do have a finely granular skin and pattern that can be suggestive of the Gila monster to the untrained eye. However, western banded gecko heads are somewhat pointed at the snout and the relatively large eyes have vertical pupils. Snouts of Gila monsters are bluntly rounded and the smallish eyes have round pupils.

Newly hatched Gila monsters are about 5 to 6 inches long with a vivid orange and black, banded pattern. Adult western banded geckos are cream to yellow and brown in pattern and do not exceed 5 inches.

Both juvenile and adult chuckwallas are commonly confused with the Gila monster. Juvenile chuckwallas have an orange and black, banded tail. Although banding of the tail fades as chuckwallas mature, their large adult size (up to 17 inches) rivals that of the Gila monster. Adult chuckwallas have a body shape somewhat suggestive of the Gila monster, but they lack the coarsely beaded skin and black and orange body pattern of the Gila monster.

## Reporting Protocol for Gila Monster Observations

Field workers and personnel in southern Nevada should at least know how to: (1) identify Gila monsters and be able to distinguish it from other lizards such as chuckwallas and western banded geckos (see Identification section above); (2) report any observations of Gila monsters to the NDOW; (3) be alerted to the consequences of a Gila monster bite resulting from carelessness or unnecessary harassment; and (4) be aware of protective measures provided under state law.

1) Live Gila monsters found in harm's way on the construction site will be captured and then detained in a cool, shaded environment (85°F or below) by the project biologist or equivalent personnel until a NDOW biologist can arrive for documentation, marking and obtaining biological measurements and samples prior to releasing. Despite that a Gila monster is venomous and can deliver a serious bite, its relatively slow gait allows for it to be easily coaxed or lifted into an open bucket or box carefully using a long handled instrument such as a shovel or snake hook (*Note: it is not the intent of NDOW to request unreasonable action to facilitate captures; additional coordination with NDOW will clarify logistical points*). A clean 5-gallon plastic bucket with a secure, vented lid; an 18-by-18-by-4-inch plastic sweater box with a secure, vented lid; or, a tape-sealed cardboard box of similar dimension may be used for safe containment. Additionally, written information identifying the mapped capture location, Global Positioning System (GPS) coordinates in Universal Transverse Mercator (UTM) using the North American Datum (NAD) 83 zone 11. Date, time, and circumstances (e.g., biological survey or construction) and habitat description (vegetation, slope, aspect, substrate) will also be provided to NDOW.

2) Injuries to Gila monsters may occur during excavation, blasting, road grading, or other construction activities. In the event a Gila monster is injured, it should be transferred to a veterinarian proficient in reptile medicine for evaluation of appropriate treatment. Rehabilitation or euthanasia expenses will not be covered by NDOW. However, NDOW will be immediately notified of any injury to a Gila monster and which veterinarian is providing care for the animal. If an animal is killed or found dead, the carcass will be immediately frozen and transferred to NDOW with a complete written description of the discovery and circumstances, date, time, habitat, and mapped location (GPS coordinates in UTM using NAD 83 Z 11).

3) Should NDOW's assistance be delayed, biological or equivalent acting personnel on site should detain the Gila monster out of harm's way until NDOW personnel can respond. The Gila monster should be detained until NDOW biologists have responded. Should NDOW not be immediately available to respond for photo-documentation, a digital (5 mega-pixel or



higher) or 35-millimeter camera will be used to take good quality images of the Gila monster *in situ* at the location of live encounter or dead salvage. The pictures will be provided to NDOW at the address above or the email address below along with specific location information including GPS coordinates in UTM using NAD 83 Z 11, date, time and habitat description. Pictures will show the following information: (1) Encounter location (landscape with Gila monster in clear view); (2) a clear overhead shot of the entire body with a ruler next to it for scale (Gila monster should fill camera's field of view and be in sharp focus); (3) a clear, overhead close-up of the head (head should fill camera's field of view and be in sharp focus).

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## H.5 REFERENCES

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