# 3.10 Biological Resources

**No Action Alternative**

Under the No Action Alternative, the 1999 Congressional land withdrawal of 201,933 acres from public domain (Public Law 106-65) would expire on November 5, 2021, and military training activities requiring the use of these public lands would cease. Expiration of the land withdrawal would terminate the Navy's authority to use nearly all of the Fallon Range Training Complex's (FRTC's) bombing ranges, affecting nearly 62 percent of the land area currently available for military aviation and ground training activities in the FRTC.

**Alternative 1 – Modernization of the Fallon Range Training Complex**

Under Alternative 1, the Navy would request Congressional renewal of the 1999 Public Land Withdrawal of 202,864 acres, which is scheduled to expire in November 2021. The Navy would request that Congress withdraw and reserve for military use approximately 618,727 acres of additional Federal land and acquire approximately 65,153 acres of non-federal land. Range infrastructure would be constructed to support modernization, including new target areas, and expand and reconfigured existing Special Use Airspace (SUA) to accommodate the expanded bombing ranges. Implementation of Alternative 1 would potentially require the reroute of State Route 839 and the relocation of a portion of the Paiute Pipeline. Public access to B-16, B-17, and B-20 would be restricted for security and to safeguard against potential hazards associated with military activities. The Navy would not allow mining or geothermal development within the proposed bombing ranges or the Dixie Valley Training Area (DVTA). Under Alternative 1, the Navy would use the modernized FRTC to conduct aviation and ground training of the same general types and at the same tempos as analyzed in Alternative 2 of the *2015 Military Readiness Activities at Fallon Range Training Complex, Nevada, Final Environmental Impact Statement* (EIS). The Navy is not proposing to increase the number of training activities under this or any of the alternatives in this EIS.

**Alternative 2 – Modernization of Fallon Range Training Complex with Managed Access**

Alternative 2 would have the same withdrawals, acquisitions, and SUA changes as proposed in Alternative 1. Alternative 2 would continue to allow certain public uses within specified areas of B-16, B-17, and B-20 (ceremonial, cultural, or academic research visits, land management activities) when the ranges are not operational and compatible with military training activities (typically weekends, holidays, and when closed for maintenance). Alternative 2 would also continue to allow grazing, hunting, off-highway vehicle (OHV) usage, camping, hiking, site and ceremonial visits, and large event off-road races at the DVTA. Additionally under Alternative 2, hunting would be conditionally allowed on designated portions of B-17, and geothermal and salable mineral exploration would be conditionally allowed on the DVTA. Large event off-road races would be allowable on all ranges subject to coordination with the Navy and compatible with military training activities.

**Alternative 3 – Bravo-17 Shift and Managed Access (Preferred Alternative)**

Alternative 3 differs from Alternative 1 and 2 with respect to the orientation, size, and location of B-16, B-17, B-20 and the DVTA, and is similar to Alternative 2 in terms of managed access. Alternative 3 places the proposed B-17 farther to the southeast and rotates it slightly counter-clockwise. In conjunction with shifting B-17 in this manner, the expanded range would leave State Route 839 in its current configuration along the western boundary of B-17 and would expand eastward across State Route 361 potentially requiring the reroute of State Route 361. The Navy proposes designation of the area south of U.S. Route 50 as a Special Land Management Overlay rather than proposing it for withdrawal as the DVTA. This Special Land Management Overlay would define two areas, one east and one west of the existing B-17 range. These two areas, which are currently public lands under the jurisdiction of BLM, would not be withdrawn by the Navy and would not directly be used for land-based military training or managed by the Navy.

# Environmental Impact Statement

# Fallon Range Training Complex Modernization

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## 3.10 Biological Resources

Biological resources include living, native, or naturalized plant and animal species and the habitats within which they occur. Plant associations are referred to generally as vegetation, and animal species are referred to generally as wildlife. Habitat can be defined as the resources and conditions present in an area that support a plant or animal.

For the purposes of this Environmental Impact Statement (EIS), biological resources is divided into three categories: vegetation types, wildlife, and special-status species.

- *Vegetation Types*: Vegetation types include dominant plant species that occur within the project areas. Unvegetated, disturbed, and developed habitats are also discussed in this section. Vegetation types were based on 2017 vegetation mapping of the proposed Fallon Range Training Complex (FRTC) expansion areas conducted in support of this EIS.
- *Wildlife:* The wildlife section includes all common animal species: birds, mammals, reptiles, amphibians, and invertebrates. Although the proposed FRTC expansion areas include small perennial streams and small man-made waterbodies that support fish species, surveys conducted in support of this EIS observed only non-native fish species within these areas (see Supporting Study, Fish Inventory and Habitat Assessment, available at http://www.frtcmodernization.com). In addition, proposed aircraft activities within the FRTC airspace would not impact fish species, and proposed ground-disturbing activities would not impact any potential fish habitat or areas that currently support fish. Therefore, this EIS does not address fish species.
- *Special-status Species*: For the purposes of this EIS, special-status species include the following:
    - Species listed under the Endangered Species Act (ESA) including associated critical habitat.
    - Species listed by the Bureau of Land Management (BLM) as sensitive species (Bureau of Land Management, 2017).
    - Bald eagle (*Haliaeetus leucocephalus*) and golden eagle (*Aquila chrysaetos*) pursuant to the Bald and Golden Eagle Protection Act (BGEPA).
    - Species listed pursuant to the Migratory Bird Treaty Act (MBTA).
    - Birds of Conservation Concern as identified by the U.S. Fish and Wildlife Service (USFWS) as species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the ESA (U.S. Fish and Wildlife Service, 2008). The region of influence for this EIS falls within Bird Conservation Region 9, Great Basin.
    - Species listed as threatened, endangered, sensitive, or otherwise protected by the State of Nevada under the Nevada Administrative Code (NAC).
    - Species listed as Species of Conservation Priority by Nevada Department of Wildlife (NDOW) in the 2013 Nevada Wildlife Action Plan (WAP) (Nevada Department of Wildlife, 2013).
    - Species ranked by the Nevada Natural Heritage Program (NNHP) as critically imperiled, imperiled, or vulnerable (Nevada Natural Heritage Program, 2018a).

The Environmental Consequences section presents an analysis of the potential impacts with implementation of the No Action Alternative, Alternative 1, Alternative 2, and Alternative 3. For each alternative, the analysis is organized by potential stressors (noise, energy [i.e., electromagnetic radiation and lasers], and physical disturbance [i.e., training and construction activities]) within each of the proposed expansion areas (i.e., ranges B-16, B-17, and B-20, and the Dixie Valley Training Area [DVTA]). The analysis for each stressor begins with an overview of the potential effects on wildlife in general, and then provides more detailed analysis for specific groups of wildlife and special-status species, as appropriate.

### 3.10.1 Methodology

This analysis focuses on the potential for significant impacts on biological resources as a result of the Proposed Action discussed in this EIS.

#### 3.10.1.1 Region of Influence

The region of influence for biological resources includes all proposed FRTC expansion areas and lands underlying the area proposed for the FRTC SUA expansion. The region of influence includes all or portions of the following counties within western and central Nevada: Churchill, Elko, Eureka, Lander, Lyon, Mineral, Nye, Pershing, and Washoe. The region of influence is largely rural and encompasses federal, state, private, and tribal lands. With the exception of noise, potential direct and indirect effects of the Proposed Action to biological resources would be limited to certain areas within ground ranges within proposed expansion areas subject to ground-disturbing activities. Accordingly, the analysis focuses on these ranges within proposed expansion areas, but also considers the effects of noise on wildlife and special-status species beneath the proposed expanded SUA. There are no proposed changes to land withdrawal and training activities, and there would be no construction activities associated with B-19. Therefore, B-19 is not discussed further and would be maintained as discussed in the *Fallon Range Training Complex Final Environmental Impact Statement* (U.S. Department of the Navy, 2015).

#### 3.10.1.2 Regulatory Framework

The following regulatory requirements are addressed within the biological resources impact analysis:

- ESA (16 United States Code [U.S.C.] section 1531 et seq.)
- BGEPA (16 U.S.C. 668–668d)
- MBTA (16 U.S.C. 703 et seq.)
- Executive Order (EO) 13186, Responsibilities of Federal Agencies to Protect Migratory Birds
- Wild Free-Roaming Horses and Burros Act (16 U.S.C. 1331–1340)
- EO 13112 and EO 13751 concerning invasive species
- Species listed as threatened, endangered, sensitive, or otherwise protected by the State of Nevada under NAC.

#### 3.10.1.3 Data Sources and Surveys

To evaluate the presence of and potential impacts on species and their habitats, biological resource surveys have been conducted on proposed FRTC expansion areas in support of this EIS within the proposed action area (as described in Section 2.3, Alternatives Carried Forward for Analysis). The following surveys have been or are in the process of being completed:

- vegetation mapping (2017, 2019)
- wetlands (2018, 2019)
- special-status plants (2017, 2019)
- wildlife camera trapping (2017, 2019)
- bats (2017, 2019)
- birds, including diurnal and nocturnal raptors (2017, 2018, 2019), greater sage-grouse (*Centrocercus urophasianus*) (2017, 2019), and MBTA-listed species (2017, 2018. 2019)
- small mammals (2018, 2019)
- reptiles and amphibians (2018, 2019)
- general invertebrates (2018, 2019)
- fish (2018, 2019)

Surveys were conducted within representative habitats within the proposed FRTC expansion lands, and findings from these locations are assumed to be representative of other areas not surveyed that possess similar habitat attributes. The survey reports are presented in as Supporting Studies and the ones that are complete, are available at http://www.frtcmodernization.com. Each report provides figures depicting the individual study areas for each group or species surveyed.

In addition to surveys conducted in support of this EIS, previous survey reports and Geographic Information System (GIS) data from the U.S. Department of the Navy (Navy), USFWS, NDOW, BLM, and others were also used to assess the status and presence of biological resources within the region of influence. The sources used are listed below.

- Natural resource inventories and survey reports supporting the *2015 Military Readiness Activities at Fallon Range Training Complex, Nevada Final Environmental Impact Statement* (U.S. Department of the Navy, 2015).
- Integrated Natural Resources Management Plan (INRMP) for Naval Air Station (NAS) Fallon (U.S. Department of the Navy, 2014).
- NDOW wildlife surveys and associated GIS data.
- Rare plant GIS data from SEINet Arizona - New Mexico Chapter (SEINet is an online data portal that serves as a gateway to natural resources data such as herbarium specimens).
- Occurrence data from the NNHP for special-status species (plants and wildlife) within and in the vicinity of the proposed expansion areas.
- Other relevant EISs and Environmental Assessments for previous actions within the region of influence.

A summary of relevant and applicable biological field studies conducted or to be conducted within existing FRTC lands and proposed FRTC expansion lands is provided in Table 3.10-1.

**Table 3.10-1: Biological Resource Field Studies within Existing FRTC Lands and Proposed FRTC Expansion Areas**

| Survey Type | Previous Surveys* | EIS-specific Surveys* |
|---|---|---|
| Vegetation Mapping | 2007, 2015 | 2017, 2019 |
| Special-status Plants | 2015 | 2017, 2019 |
| Noxious/Non-native Weeds | 2007 | - |
| Wetlands | 2007 | 2018, 2019 |
| Birds | | |
| MBTA-listed species | 2007 | 2017, 2018, 2019 |
| Raptors | 2007† | 2018, 2019 |
| Burrowing owl | 2007† | 2018, 2019 |
| Greater sage-grouse | 2007 | 2017, 2019 |
| Mammals | | |
| Large mammals | 2007‡ | 2017, 2019 |
| Small mammals | 2007 | 2018, 2019 |
| Bats | 2007 | 2017, 2019 |
| Reptiles and amphibians | 2007 | 2018, 2019 |
| Fish | 2007 | 2018, 2019 |
| Invertebrates (focus on insects) | 2007 | 2018, 2019 |

Notes: *Previous surveys were conducted on existing FRTC lands (i.e., B-16, B-17, B-19, B-20, DVTA, and Shoal Site); however, all survey types were not conducted in all survey areas. EIS-specific surveys were conducted on proposed FRTC expansion areas.
†Raptor- and burrowing owl-specific surveys were not conducted' incidental sightings of raptors and owls were recorded while conducting general avian surveys.
‡Large mammal-specific surveys were not conducted in 2007, only incidental sightings were recorded while conducting other surveys.
Sources: {Tierra Data Inc., 2008 #112;Naval Air Station Fallon, 2015 #762;Natural Resources Conservation Service, 2010 #795} and Supporting Studies: Final Wetland Survey Report; Final Burrowing Owl (*Athene cunicularia*) Survey Report; Final Survey Report: Greater Sage-Grouse Lek Aerial Surveys; Draft Raptor Survey Report; Final Rare Plant Survey Report; Final Plant Community Surveys and Mapping Report; Final Wildlife Remote Camera Trapping Survey Report; Final Survey Report: Passive Acoustic Bat Surveys; and Final Avian Survey Report available at http://www.frtcmodernization.com.

### 3.10.1.4 Approach to Analysis

As discussed above, the biological resources impact analysis addresses potential effects to vegetation communities and wildlife (i.e., mammals, birds, fish, and amphibians/reptiles), with special focus on special-status species. The acreage and location of the proposed FRTC range expansion and the associated support facilities and infrastructure construction footprints (described in Chapter 2, Description of Proposed Action and Alternatives) were quantified using GIS analysis to determine potential impacts to habitat and special-status species.

The footprints of ground-disturbing activities within the proposed FRTC expansion areas were also accounted for to ensure that the full range of potential impacts was identified. Under the proposed action, impacts (or effects) may be either temporary (reversible) or permanent (irreversible). Direct and indirect impacts are distinguished as follows.

*Direct impacts* occur at the same place or time as actions generated by proposed construction (e.g., ground-disturbing activities) and training operations (e.g., range use). Direct impacts from construction ground disturbance and operational vegetation clearing were assumed within all areas labeled as facility footprints. These impacts may include, but are not limited to, the following consequences:

- permanent loss of habitat due to vegetation removal for construction of proposed new facilities;
- temporary loss of habitat due to vegetation removal during construction (e.g., some areas would be revegetated after construction), noise, lighting, or human activity;
- permanent loss of habitat due to human activity, noise, or lighting that could prevent a wildlife species, including special-status species, from occupying otherwise suitable habitat, including displacement of wildlife, loss of nesting or foraging habitat, habitat fragmentation, and disruption of migration corridors;
- temporary or permanent injury or mortality of wildlife or special-status species caused by the action and occurring at the same time and place as the action; and
- permanent or temporary loss of habitat due to potential wildfires generated by training activities.

*Indirect impacts*, caused by or resulting from project-related activities, may occur at a different time or place, but are reasonably foreseeable. Indirect impacts from construction ground disturbance and operational vegetation clearing were assumed within all areas labeled as facility footprints. Potential causes of indirect impacts include, but are not limited to, the following reasons:

- introduction of new or increased dispersal of existing non-native, invasive noxious species within the region of influence.
- temporary or permanent impacts on reproductive success or survival of wildlife or special-status species caused by the action but occurring later in time.

The following general principles were used to evaluate impacts:

- the extent, if any, that the action would result in substantial loss or degradation of habitat or ecosystem functions (natural features and processes) essential to the persistence of native flora or fauna populations;
- the extent, if any, that the action would diminish the population size, distribution, or habitat of special-status species or regionally important native plant or animal species; and
- the extent, if any, that the action would permanently degrade ecological habitat qualities that special-status species depend upon, and which partly determines the species' prospects for conservation and recovery;

Specific evaluation criteria are discussed below.

#### 3.10.1.4.1 Vegetation Types and Special-status Plant Species

The methods for analysis of potential vegetation effects used a phased approach outlined below:

- **Step 1**: Define the spatial extent of the No Action Alternative and action alternatives.
- **Step 2**: Define the vegetation community types that are within the spatial extent of the alternatives and would be impacted by proposed ground-disturbing activities. This step primarily relied on ecological surveys conducted in 2017 and 2018 in support of this EIS. Additional information from the NAS Fallon INRMP (U.S. Department of the Navy, 2014), NDOW, BLM, and USFWS supplemented the analysis.

- **Step 3**: Identify any individual special-status plant species and habitats or areas of special concern (e.g., wetlands, springs) that may be within the area subject to direct and indirect effects with implementation of the alternatives.
- **Step 4**: Assess qualitative factors that contribute to potential indirect effects, such as erosion and edge effects (changes in population or community structures that occur at the boundary of two habitats or new artificial infrastructure), and other potential indirect effects (wildfire potential). This step will include a literature review for potential edge effects in similar vegetation community types.

#### 3.10.1.4.2 Wildlife and Special-status Wildlife Species

The methods for analysis of potential effects on wildlife use a similar phased approach outlined below:

- **Step 1**: Define the spatial extent of the No Action Alternative and action alternatives.
- **Step 2**: Define the wildlife communities and major taxonomic groups (e.g., mammals, birds) found within areas of effects, as identified primarily from ecological surveys conducted in 2017 and 2018 in support of this EIS. Additional information from the NAS Fallon INRMP (U.S. Department of the Navy, 2014), NDOW, BLM, and USFWS supplemented the analysis.
- **Step 3**: Identify habitats or areas of special concern (e.g., wetlands, springs, wildlife water developments [e.g., guzzlers]), Wildlife Management Areas, Areas of Critical and Environmental Concern).
- **Step 4**: Identify any individual special-status wildlife species with that may be within the area subject to direct and indirect effects with implementation of the alternatives.
- **Step 5**: Assess qualitative factors that contribute to potential indirect effects to wildlife, including but not limited to habitat degradation, loss, and fragmentation.

The overall effects in this analysis were determined in the context of impacts to populations and extent of habitats supporting wildlife. Impacts considerations included spatial scales (e.g., geographic distributions and abundance of wildlife species relative to the spatial extent of the effect) and temporal scales (e.g., timespan of effects, such as short-term construction effects of new roads and longer-term indirect effects of habitat fragmentation or migration disruptions). Potential impacts to bald and golden eagles are analyzed on an individual animal basis (not just on effects to populations). Species protected under the MBTA are analyzed by major taxonomic groups within subcategories (e.g., passerines, shorebirds), and the impact analysis is conducted in terms of potential effects to populations of migratory birds.

The evaluation criteria also include thresholds specified in various relative regulatory frameworks to assess potential effects of implementation of the action alternatives on species that intersect with the applicable regulatory frameworks. For example, evaluating if the proposed action meets or exceeds the requirement specified in the Department of Defense (DoD) authorization to take birds protected under the MBTA, thereby requiring the Navy to confer with the USFWS.

### 3.10.1.5 Public Scoping Concerns

A number of public scoping comments were received concerning biological resources and potential effects of the Proposed Action. Comments included a general concern for potential vegetation effects on the Great Basin sagebrush ecosystem, with a particular concern on wildfire potential and impacts on

USFWS National Wildlife Refuge (NWR) units and Nevada Wildlife Management Areas in the region (e.g., Stillwater NWR, Fallon NWR, Humboldt Wildlife Management Area). Public comments also addressed noise generated from training activities that would occur within proposed expanded range areas and adjacent lands and have potential impacts on wildlife and special-status species (e.g., greater sage grouse, raptors) as well as game species. For further information regarding comments received during the public scoping process, please refer to Appendix D, Public Involvement.

Public comments are addressed within the description of the Affected Environment (Section 3.10.2) and within the Environmental Consequences section (Section 3.10.3). To address public concerns on vegetation, the EIS includes an updated description of vegetation communities and their distributions within the region of influence that relies on recent (2017) surveys. Other surveys provide baseline information to address other concerns raised by the public (e.g., impacts on bird, big game, and other wildlife populations found within the region of influence).

### 3.10.2 Affected Environment

The following sections provide a description of the existing conditions for each of the categories under biological resources within the proposed expansion areas described in Chapter 2 (Description of Proposed Action and Alternatives). The region of influence for biological resources includes all proposed expansion lands and lands underlying the area proposed for the FRTC airspace expansion, including the Reno Military Operations Area (MOA) to the northwest of the main FRTC airspace.

To support the discussion of the affected environment and associated impact analysis with implementation of the Alternatives 1, 2, or 3, the Navy conducted ecological surveys within the proposed expansion areas from March 2017 through October 2018, with additional surveys to be conducted from November 2018 through July 2019. The Final EIS will be updated accordingly with the results of the surveys conducted after publication of the Draft EIS.

#### 3.10.2.1 General Physiographic and Climatic Factors that Influence Biological Resources

The project area lies within the geographic feature known as the Great Basin. The Great Basin Desert is the largest desert in the U.S., covering roughly 158,000 square miles of southern Idaho, southeastern Oregon, western Utah, eastern California, and nearly all of Nevada (Figure 3.10-1). The Great Basin is a high cold desert, with most of its elevations over 4,000 feet above mean sea level (Note: hereafter all elevations are above sea level), and most of its precipitation in the form of snow, although rain showers can occur throughout the hotter months. The western part as a whole averages 9 inches of precipitation per year, while the Fallon area averages considerably lower, at only 5 inches per year (Sowell, 2001).

The Great Basin Desert is located in the Basin and Range Province, named for the alternating topography between mostly north-south oriented mountain ranges and valleys with no or very few waterways leading out. The Great Basin has approximately 160 mountain ranges, with a corresponding number of basins in between. The geologic activity leading to this topography has also resulted in a diverse range of soil types and soil temperature moisture regimes, resulting in high species diversity and vegetation complexity in the Great Basin. The movement of sediments downhill from the mountains to the basins produces arroyos, bajadas, and eventually playas, which support shrublands, grasslands, wetlands, and alkali flat habitats, which in turn support their own suites of plant and animal species (Naval Air Station Fallon, 2015).


**Figure 3.10-1: Occurrence of the Great Basin Within the Western United States**

### 3.10.2.2 Vegetation Types

As ground-disturbing activities would only occur within the proposed FRTC expansion areas, the discussion of vegetation types or communities only addresses those areas and not the lands underlying the larger FRTC airspace.

The lowest elevation in the proposed expansion areas is 3,390 feet, and the lowest elevations are predominantly occupied by playas. At these low elevations, where temperatures are the hottest and the soil is the most saline, the vegetation is dominated by plant species in the family Chenopodiaceae. The most common dominant shrubs in the lowest areas are saltbush (*Atriplex*) and greasewood (*Sarcobatus*) species. Other dominant chenopod species of the valley bottoms and lower bajadas include four-wing saltbush (*Atriplex canescens*) and spiny hopsage (*Grayia spinosa*). Also common in these saline areas are bud sagebrush (*Picrothamnus desertorum*), sticky rabbitbrush (*Chrysothamnus viscidiflorus*), and rubber rabbitbrush (*Ericameria nauseosa*), all in the Asteraceae (Mozingo, 1987). The valley bottom wetlands in the Dixie Valley area support dense stands of rushes (*Juncus* spp.), saltgrass (*Distichlis spicata*), and cattail (*Typha angustifolia*) (Naval Air Station Fallon, 2015). These areas have also been invaded by Russian olive (*Elaeganus angustifolia*) and are heavily disturbed by cattle (*Bos taurus*) and wild horses (*Equus caballus*) (see Suppporting Study: Final Wildlife Remote Camera Trapping Survey Report, available at http://www.frtcmodernization.com). At slightly higher elevations, where the soils are less saline and more moisture is available, varieties of sagebrush (*Artemisia* spp.) become the dominant vegetation. Sagebrush shrublands are the most common vegetation type in the Great Basin Desert, covering nearly 40 percent of the area (Brussard et al., 1998). The big sagebrush (*Artemisia tridentata*) varieties and closely related *Artemisia* species are morphologically and taxonomically difficult to distinguish, particularly when not flowering. Sticky and rubber rabbitbrush are also common in these areas, along with Nevada joint-fir (*Ephedra nevadensis*) and littleleaf horsebrush (*Tetradymia glabrescens*) (Mozingo, 1987).

The sagebrush-dominated regions are also the areas where non-native invasive cheatgrass (*Bromus tectorum*) often forms large, dense stands. The replacement of native shrubs and bunchgrasses by annual non-native grasses (e.g., cheatgrass) and warmer temperatures, have led to increased fire frequency, which in turn favors further establishment of invasive plant species (Eiswerth & Shonkwiler, 2006).

Riparian habitats are found in canyons and washes in the middle to upper elevations of the project area. These generally result from springs and small seeps, although a few riparian areas are perennial waterways. Species commonly encountered in the riparian areas include Fremont cottonwood (*Populus fremontii*), willows (*Salix* spp.), and Wood's rose (*Rosa woodsii*) (Naval Air Station Fallon, 2015; Peterson, 2008). The presence of relatively permanent water allows riparian areas to support among the highest species diversity in the Great Basin Desert (Naiman et al., 1993).

At the highest, coolest, moistest elevations of the project area, up to 8,000 feet elevation, trees become more common, and the vegetation changes to pinyon-juniper woodlands. Generally, the lower range of these elevations are dominated by Utah juniper (*Juniperus osteosperma*), the middle range is a mixture of Utah juniper and singleleaf pinyon pine (*Pinus monophylla*), and the upper end of the range is dominated by singleleaf pinyon pine. This woodland zone generally has an understory of sagebrush, rabbitbrushes, and other common shrubs (Peterson, 2008).

#### 3.10.2.2.1 Vegetation Mapping within the Proposed Fallon Range Training Complex Expansion Areas

The following is a summary of the vegetation mapping and classification process used during the survey efforts in support of this EIS. Further details can be found in the plant community mapping report (see Supporting Study: Final Plant Community Surveys and Mapping Report, available at http://www.frtcmodernization.com), which is provided in the Supporting Study: Plant Community Surveys and Mapping Report (available at http://www.frtcmodernization.com). Throughout 2017, the Navy mapped vegetation within the proposed FRTC expansion areas using the following step-wise process:

- Imagery selection and acquisition (using 2015 ortho-rectified imagery sourced from the U.S. Department of Agriculture Farm Service Agency).
- Determination of the minimum mapping units (a minimum of 5 acres for open habitats and a minimum of 2 acres for riparian zones to delineate habitats along stream corridors, seeps, and springs).
- Polygon delineation (mapping of distinct boundaries).
- Protocol development (for field data acquisition, including helicopter survey and photo-documentation methods).
- Scheduling surveys (for seasonality).
- Data curation and analysis (where polygons are assigned attributes based on field data).
- Accuracy assessment (quality assurance and quality control mapping vegetation using random points and photo-documentation).

Vegetation was categorized using the International Vegetation Classification (IVC) system, a standard hierarchical cataloging of plant groupings that incorporates basic environmental differences, physiognomy, and floristics. The first two levels of the IVC deal with environmental characteristics such as aquatic versus terrestrial. Physiognomy, or the shape and form that a plant takes on at maturity, forms the basis for the next four ranks within the hierarchy, with floristics, or plant species identity, forming the last two ranks. Lower in the classification, the identities of the plants become important, with the two lowest levels concerned with the top one or two dominant plant species. In the IVC system, "dominant" refers to visual dominance as well as percent cover. If a tree is present over a certain threshold, it will generally be considered to be dominant over a grass that may be present at a much higher percent cover. Similarly, shrubs can dominate over grasses, and grasses over microphytic types such as cryptobiotic crusts (Peterson, 2008).

For the purposes of mapping and classifying the vegetation within the proposed FRTC expansion areas, the ranks of *formation* and *alliance* were used. *Formations* can be defined as broad combinations of general dominant growth forms that are adapted to basic temperature (energy budget), moisture, and substrate conditions. *Alliances* refer to diagnostic species, including some from the dominant growth form or layer (i.e., formation), and moderately similar composition that reflect regional to subregional climate, substrates, hydrology, moisture/nutrient factors, and disturbance regimes (NatureServe, 2016).

A total of 25 alliances within seven formations were recorded within the proposed FRTC expansion areas (Tables 3.10-2 through 3.10-7; Figures 3.10-2 through 3.10-8). The majority of these were in the Cool Semi-Desert Scrub and Grassland Formation. Although the proposed B-16 Expansion Area is by far the smallest of the expansion areas, it was relatively diverse, with a good representation of upland alliances

(Tables 3.10-2 and 3.10-4). The proposed B-20 Expansion Area was the least diverse, as most of it is a large, unvegetated playa (Tables 3.10-2 and 3.10-6). The margins of the proposed B-20 Expansion Area, particularly at the north end, were more diverse where soils and topography became more complex. The proposed B-17 and DVTA expansion areas had by far the most diverse assemblage of vegetation alliances, consistent with their large size and topographic complexity (Tables 3.10-2, 3.10-5, and 3.10-7).

The lowest elevations of Dixie Valley were highly complex due to the presence of small seeps and springs as well as development and grazing. The proposed DVTA Expansion Area is the only area that contains mapped riparian alliances, although small seeps were found in B-17 that fell below the 2-acre minimum mapping unit (see Supporting Study: Final Plant Community Surveys and Mapping Report, available at http://www.frtcmodernization.com).

In support of this EIS, additional focused mapping of wetland and riparian areas was conducted within the proposed expansion areas in spring-summer 2018 (see Supporting Study: Final Wetland Survey Report, available at http://www.frtcmodernization.com). A total of 56 potential wetlands totaling approximately 283 acres were mapped within the proposed DVTA, B-17, and B-16 expansion areas; the proposed B-16 expansion area did not include any potential wetlands. There were 36 potential wetlands totaling 259 acres in the northernmost portion of the proposed DVTA expansion area, 19 potential wetlands totaling 24 acres in the southernmost portion of the proposed B-17 expansion area, and 1 potential wetland totaling 0.1 acre within the northernmost portion of B-20 expansion area.

All of the potential wetlands observed fell into the Palustrine System of wetlands. Palustrine wetlands are dominated by trees; shrubs; persistent emergent; emergent mosses or lichens; or are wetland sites that lack this vegetation but are less than 20 acres in size without active wave-formed or bedrock shorelines, with shallow water and with low salinity. Palustrine wetlands are described as marshes, bogs, prairies, ponds, etc. The Palustrine System is further divided into classes, based on the nature of the vegetation or substrate. All but four potential wetlands were in the Emergent Wetland class within the Palustrine System. These potential wetlands were dominated by short graminoids or forbs, with only occasional shrubs or short trees. Four potential wetlands (three in the DVTA and one in B-20) were characterized as Scrub-Shrub Wetlands due to the dominance of native or exotic shrubs such as willows (*Salix* spp.), tamarisk or Russian olive (*Eleagnus angustifolia*). None of the potential wetland areas are located in areas potentially subject to ground disturbance under the proposed action. For further details refer to the Supporting Study: Wetland Survey Report (available at http://www.frtcmodernization.com). Additional wetland surveys will be conducted within the proposed expansion areas in spring-summer 2019, and the results will be incorporated into this EIS accordingly.

**Table 3.10-2: Acreage and Elevation Range of Vegetation Alliances Mapped Within the Proposed FRTC Expansion Areas under Alternatives 1 and 2**

| Formation / Alliance | Elevation (feet) | Area (acres) | Percent of Total | Proposed Expansion Area | | | |
|---|---|---|---|---|---|---|---|
| | | | | B-16 | B-17 | B-20 | DVTA |
| Cool Semi-Desert Scrub & Grassland | | | | | | | |
| Bailey's Greasewood Shrubland | 3,460–7,120 | 266,194 | 40.1 | X | X | X | X |
| Black Sagebrush Steppe & Shrubland | 3,960–7,440 | 57,769 | 8.7 | | X | X | X |
| Wyoming Big Sagebrush Dry Steppe & Shrubland | 4,320–6,880 | 39,739 | 6.0 | X | X | | X |
| Basin Big Sagebrush–Foothill Big Sagebrush Dry Steppe & Shrubland | 3,400–7,200 | 16,855 | 2.5 | | X | X | X |
| Big Sagebrush–Mixed Shrub Dry Steppe & Shrubland | 3,600–6,920 | 8,456 | 1.3 | X | X | X | X |
| Shadscale Saltbush Scrub | 3,960–6,000 | 5,780 | 0.9 | X | X | X | X |
| Rubber Rabbitbrush–Sand Buckwheat–Four-part Horsebrush Sparse Scrub | 3,390–6,600 | 5,192 | 0.8 | X | X | X | X |
| Cheatgrass Ruderal Grassland | 3,960–6,820 | 1,758 | 0.3 | | X | X | |
| Nevada Joint-fir Scrub | 4,440–7,120 | 977 | 0.1 | | X | | |
| Yellow Star-thistle–Dyer's Woad–Prickly Russian Thistle Ruderal Annual Forb | 3,960–4,880 | 761 | 0.1 | X | X | X | X |
| Winterfat Steppe & Dwarf Shrubland | 4,080–5,740 | 268 | <0.1 | | X | X | |
| Fourwing Saltbush–Rubber Rabbitbrush Desert Wash | 3,390–3,450 | 146 | <0.1 | | | | X |
| Salt Marsh | | | | | | | |
| Microphytic Playa | 3,390–4,120 | 136,107 | 20.5 | | X | X | X |
| Intermountain Greasewood Wet Shrubland | 3,390–6,600 | 61,865 | 9.3 | X | X | X | X |
| Mojave Seablite–Red Swampfire Alkaline Wet Scrub | 3,400–4,080 | 4,667 | 0.7 | | X | X | X |
| Western Wildrye Alkaline Wet Meadow | 3,390–4,900 | 593 | <0.1 | | | X | X |
| Saltgrass Alkaline Wet Meadow | 3,390–4,140 | 439 | <0.1 | | X | | X |
| Cool Temperate Forest & Woodland | | | | | | | |
| Great Basin Singleleaf Pinyon–Utah Juniper/Shrub Woodland | 4,040–7,480 | 26,495 | 4.0 | | | | X |
| Utah Juniper/Shrub Woodland | 5,000–8,280 | 9,463 | 1.4 | | X | | X |
| Warm Desert & Semi-Desert Scrub & Grassland | | | | | | | |
| Mojave-Sonoran Burrobrush–Sweetbush Desert Wash Scrub | 3,480–6,960 | 17,458 | 2.6 | | X | X | X |
| Fremont's Smokebush–Nevada Smokebush Desert Wash Scrub | 4,200–5,800 | 1,715 | 0.3 | X | X | | |
| Temperate Flooded & Swamp Forest | | | | | | | |
| Ruderal Tamarisk Riparian Scrub* | 3,410–6,880 | 477 | 0.1 | | | | X |
| Great Basin Fremont Cottonwood Riparian Forest* | 5,080–7,280 | 68 | <0.1 | | | | X |
| Shrub & Herb Wetland Formation | | | | | | | |
| Western Baltic Rush–Mexico Rush Wet Meadow* | 3,390–3,440 | 190 | <0.1 | | | | X |
| Temperate to Polar Freshwater Marsh, Wet Meadow & Shrubland | | | | | | | |
| Arroyo Willow Wet Shrubland* | 4,440–6,960 | 133 | <0.1 | | | | X |

Note: *Riparian alliance

**Table 3.10-3: Acreage and Elevation Range of Vegetation Alliances Mapped Within the Proposed FRTC Expansion Areas under Alternative 3**

| Formation<br>Alliance | Elevation (feet) | Area (acres) | Percent of Total | Proposed Expansion Area | | | |
|---|---|---|---|---|---|---|---|
| | | | | B-16 | B-17 | B-20 | DVTA |
| Cool Semi-Desert Scrub & Grassland | | | | | | | |
| Bailey's Greasewood Shrubland | 3,460–7,120 | 239,933 | 36.8 | X | X | X | X |
| Black Sagebrush Steppe & Shrubland | 3,960–7,440 | 46,021 | 7.1 | | X | X | X |
| Wyoming Big Sagebrush Dry Steppe & Shrubland | 4,320–6,880 | 16,530 | 2.5 | X | X | | X |
| Basin Big Sagebrush–Foothill Big Sagebrush Dry Steppe & Shrubland | 3,400–7,200 | 13,990 | 2.1 | | X | X | X |
| Big Sagebrush–Mixed Shrub Dry Steppe & Shrubland | 3,600–6,920 | 7,705 | 1.2 | X | X | X | X |
| Shadscale Saltbush Scrub | 3,960–6,000 | 5,337 | 0.8 | X | X | X | X |
| Rubber Rabbitbrush–Sand Buckwheat–Four-part Horsebrush Sparse Scrub | 3,390–6,600 | 5,012 | 0.8 | X | X | X | X |
| Cheatgrass Ruderal Grassland | 3,960–6,820 | 1,181 | 0.2 | | X | X | |
| Nevada Joint-fir Scrub | 4,440–7,120 | 882 | 0.1 | | X | | |
| Yellow Star-thistle–Dyer's Woad–Prickly Russian Thistle Ruderal Annual Forb | 3,960–4,880 | 734 | 0.1 | X | X | X | X |
| Winterfat Steppe & Dwarf Shrubland | 4,080–5,740 | 268 | <0.1 | | X | X | |
| Fourwing Saltbush–Rubber Rabbitbrush Desert Wash | 3,390–3,450 | 146 | <0.1 | | | | X |
| Salt Marsh | | | | | | | |
| Microphytic Playa | 3,390–4,120 | 132,838 | 20.4 | | X | X | X |
| Intermountain Greasewood Wet Shrubland | 3,390–6,600 | 53,502 | 8.2 | X | X | X | X |
| Mojave Seablite–Red Swampfire Alkaline Wet Scrub | 3,400–4,080 | 4,626 | 0.7 | | | X | X |
| Western Wildrye Alkaline Wet Meadow | 3,390–4,900 | 593 | 0.1 | | | X | X |
| Saltgrass Alkaline Wet Meadow | 3,390–4,140 | 432 | 0.1 | | X | | X |
| Cool Temperate Forest & Woodland | | | | | | | |
| Great Basin Singleleaf Pinyon–Utah Juniper/Shrub Woodland | 4,040–7,480 | 26,495 | 4.1 | | | | X |
| Utah Juniper/Shrub Woodland | 5,000–8,280 | 2,754 | 0.4 | | X | | X |
| Warm Desert & Semi-Desert Scrub & Grassland | | | | | | | |
| Mojave-Sonoran Burrobrush–Sweetbush Desert Wash Scrub | 3,480–6,960 | 14,812 | 2.3 | | X | X | X |
| Fremont's Smokebush–Nevada Smokebush Desert Wash Scrub | 4,200–5,800 | 1,715 | 0.3 | X | X | | |
| Temperate Flooded & Swamp Forest | | | | | | | |
| Ruderal Tamarisk Riparian Scrub* | 3,410–6,880 | 477 | <0.1 | | | | X |
| Great Basin Fremont Cottonwood Riparian Forest* | 5,080–7,280 | 68 | <0.1 | | | | X |
| Shrub & Herb Wetland Formation | | | | | | | |
| Western Baltic Rush–Mexico Rush Wet Meadow* | 3,390–3,440 | 190 | <0.1 | | | | X |
| Temperate to Polar Freshwater Marsh, Wet Meadow & Shrubland | | | | | | | |
| Arroyo Willow Wet Shrubland* | 4,440–6,960 | 133 | <0.1 | | | | X |
| To Be Mapped (spring-summer 2019) | various | 75,997 | 11.6 | | X | | |

Note: *Riparian alliance

**Table 3.10-4: Acreage of Vegetation Alliances Mapped Within the Proposed B-16 Expansion Area**

| Vegetation Alliance | Alternatives 1 & 2 | | Alternative 3 | |
|---|---|---|---|---|
| | Acres | Percent | Acres | Percent |
| Bailey's Greasewood Shrubland | 25,265 | 78.4 | 25,265 | 79.1 |
| Shadscale Saltbush Scrub | 2,325 | 7.2 | 2,325 | 7.3 |
| Fremont's Smokebush–Nevada Smokebush Desert Wash Scrub | 1,676 | 5.2 | 1,676 | 5.2 |
| Intermountain Greasewood Wet Shrubland | 1,355 | 4.2 | 1,035 | 3.2 |
| Big Sagebrush–Mixed Shrub Dry Steppe & Shrubland | 918 | 2.8 | 918 | 2.9 |
| Rubber Rabbitbrush–Sand Buckwheat–Four-part Horsebrush Sparse Scrub | 473 | 1.5 | 473 | 1.5 |
| Yellow Star-thistle–Dyer's Woad–Prickly Russian-thistle Ruderal Annual Forb | 129 | 0.4 | 129 | 0.4 |
| Wyoming Big Sagebrush Dry Steppe & Shrubland | 105 | 0.3 | 105 | 0.3 |
| **Total** | **32,246** | | **31,926** | |

**Table 3.10-5: Acreage of Vegetation Alliances Mapped Within the Proposed B-17 Expansion Area**

| Vegetation Alliance | Alternatives 1 & 2 | | Alternative 3 | |
|---|---|---|---|---|
| | Acres | Percent | Acres | Percent |
| Bailey's Greasewood Shrubland | 85,128 | 49.8 | 76,437 | 58.0 |
| Black Sagebrush Steppe & Shrubland | 19,648 | 11.3 | 12,994 | 9.9 |
| Wyoming Big Sagebrush Dry Steppe & Shrubland | 15,186 | 8.7 | 8,143 | 6.2 |
| Intermountain Greasewood Wet Shrubland | 14,622 | 8.4 | 6,995 | 5.3 |
| Microphytic Playa | 8,424 | 4.8 | 5,155 | 3.9 |
| Utah Juniper/Shrub Understory Woodland | 8,184 | 4.7 | 1,792 | 1.4 |
| Big Sagebrush–Mixed Shrub Dry Steppe & Shrubland | 5,666 | 3.2 | 5,482 | 4.2 |
| Mojave-Sonoran Burrobrush–Sweetbush Desert Wash Scrub | 5,407 | 3.1 | 4,705 | 3.6 |
| Basin Big Sagebrush–Foothill Big Sagebrush Dry Steppe & Shrubland | 3,722 | 2.1 | 2,733 | 2.1 |
| Rubber Rabbitbrush–Sand Buckwheat–Four-part Horsebrush Sparse Scrub | 2,556 | 1.5 | 2,430 | 1.8 |
| Shadscale Saltbush Scrub | 2,168 | 1.2 | 2,084 | 1.6 |
| Cheatgrass Ruderal Grassland | 1,664 | 1.0 | 1,087 | 0.8 |
| Nevada Joint-fir Scrub | 977 | 0.6 | 882 | 0.7 |
| Yellow Star-thistle–Dyer's Woad–Prickly Russian-thistle Ruderal Annual Forb | 516 | 0.3 | 489 | 0.4 |
| Saltgrass Alkaline Wet Meadow | 224 | 0.1 | 217 | 0.2 |
| Winterfat Steppe Dwarf Shrubland | 189 | 0.1 | 189 | 0.1 |
| Mojave Seablite–Red Swampfire Alkaline Wet Scrub | 41 | <0.1 | 0 | 0 |
| Fremont's Smokebush–Nevada Smokebush Desert Wash Scrub | 39 | <0.1 | 39 | <0.1 |
| To Be Mapped* | 3,513 | 2.0 | 75,997 | 36.6 |
| **Total** | **177,874** | | **207,850** | |

Note: *Area to be mapped in spring-summer 2019.

**Table 3.10-6: Acreage of Vegetation Alliances Mapped Within the Proposed B-20 Expansion Area**

| | Alternatives 1 & 2 | | Alternative 3 | |
|---|---|---|---|---|
| Vegetation Alliance | Acres | Percent | Acres | Percent |
| Microphytic Playa | 127,235 | 70.2 | 127,235 | 70.4 |
| Intermountain Greasewood Wet Shrubland | 24,117 | 13.3 | 23,892 | 13.2 |
| Bailey's Greasewood Shrubland | 23,777 | 13.1 | 23,665 | 13.1 |
| Mojave Seablite–Red Swampfire Alkaline Wet Scrub | 2,895 | 1.6 | 2,895 | 1.6 |
| Rubber Rabbitbrush–Sand Buckwheat–Four-part Horsebrush Sparse Scrub | 800 | 0.4 | 800 | 0.4 |
| Shadscale Saltbush Scrub | 745 | 0.4 | 745 | 0.4 |
| Mojave-Sonoran Burrobrush–Sweetbush Desert Wash Scrub | 580 | 0.3 | 580 | 0.3 |
| Basin Big Sagebrush–Foothill Big Sagebrush Dry Steppe & Shrubland | 321 | 0.2 | 321 | 0.2 |
| Big Sagebrush–Mixed Shrub Dry Steppe & Shrubland | 205 | 0.1 | 205 | 0.1 |
| Black Sagebrush Steppe & Shrubland | 173 | 0.1 | 173 | 0.1 |
| Yellow Star-thistle–Dyer's Woad–Prickly Russian-thistle Ruderal Annual Forb | 110 | 0.1 | 110 | 0.1 |
| Cheatgrass Ruderal Grassland | 94 | 0.1 | 94 | 0.1 |
| Winterfat Steppe Dwarf Shrubland | 79 | <0.1 | 79 | <0.1 |
| Western Wildrye Alkaline Wet Meadow | 3 | <0.1 | 3 | <0.1 |
| **Total** | **181,134** | | **180,797** | |

**Table 3.10-7: Acreage of Vegetation Alliances Mapped Within the Proposed DVTA Expansion Area**

| | Alternatives 1 & 2 | | Alternative 3 | |
|---|---|---|---|---|
| Vegetation Alliance | Acres | Percent | Acres | Percent |
| Bailey’s Greasewood Shrubland | 132,024 | 47.9 | 114,566 | 49.4 |
| Black Sagebrush Steppe & Shrubland | 37,948 | 13.8 | 32,854 | 14.2 |
| Great Basin Singleleaf Pinyon–Utah Juniper/Shrub Understory Woodland | 26,495 | 9.6 | 26,495 | 11.4 |
| Wyoming Big Sagebrush Dry Steppe & Shrubland | 24,448 | 8.9 | 21,580 | 9.3 |
| Intermountain Greasewood Wet Shrubland | 21,771 | 7.9 | 10,936 | 4.7 |
| Basin Big Sagebrush–Foothill Big Sagebrush Dry Steppe & Shrubland | 12,812 | 4.6 | 9,527 | 4.1 |
| Mojave-Sonoran Burrobrush–Sweetbush Desert Wash Scrub | 11,471 | 4.2 | 8,282 | 3.6 |
| Mojave Seablite–Red Swampfire Alkaline Wet Scrub | 1,731 | 0.6 | 1,731 | 0.7 |
| Big Sagebrush–Mixed Shrub Dry Steppe & Shrubland | 1,667 | 0.6 | 1,309 | 0.6 |
| Rubber Rabbitbrush–Sand Buckwheat–Four-part Horsebrush Sparse Scrub | 1,363 | 0.5 | 1,100 | 0.5 |
| Utah Juniper/Shrub Understory Woodland | 1,279 | 0.5 | 962 | 0.4 |
| Western Wildrye Alkaline Wet Meadow | 590 | 0.2 | 590 | 0.3 |
| Ruderal Tamarisk Riparian Scrub | 477 | 0.2 | 477 | 0.2 |
| Microphytic Playa | 448 | 0.2 | 448 | 0.2 |
| Shadscale Saltbush Scrub | 542 | 0.2 | 183 | 0.1 |
| Saltgrass Alkaline Wet Meadow | 215 | 0.1 | 215 | 0.1 |
| Western Baltic Rush - Mexican Rush Wet Meadow | 190 | 0.1 | 190 | 0.1 |
| Fourwing Saltbush–Rubber Rabbitbrush Desert Wash | 146 | 0.1 | 146 | 0.1 |
| Arroyo Willow Wet Shrubland | 133 | <0.1 | 133 | 0.1 |
| Great Basin Fremont Cottonwood Riparian Forest | 68 | <0.1 | 68 | <0.1 |
| Yellow Star-thistle–Dyer's Woad–Prickly Russian-thistle Ruderal Annual Forb | 6 | <0.1 | 6 | <0.1 |
| To Be Mapped* | 16,418 | 5.6 | 0 | 0 |
| **Total** | **292,242** | | **231,798** | |

Note: *Area to be mapped in spring-summer 2019.

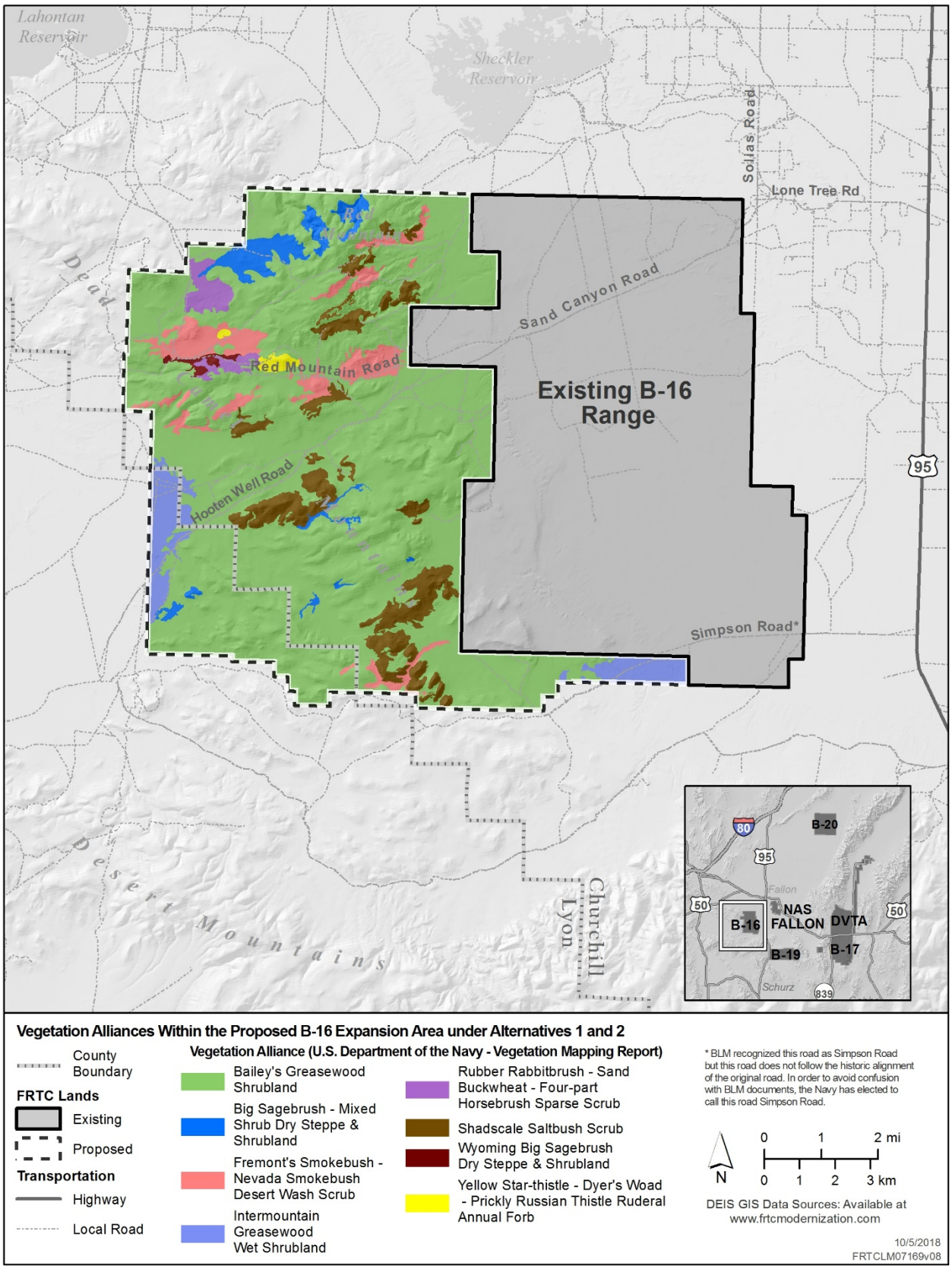


**Figure 3.10-2: Vegetation Alliances Within the Proposed B-16 Expansion Area under Alternatives 1 and 2**

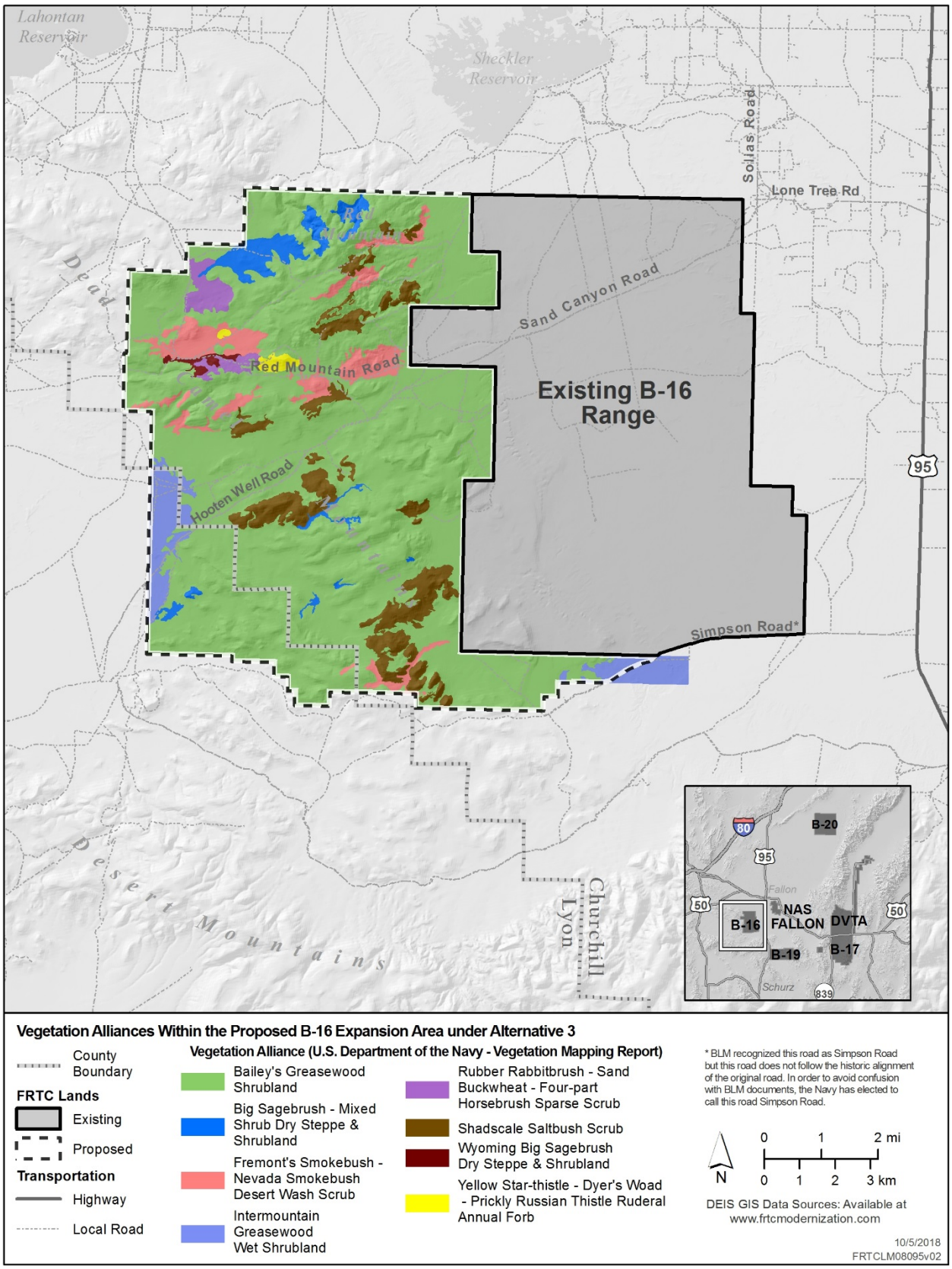


**Figure 3.10-3: Vegetation Alliances Within the Proposed B-16 Expansion Area under Alternative 3**

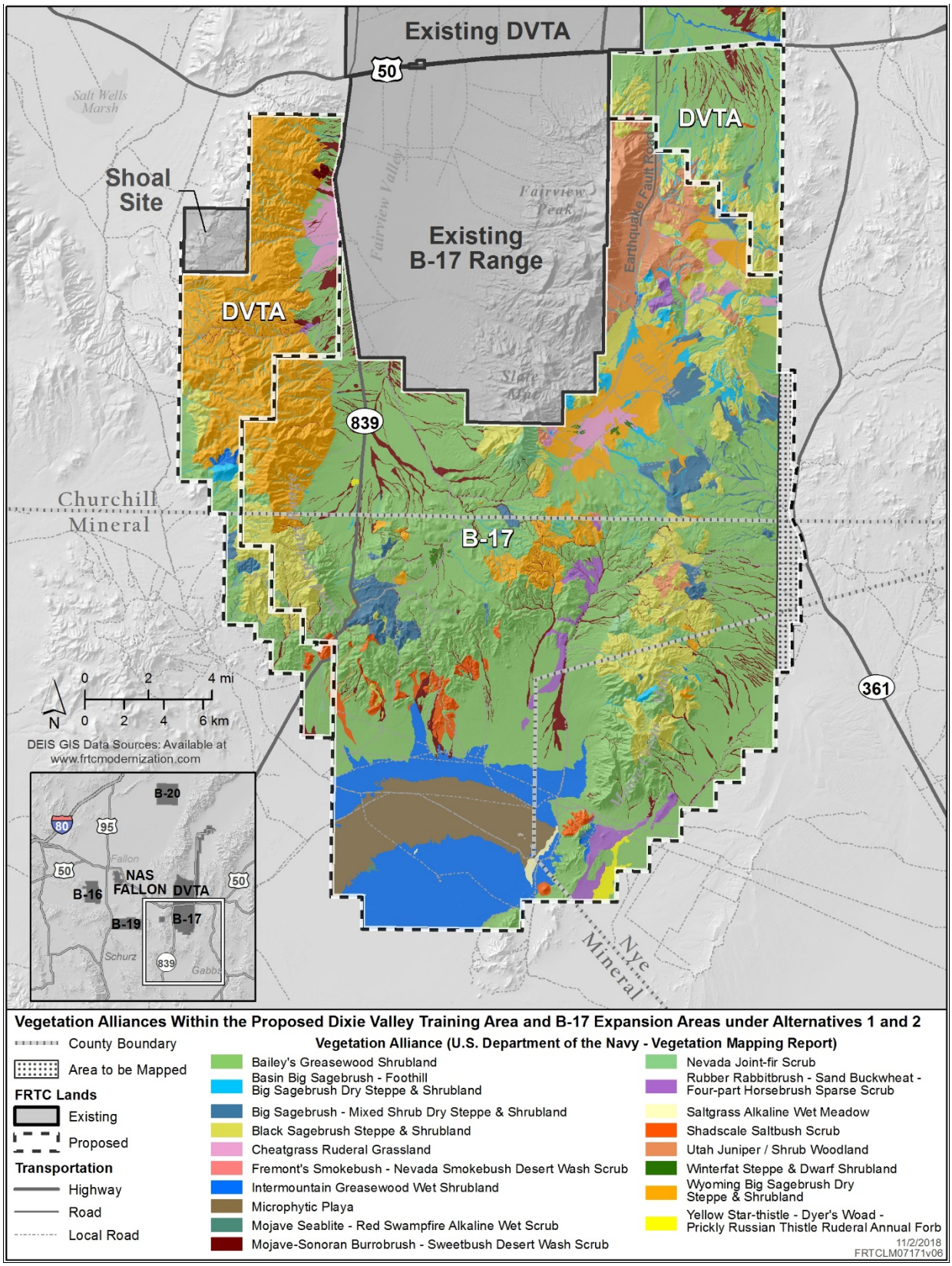


**Figure 3.10-4: Vegetation Alliances Within the Proposed Dixie Valley Training Area and B-17 Expansion Areas under Alternatives 1 and 2**

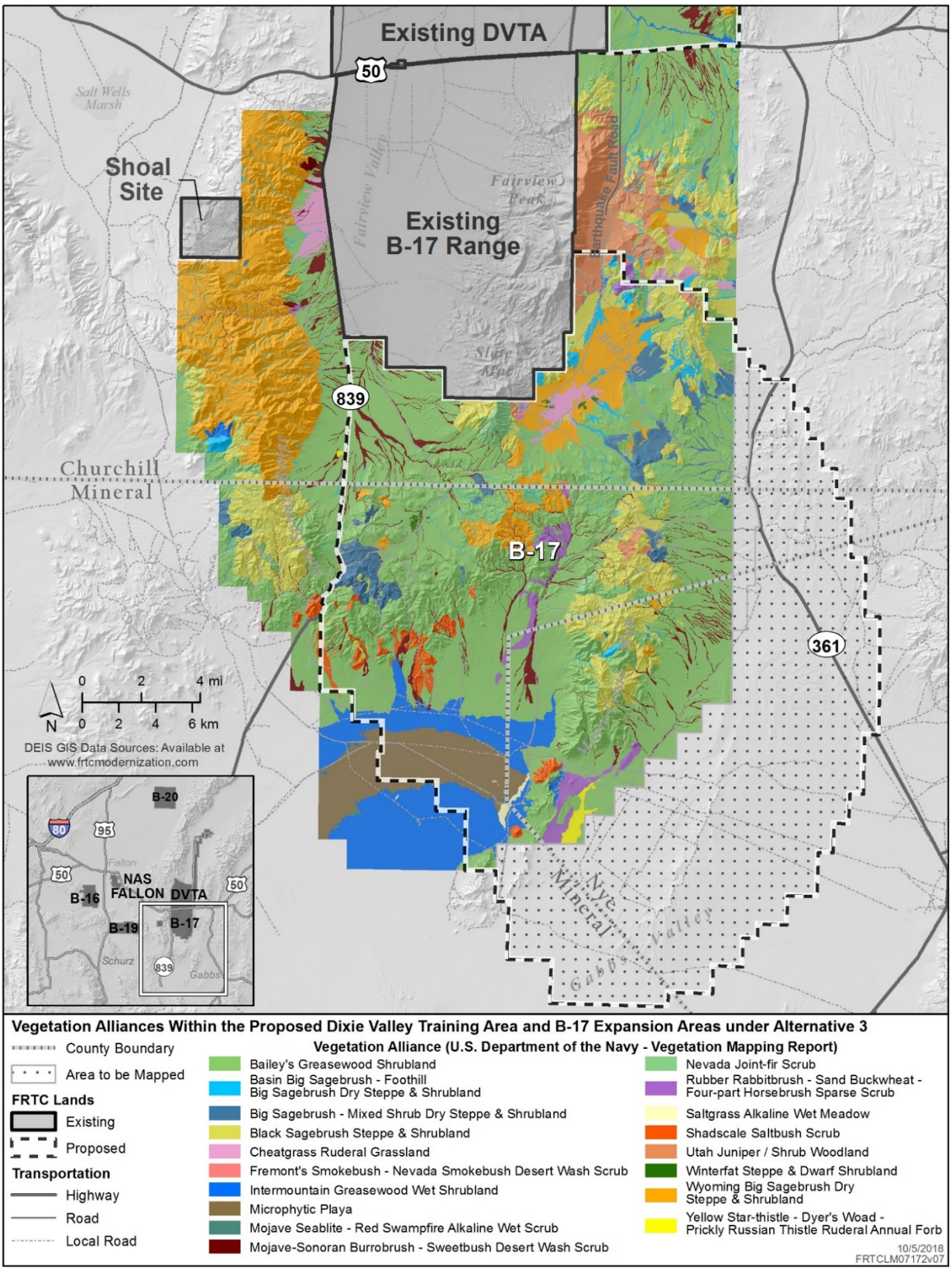


**Figure 3.10-5: Vegetation Alliances Within the Proposed Dixie Valley Training Area and B-17 Expansion Areas under Alternative 3**

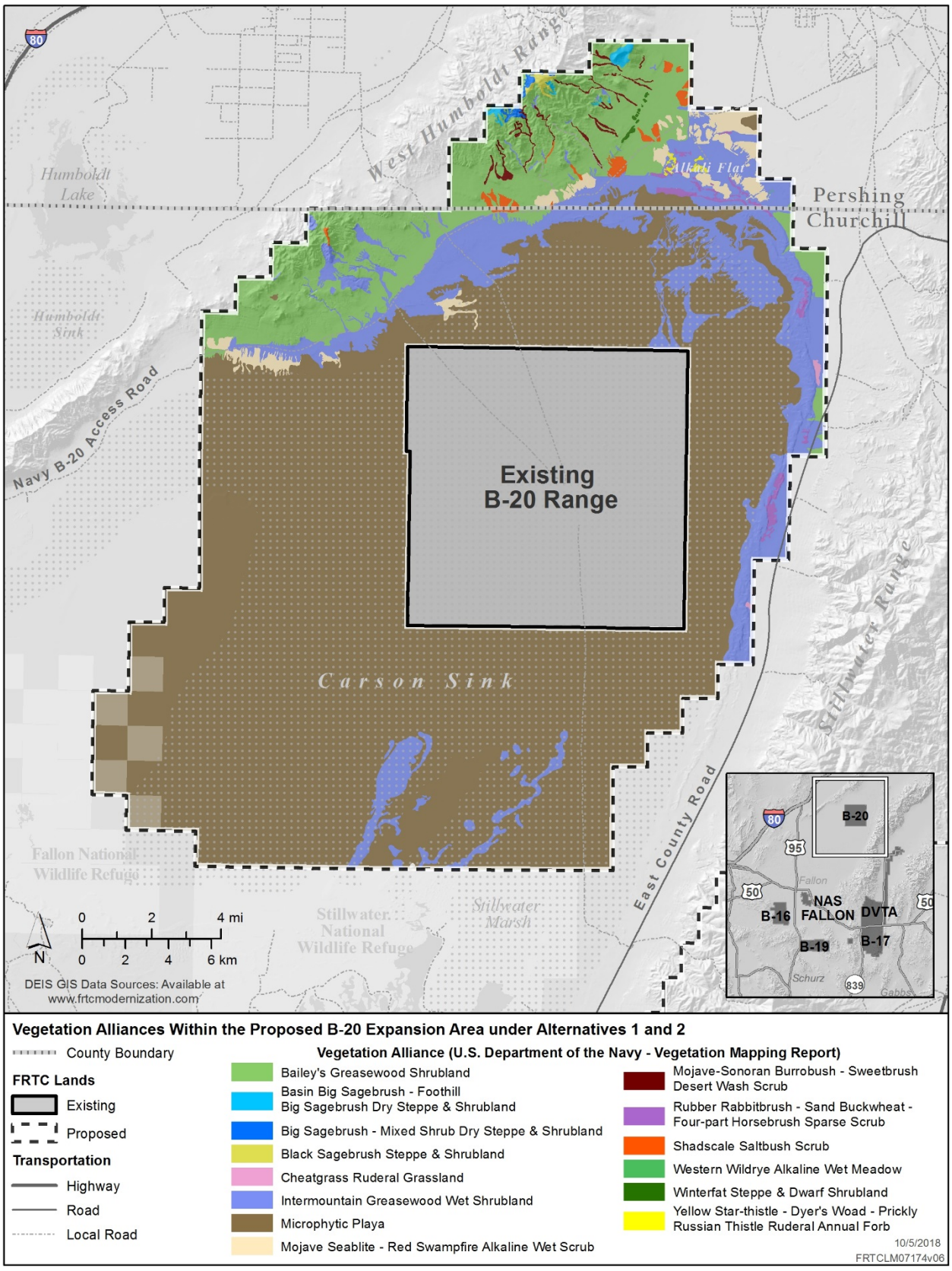


**Figure 3.10-6: Vegetation Alliances Within the Proposed B-20 Expansion Area under Alternatives 1 and 2**

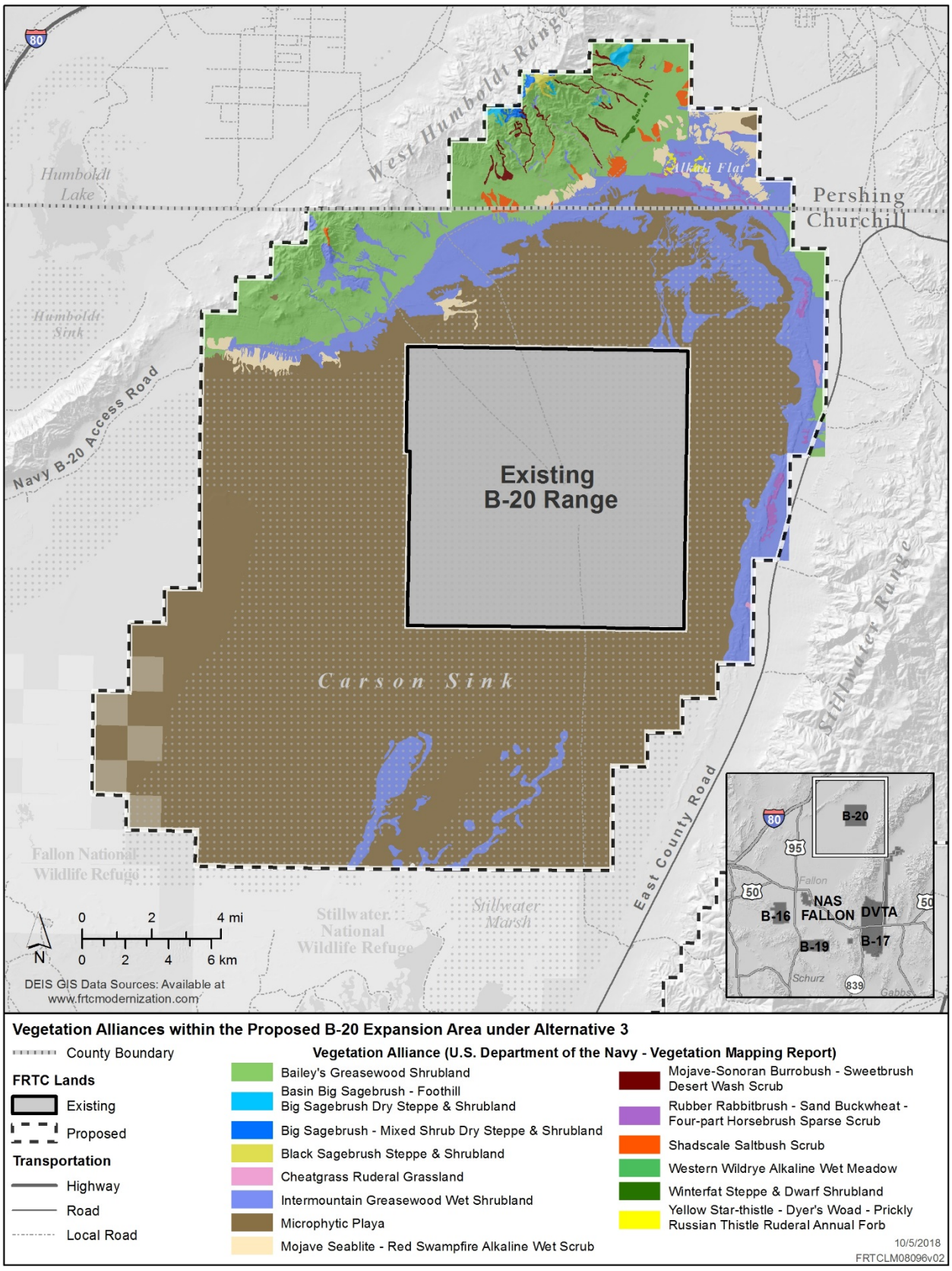


**Figure 3.10-7: Vegetation Alliances within the Proposed B-20 Expansion Area under Alternative 3**

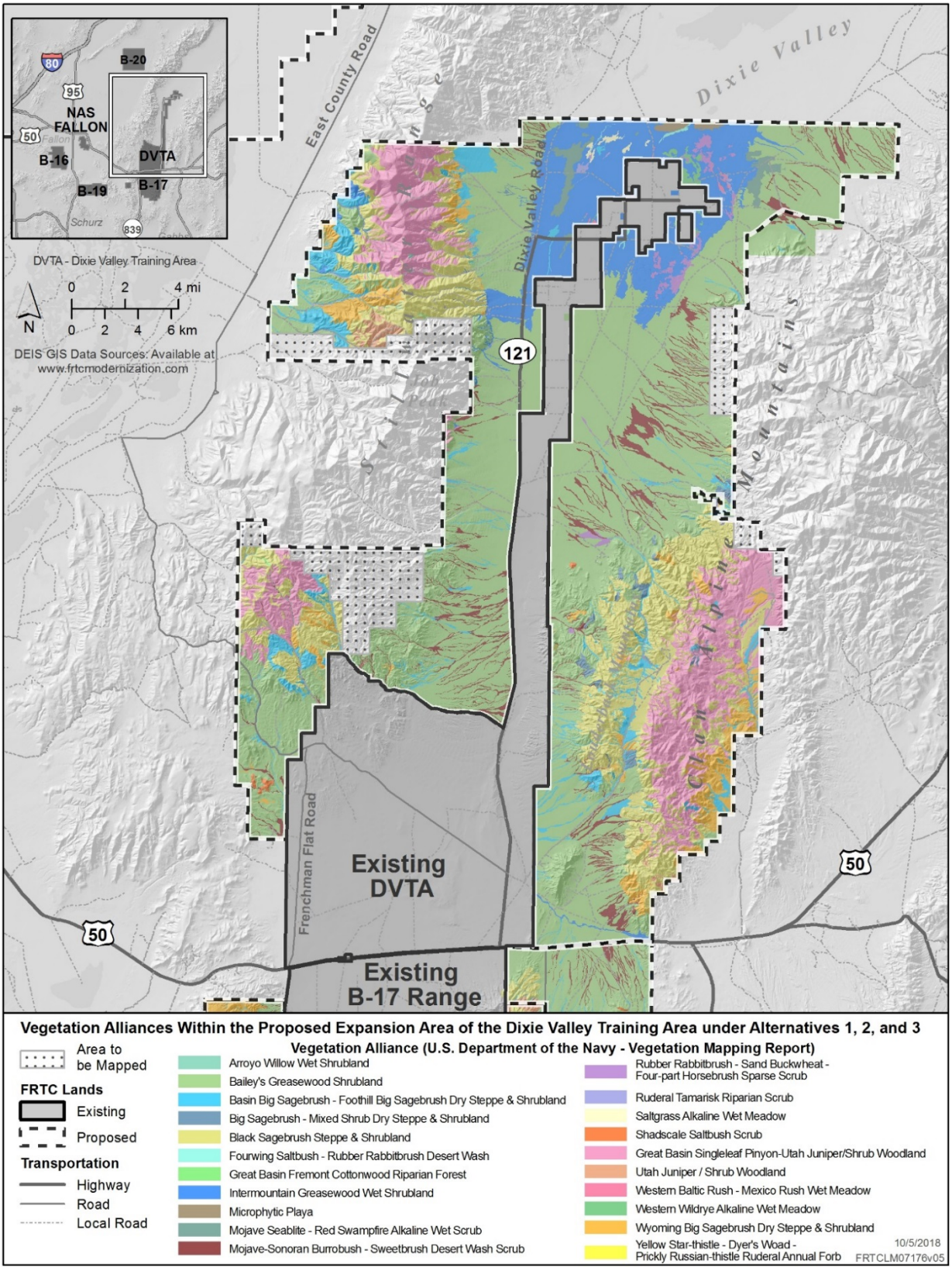


**Figure 3.10-8: Vegetation Alliances Within the Proposed Expansion Area of the Dixie Valley Training Area under Alternatives 1, 2, and 3**

**Vegetation Formation and Alliance Descriptions**

**Cool Semi-Desert Scrub and Grassland Formation**. The Cool Semi-Desert Scrub and Grassland Formation encompasses the majority of the proposed range expansion areas, both in acres and in the number of alliances within it. Shrubs or non-native annual species dominate these alliances and occur at all but the highest elevations of the project. Although some alliances occur in washes and canyons, none of the members of this formation are truly riparian.

- *Bailey's Greasewood Shrubland Alliance*. This is the most common alliance in the proposed FRTC expansion areas, encompassing approximately 266,000 acres, or approximately 40 percent of land within the proposed expansion areas (Tables 3.10-2 and 3.10-3). This alliance is based on the presence of Bailey's greasewood and occurs in all proposed expansion areas between 3,460 and 7,120 feet in elevation. Total cover in this alliance is generally sparse, with Bailey's greasewood generally occupying between 15 percent and 30 percent, with some cases as low as 5 percent if no other shrubs are present. Particularly low cover of the dominant shrub usually include high cover of cheatgrass, and these areas are presumably facing cheatgrass invasion. Other shrubs commonly found in this alliance include bud sagebrush and winterfat (*Krascheninnikovia lanata*) at up to 35 percent cover, shadscale (*Atriplex confertifolia*) up to 15 percent cover, intermountain greasewood up to 20 percent, and big sagebrush occasionally up to 30 percent cover. Understory forbs are quite diverse, including non-native cheatgrass and flixweed (*Descurainia sophia*), Menzie's fiddleneck (*Amsinckia menziesii*), yellow pepperweed (*Lepidium flavum*) and desert dandelion (*Malacothrix glabrata*).
- *Black Sagebrush Steppe and Shrubland Alliance.* This alliance occurred at slopes between 3,960 and 7,440 feet that intergrade into pinyon woodland at the upper elevations and are occupied by black sagebrush (*Artemisia nova*), a diminutive relative of the Basin and Wyoming varieties of big sagebrush, which prefers steeper, rockier, less productive sites. The fourth-largest in area, this alliance covers approximately 57,700 acres within the proposed B-17, B-20, and DVTA expansion areas, or almost 9 percent of the total proposed expansion areas (Tables 3.10-2 and 3.10-3). Black sagebrush occurs at up to 50 percent cover and should always contribute over 10 percent. This alliance was also heavily invaded with cheatgrass, at times with up to 70 percent cover when shrub cover was low. Bailey's greasewood can provide up to 30 percent cover, with sticky rabbitbrush and Wyoming sagebrush up to 15 percent cover. On slopes that transition to pinyon or juniper woodland, singleleaf pinyon and Utah juniper can occur at less than 4 percent. Both Basin big and Wyoming sagebrush can accompany black sagebrush in this alliance, but at a lower cover and only up to 20 percent. Understory elements include Sandberg bluegrass (*Poa secunda*), non-native crested wheatgrass (*Agropyron cristatum*), grizzlybear pricklypear (*Opuntia erinacea*), and ricegrass (*Stipa hymenoides*).
- *Wyoming Big Sagebrush Dry Steppe and Shrubland Alliance*. Wyoming big sagebrush occurs as the dominant shrub in upland sites between approximately 4,320 and 6,880 feet elevation, and occupied approximately 40,000 acres, or approximately 6 percent of the total proposed expansion areas (Tables 3.10-2 and 3.10-3). It occurs within all of the proposed expansion areas except B-20. Stands of this alliance are composed of approximately 20–30 percent cover of Wyoming big sagebrush, or as much as 50 percent in some cases. Cover occasionally drops as low as 10 percent with an understory of grasses and forbs, but with shrubs subordinate. This alliance was also found to be heavily invaded by cheatgrass, with some stands registering up to 80 percent cover. Accompanying shrubs included sticky rabbitbrush and Nevada joint-fir with up

to 15 percent cover, and occasionally Bailey's greasewood up to 10 percent cover. The understory contained up to 30 percent cover of James' galleta (*Pleuraphis jamesii*), as well as Sandberg bluegrass, tailcup lupine (*Lupinus argenteus*), and sulphur-flower buckwheat (*Eriogonum inflatum*).

- *Basin Big Sagebrush – Foothill Big Sagebrush Dry Steppe and Shrubland Alliance*. Wetter sites between 3,400 and 7,200 feet such as wash bottoms and talus slopes within Wyoming big sagebrush stands were frequently occupied by Basin big sagebrush and rubber rabbitbrush (*Ericameria nauseosa* var. *hololeuca*). This alliance covers approximately 16,800 acres of the proposed expansion areas except B-16 (Tables 3.10-2 and 3.10-3). Membership in this alliance requires that at least one of the two key species occurs at up to 40 percent cover and always over 10 percent. Cheatgrass can also occur at up to 40 percent in heavily invaded sites. Both species of greasewood can be associated with this alliance, but only up to approximately 30 percent cover. Western wildrye (*Leymus cinereus*) and saltgrass occur in the graminoid layer, with only sparse forbs.
- *Big Sagebrush – Mixed Shrub Dry Steppe and Shrubland Alliance*. The transition zone between Wyoming sagebrush stands and Bailey's greasewood stands between 3,600 and 6,920 feet merits its own alliance, as these areas contain co-dominant proportions of these species. A total of 8,456 acres of this alliance were mapped, and it occurred within all the proposed expansion areas (Tables 3.10-2 and 3.10-3). In order to qualify, the greater of the two key species should occur at above 10 percent cover, with shrubs other than the codominant being subordinate. These stands also frequently contain winterfat at up to 15 percent cover, and spiny hopsage and Nevada joint-fir at 5–10 percent cover; cheatgrass can occupy up to 65 percent cover.
- *Shadscale Saltbrush Scrub Alliance*. Shadscale occupies lower elevations in sparse vegetation and frequently participates in other alliances, particularly Bailey's Greasewood. Delineating boundaries between these alliances can be difficult as they often intergrade. Sites between 3,960 and 6,000 feet elevation can be dominated by shadscale at 5–25 percent cover, with all other shrub species subordinate. Occurring within all the proposed expansion areas, a total of approximately 5,780 acres of this alliance were mapped (Tables 3.10-2 and 3.10-3). Total vegetation cover is generally very low in these stands, although cheatgrass can grow at up to 40 percent cover in some stands. Shrub associates can include Mojave seablight, Nevada joint-fir, and both species of greasewood. Other non-native species in this alliance include salt-lover (*Halogeton glomeratus*), clasping pepperweed (*Lepidium perfoliatum*), Russian thistle (*Salsola tragus*), and flixweed, all generally below 5 percent cover, although some stands can contain higher cover of salt-lover. Native forbs and graminoids can include silverscale saltbush (*Atriplex argentea*), squirreltail (*Elymus elymoides*), and Sandberg bluegrass.
- *Rubber Rabbitbrush – Sand Buckwheat – Four-part Horsebrush Sparse Scrub Alliance*. The playas and sinks that dominate low-lying areas within the proposed expansion areas provide a source of wind-transported sand that is deposited on the north and northeastern edges in short dunes. These dune fields can be partially stabilized by a community of shrubs and grasses that can withstand the periodic burial and exposure of moving dune fields. Where this community is dominated by four-part horsebrush (*Tetradymia tetrameres*) at 5–10 percent cover and intermountain greasewood at up to 20 percent cover, it falls into its own alliance. This alliance was found in all the proposed expansion areas, occurs between 3,390 and 6,600 feet elevation, and encompasses approximately 5,190 acres (Tables 3.10-2 and 3.10-3). These stands occupy

the leeward sides of dune faces, and occasionally creep up onto the tops of lower, protected dunes. Common shrub associates include fourwing saltbush and Mojave seablight at up to 10 percent cover, and rubber rabbitbrush up to 5 percent. Russian thistle can be particularly troublesome, occurring at up to 10 percent cover. Ricegrass and desert needlegrass (*Stipa hymenoides*) are often present at low cover, and a wide assortment of sand-loving annuals occur in spring.

- *Cheatgrass Ruderal Grassland Alliance*. Although cheatgrass pervaded the survey areas and occurred at some level in most alliances, some areas acres were so thoroughly invaded by cheatgrass that they were defined as the Cheatgrass Ruderal Grassland Alliance (Tables 3.10-2 and 3.10-3). Within the proposed B-17 and B-20 expansion areas, this alliance spanned between the elevations of 3,960 and 6,820 feet, and was always over 80 percent cover. Shrubs and native grasses were less than 5 percent, and the original native alliance was so obscured as to be undefinable. These areas are likely linked to disturbance such as fires, overgrazing, or a combination of the two. The native shrubs shadscale and rubber rabbitbrush occasionally occurred at low levels (less than 2 percent).
- *Nevada Joint-fir Scrub Alliance*. Although a common associate of other alliances, Nevada joint-fir only rarely dominates a stand. However, on rocky, cobbly slopes and alluvial fans, particularly in the proposed B-17 Expansion Area, it can be the dominant shrub species, occupying up to 10 percent cover and occasionally as low as 5 percent. Associated subordinate shrubs included Mojave burrobrush (*Ambrosia salsola*), Bailey's greasewood, and sticky rabbitbrush. This alliance occupied between 882 and 977 acres within only the proposed B-17 Expansion Area and occurred between the elevations of 4,440 and 7,120 feet (Tables 3.10-2 and 3.10-3). Cheatgrass can heavily infest these stands, occasionally as high as 30 percent cover. Areas with particularly high cheatgrass cover and remnant Nevada joint-fir may indicate a past burn, particularly when sticky rabbitbrush and cheatgrass are both present. These stands may represent a transitional phase from Bailey's greasewood or shadscale-dominated stands into fire-affected stands dominated by Nevada joint-fir and cheatgrass.
- *Yellow Star-thistle – Dyer's Woad – Russian Thistle Ruderal Annual Forb Alliance*. Russian thistle was frequently found in the survey areas, occurring between the elevations of 3,960 and 4,880 feet. In sandy sites in all four proposed expansion areas, Russian thistle was dense enough to characterize the stand, with between 10 and 40 percent cover. In B-20, these stands were closely associated with the Rubber Rabbitbrush – Sand Buckwheat – Four-part Horsebrush Sparse Scrub, occupying the tops of dunes and windward sides. In the other areas, this alliance was found on flat sandy areas, generally intermixed with heavy cover of cheatgrass as well. Shadscale, desert needlegrass, smokebush (*Psorothamnus polydenius*), and four-part horsebrush may also occur within this alliance, but never at greater than 2 percent cover. This alliance occurred in all of the proposed expansion areas and covered approximately 760 acres (Tables 3.10-2 and 3.10-3).
- *Winterfat Steppe and Dwarf Shrubland Alliance*. Winterfat generally occurs alongside and subordinate to Wyoming sagebrush and Bailey's greasewood, but occasionally will dominate a stand on its own. These stands covered 268 acres in alluvial fans and wide valleys of the proposed B-17 and B-20 expansion areas between 4,080 and 5,740 feet (Tables 3.10-2 and 3.10-3). Winterfat cover can be as high as 15 percent, with sticky rabbitbrush, bud sagebrush,

Bailey's greasewood, and Wyoming sagebrush subordinate. Cheatgrass can occupy approximately 10 percent cover, and the understory is generally sparse.

- *Fourwing Saltbrush – Rubber Rabbitbrush Desert Wash Alliance*. Green rubber rabbitbrush (*Ericameria nauseosa* var. *oreophylla*) occupies sites with seasonal moisture in similar fashion to *E. n.* var*. hololeuca,* except the former prefers alkaline sites, while the latter tends to be found in higher elevation washes, between 3,390 and 3,450 feet, and along road bar ditches. Green rubber rabbitbrush occupies from 5 to 20 percent cover in this alliance with other shrubs subordinate. These can include Torrey's saltbush (*Atriplex torreyi*), fourwing saltbush, and intermountain greasewood. Western wildrye may also be present at up to 10 percent cover. Stands of this alliance are extremely sparse, often with only 25 percent total cover. This alliance was mapped only within the proposed DVTA Expansion Area and encompassed 146 acres (Tables 3.10-2 and 3.10-3).

**Salt Marsh Formation.** Alliances within the Salt Marsh Formation generally occur on the margins of playa areas, where hydrologic conditions make conditions suitable for shrubby members of the Chenopodiaceae family and few others. These alliances are often sparse and of low diversity, and generally occur on flat areas and the washes that bisect playa margins.

- *Microphytic Playa Alliance*. The lowest-lying areas of the project are subjected to seasonal inundation by shallow lakes, occurring between 3,390 and 4,120 feet within the proposed B-17, B-20, and DVTA expansion areas (Tables 3.10-2 and 3.10-3). The lack of outflow from these areas forces the water to evaporate, leaving residues of salts and other minerals that preclude colonization by most plants. These areas are sometimes classified as "barren" in vegetation mapping, but they do support microscopic communities of cryptobiotic crusts, algae, lichens, diatoms, etc. At the margins, salt-tolerant species such as intermountain greasewood and Mojave seablight may intrude at low cover. The large playa that forms the majority of the proposed B-20 Expansion Area (Figure 3.10-5) makes this the second-largest alliance mapped, at over 130,000 acres, or 20 percent of the total proposed expansion areas (Tables 3.10-2 and 3.10-3).
- *Intermountain Greasewood Wet Shrubland Alliance*. Intermountain greasewood occurs between the elevations of 3,390 and 6,600 feet and occupies seasonally or intermittently mesic sites generated by alkaline seeps and springs, or accumulation of surface flow on the margins of playas. A fringe of intermountain greasewood rings the playa areas throughout the proposed FRTC expansion areas and occasional washes and seeps in the proposed DVTA Expansion Area. Mapped within all the proposed expansion areas, this alliance covers approximately 8–9 percent of the proposed expansion areas (Tables 3.10-2 and 3.10-3). The alliance is sparse, with 10-45 percent cover of intermountain greasewood, although this can be as low as 5 percent when no other shrubs are present). Cheatgrass was common in stands of this alliance, with some infested at up to 65 percent cover. Other shrubs commonly included four-part horsebrush at up to 30 percent; Mojave seablight, rubber rabbitbrush, and fourwing saltbush up to 20 percent; and Bailey's greasewood up to 10 percent, with the latter generally on the edges of stands or drier microsites. Understory is generally sparse but can include ricegrass, alkali sacaton (*Sporobolus airoides*), and desert needlegrass.
- *Mojave Seablight – Red Swampfire Alkaline Wet Scrub Alliance*. Mojave seablight interlaces with intermountain greasewood on playa edges and alkaline soils at low elevations between 3,400 and 4,080 feet (Tables 3.10-2 and 3.10-3). The alliance covers approximately 4,600 acres within all proposed expansion areas except B-16, and is characterized by very sparse cover with

3-30 percent Mojave seablite with no more than 10 percent cover of other shrubs. The most common associated shrubs are intermountain greasewood and fourwing saltbush, both generally less than 10 percent cover. Stands often occur on black cryptobiotic crust soils, with crust comprising up to 60 percent cover. Non-native Russian thistle and salt-lover can occupy up to 5 percent cover, and cheatgrass and annual wheatgrass (*Eremopyron triticeum*) up to 30 percent cover.

- *Saltgrass Alkaline Wet Meadow Alliance*. Saltgrass (*Distichlis spicata*) occupies small mesic sites on edges of playas with reliable year-round water. Heavily dominated by saltgrass (up to 90 percent cover), this alliance covers approximately 430 acres within the proposed B-17 and DVTA expansion areas at between the elevations of 3,390 and 4,140 feet (Tables 3.10-2 and 3.10-3). Associated shrubs include Mojave seablight, intermountain greasewood, rubber rabbitbrush, and Torrey's saltbrush, none of which exceed 10 percent cover.
- *Western Wildrye Alkaline Wet Meadow Alliance*. Several flat plains and washes in the dune field margins contain stands dominated by western wildrye, occurring between the elevations of 3,390 and 4,900 feet at 2–20 percent cover. Although shrubs occasionally occur intermixed with the wild rye, they never exceed 15 percent cover, and do not exceed the cover of wildrye. Associated shrubs include Basin big sagebrush, Torrey's saltbush, green rubber rabbitbrush, intermountain greasewood, and Mojave seablight. Saltgrass, cheatgrass, clasping pepperweed, and crested wheatgrass comprise the sparse understory. A total of 593 acres of this alliance was mapped within the proposed DVTA and B-20 expansion areas (Tables 3.10-2 and 3.10-3).

**Cool Temperate Forest and Woodland Formation.** This formation contains the two high-elevation tree alliances. Neither of these produces stands of trees at sufficient density to be considered forest, and in combination with the shrub understory, this places it into a woodland instead. The boundary between the lower-lying shrublands and woodland stands can be difficult to distinguish, and likely fluctuates to some extent over decades. In some sites, both singleleaf pinyon and Utah juniper may be invading sagebrush habitat, assisted by changes in fire regimes or overgrazing.

- *Great Basin Singleleaf Pinyon – Utah Juniper/Shrub Woodland Alliance*. Pinyon juniper woodland occurs only within the proposed DVTA Expansion Area at elevations of 4,040 to 7,480 feet and encompasses 26,495 acres (Tables 3.10-2 and 3.10-3). The threshold for designating a site as woodland was 5 percent relative cover of trees, with up to 95 percent absolute cover of Utah juniper. Understory shrubs included black and Wyoming sagebrush up to 40 percent cover, and Basin big sagebrush up to 20 percent. An understory of Sandberg bluegrass, Newberry's milkvetch (*Astragalus newberryi* var. *castoreus*), and carpet phlox (*Phlox hoodii*) is often accompanied by a diverse assemblage of annual and perennial forbs.
- *Utah Juniper/Shrub Woodland Alliance*. Stands with tree cover over 5 percent, with no more than 5 percent absolute cover of singleleaf pinyon, are designated as Utah Juniper Shrub Woodland, and generally occur between 5,000 and 8,280 feet. Utah juniper cover ranges up to 15 percent, with an understory of black and Wyoming sagebrush up to 30 percent. Basin big sagebrush can occur up to 15 percent, and some lower elevation sites can also contain up to 10 percent cover of Bailey's greasewood. Cheatgrass comprises up to 15 percent cover in this alliance. Understory graminoids and forbs are generally sparse but can include James' galleta and ricegrass. A total of approximately 9,400 acres was mapped within the proposed B-17 and DVTA expansion areas (Tables 3.10-2 and 3.10-3).

**Warm Desert and Semi-Desert Scrub and Grassland Formation.** The two alliances of this formation occur in dry washes and sand dune areas.

- *Mojave-Sonoran Burrobrush – Sweetbush Desert Wash Scrub Alliance*. Dry washes winding through Bailey's greasewood are often dominated by Mojave burrobrush at 5–50 percent cover with few other shrubs present. The washes channel runoff and only contain water during and shortly after rainfall events, which benefits burrobrush's high germination rates, short lifespan, and shallow root systems. This alliance occurs between the elevations of 3,480 and 6,960 feet (Tables 3.10-2 and 3.10-3). The regular disturbance precludes colonization by most other shrubs, although Wyoming sagebrush, intermountain and Bailey's greasewood, spiny hopsage, and bud sagebrush can occur on the margins at less than 10 percent cover. The understory is generally sparse, but cheatgrass can occur at up to 25 percent cover. Sandberg bluegrass, ricegrass, and annual forbs contribute to the understory. This alliance occurs on all proposed expansion areas except for B-16 and encompasses approximately 17,450 acres (Tables 3.10-2 and 3.10-3).
- *Fremont's Smokebush – Nevada Smokebush Desert Wash Scrub Alliance*. Nevada smokebush (*Psorothamnus polydenius*) is a sand-loving shrub that likely occurred over a wider range than it does presently. It occurs within the proposed B-16 and B-17 expansion areas between 4,200 and 5,800 feet and on 1,715 acres (Tables 3.10-2 and 3.10-3). Documented stands included high cover of cheatgrass and Russian thistle, which may be in the process of replacing Nevada smokebush. This alliance is characterized by up to 15 percent cover of smokebush, with only occasional occurrences of Bailey's greasewood, Nevada joint-fir, and sticky rabbitbrush at less than 5 percent cover. Cheatgrass was ubiquitous in these stands, occupying 15–40 percent cover. Bare ground is likely occupied by ephemeral annual species, but this is a sparse and depauperate alliance in general.

**Temperate Flooded and Swamp Forest.** This riparian forest formation and associated alliances occur only in the proposed DVTA expansion area, particularly in the Stillwater and Louderback mountains.

- *Ruderal Tamarisk Riparian Scrub Alliance*. Tamarisk or salt cedar (*Tamarix ramosissima)* occurs in the proposed DVTA Expansion Area and in some of the canyons in the Stillwater Mountains. The low-elevation stands are associated with homesteads and disturbance, while the mountain canyon stands are native willow or cottonwood riparian areas that have been invaded more recently. Stands of Russian olive are also lumped into this non-native tree dominated alliance, which ranged from approximately 3,410 to 6,880 feet and covered 477 acres (Tables 3.10-2 and 3.10-3). Cover of tamarisk or Russian olive ranges from 10 to 90 percent, with a depauperate understory generally composed of non-native forb or grass species such as five-hook bassia (*Bassia hyssopifolia*) and rabbitfoot grass (*Polypogon monspeliensis*).
- *Great Basin Fremont Cottonwood Riparian Forest Alliance*. Fremont cottonwood trees create shady gallery forests along the middle slopes and bases of wet canyons on both sides of the Stillwater Mountains between 5,080 and 7,280 feet elevation (Tables 3.10-2 and 3.10-3). Understory shrub species include arroyo and red willow (*Salix laevigata*), Russian olive up to 30 percent cover, and desert snowberry (*Symphoricarpos longiflorus*) at up to 5 percent cover, with particularly wet sites harboring perennial water lovers such as narrowleaf cattail (*Typha angustifolia*) and stream orchid (*Epipactis gigantea*). These sites can be highly diverse, often including members of the rush (*Juncus*) and sedge (*Carex*) genera, or heavily disturbed by wildlife and feral ungulates. They provide water for wildlife and nesting sites for riparian bird

species. Russian olive and tamarisk infestations in this alliance present an opportunity for improvement of this valuable resource. A total of 68 acres of cottonwood groves was mapped only within the proposed DVTA Expansion Area (Tables 3.10-2 and 3.10-3).

**Shrub and Herb Wetland Formation.** This formation includes one alliance.

- *Western Baltic Rush – Mexico Rush Wet Meadow Alliance*. This alliance is heavily dominated (occasionally up to 100 percent cover, and always over 50 percent) by one or more species of rush (*Juncus*), sedge (*Carex*), bulrush (*Schoenoplectus*), and/or spikerush (*Eleocharis*). A total of 190 acres was mapped only within the proposed DVTA Expansion Area at elevations of 3,390 and 3,440 feet (Tables 3.10-2 and 3.10-3). The majority is found near perennial water, and many areas fell below the 2-acre minimum mapping unit, so this alliance may be more common than currently mapped. Stands may be intermixed with Russian olive or tamarisk stands, and may have alkali sacaton, squirreltail, green rubber rabbitbrush, Mojave seablite, or intermountain greasewood on the margins.

**Temperate to Polar Freshwater Marsh, Wet Meadow and Shrubland Formation.** This formation includes one alliance.

- *Arroyo Willow Wet Shrubland Alliance*. Riparian zones dominated by arroyo willow (*Salix lasiolepis*) grow on seasonally flooded stream benches and occasionally seeps, and often form stringer communities along moist drainages with nearly year round water, particularly in the Stillwater Mountains. Found only within the proposed DVTA Expansion Area at elevations between 4,440 and 6,960 feet, this alliance totals 133 acres (Tables 3.10-2 and 3.10-3). The tall shrub layer is dominated by arroyo willow which forms a dense overstory ranging from 15-70 percent cover. Arroyo willow is often accompanied by silver buffaloberry (*Shepherdia argentea*) at up to 40 percent cover and an understory of Wood's rose, common dogbane (*Apocynum cannabium*), Basin big sagebrush, rubber rabbitbrush, and desert snowberry, all representing under 5 percent cover. Rarely, emergent Fremont cottonwood trees may be present, but should not exceed 5 percent absolute cover. Willow stands provide important habitat for mammals, birds, and invertebrates, as well as a diverse assemblage of graminoids and forbs that need shade and moisture.

### 3.10.2.3 Wildlife

As stated above, the region of influence is located in the Great Basin and specifically the Great Basin Desert. The Great Basin Desert is a high cold desert that is internally drained and characterized by north-south trending mountain ranges that are separated by broad xeric basins, valleys, and salt flats. Elevations range from 3,350 feet to more than 13,120 feet. There is a significant rain shadow effect from the Sierra Nevada Mountains to the west that creates an arid climate throughout the region. Wildlife species within the region are those adapted to dry, high desert conditions dominated by sagebrush, saltbush, and greasewood. Given the arid character of the region, areas of permanent and ephemeral water (e.g., lakes, reservoirs, wetlands, rivers, playas) are important areas for various wildlife species (Figure 3.10-9). The presence of relatively permanent water allows lakes, reservoirs, and riparian areas to support among the highest species diversity in the Great Basin Desert.

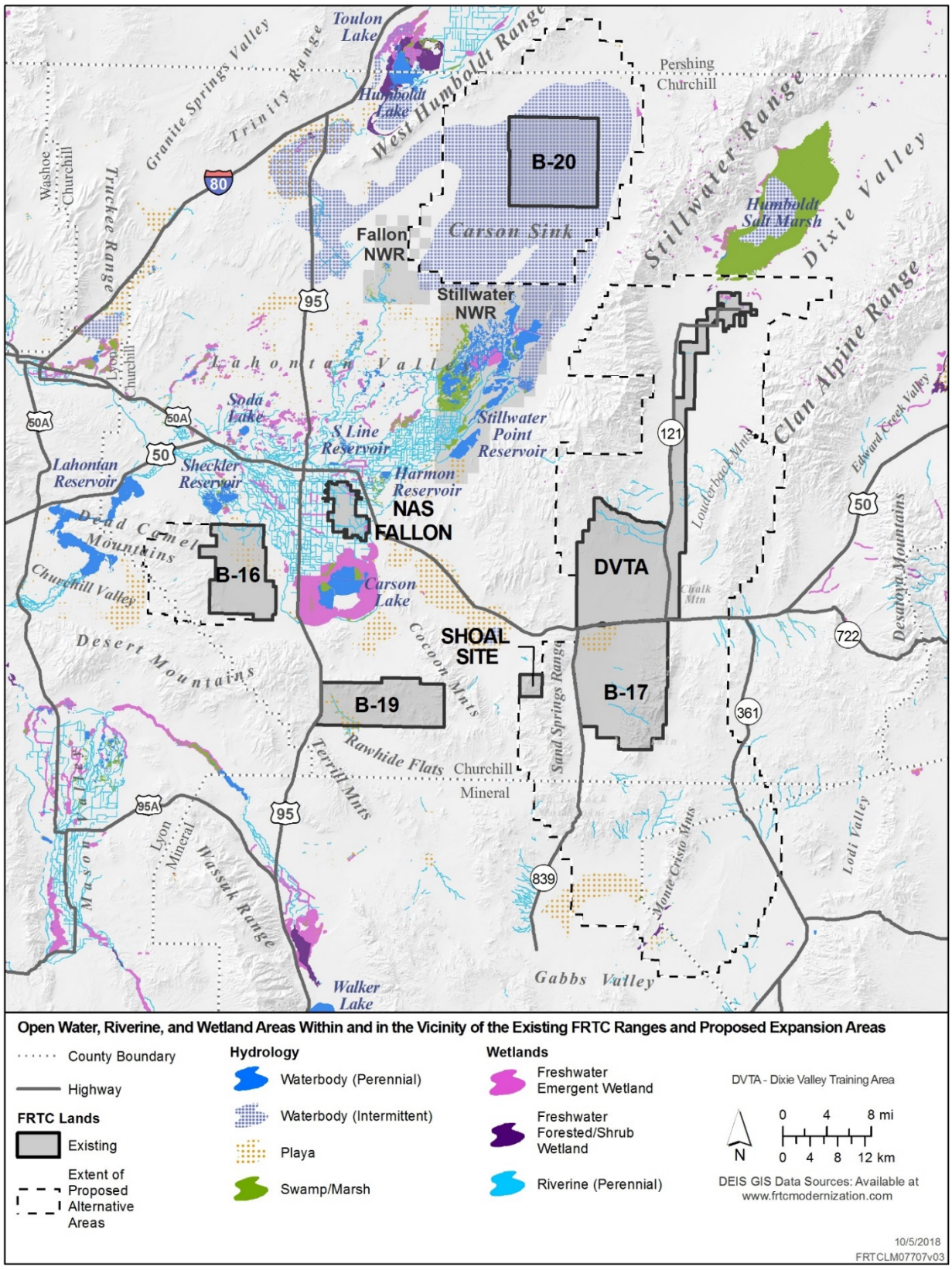


**Figure 3.10-9: Open Water, Riverine, and Wetland Areas Within and in the Vicinity of the Existing FRTC Ranges and Proposed Expansion Areas**

#### 3.10.2.3.1 Amphibians and Reptiles

Due to the arid conditions, amphibian species diversity is low and only three species have been recorded on Navy-managed FRTC lands: American bullfrog (*Lithobates catesbeianus*), Great Basin spadefoot (*Spea intermontana*), and western toad (*Anaxyrus boreas*). The western toad is considered a special-status species and is discussed below in Section 3.10.3.4.2 (Special-status Amphibians and Reptiles). In contrast, the desert habitats within the FRTC region support a wide variety of reptile species and 16 species have been recorded on FRTC lands (see Supporting Study: Wildlife Species Documented on Existing Navy-managed FRTC Lands and Proposed FRTC Expansion Areas, available at http://www.frtcmodernization.com). In support of this EIS, amphibian and reptile surveys will be conducted within the proposed FRTC expansion areas in summer 2018 and 2019, and the results will be incorporated into this EIS.

Based on previous surveys (Naval Air Station Fallon, 1997; Tierra Data Inc., 2008; Todd et al., 2011), common species observed within the proposed expansion areas include common sagebrush lizard (*Sceloporus graciosus*), Great Basin whiptail (*Aspidoscelis t. tigris*), Nevada side-blotched lizard (*Uta stansburiana nevadensis*), western fence lizard (*Sceloporus occidentalis*), Great Basin gophersnake (*Pituophis catenifer deserticola*), and desert striped whipsnake (*Masticophis t. taeniatus*). In addition, three special-status reptile species have been recorded on FRTC lands and are discussed below in Section 3.10.2.4.2 (Special-status Amphibians and Reptiles*)*.

#### 3.10.2.3.2 Birds

The western portion of the FRTC region of influence is within the Lahontan Valley, which contains a number of wetlands, lakes, reservoirs, and riparian areas that support a large diversity of breeding, migrating, and wintering birds (see Figure 3.10-9). This area is located on the Pacific Flyway, which extends from Mexico in the south to Alaska in the north and from the Pacific Ocean to the Rocky Mountains, and each year hundreds of thousands of shorebirds, waterfowl, and other birds migrate through the region utilizing these wetland areas. The irrigated agricultural lands also provide important songbird habitat for migrant and breeding birds. A total of 195 species of birds have been recorded on Navy-managed FRTC lands (see Supporting Study: Wildlife Species Documented on Navy-managed FRTC Lands and Proposed FRTC Expansion Areas [available at http://www.frtcmodernization.com]). Based on previous surveys (Naval Air Station Fallon, 1997; Tierra Data Inc., 2008) and surveys conducted in support of this EIS (see Supporting Study: Avian Survey Report and Supporting Study: Raptor Survey Report available at http://www.frtcmodernization.com), common species observed within the proposed expansion areas include black-throated sparrow (*Amphispiza bilineata*), savannah sparrow (*Passerculus sandwichensis*), Say's phoebe (*Sayornis saya*), song sparrow (*Melospiza melodia*), Brewer's blackbird (*Euphagus cyanocephalus*), red-winged blackbird (*Agelaius phoeniceus*), cinnamon teal (*Spatula cyanoptera*), chukar (*Alectoris chukar*), cliff swallow (*Petrochelidon pyrrhonota*), common raven (*Corvus corax*), horned lark (*Eremophila alpestris*), house finch (*Haemorhous mexicanus*), northern harrier (*Circus hudsonius*), American kestrel (*Falco sparverius*), and great-blue heron (*Ardea herodias*). In addition, 40 special-status bird species are known to or potentially occur within the FRTC region of influence and are discussed below in Section 3.10.2.4.3 (Special-status Birds).

#### 3.10.2.3.3 Mammals

Over 40 mammal species have been recorded on Navy-managed FRTC lands (see Supporting Study: Wildlife Species Documented on Navy-managed FRTC Lands and Proposed FRTC Expansion Areas, available at http://www.frtcmodernization.com). Based on previous surveys (Naval Air Station Fallon,

1997; Tierra Data Inc., 2008) and surveys conducted in support of this EIS (see Supporting Study: Wildlife Remote Camera Trapping Survey Report and Supporting Study: Small Mammal Survey Report, available at http://www.frtcmodernization.com), common mammals observed within the proposed expansion areas include desert woodrat (*Neotoma lepida*), deer mouse (*Peromyscus maniculatus*), pocket gophers (*Thomomys* spp.), white-tailed antelope ground squirrel (*Ammospermophilus leucurus*), cottontail rabbits (*Sylvilagus* spp.), black-tailed jackrabbit (*Lepus californicus*), American badger (*Taxidea taxus*), striped skink (*Mephitis mephitis*), and coyote (*Canis latrans*). In addition, 26 species of special-status mammals are known to or potentially occur within the FRTC region of influence and are discussed below in Section 3.10.2.4.4 (Special-status Mammals). In support of this EIS, small mammal surveys will be conducted within the proposed FRTC expansion areas in summer/fall 2018 and spring/summer 2019, and the results will be incorporated into this EIS.

Wild Free-Roaming Horses and Burros

The 53.8 million acres across the Western U.S. where wild horses or burros were found roaming at the time the 1971 Wild Free-Roaming Horses and Burros Act was passed are known as herd areas (HAs). A subset of these areas (approximately 31.6 million acres nationwide in 2012) have been determined suitable for long-term management of wild horses and burros (*Equus asinus*) and are known as herd management areas (HMAs). Wild horses and burros within HMAs are managed with the goal of maintaining sustainable ecological conditions and multiple use and sustained yield relationships on federal lands. Both HAs and HMAs can include private or state lands, but BLM has management authority only over BLM-administered lands (Bureau of Land Management, 2014).

There are 24 HAs totaling approximately 1.5 million acres and 24 HMAs totaling approximately 2.4 million acres within the FRTC region of influence, primarily underlying the airspace (Figure 3.10-10). One HMA and two HAs overlap two of the proposed FRTC expansion areas:

- The eastern portion of the proposed DVTA expansion area overlaps approximately 47,580 acres of the Clan Alpine HMA.
- The western portion of the proposed DVTA expansion area overlaps approximately 7,600 acres of the South Stillwater HA.
- The northern portion of the proposed B-20 expansion area overlaps approximately 20,400 acres of the Humboldt HA.

The 1993 Clan Alpine HMA Management Plan set management objectives for the HMA. The plan calls for a periodic census of the wild horse population and for additional monitoring to determine areas of use, seasonal movement patterns, sex ratios, and other facets of population dynamics to determine if management objectives are being met. The plan calls for maintaining the wild horses in good or excellent physical condition, maintaining the free-roaming nature of the wild horses, maintaining the wild horses within the HMA, and minimizing adverse effects on individual wild horses and on the population as a whole that could be caused by round-ups. Management objectives also include maintaining and enhancing habitat to provide forage for a specified number of horses (Bureau of Land Management, 2014).

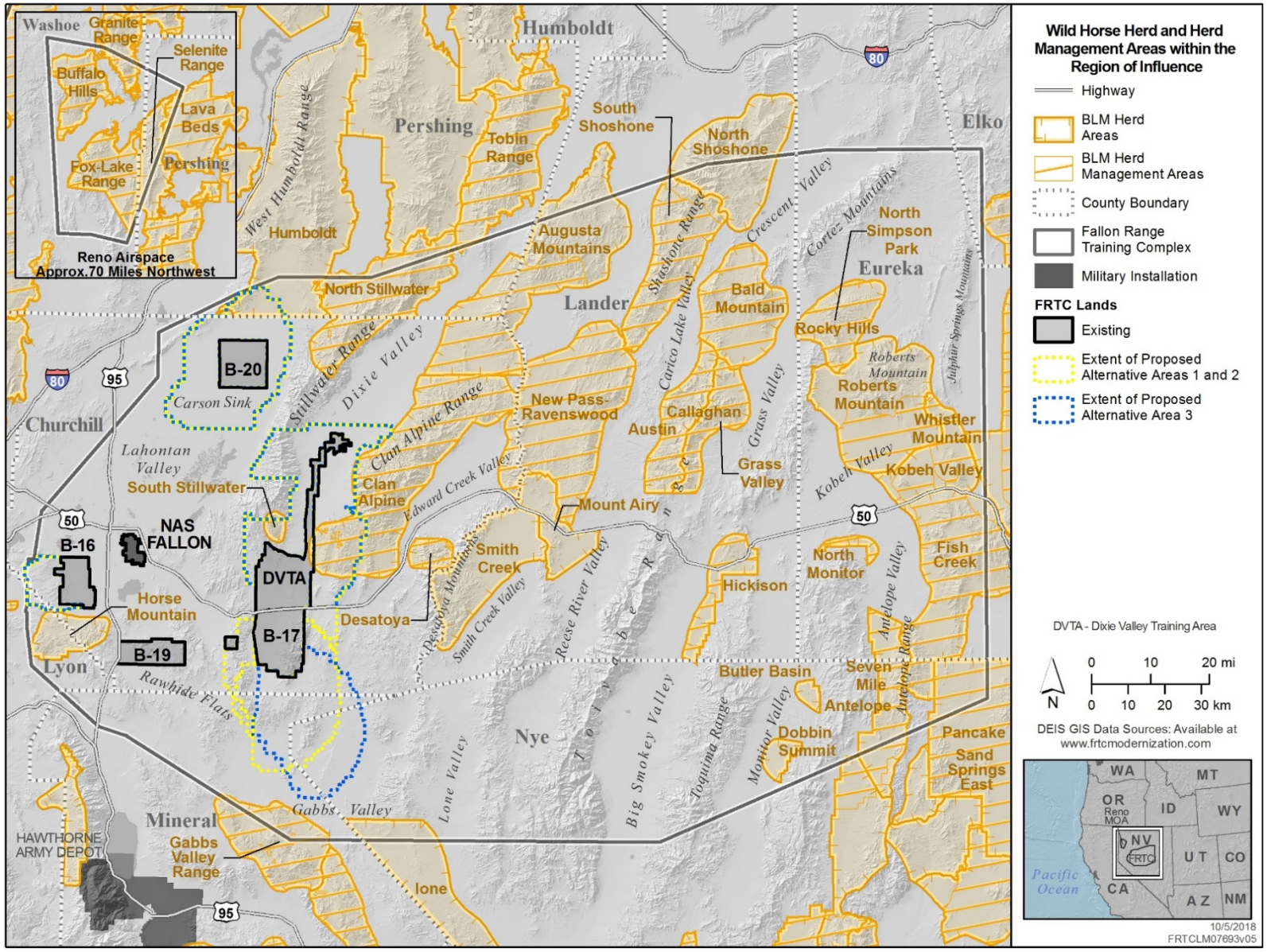


**Figure 3.10-10: Wild Horse Herd and Herd Management Areas within the Region of Influence**

### 3.10.2.4 Special-Status Species

Based on NNHP, NDOW, BLM, and USFWS information, 92 special-status species are known to or potentially occur within the region of influence: 19 plants, 4 amphibians, 4 reptiles, 38 birds, and 27 mammals (Table 3.10-8).

- USFWS: 1 ESA-listed threatened bird species; bald eagle (*Haliaeetus leucocephalus*) and golden eagle (*Aquila chrysaetos*) which are protected by the BGEPA; and 18 Birds of Conservation Concern.
- State of Nevada: 24 protected or sensitive species – 1 plant, 2 amphibians, 7 birds, and 14 mammals; and 2 endangered birds and 1 threatened mammal.
- BLM (Carson City and Battle Mountain districts): 66 sensitive species – 13 plants, 4 amphibians, 4 reptiles, 24 birds, and 21 mammals.

All bird species except for dusky grouse (*Dendragapus obscurus*), greater sage-grouse, and mountain quail (*Oreortyx pictus*) are protected by the MBTA. There are no records of ESA-listed or proposed for ESA listing plant, amphibian, reptile, or mammal species within the region of influence (Nevada Department of Wildlife, 2013, 2018a, 2018b; Nevada Natural Heritage Program, 2018a, 2018b; U.S. Bureau of Land Management, 2017; U.S. Fish and Wildlife Service, 2008).

**Table 3.10-8: Potential Occurrence of Special-status Species within the FRTC Region of Influence**

| Common Name (Scientific Name) | Status* | | | | Known or Potential Occurrence: Counties within the Region of Influence* |
|---|---|---|---|---|---|
| | USFWS | BLM | State | NNHP | |
| PLANTS (*Note*: Region of influence for plants only includes those counties that have proposed ground-disturbing activities under the action alternatives) | | | | | |
| Scorpion milkvetch (*Astragalus lentiginosus* var. *scorpionis*) | - | - | - | S3? | Chu, Min, Nye |
| Lahontan milkvetch (*Astragalus porrectus*) | - | S | - | S3? | Chu |
| Tonopah milkvetch (*Astragalus pseudiodanthus*) | - | S | - | S2 | Chu, Min, Nye |
| Winged milkvetch (*Astragalus pterocarpus*) | - | - | - | S3 | Chu |
| Nevada suncup (*Camissonia nevadensis*) | - | S | - | S3 | Chu |
| Beatley buckwheat (*Eriogonum beatleyae*) | - | S | - | S3 | Chu, Min, Nye |
| Lemmon buckwheat (*Eriogonum lemmonii*) | - | S | - | S3? | Chu |
| Lahontan Basin buckwheat (*Eriogonum rubricaule*) | - | S | - | S3 | Chu Min, Nye |
| Sand cholla (*Grusonia pulchella*) | - | S | PC | S2S3 | Chu, Min, Nye |
| Dune sunflower (*Helianthus deserticola*) | - | - | - | S3 | Chu, Min |
| Dune linanthus (*Linanthus arenicola*) | - | - | - | S3 | Chu, Nye |
| Candelaria blazing star (*Mentzelia candelariae*) | - | S | - | S3? | Chu, Min, Nye |
| Inyo blazing star (*Mentzelia inyoensis*) | - | S | - | S1 | Chu |
| Oryctes (*Oryctes nevadensis*) | - | S | - | S3 | Chu, Min |
| Nevada dune beardtongue (*Penstemon arenarius*) | - | S | - | S2 | Chu, Min, Nye |
| Lahontan beardtongue (*Penstemon palmeri* var. *macranthus*) | - | S | - | S2? | Chu, Nye |
| Reese River phacelia (*Phacelia glaberrima*) | - | S | - | S3? | Chu, Min |
| Saltmarsh allocarya (*Plagiobothrys salsus*) | - | - | - | S2S3 | Chu, Min |
| Lahontan indigobush (*Psorothamnus kingii*) | - | - | - | S3 | Chu |
| AMPHIBIANS (*Note*: Region of influence for amphibians only includes those counties that have proposed ground-disturbing activities under the action alternatives) | | | | | |
| Columbia spotted frog (*Rana luteiventris*) | - | S | PA, WAP | S2S3 | Nye |
| Northern leopard frog (*Lithobates pipiens*) | - | S | PA, WAP | S2S3 | Chu, Min, Nye |
| Western toad (*Anazyrus boreas*) | - | S | WAP | S4 | Chu, Min, Nye |
| Dixie Valley toad (*Anaxyrus williamsi*) | - | S | - | S1 | Chu |
| REPTILES (*Note*: Region of influence for reptiles only includes those counties that have proposed ground-disturbing activities under the action alternatives) | | | | | |
| Desert horned lizard (*Phrynosoma platyrhinos*) | - | S | WAP | S4 | Chu, Min, Nye |
| Great Basin collared lizard (*Crotophytus bicinctores*) | - | S | WAP | S4 | Chu, Min, Nye |
| Long-nosed leopard lizard (*Gambelia wislizenii*) | - | S | WAP | S4 | Chu, Min, Nye |
| Northern rubber boa (*Charina bottae*) | - | S | WAP | S3S4 | Chu, Min, Nye |
| BIRDS | | | | | |
| American avocet (*Recurvirostra americana*) | MBTA | - | WAP | S4B | Chu, Eur, Lan, Lyo, Min, Per |
| American white pelican (*Pelecanus erythrorhynchos*) | MBTA | - | WAP | S2B | Chu, Lyo, Min, Per |
| Bald eagle (*Haliaeetus leucocephalus*) | MBTA, BGEPA, BCC | S | E, WAP | S1B,S3N | Chu, Lyo, Min |

**Table 3.10-8: Potential Occurrence of Special-status Species within the FRTC Region of Influence (continued)**

| Common Name (Scientific Name) | Status* | | | | Known or Potential Occurrence: Counties within the Region of Influence* |
|---|---|---|---|---|---|
| | USFWS | BLM | State | NNHP | |
| Black rosy-finch (*Leucosticte atrata*) | MBTA, BCC | S | WAP | S3 | Chu, Eur, Lan, Per |
| Black tern (*Chlidonias niger*) | MBTA | - | WAP | S2S3B | Chu, Eur, Lan, Lyo, Min, Per |
| Brewer's sparrow (*Spizella breweri*) | MBTA, BCC | S | S, WAP | S4B | Chu, Eur, Lan, Lyo, Min, Nye, Per |
| Burrowing owl (*Athene cunicularia*) | MBTA | S | WAP | S3B | Chu, Eur, Lan, Lyo, Min, Nye, Per |
| Canvasback (*Aythya valisineria*) | MBTA | - | WAP | S3S4 | Chu, Eur, Lan, Lyo, Min, Nye, Per |
| Cassin's finch (*Carpodacus cassinii*) | MBTA | - | WAP | S5 | Chu, Eur, Lan, Lyo, Min, Nye, Per |
| Common nighthawk (*Chordeiles minor*) | MBTA | - | WAP | S5B | Chu, Eur, Lan, Lyo, Min, Nye, Per |
| Dusky grouse (*Dendragapus obscurus*) | - | - | PB, WAP | S3 | Chu, Eur, Lan, Nye |
| Ferruginous hawk (*Buteo regalis*) | MBTA, BCC | S | WAP | S2 | Chu, Eur, Lan, Lyo, Min, Nye, Per |
| Flammulated owl (*Psiloscops flammeolus*) | MBTA, BCC | S | WAP | S4B | Chu, Eur, Lan, Lyo, Min, Nye, Per |
| Golden eagle (*Aquila chrysaetos*) | MBTA, BGEPA, BCC | S | WAP | S4 | Chu, Eur, Lan, Lyo, Min, Nye, Per |
| Gray-crowned rosy-finch (*Leucosticte tephrocotis*) | MBTA | S | WAP | S3N | Chu, Eur, Lan, Min, Nye, Per |
| Great Basin willow flycatcher (*Empidonax traillii adastus*) | MBTA, BCC | S | WAP | S1S2 | Chu, Eur, Lan, Lyo, Min, Nye, Per |
| Greater sage-grouse (*Centrocercus urophasianus*) | BCC | S | WAP | S3 | Chu, Eur, Lan, Lyo, Min, Per |
| Western least bittern (*Ixobrychus exilis*) | MBTA | S | WAP | S2B | Chu, Eur, Lan, Lyo, Min, Nye, Per |
| Lewis's woodpecker (*Melanerpes lewis*) | MBTA, BCC | S | WAP | S3 | Chu, Eur, Lan, Lyo, Min, Per |
| Loggerhead shrike (*Lanius ludovicianus*) | MBTA, BCC | S | S, WAP | S4 | Chu, Eur, Lan, Lyo, Min, Nye, Per |
| Long-billed curlew (*Numenius americanus*) | MBTA, BCC | S | WAP | S2S3B | Chu, Eur, Lan, Lyo, Min, Nye, Per |
| Long-billed dowitcher (*Limnodromus scolopaceus*) | MBTA | - | WAP | S4 | Chu, Eur, Lan, Lyo, Min, Nye, Per |
| Mountain quail (*Oreortyx pictus*) | - | S | PB, WAP | S3 | Chu, Lan, Min, Nye, Per |
| Northern goshawk (*Accipiter gentilis*) | MBTA | S | S, WAP | S2 | Chu, Eur, Lan, Lyo, Per |
| Northern pintail (*Anas acuta*) | MBTA | - | WAP | S5 | Chu, Eur, Lan, Lyo, Min, Nye, Per |
| Olive-sided flycatcher (*Contopus cooperi*) | MBTA | - | WAP | S2B | Eur, Lan, Lyo, Min |
| Peregrine falcon (*Falco peregrinus*) | MBTA, BCC | S | E, WAP | S2 | Lyo, Min |
| Pinyon jay (*Gymnorhinus cyanocephalus*) | MBTA, BCC | S | WAP | S3S4 | Chu, Eur, Lan, Lyo, Min, Nye, Per |
| Prairie falcon (*Falco mexicanus*) | MBTA | - | WAP | S4 | Chu, Eur, Lan, Lyo, Min, Nye, Per |
| Redhead (*Aythya americana*) | MBTA | - | WAP | S4B | Chu, Eur, Lan, Lyo, Min, Nye, Per |
| Sagebrush sparrow (*Artemisiospiza nevadensis*) | MBTA, BCC | - | WAP | - | Chu, Eur, Lan, Lyo, Min, Nye, Per |
| Sage thrasher (*Oreoscoptes montanus*) | MBTA, BCC | S | S, WAP | S5B | Chu, Eur, Lan, Lyo, Min, Nye, Per |
| Sandhill crane (*Antigone canadensis*) | MBTA | S | WAP | S2B,S3M | Chu, Eur, Lan, Per |
| Short-eared owl (*Asio flammeus*) | MBTA | S | WAP | S4 | Chu, Eur, Lan, Lyo, Per |
| Swainson's hawk (*Buteo swainsoni*) | MBTA | S | - | S2B | Chu, Eur, Lan, Lyo, Min, Nye, Per |
| Western snowy plover (*Charadrius alexandrinus nivosus*) | MBTA, BCC | S | WAP | S3B | Chu, Eur, Lyo, Min, Nye, Per |

**Table 3.10-8: Potential Occurrence of Special-status Species within the FRTC Region of Influence (continued)**

| Common Name (Scientific Name) | Status* | | | | Known or Potential Occurrence: Counties within the Region of Influence* |
|---|---|---|---|---|---|
| | USFWS | BLM | State | NNHP | |
| White-faced ibis (*Plegadis chihi*) | MBTA | - | WAP | S3B | Chu, Eur, Lan, Lyo, Min, Nye, Per |
| Yellow-billed cuckoo (*Coccyzus americanus*) – Western DPS | T, MBTA, BCC | S | S, WAP | S1B | Chu, Min, Nye |
| MAMMALS | | | | | |
| American pika (*Ochotona princeps*) | - | S | PM, WAP | S2 | Chu, Eur, Lan, Lyo, Min, Nye, Per |
| Bighorn sheep (*Ovis canadensis*) | - | S | PGM, WAP | S4 | Chu, Eur, Lan, Lyo, Min, Nye, Per |
| Elk (*Cervus elaphus*) | - | - | PGM | S5 | Eur, Lan, Nye |
| Kit fox (*Vulpes macrotis*) | - | - | PM | S3 | Chu, Lan, Lyo, Min, Nye, Per |
| Mule deer (*Odocoileus hemionus*) | - | - | PGM, WAP | S5 | Chu, Eur, Lan, Lyo, Min, Nye, Per |
| Pronghorn (*Antilocapra americana*) | - | - | PGM | S5 | Chu, Eur, Lan, Lyo, Min, Nye, Per |
| Pygmy rabbit (*Brachylagus idahoensis*) | - | S | PGM, WAP | S3 | Chu, Eur, Lan, Lyo, Nye |
| Bats | | | | | |
| Big brown bat (*Eptesicus fuscus*) | - | S | - | S3S4 | Chu, Eur, Lan, Lyo, Min, Nye, Per |
| Brazilian free-tailed bat (*Tadarida brasiliensis*) | - | S | PM, WAP | S4 | Chu, Eur, Lan, Lyo, Min, Nye, Per |
| California myotis (*Myotis californicus*) | - | S | - | S3S4 | Chu, Eur, Lan, Lyo, Min, Nye, Per |
| Canyon bat or western pipistrelle (*Pipistrellus hesperus*) | - | S | - | S3S4 | Chu, Lan, Min, Nye |
| Fringed myotis (*Myotis thysanodes*) | - | S | PM, WAP | S2 | Chu, Eur, Lan, Lyo, Min, Nye, Per |
| Hoary bat (*Lasiurus cinereus*) | - | S | WAP | S2S3 | Chu, Eur, Lan, Lyo, Min, Nye, Per |
| Little brown bat (*Myotis lucifugus*) | - | S | WAP | S2S3 | Chu, Eur, Lan, Lyo, Min, Per |
| Long-eared myotis (*Myotis evotis*) | - | S | WAP | S3 | Chu, Eur, Lan, Lyo, Min, Nye, Per |
| Long-legged myotis (*Myotis volans*) | - | S | - | S3S4 | Chu, Eur, Lan, Lyo, Min, Nye, Per |
| Pallid bat (*Antrozous pallidus*) | - | S | PM | S3 | Chu, Eur, Lan, Lyo, Min, Nye, Per |
| Silver-haired bat (*Lasionycteris noctivagans*) | - | S | WAP | S3 | Chu, Eur, Lan, Lyo, Min, Nye, Per |
| Spotted bat (*Euderma maculatum*) | - | S | T, WAP | S2 | Chu, Eur, Lan, Lyo, Min, Nye, Per |
| Townsend's big-eared bat (*Corynorhinus townsendii*) | - | S | S, WAP | S2 | Chu, Eur, Lan, Lyo, Min, Nye, Per |
| Western red bat (*Lasiurus blossevillii*) | - | S | S, WAP | S2 | Chu |
| Western small-footed myotis (*Myotis ciliolabrum*) | - | S | WAP | S3S4 | Chu, Eur, Lan, Lyo, Min, Nye |
| Yuma myotis (*Myotis yumanensis*) | - | S | - | S3 | Chu, Lyo, Min, Per |
| Rodents (*Note*: Region of influence for rodents includes only those counties that have proposed ground-disturbing activities under the action alternatives) | | | | | |
| Dark kangaroo mouse (*Microdipodops megacephalus*) | - | S | PM, WAP | S2 | Nye |
| Desert kangaroo rat (*Dipodomys deserti*) | - | - | WAP | S2S3 | Chu, Min, Nye |
| Pale kangaroo mouse (*Microdipodops pallidus*) | - | S | PM, WAP | S2 | Chu, Min, Nye |
| Sagebrush vole (*Lemmiscus curtatus*) | - | - | WAP | S3 | Chu, Min, Nye |

**Table 3.10-8: Potential Occurrence of Special-status Species Within the FRTC Region of Influence (continued)**

| Common Name (Scientific Name) | Status* | | | | Known or Potential Occurrence: Counties within the Region of Influence* |
|---|---|---|---|---|---|
| | USFWS | BLM | State | NNHP | |

Notes:*BCC = Bird of Conservation Concern; BGEPA = Bald and Golden Eagle Protection Act; DPS = Distinct Population Segment; E = endangered; MBTA = Migratory Bird Treaty Act; PA = Protected Amphibian; PC = Protected Cactus; PGM = Protected Game Mammal; PM = Protected Mammal; S = sensitive; T = threatened; WAP = Wildlife Action Plan Species of Conservation Priority.

Nevada Natural Heritage Program (NNHP) Rank Definitions:

S1 = Critically Imperiled – at very high risk of extirpation in the state due to very restricted range, very few populations or occurrences, very steep declines, severe threats, or other factors.

S2 = Imperiled – at high risk of extirpation in the state due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors.

S3 = Vulnerable – at moderate risk of extirpation in the state due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.

S4 = Apparently Secure – at fairly low risk of extirpation in the state due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors.

S5 = Secure – at very low or no risk of extirpation in the state due to a very extensive range, abundant populations or occurrences, with little to no concern from declines or threats.

S#S# = Range Rank – a numeric range rank (e.g., S2S3 or S1S3) is used to indicate uncertainty about the exact status of a taxon.

? = Questionable taxonomy – taxonomic distinctiveness of the entity at the current level is questionable or currently being reviewed; resolution of this uncertainty may result in change from a species to a subspecies, variety or hybrid, or the inclusion of this taxon in another taxon, with the resulting taxon having a lower-priority conservation status.

B = Breeding – conservation status refers to the breeding population of the element in the state.

N = Non-breeding – conservation status refers to the non-breeding population of the element in the state (e.g., wintering bird population).

Counties: Chu = Churchill, Eur = Eureka, Lan = Lander, Lyo = Lyon, Min = Mineral, Per = Pershing.

Sources: (Nevada Department of Wildlife, 2013; Nevada Natural Heritage Program, 2018b; U.S. Bureau of Land Management, 2017; U.S. Fish and Wildlife Service, 2008)

#### 3.10.2.4.1 Special-status Plants

The region of influence for special-status plant species includes only the areas within the proposed FRTC range expansion areas where ground-disturbing activities would occur under the proposed action. The Navy completed rare plant surveys in 2017 to provide information on the occurrence of special-status plant species within the proposed range expansion areas (see Supporting Study: Rare Plant Survey Report available at http://www.frtcmodernization.com). The target list of 19 special-status plant species was assembled from the NNHP species lists for Churchill County (see Table 3.10-8). Of the 19 species, none are listed as threatened or endangered by the USFWS or State of Nevada. All are ranked by the NNHP as critically imperiled (1 species), imperiled (5 species), or vulnerable (13 species); 9 species are Nevada endemics; 16 are BLM Sensitive Species; and 1 species is listed by the State of Nevada as a protected cactus. In addition, special-status plant surveys will be conducted in 2019 within additional portions of the proposed expansion areas, and results of those surveys will be incorporated into this EIS.

Prior to the 2017 rare plant surveys, known locations of each species were researched to determine distributions and habitat preferences. Pre-survey resources included the recent rare plant survey of NAS Fallon (Naval Air Station Fallon, 2015) and online data from NNHP (http://heritage.nv.gov/) and SEINet Arizona-New Mexico Chapter (http://swbiodiversity.org/seinet/). SEINet is an online data portal that serves as a gateway to natural resources data such as herbarium specimens. SEINet indexes an extensive list of herbaria to leverage collections across the U.S. and Mexico. Spatial data for each rare plant species were downloaded from SEINet and integrated into the project GIS.

A total of 66 days, split between four visits (May, June, July, and September), were spent conducting rare plant surveys within the four proposed expansion areas. All four proposed expansion areas were visited on each trip, with the exception of the proposed B-16 expansion area, which was only visited during the May and June surveys. The proposed B-16 Expansion Area is the smallest of the four proposed expansion areas and also the most homogenous in terms of habitat/vegetation communities. Therefore, the surveys focused on the larger proposed expansion areas instead of revisiting B-16. A total of 445 miles were surveyed on foot, with an additional 1,067 miles surveyed by vehicle. Survey effort within each proposed expansion area was roughly proportional to the total acreage (see Supporting Study: Rare Plant Survey Report, available at http://www.frtcmodernization.com). Further details can be found in the Supporting Study: Rare Plant Survey Report (available at http://www.frtcmodernization.com).

Of the 19 target special-status plant species, 8 were detected during the 2017 surveys of the proposed expansion areas (Table 3.10-9) (see Supporting Study: Rare Plant Survey Report, available at http://www.frtcmodernization.com). Occurrences ranged from single individuals up to estimates of thousands.

**Table 3.10-9: 2017 Occurrences of Rare Plant Species Within the Proposed FRTC Expansion Areas**

| Status* | | Scientific Name* | Common Name* | Occurrence in Expansion Area (Occurrences [Individuals]) | | | |
|---|---|---|---|---|---|---|---|
| BLM | NNHP | | | B-16 | B-17 | B-20 | DVTA |
| S | S2 | *Astragalus pseudiodanthus* | Tonopah milkvetch | 0 | 2 (4) | 0 | 0 |
| S | S2S3 | *Grusonia pulchella* | Sand cholla | 1 (1) | 0 | 8 (8) | 16 (16) |
| S | S3 | *Oryctes nevadensis* | Oryctes | 0 | 4 (5) | 5 (18) | 0 |
| S | S2? | *Penstemon palmeri* var. *macranthus*† | Lahontan beardtongue | 0 | 0 | 1 (25) | 5 (70) |
| S | S3 | *Camissonia nevadensis*† | Nevada suncup | 3 (41) | 0 | 0 | 0 |
| S | S3 | *Eriogonum rubricaule*† | Lahontan Basin buckwheat | 0 | 2 (55) | 5 (48) | 38 (8,197) |
| S | S3? | *Phacelia glaberrima*† | Reese River phacelia | 0 | 0 | 7 (573) | 0 |
| - | S2S3 | *Plagiobothrys salsus* | Saltmarsh allocarya | 0 | 0 | 0 | 2 (14) |

† = Nevada endemic. Common and scientific names based on Nevada Natural Heritage Program (2018a).
Notes: *S = sensitive; see notes for Table 3.10-8 for definitions of NNHP ranks.
Sources: (see Supporting Study: Final Plant Community Surveys and Mapping Report, available at http://www.frtcmodernization.com) (Nevada Natural Heritage Program, 2018b; U.S. Bureau of Land Management, 2017).

Tonopah Milkvetch (*Astragalus pseudiodanthus*). Listed as a BLM Sensitive Species and ranked as imperiled by the NNHP, Tonopah milkvetch is a mat-forming, perennial herb in the Fabaceae family that flowers May to June (Cronquist et al., 1984). During the 2017 surveys, four individuals were found in two localities in stabilized dunes and sandy flats near the south end of the proposed B-17 expansion area (Table 3.10-9; Figure 3.10-9) (see Supporting Study: Rare Plant Survey Report, available at http://www.frtcmodernization.com). Based on concurrent vegetation mapping, one occurrence was in the Rubber Rabbitbrush – Sand Buckwheat – Four-part Horsebrush Sparse Scrub vegetation alliance, and one was in the Bailey's Greasewood Shrubland alliance (see Supporting Study: Final Plant Community Surveys and Mapping Report, available at http://www.frtcmodernization.com). In addition, there are two historical SEINet and one NNHP occurrences within or in the vicinity of the proposed B-17 expansion area: one near the 2017 occurrences, one south of the proposed Alternatives 1 and 2 B-17 expansion area and within the proposed Alternative 3 B-17 expansion area (Figures 3.10-11 and 3.10-12), and one southeast of the proposed Alternative 3 B-17 expansion area (Figure 3.10-12) (Nevada Natural Heritage Program, 2018b).

Sand Cholla (*Grusonia pulchella*). Listed as a protected cactus by the State of Nevada (Nevada Revised Statutes 527.050 through 527.120), a BLM Sensitive Species, and ranked as imperiled/vulnerable by the NNHP, sand cholla is a diminutive cactus that grows from a large, often spiny, tuber and flowers May through July. Despite its common name, sand cholla occurs sporadically on gravelly, silty, sometimes rocky, alluvial fans, and less often along dry lake beds or in sandy areas. It is distributed from the eastern edge of California, throughout much of northern Nevada, to the western edge of Utah (Holmgren et al., 2012). During the 2017 surveys, sand cholla was recorded in broad valleys and flats in very low densities but occasionally in small clusters of two to four individuals. It occurred most often in silty soils with a surface of rocks and gravel but also occurred in a matrix of cryptogamic crusts. The densest cluster of occurrences, eight localities with eight individuals, was in the northern portion of proposed B-20 expansion area (Figure 3.10-13), while 16 occurrences with 16 individuals were recorded in the proposed DVTA expansion area (Figure 3.10-15), and only a single individual was found in the proposed B-16 expansion area (Figure 3.10-16; Table 3.10-9) (see Supporting Study: Rare Plant Survey Report, available at http://www.frtcmodernization.com). Most occurrences were within in the Bailey's

Greasewood alliance, with three in Basin Big Sagebrush - Foothill Big Sagebrush Dry Steppe & Shrubland (see Supporting Study: Final Plant Community Surveys and Mapping Report, available at http://www.frtcmodernization.com). Although the NNHP and SEINet had no records of sand cholla in the vicinity of the proposed FRTC range expansion areas (Nevada Natural Heritage Program, 2018b), the 2015 surveys documented a few occurrences within the existing B-17 and B-16 ranges (Figures 3.10-11 and 3.10-16) (Naval Air Station Fallon, 2015).

Oryctes (*Oryctes nevadensis*). Listed as a BLM Sensitive Species and ranked as vulnerable by the NNHP, oryctes is a small, compact annual member in the Solanaceae family. Oryctes is historically known from open sandy washes and desert foothills. Populations occur from Inyo County, California to northwestern Nevada (Cronquist et al., 1984). During the 2017 surveys, 23 individual oryctes were found in stabilized dunes or fine sand in the northern portion of the proposed B-20 expansion area (5 occurrences with 18 individuals) (Figure 3.10-13) and the southern portion of the proposed B-17 expansion area (4 occurrences with 5 individuals) (Figure 3.10-11; Table 3.10-9) (see Supporting Study: Rare Plant Survey Report, available at http://www.frtcmodernization.com). Oryctes occurred in both the Intermountain Greasewood Wet Shrubland alliance and the Rubber Rabbitbrush – Sand Buckwheat – Four-part Horsebrush Sparse Scrub alliance (see Supporting Study: Final Plant Community Surveys and Mapping Report, available at http://www.frtcmodernization.com). SEINet records indicate two additional occurrences within the southern portion of the proposed B-17 expansion area (Figure 3.10-11), as well as records north of B-20 (Figure 3.10-13). In addition, NNHP records indicate one occurrence along Highway 50 to the west of the existing DVTA (Figure 3.10-15) (Nevada Natural Heritage Program, 2018b).

Lahontan Beardtongue (*Penstemon palmeri* var. *macranthus*). Endemic to Nevada and Listed as a BLM Sensitive Species and ranked as imperiled by the NNHP, Lahontan beardtongue is a fast-growing, short-lived perennial in the family Plantaginaceae. It has large flowers with expanded throats that accommodate large bumblebees. Occurrences were found on moderate to steep slopes and washes of silt, sand, gravel, and rocks in the northern portion of the proposed B-20 expansion area (1 occurrence with 25 individuals) (Figure 3.10-13) and quite commonly in the western portion of the proposed DVTA expansion area (5 occurrences with 70 individuals) (Figure 3.10-15; Table 3.10-9) (see Supporting Study: Rare Plant Survey Report, available at http://www.frtcmodernization.com). This species occurred in a greater variety of vegetation alliances than the other target species detected, ranging through Bailey's Greasewood Shrubland, Basin Big Sagebrush – Foothill Big Sagebrush Dry Steppe & Shrubland, Arroyo Willow Wet Shrubland, and Black Sagebrush Steppe & Shrubland (see Supporting Study: Final Plant Community Surveys and Mapping Report, available at http://www.frtcmodernization.com). SEINet records indicate one occurrence within the western proposed DVTA Expansion Area (Figures 3.10-11). There are two NNHP records of Lahontan beardtongue to the west and north outside of the proposed DVTA expansion area (Figure 3.10-15) (Nevada Natural Heritage Program, 2018b).

Saltmarsh Allocarya (*Plagiobothrys salsus*). Ranked as imperiled/vulnerable by the NNHP, saltmarsh allocarya is a small annual in the Boraginaceae family. Flowering from May through August, saltmarsh allocarya occurs in moist, poorly-drained silty to clay alkaline soils. It is rather widely distributed from Canada south to California, Nevada, Utah, and New Mexico (Cronquist et al., 1984). A total of 14 individuals were recorded from two alkaline seeps in the northern portion of the proposed DVTA Expansion Area (Table 3.10-9; Figure 3.10-15) (see Supporting Study: Rare Plant Survey Report, available at http://www.frtcmodernization.com). No SEINet or NNHP occurrences are currently recorded in the region, despite the wide range of the species.

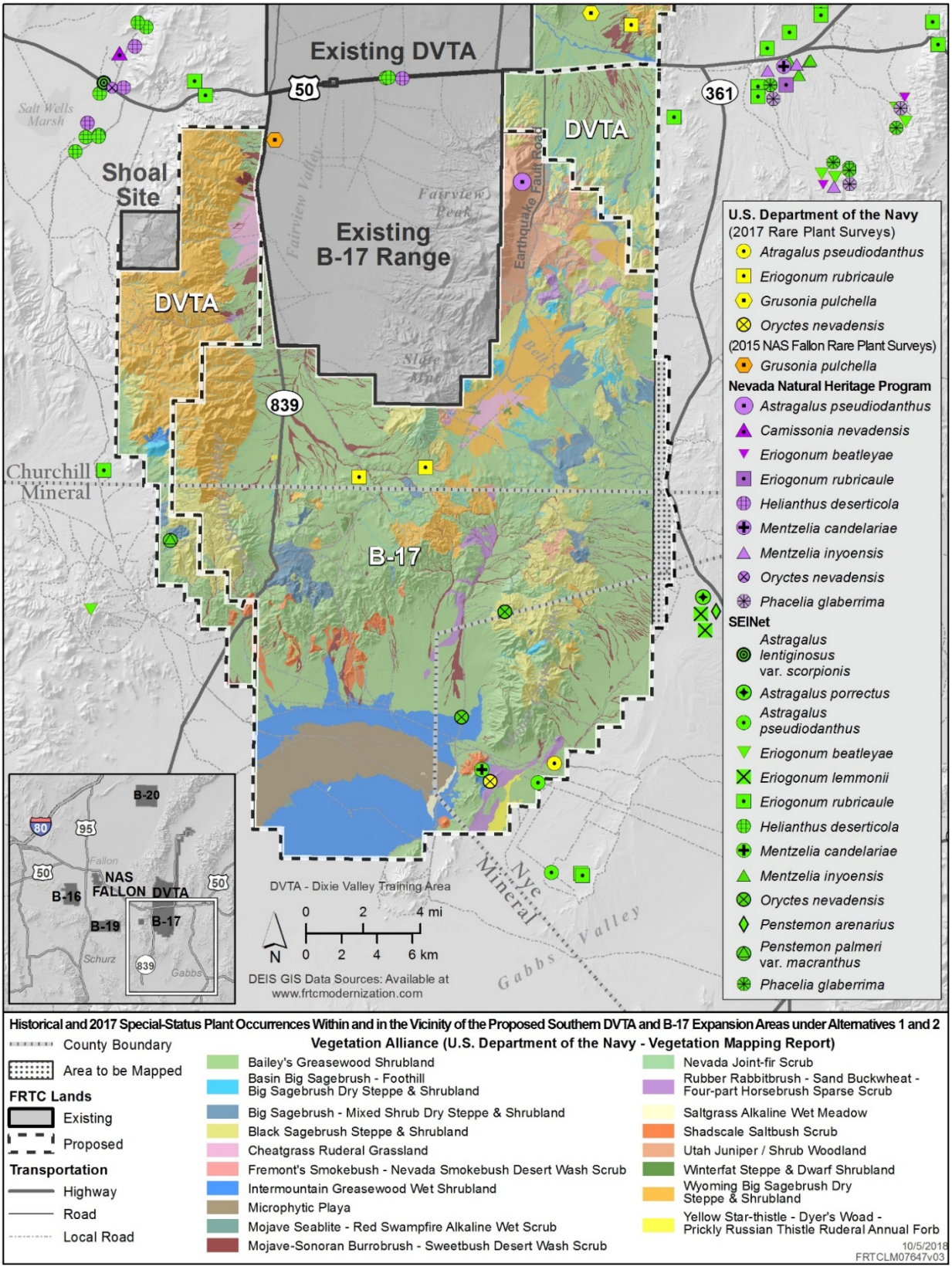


**Figure 3.10-11: Historical and 2017 Special-Status Plant Occurrences Within and in the Vicinity of the Proposed Southern DVTA and B-17 Expansion Areas under Alternatives 1 and 2**

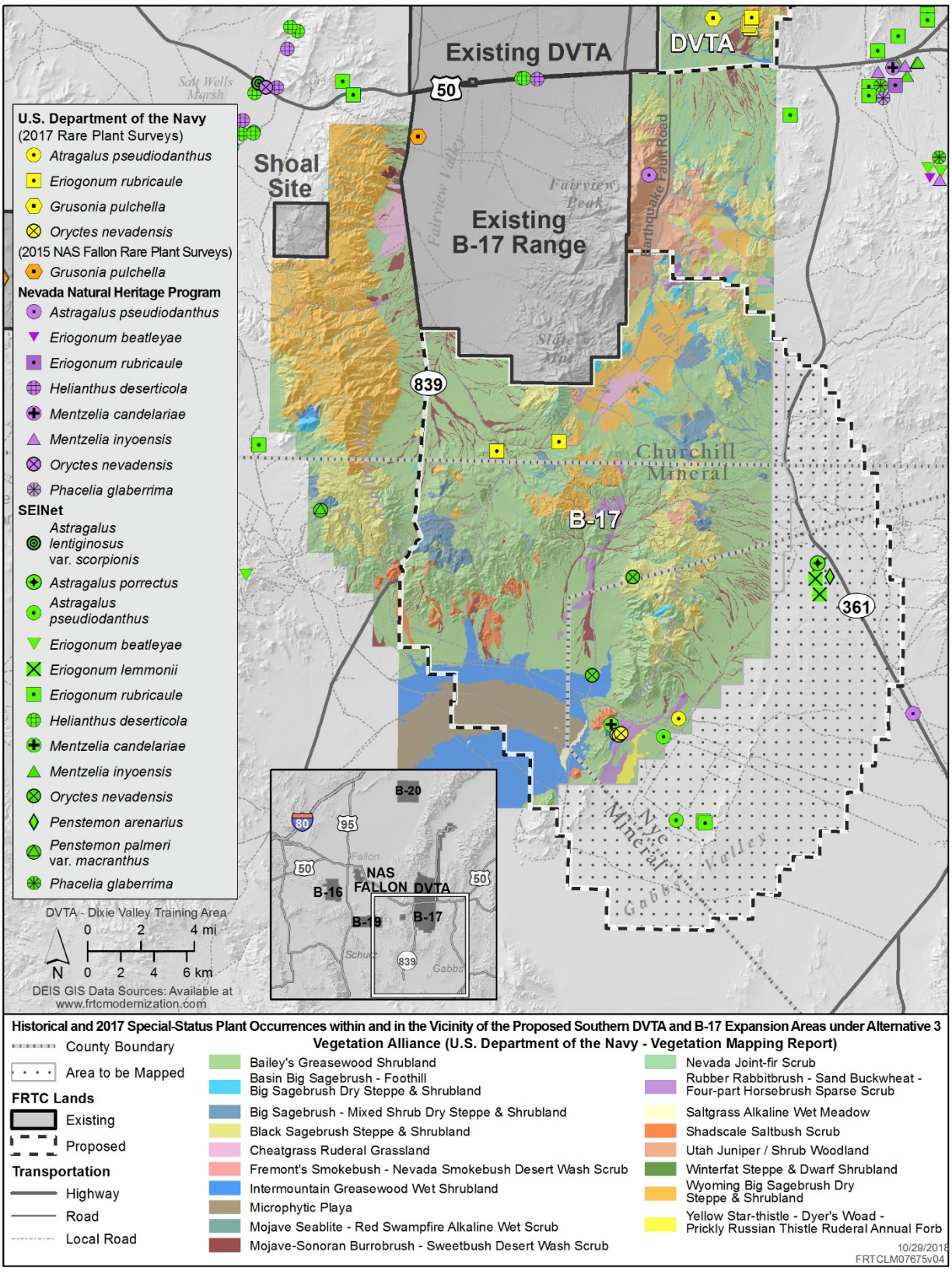


**Figure 3.10-12: Historical and 2017 Special-Status Plant Occurrences Within and in the Vicinity of the Proposed Southern DVTA and B-17 Expansion Areas under Alternative 3**

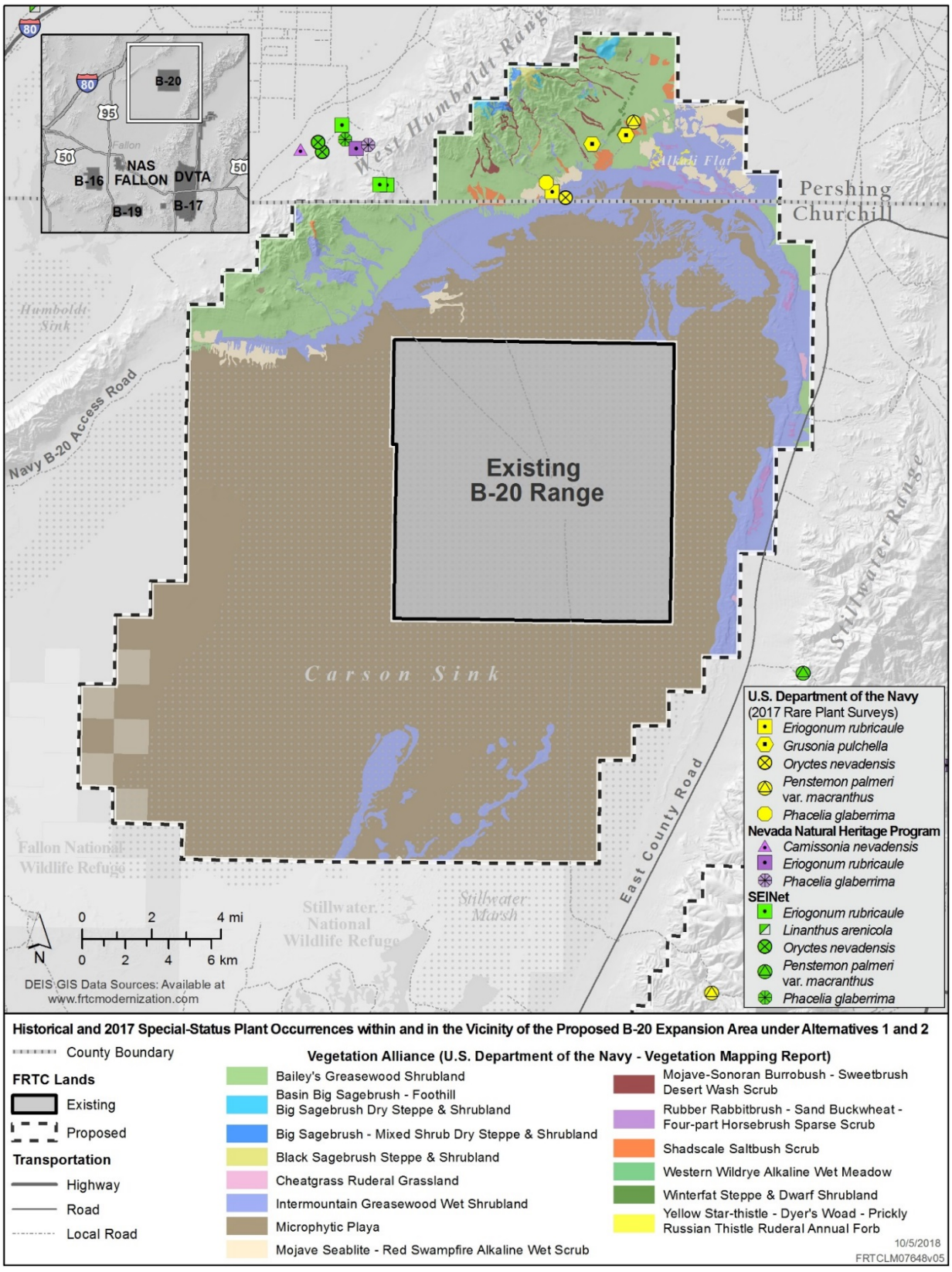


**Figure 3.10-13: Historical and 2017 Special-Status Plant Occurrences Within and in the Vicinity of the Proposed B-20 Expansion Area Under Alternatives 1 and 2**

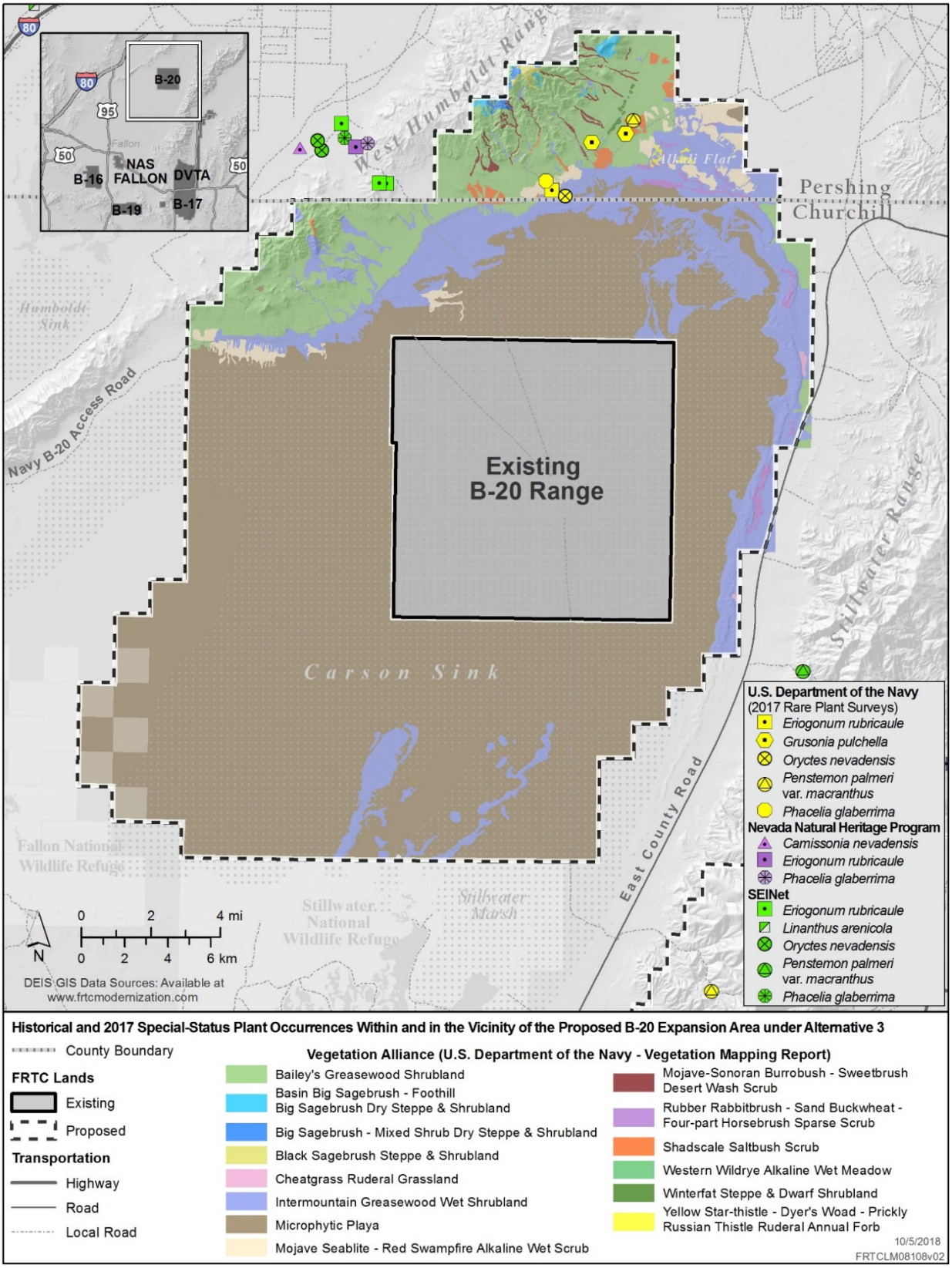


**Figure 3.10-14: Historical and 2017 Special-Status Plant Occurrences Within and in the Vicinity of the Proposed B-20 Expansion Area Under Alternative 3**

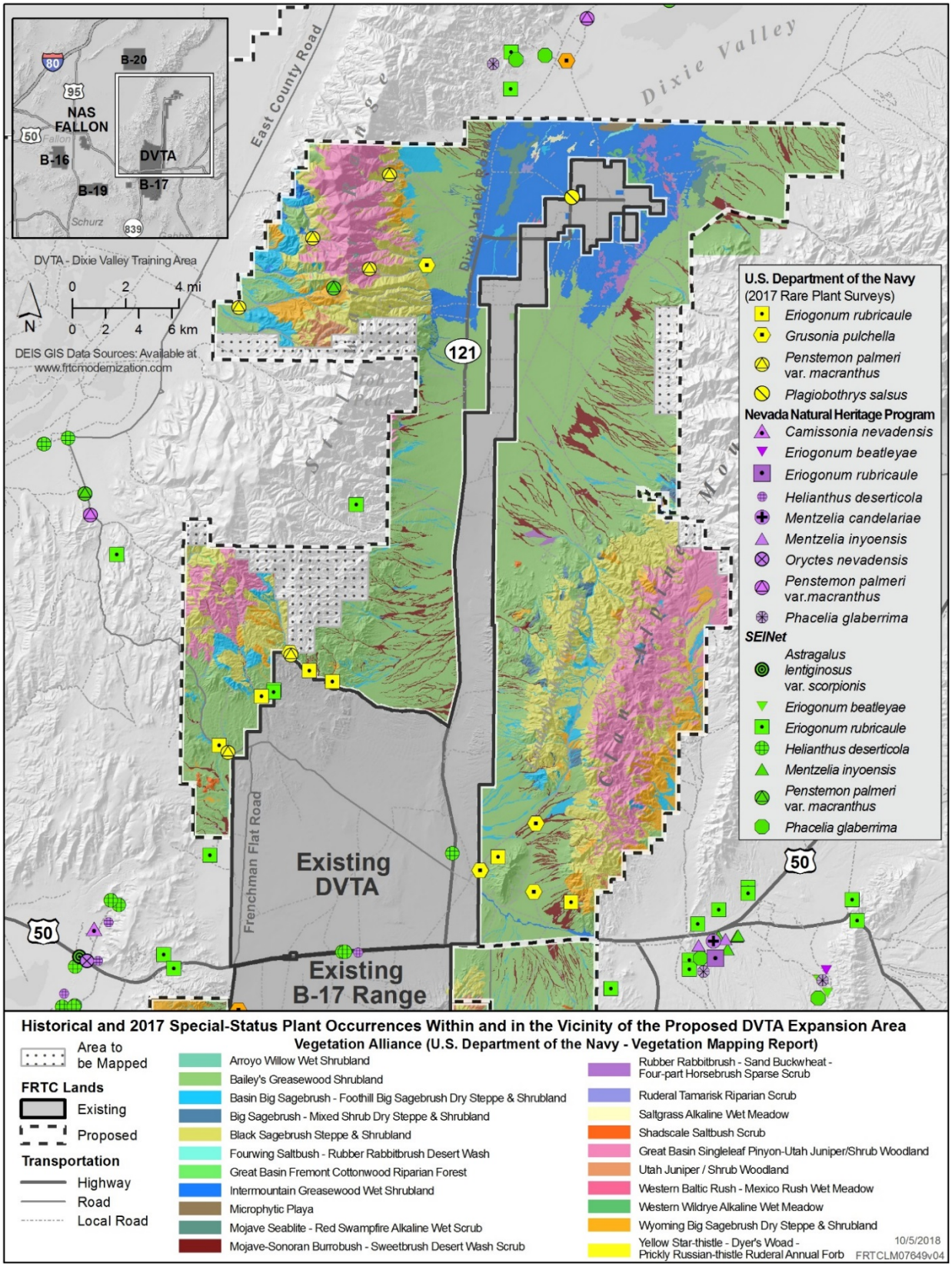


**Figure 3.10-15: Historical and 2017 Special-Status Plant Occurrences Within and in the Vicinity of the Proposed DVTA Expansion Area**

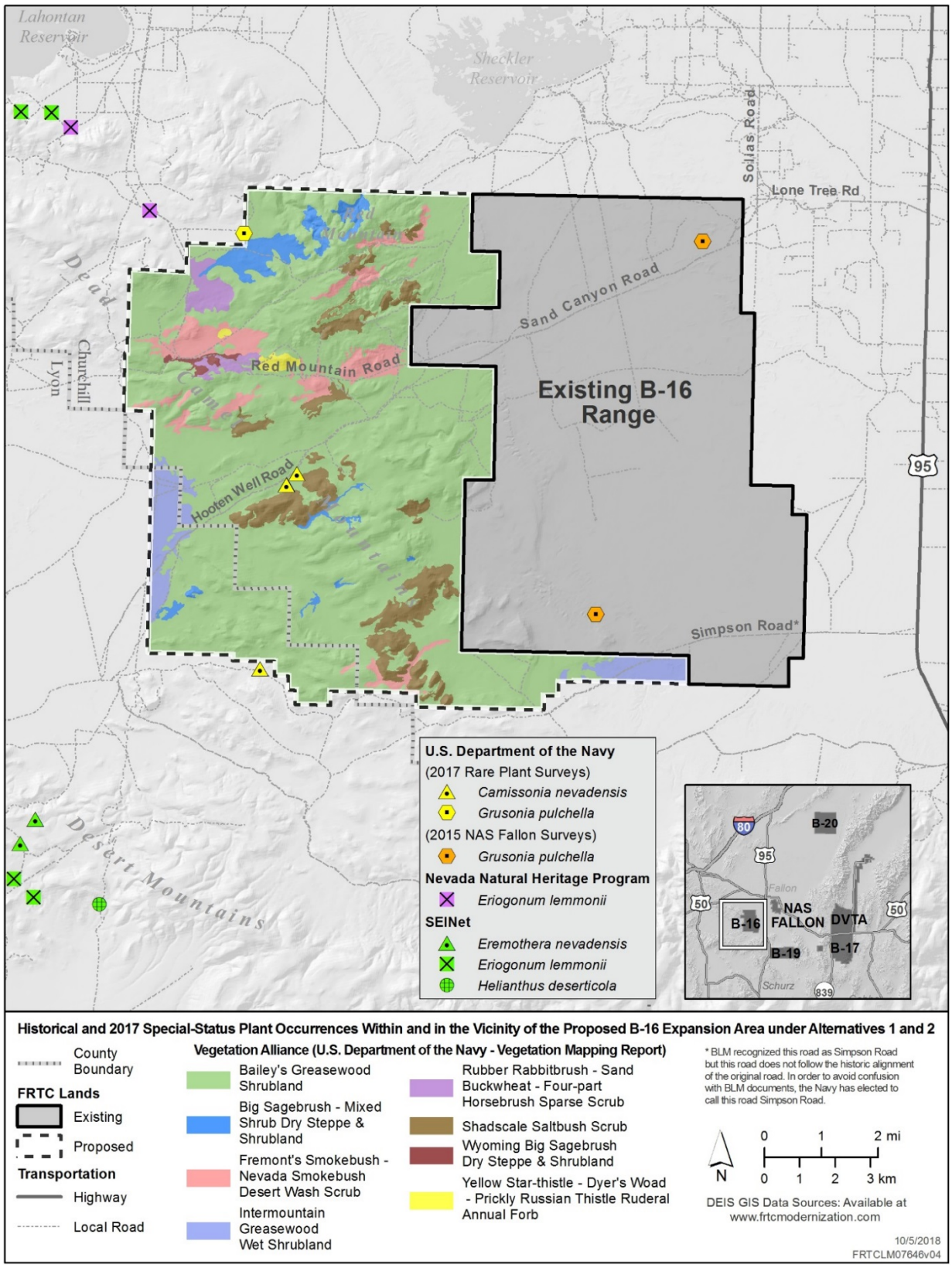


**Figure 3.10-16: Historical and 2017 Special-Status Plant Occurrences Within and in the Vicinity of the Proposed B-16 Expansion Area Under Alternatives 1 and 2**

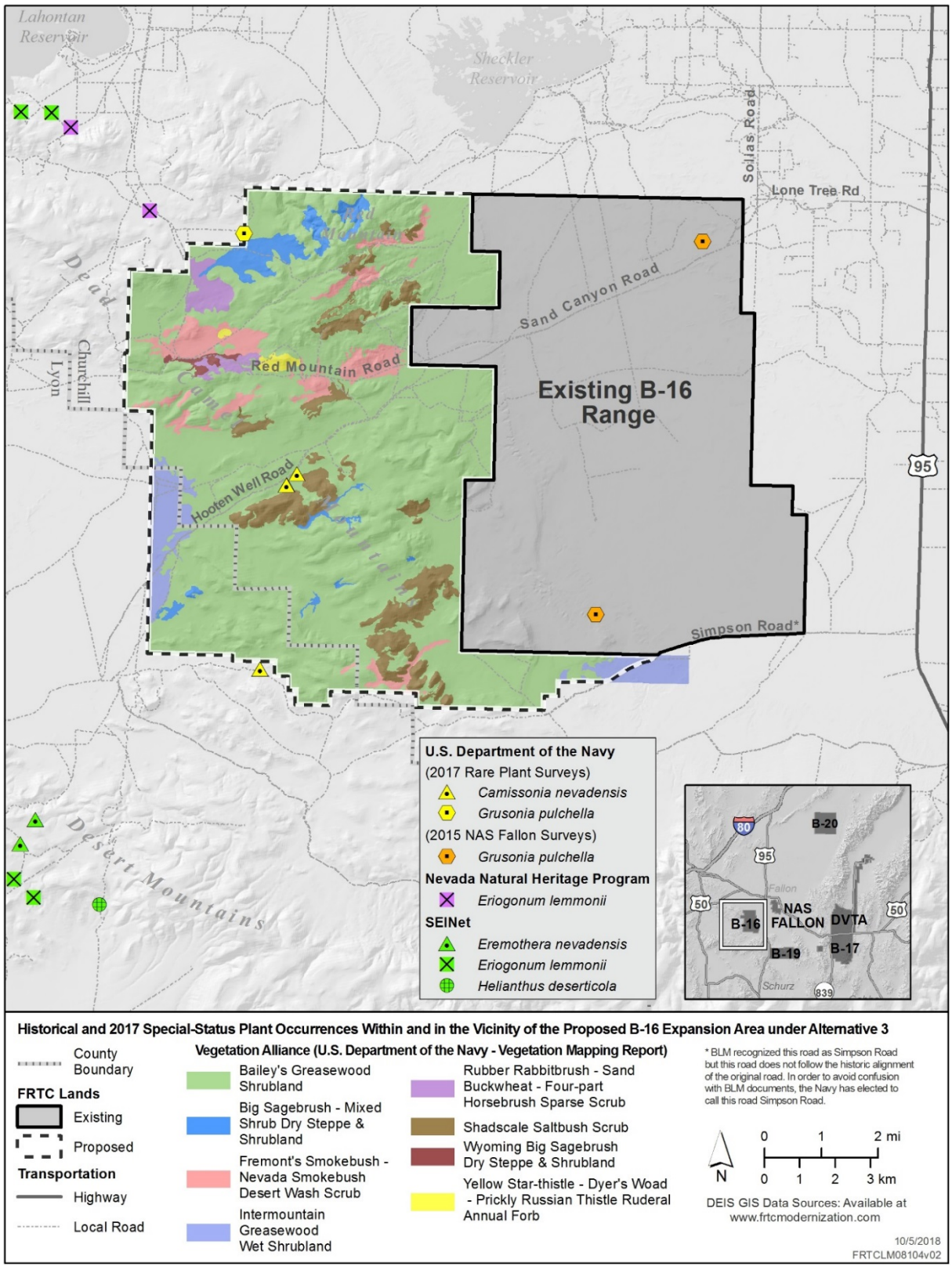


**Figure 3.10-17: Historical and 2017 Special-Status Plant Occurrences Within and in the Vicinity of the Proposed B-16 Expansion Area Under Alternative 3**

Nevada Suncup (*Camissonia nevadensis*). Listed as a BLM Sensitive Species and ranked as vulnerable by the NNHP, Nevada suncup is a low, small annual in the Onagraceae family. Plants generally flower from April to May and occur in sparsely vegetated areas in valleys and on low hills, and in substrate that is sandy, gravelly, silty, or clayey, and often alkaline in nature (Cronquist et al., 1997). During the 2017 surveys, Nevada suncup was recorded at three locations with 41 individuals at the edge of a small dry lake bed within the proposed B-16 expansion area; one additional occurrence with two individuals was recorded along the southwest border outside of the proposed B-16 expansion area (Figure 3.10-16) (see Supporting Study: Rare Plant Survey Report, available at http://www.frtcmodernization.com). All of the occurrences were within the Bailey's Greasewood vegetation alliance (see Supporting Study: Final Plant Community Surveys and Mapping Report, available at http://www.frtcmodernization.com). The 2015 surveys documented the species at one location north of the proposed DVTA expansion area (Naval Air Station Fallon, 2015). NNHP data indicates a large area supporting Nevada suncup to the west of the existing DVTA and north of Highway 50, and outside the proposed expansion area (Figure 3.10-15).

Lahontan Basin Buckwheat (*Eriogonum rubricaule*). Listed as a BLM Sensitive Species and ranked as vulnerable by the NNHP, Lahontan Basin buckwheat is a small, erect annual in the family Polygonaceae. Flowering from May to October, this buckwheat grows primarily on moderate to steep, easily eroded hillsides composed of a combination of silt, fine sand, loose clay, and gravel. This species was both the most widespread and the most abundant special-status plant species found during the 2017 surveys of the proposed FRTC expansion areas (see Supporting Study: Rare Plant Survey Report, available at http://www.frtcmodernization.com). A total of 45 occurrences of 8,294 individuals were recorded: 5 locations with 48 individuals within the proposed B-20 expansion area (Figure 3.10-13), 38 occurrences with 8,197 individuals in the southeastern and southwestern portions of the proposed DVTA expansion area (Figure 3.10-15), and 2 locations with 55 individuals in the proposed B-17 expansion area (Figure 3.10-11; Table 3.10-9). In some areas, particularly in southeastern DVTA, the habitat was extensive, harboring large populations of up to several thousand buckwheat plants. SEINet and NNHP records also indicate that this plant is relatively widespread in the Fallon area (Figures 3.10-11, 3.10-13, and 3.10-15).

Reese River Phacelia (*Phacelia glaberrima*). Endemic to Nevada, and listed as a BLM Sensitive Species and ranked as vulnerable by the NNHP, Reese River phacelia is a small annual in the Boraginaceae family. Flowering in May to June, populations of Reese River phacelia occur on barren, pale alkaline hills in shrink-swell soils, often with Lahontan Basin buckwheat, from Lander County to Pershing and Churchill counties. During the 2017 surveys, 573 individuals were recorded at seven closely clustered locations in clay hills in the northern portion of the proposed B-20 expansion area where it was locally abundant, with two populations numbering approximately 200–250 individuals (Table 3.10-9; Figure 3.10-13) (see Supporting Study: Rare Plant Survey Report, available at http://www.frtcmodernization.com). SEINet and NNHP occurrences were widespread in the region surrounding the proposed expansion areas (Figures 3.10-11, 3.10-13, 3.10-15), indicating that this species may be under-surveyed and more common (Nevada Natural Heritage Program, 2018b).

Other Special-Status Plant Species. Based upon SEINet and NNHP records, an additional 10 target special-status plant species have occurrences in the vicinity of the proposed FRTC expansion areas but were not detected within the proposed expansion areas during the 2017 surveys (Figures 3.10-11, 3.10-15, and 3.10-16):

- Inyo blazing star (*Mentzelia inyoensis*)
- Lahontan milkvetch (*Astragalus porrectus*)
- Beatley buckwheat (*Eriogonum beatleyae*)

- Lemmon buckwheat (*Eriogonum lemmonii*)
- Dune sunflower (*Helianthus deserticola*)
- Scorpion milkvetch (*Astragalus lentiginosus* var. *scorpionis*)
- Candelaria blazing star (*Mentzelia candelariae*)
- Nevada dune beardtongue (*Penstemon arenarius*)
- Dune linanthus (*Linanthus arenicola*)
- Lahontan indigobush (*Psorothamnus kingii*)

Only one of the target species (winged milkvetch [*Astragalus pterocarpus*]) has no SEINet or NNHP records within or in the vicinity of the proposed expansion areas and was not detected during the 2015 surveys of existing FRTC lands (Naval Air Station Fallon, 2015; Nevada Natural Heritage Program, 2018b).

#### 3.10.2.4.2 Special-status Amphibians and Reptiles

The region of influence for special-status amphibian and reptile species includes only the areas within the proposed FRTC range expansion areas where ground-disturbing activities would occur under the proposed action. Four special-status amphibian species and four special-status reptile species are expected to occur within the region of influence (Table 3.10-10). All are listed as BLM sensitive species and seven are Species of Conservation Priority under the Nevada WAP; NNHP rankings range from critically imperiled to apparently secure. Amphibian species occur primarily within riparian and wetland habitats where they can find a water source for breeding. Reptile species can be found throughout the region of influence in suitable species-specific habitat. In support of this EIS, amphibian and reptile surveys will be conducted within the proposed FRTC expansion areas in summer 2018 and 2019, and the results will be incorporated into this EIS. Descriptions of special-status amphibian and reptile species are provided in the following sections.

Columbia Spotted Frog (*Rana luteiventris*). The Great Basin Distinct Population Segment of the Columbia spotted frog was petitioned for listing under the ESA in 1989 and added to the candidate list in 1997. In 2015, the USFWS determined that listing under the ESA was not warranted and it was removed from candidate status (80 Federal Register 60834). It is currently listed as a BLM Sensitive Species, Species of Conservation Priority under the Nevada WAP, Protected Amphibian by the State of Nevada (NAC 503.075.2), and ranked as imperiled/vulnerable by the NNHP (Nevada Department of Wildlife, 2013; Nevada Natural Heritage Program, 2018a; U.S. Bureau of Land Management, 2017). The species is closely associated with clear, slow-moving or ponded surface waters, with little shade, and relatively constant water temperatures. Spotted frogs may be found in the eastern portion of the region of influence in the Toiyabe Mountains in Lander and Nye counties (Nevada Department of Wildlife, 2013). The Columbia spotted frog was not observed during the 2007 surveys of existing FRTC lands, and there are no NNHP or NDOW records of the species within or in the vicinity of the proposed FRTC expansion areas (Nevada Department of Wildlife, 2018a; Nevada Natural Heritage Program, 2018b; Tierra Data Inc., 2008).

Northern Leopard Frog (*Rana pipiens*). The northern leopard frog is listed as a BLM Sensitive Species, Species of Conservation Priority under the Nevada WAP, Protected Amphibian by the State of Nevada (NAC 503.075.2), and ranked as imperiled/vulnerable by the NNHP (Nevada Department of Wildlife, 2013; Nevada Natural Heritage Program, 2018a; U.S. Bureau of Land Management, 2017). Northern leopard frogs require a variety 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. The species is found within the region of influence primarily in the central portions of Pershing and Churchill counties (Nevada Department of Wildlife, 2013). The northern leopard frog

was not observed during the 2007 surveys of existing FRTC lands, and there are three NNHP records of the species within the vicinity of the proposed expansion areas (Figure 3.10-18) (Nevada Natural Heritage Program, 2018b; Tierra Data Inc., 2008). There are no NDOW records of the species within or in the vicinity of the proposed FRTC expansion areas since 2008 (Nevada Department of Wildlife, 2018a).

**Table 3.10-10: Known or Potential Occurrences of Special-status Amphibian and Reptile Species within the Region of Influence**

| Common Name (Scientific Name)* | Status* | | | Habitat/Occurrence in the Region of Influence |
|---|---|---|---|---|
| | BLM | State | NNHP | |
| AMPHIBIANS | | | | |
| Columbia spotted frog (*Rana luteiventris*) | S | PA, WAP | S2S3 | Riparian and wetland areas/Toiyabe Mountains in eastern portion of region of influence. |
| Northern leopard frog (*Lithobates pipiens*) | S | PA, WAP | S2S3 | Riparian and wetland areas/central portions of Pershing & Churchill counties. |
| Western toad (*Anaxyrus boreas*) | S | WAP | S4 | Riparian and wetland areas and associated uplands/all counties. |
| Dixie Valley toad (*Anaxyrus williamsi*) | S | - | S1 | Spring-fed geothermal springs/north of proposed DVTA expansion area. |
| REPTILES | | | | |
| Desert horned lizard (*Phrynosoma platyrhinos*) | S | WAP | S4 | Sandy flats, alluvial fans, along washes, and at the edges of dunes; associated with sagebrush, saltbush, and greasewood/all counties. |
| Great Basin collared lizard (*Crotophytus bicinctores*) | S | WAP | S4 | Xeric, sparsely vegetated, rocky areas on alluvial fans, lava flows, hillsides, rocky plains, and in canyons/all counties. |
| Long-nosed leopard lizard (*Gambelia wislizenii*) | S | WAP | S4 | Sandy and gravelly desert and semi desert areas with scattered bunch grass, alkali bush, sagebrush, and creosote bush/all counties. |
| Northern rubber boa (*Charina bottae*) | S | WAP | S3S4 | Woodlands, forest clearings, patchy chaparral, meadows, and grassy savannas, generally not far from water/Churchill, Pershing, Lander, and Nye counties. |

Notes: *See notes for Table 3.10-8 for definitions of NNHP ranks. DPS = Distinct Population Segment; PA = Protected Amphibian; S = sensitive; WAP = Wildlife Action Plan Species of Conservation Priority.
Sources: (Nevada Department of Wildlife, 2013; Nevada Natural Heritage Program, 2018b; U.S. Bureau of Land Management, 2017)

Western Toad (*Anaxyrus boreas*). The western toad is listed as a BLM Sensitive Species, Species of Conservation Priority under the Nevada WAP, and ranked as apparently secure by the NNHP (Table 3.10-10). Although this species is common throughout the Great Basin, there are potentially distinct and isolated endemic species within the *Anazyrus boreas* species group (refer to discussion of the Dixie Valley toad [*Anazyrus williamsi*] below). The species is found in a wide variety of habitats ranging from desert springs to mountain wetlands, and it ranges into various uplands habitats around ponds, lakes, reservoirs, and slow-moving rivers and streams. It digs its own burrow in loose soil or uses those of small mammals, or shelters under logs or rocks (Nevada Department of Wildlife, 2013). Occurs within all counties within the region of influence. The western toad was not observed during the 2007 surveys of existing FRTC lands, and there is one NNHP record of the species east of Highway 95 and south of the region of influence (Figure 3.10-18) (Nevada Natural Heritage Program, 2018b; Tierra Data Inc., 2008).

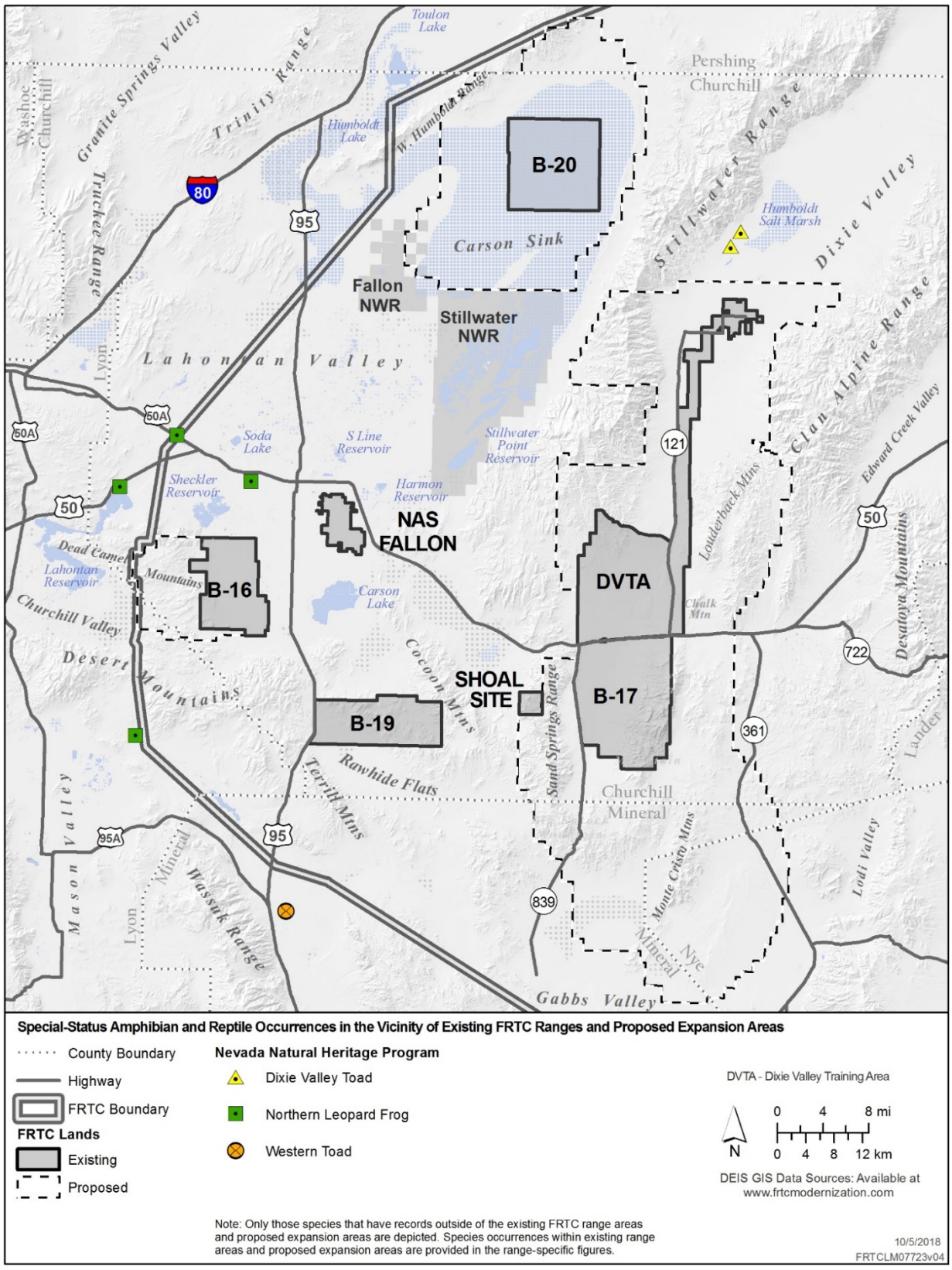


**Figure 3.10-18: Special-Status Amphibian and Reptile Occurrences in the Vicinity of Existing FRTC Ranges and Proposed Expansion Areas**

There are no NDOW records of the western toad within or in the vicinity of the proposed FRTC expansion areas (Nevada Department of Wildlife, 2018a).

Dixie Valley Toad (Proposed species - *Anaxyrus williamsi*). Based on recent genetic studies, the Dixie Valley toad has been proposed as a new species belonging to the *Anaxyrus boreas* species complex (Forrest et al., 2017; Gordon et al., 2017). The known distribution of the proposed new species is restricted to four spring-fed geothermal springs within a less than 1,500-acre area in Dixie Valley, approximately 3 miles north of the proposed DVTA expansion area (Figure 3.10-18). Based on the recent proposed species determination and the potential threats to the species from the construction and operation of a proposed geothermal plant in the immediate vicinity, as well as other threats to the species, the Center for Biological Diversity petitioned the USFWS to list the species under the ESA in September 2017 (Center for Biological Diversity, 2017). In June 2018, the USFWS issued its 90-day finding on the review of the petition and found that the petitioned action may be warranted. The USFWS is now conducting a status review of the species and will issue a 12-month finding, which will address whether or not the petitioned action is warranted under the ESA (83 Federal Register 30091). The USFWS, NDOW, BLM, and U.S. Geological Survey are currently conducting studies on the natural history and habitat requirements of the Dixie Valley toad in support of the species status assessment being prepared by the USFWS in response to the petition.

Desert Horned Lizard (*Phrynosoma platyrhinos*). The desert horned lizard is listed as a BLM Sensitive Species, Species of Conservation Priority under the Nevada WAP, and ranked as apparently secure by the NNHP (Nevada Department of Wildlife, 2013; Nevada Natural Heritage Program, 2018a; U.S. Bureau of Land Management, 2017). Although relatively common in suitable habitat throughout Nevada, the desert horned lizard is considered a Species of Conservation Priority due to commercial collection pressures. The species is associated with sagebrush, saltbush, and greasewood on sandy fats, alluvial fans, along washes, and at the edges of dunes; sometimes found on hardpan or among rocks with patches of sand (Nevada Department of Wildlife, 2013). It is expected to occur within all counties within the region of influence. During previous surveys of existing FRTC lands, the desert horned lizard was observed within NAS Fallon and the existing DVTA, B-16, B-17, B-19, and Shoal Site areas (Naval Air Station Fallon, 1997; Tierra Data Inc., 2008; Todd et al., 2011). There are no NNHP records of the species within the vicinity of the proposed FRTC expansion areas (Nevada Natural Heritage Program, 2018b). Records from NDOW from 1986 through August 2015 list approximately 35,000 desert horned lizards that were collected within and in the vicinity of the proposed FRTC expansion areas (Nevada Department of Wildlife, 2018a).

Great Basin Collared Lizard (*Crotophytus bicinctores*). The Great Basin collared lizard is listed as a BLM Sensitive Species, Species of Conservation Priority under the Nevada WAP, and ranked as apparently secure by the NNHP (Nevada Department of Wildlife, 2013; Nevada Natural Heritage Program, 2018a; U.S. Bureau of Land Management, 2017). Although relatively common in suitable habitat throughout Nevada, as with the desert horned lizard, the Great Basin collared lizard is considered a Species of Conservation Priority due to commercial collection pressures. The species occurs from sea level to about 7,500 feet mainly in xeric, sparsely vegetated, rocky areas on alluvial fans, lava flows, hillsides, rocky plains, and in canyons and is expected to occur within all counties within the region of influence (Nevada Department of Wildlife, 2013). The Great Basin collared lizard has been observed within the existing DVTA, B-16, B-17, B-19, and Shoal Site) (Tierra Data Inc., 2008; Todd et al., 2011); there are no NNHP records of the species within or in the vicinity of the proposed FRTC expansion areas (Nevada Natural Heritage Program, 2018b). Records from NDOW from 1986 through August 2015 list approximately

26,000 Great Basin collared lizards that were collected within and in the vicinity of the proposed expansion areas (Nevada Department of Wildlife, 2018a).

Long-nosed Leopard Lizard (*Gambelia wislizenii*). The long-nosed leopard lizard is listed as a BLM Sensitive Species, Species of Conservation Priority under the Nevada WAP, and ranked as apparently secure by the NNHP (Nevada Department of Wildlife, 2013; Nevada Natural Heritage Program, 2018a; U.S. Bureau of Land Management, 2017). Although found throughout Nevada in suitable habitat, the long-nosed leopard lizard is considered a Species of Conservation Priority due to commercial collection pressures. This species occurs from sea level to approximately 5,900 feet in sandy and gravelly desert and semi desert areas with scattered shrubs or other low plants (e.g., bunch grass, alkali bush, sagebrush, creosote bush), especially areas with abundant rodent burrows (Nevada Department of Wildlife, 2013). It is expected to occur within all counties within the region of influence. During the 2007 surveys of existing FRTC lands, there were four observations of the long-nosed leopard lizard within the existing B-16, B-19, DVTA, and Shoal Site areas (Tierra Data Inc., 2008). The long-nosed leopard lizard has been observed within NAS Fallon, the DVTA, B-16, B-19, Shoal Site, and the proposed B-17/DVTA expansion area (Figure 3.10-14) (see Supporting Study: Final Wildlife Remote Camera Trapping Survey Report, available at http://www.frtcmodernization.com)(Tierra Data Inc., 2008; Todd et al., 2011). Records from NDOW from 1986 through August 2015 list approximately 20,000 long-nose leopard lizards that were collected within and in the vicinity of the proposed expansion areas (Nevada Department of Wildlife, 2018a).

Northern Rubber Boa (*Charina bottae*). The northern rubber boa is listed as a BLM Sensitive Species, Species of Conservation Priority under the Nevada WAP, and ranked as vulnerable/apparently secure by the NNHP (Nevada Department of Wildlife, 2013; Nevada Natural Heritage Program, 2018a; U.S. Bureau of Land Management, 2017). 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. It is found throughout Churchill, Pershing and Lander counties and the northwestern portion of Nye County. There are no Navy, NNHP, or NDOW records of the species within or in the vicinity of the proposed FRTC expansion areas (Naval Air Station Fallon, 1997; Nevada Department of Wildlife, 2018a; Nevada Natural Heritage Program, 2018b; Todd et al., 2011).

#### 3.10.2.4.3 Special-Status Birds

The region of influence for special-status birds includes all proposed FRTC expansion areas and lands underlying the proposed FRTC SUA revision. A total of 38 special-status bird species are known or expected to occur within the region of influence (Table 3.10-11). Of these 38 species, 29 have been documented as occurring on Navy-managed FRTC lands.

- USFWS: 1 ESA-listed threatened species; 18 Birds of Conservation Concern; all special-status bird species are also listed under the MBTA (U.S. Fish and Wildlife Service, 2008).
- State of Nevada: 33 Species of Conservation Priority under the Nevada WAP, which also includes 2 endangered species and 7 sensitive species (Nevada Department of Wildlife, 2013).
- BLM (Carson City and Battle Mountain districts): 24 sensitive species (U.S. Bureau of Land Management, 2017).
- NNHP: 3 critically imperiled, 10 imperiled, 9 vulnerable, 8 apparently secure, 3 secure, and 1 with no ranking (Nevada Natural Heritage Program, 2018a).

**Table 3.10-11: Known or Potential Occurrence of Special-status Bird Species Within the Region of Influence**

| Common Name (Scientific Name) | Status* | | | | Seasonal Presence† | | | |
|---|---|---|---|---|---|---|---|---|
| | USFWS | BLM | State | NNHP | Spr | Sum | Fal | Win |
| American avocet (*Recurvirostra americana*) | MBTA | - | WAP | S4B | | | | |
| American white pelican (*Pelecanus erythrorhynchos*) | MBTA | - | WAP | S2B | | | | |
| Bald eagle (*Haliaeetus leucocephalus*) | BCC, BGEPA | S | E, WAP | S1B,S3N | | | | |
| Black rosy-finch (*Leucosticte atrata*) | MBTA, BCC | S | WAP | S3 | | | | |
| Black tern (*Chlidonias niger*) | MBTA | - | WAP | S2S3B | | | | |
| Brewer's sparrow (*Spizella breweri*) | MBTA, BCC | S | S, WAP | S4B | | | | |
| Burrowing owl (*Athene cunicularia*) | MBTA | S | WAP | S3B | | | | |
| Canvasback (*Aythya valisineria*) | MBTA | - | WAP | S3S4 | | | | |
| Cassin's finch (*Carpodacus cassinii*) | MBTA | - | WAP | S5 | | | | |
| Common nighthawk (*Chordeiles minor*) | MBTA | - | WAP | S5B | | | | |
| Dusky grouse (*Dendragapus obscurus*) | - | - | PB, WAP | S3 | | | | |
| Ferruginous hawk (*Buteo regalis*) | MBTA, BCC | S | WAP | S2 | | | | |
| Flammulated owl (*Psiloscops flammeolus*) | MBTA, BCC | S | WAP | S4B | | | | |
| Golden eagle (*Aquila chrysaetos*) | BCC, BGEPA | S | WAP | S4 | | | | |
| Gray-crowned rosy-finch (*Leucosticte tephrocotis*) | MBTA | S | WAP | S3N | | | | |
| Great Basin willow flycatcher (*Empidonax traillii adastus*) | MBTA, BCC | S | WAP | S1S2 | | | | |
| Greater sage-grouse (*Centrocercus urophasianus*) | BCC | S | WAP | S3 | | | | |
| Least bittern (*Ixobrychus exilis*) | MBTA | S | WAP | S2B | | | | |
| Lewis's woodpecker (*Melanerpes lewis*) | MBTA, BCC | S | WAP | S3 | | | | |
| Loggerhead shrike (*Lanius ludovicianus*) | MBTA, BCC | S | S, WAP | S4 | | | | |
| Long-billed curlew (*Numenius americanus*) | MBTA, BCC | - | WAP | S2S3B | | | | |
| Long-billed dowitcher (*Limnodromus scolopaceus*) | MBTA | - | WAP | S4 | | | | |
| Mountain quail (*Oreortyx pictus*) | - | S | PB, WAP | S3 | | | | |
| Northern goshawk (*Accipiter gentilis*) | MBTA | S | S, WAP | S2 | | | | |
| Northern pintail (*Anas acuta*) | MBTA | - | WAP | S5 | | | | |
| Olive-sided flycatcher (*Contopus cooperi*) | MBTA | - | WAP | S2B | | | | |
| Peregrine falcon (*Falco peregrinus*) | MBTA, BCC | S | E, WAP | S2 | | | | |
| Pinyon jay (*Gymnorhinus cyanocephalus*) | MBTA, BCC | S | WAP | S3S4 | | | | |
| Prairie falcon (*Falco mexicanus*) | MBTA | - | WAP | S4 | | | | |
| Redhead (*Aythya americana*) | MBTA | - | WAP | S4B | | | | |
| Sagebrush sparrow (*Artemisiospiza nevadensis*) | MBTA, BCC | - | WAP | - | | | | |

**Table 3.10-11: Known or Potential Occurrence of Special-status Bird Species Within the Region of Influence (continued)**

| Common Name (Scientific Name) | Status* | | | | Seasonal Presence† | | | |
|---|---|---|---|---|---|---|---|---|
| | USFWS | BLM | State | NNHP | Spr | Sum | Fal | Win |
| Sage thrasher (*Oreoscoptes montanus*) | MBTA, BCC | S | S, WAP | S5B | | | | |
| Sandhill crane (*Antigone canadensis*) | MBTA | S | WAP | S2B,S3M | | | | |
| Short-eared owl (*Asio flammeus*) | MBTA | S | WAP | S4 | | | | |
| Swainson's hawk (*Buteo swainsoni*) | MBTA | S | - | S2B | | | | |
| Western snowy plover (*Charadrius alexandrinus nivosus*) | MBTA, BCC | S | WAP | S3B | | | | |
| White-faced ibis (*Plegadis chihi*) | MBTA | - | WAP | S3B | | | | |
| Yellow-billed cuckoo (*Coccyzus americanus*) – Western DPS | T, MBTA, BCC | S | S, WAP | S1B | | | | |

†Spr = spring, Sum = summer, Fal = fall, Win = winter.

Notes: *See notes for Table 3.10-8 for definitions of NNHP ranks. BCC = Bird of Conservation Concern, BGEPA = Bald and Golden Eagle Protection Act, BLM = Bureau of Land Management, DPS = Distinct Population Segment, E = endangered, S = sensitive, T = threatened, USFWS = U.S. Fish and Wildlife Service, WAP = Wildlife Action Plan Species of Conservation Priority.

Sources: (Great Basin Bird Observatory, 2010; Nevada Department of Wildlife, 2013, 2018a, 2018b; Nevada Natural Heritage Program, 2018b; U.S. Bureau of Land Management, 2017; U.S. Fish and Wildlife Service, 2008)

A Bird of Conservation Concern is a species of migratory, non-game bird identified in 2008 by the USFWS that, at that time, was likely to become a candidate for listing under the ESA. Of the 28 species listed in Bird Conservation Region 9 (Great Basin), 20 have the potential to occur within the region of influence and 17 have been recorded on existing Navy-managed FRTC lands or on proposed FRTC expansion areas.

For further details on bird surveys see Supporting Studies: Greater Sage-Grouse Lek Aerial Survey Report; Wildlife Remote Camera Trapping Survey Report; Avian Survey Report; Raptor Survey Report; and Burrowing Owl Survey Report (available at http://www.frtcmodernization.com).

The following sections provide descriptions of the special-status bird species and their known or potential occurrence within the region of influence. Unless referenced otherwise, the following descriptions are based upon the following sources: Floyd et al. (2007), Great Basin Bird Observatory (2010), Nevada Department of Wildlife (2013), Nevada Natural Heritage Program (2018a, 2018b), and U.S. Bureau of Land Management (2017).

American Avocet (*Recurvirostra americana*). Listed as a Species of Conservation Priority under the Nevada WAP and ranked as apparently secure by the NNHP, the American avocet is found in lowland marshes, mudflats, ponds, and alkaline lakes. The Lahontan Valley wetlands support breeding avocets in the spring/summer as well as thousands of birds during spring and fall migration. Avocets have been observed on NAS Fallon, within the existing DVTA and B-19 (Naval Air Station Fallon, 1997; Tierra Data Inc., 2008), and within the Stillwater NWR to the south of the proposed B-20 expansion area and west of the proposed DVTA expansion area (Nevada Department of Wildlife, 2018a) (Figure 3.10-19).

American White Pelican (*Pelecanus erythrorhynchos*). Listed as a Species of Conservation Priority under the Nevada WAP and ranked as imperiled (breeding) by the NNHP, the American white pelican is found in areas of permanent and ephemeral open water such as lakes, reservoirs, marshes, and rivers. Although pelicans are not known to breed within the region of influence, they are transient visitors to the region's wetlands and lakes during spring, summer, and fall. The NNHP has numerous records of white pelicans associated with the major open water and wetlands in the Fallon region: Lahontan Reservoir, Carson Lake, Humboldt Lake, Fallon NWR, and Stillwater NWR (Nevada Natural Heritage Program, 2018b) (Figure 3.10-19). White pelicans have also been observed on NAS Fallon (U.S. Department of the Navy, 2014).

Bald Eagle (*Haliaeetus leucocephalus*). The bald eagle is a Bird of Conservation Concern, a BLM sensitive species, listed as endangered by the State of Nevada, a Nevada Species of Conservation Priority under the Nevada WAP, and ranked as critically imperiled (breeding)/vulnerable (non-breeding) by the NNHP. In addition, the bald eagle is protected under the provisions of BGEPA. The bald eagle is associated with open water areas including lakes, reservoirs, wetlands, and rivers. Bald eagles primarily occur in Nevada during the winter with an estimated winter population of 120 birds. The Stillwater NWR supports Nevada's largest bald eagle winter population. A small breeding population of 3-5 nesting pairs occurs west of the region of influence at the Lahontan Reservoir. The 2016 NDOW winter raptor survey did not observe any bald eagles within surveyed areas within the region of influence (Jeffress, 2017). Within the region of influence, bald eagles have been observed near Fallon, at the Stillwater NWR, on NAS Fallon, and in the proposed DVTA expansion area (Figures 3.10-19 and 3.10-24) (see Supporting Study, Draft Raptor Survey Report, available at http://www.frtcmodernization.com) (Nevada Department of Wildlife, 2013; Nevada Natural Heritage Program, 2018b).

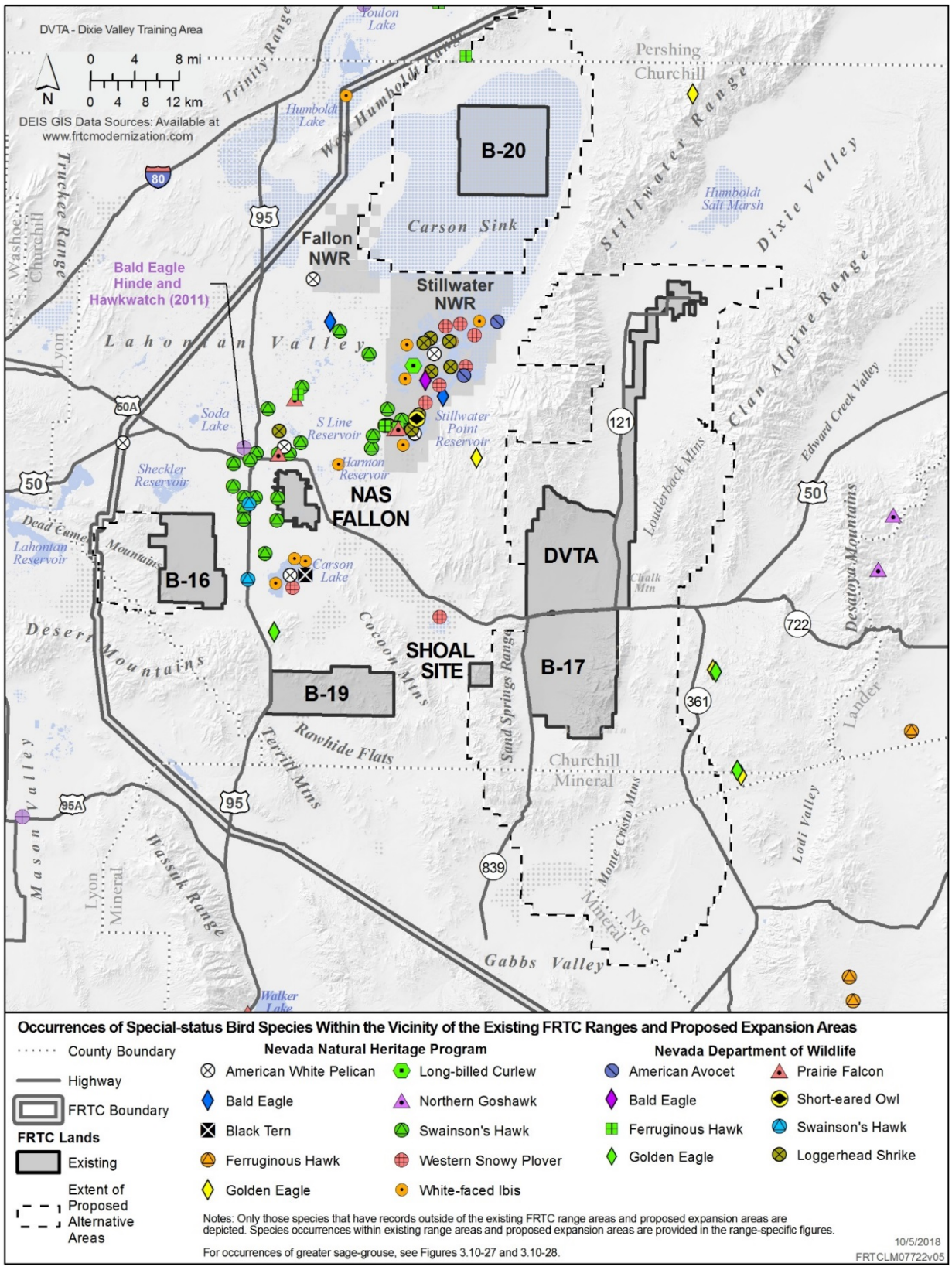


**Figure 3.10-19: Occurrences of Special-status Bird Species Within the Vicinity of the Existing FRTC Ranges and Proposed Expansion Areas**

Black Rosy-finch (*Leucosticte atrata*). Listed as a Bird of Conservation Concern, BLM sensitive species, Nevada Species of Conservation Priority under the Nevada WAP, and ranked as vulnerable by the NNHP, the black rosy-finch breeds in high alpine habitats of the mountains of northeastern Nevada. Descending to lower elevations for the winter, they can be found throughout the region of influence in open fields, cultivated lands, brushy areas, and around human habitation, where they often join with gray-crowned rosy-finches in mixed foraging and roosting flocks. There are no records of the species on existing Navy-managed FRTC lands or proposed expansion areas.

Black Tern (*Chlidonias niger*). A species associated with large marsh/wetland complexes, the black tern is a Nevada Species of Conservation Priority under the Nevada WAP and ranked as imperiled/vulnerable (breeding) by the NNHP. Found primarily within the region of influence as a migrant in spring and fall, there are breeding populations west of the region of influence, within the Lahontan Valley wetlands and transient individuals can also be found in the summer at wetlands within the region of influence (Figure 3.10-19) (e.g., Carson Lake, Stillwater NWR, Lahontan Reservoir). Although the NAS Fallon INRMP lists the species as documented on Navy-managed FRTC lands, a specific location is not given (U.S. Department of the Navy, 2014).

Brewer's Sparrow (*Spizella breweri*). The Brewer's sparrow is a Bird of Conservation Concern, BLM and Nevada Sensitive Species, a Nevada Species of Conservation Priority under the Nevada WAP, and ranked by the NNHP as apparently secure (breeding). The Brewer's sparrow is a sagebrush obligate that is often the most abundant songbird in sagebrush shrub steppe habitats in some regions. It prefers to nest in large, living sagebrush and primarily forages on the ground for insects during the summer and seeds in the winter. The Brewer's sparrow breeds throughout northern Nevada from April through September, and winters in the extreme southern portion of Nevada and further south. It has been observed within the proposed DVTA and B-17 expansion areas (Figures 3.10-24 and 3.10-25) (see Supporting Studies: Final Plant Community Surveys and Mapping Report, Final Wildlife Remote Camera Trapping Survey Report, available at http://www.frtcmodernization.com)(U.S. Department of the Navy, 2014, ).

Burrowing Owl (*Athene cunicularia*). A BLM Sensitive Species, Conservation Priority Species under the Nevada WAP, and ranked by the NNHP as vulnerable (breeding), burrowing owls nest in the region of influence during spring and summer and then migrate south for the winter. Burrowing owls are found in open grasslands, sagebrush, and sagebrush-steppe, sometimes in open areas such as vacant lots near human habitation (e.g., campuses, airports, golf courses, perimeter of agricultural fields, banks of irrigation canals). They nest and roost in abandoned burrows, particularly those dug by ground squirrels, American badger, fox, and tortoise. Although burrowing owls have been recorded within the existing DVTA (Tierra Data Inc., 2008) and the proposed B-16, B-17, B-20, and DVTA expansion areas (Figures 3.10-20 through 3.10-26), active nesting has not been observed within the existing Navy-managed lands or proposed expansion areas (see Supporting Studies: Burrowing Owl Survey Report and Avian Survey Report, available at http://www.frtcmodernization.com). In support of this EIS, additional breeding burrowing owl surveys will be conducted within the proposed FRTC expansion areas in spring/summer 2019 and the results will be incorporated into this EIS.

Canvasback (*Aythya valisineria*). A year-round resident of open water areas within the region of influence, the canvasback is a Conservation Priority Species under the Nevada WAP and ranked by the NNHP as vulnerable/apparently secure. It breeds and overwinters throughout central and northern Nevada on wetlands, lakes, and ponds, with the greatest numbers in the region of influence during spring and fall migration. Lahontan Valley supports the most southerly large breeding population and Stillwater NWR supports approximately half the wintering canvasback population in the Pacific Flyway.

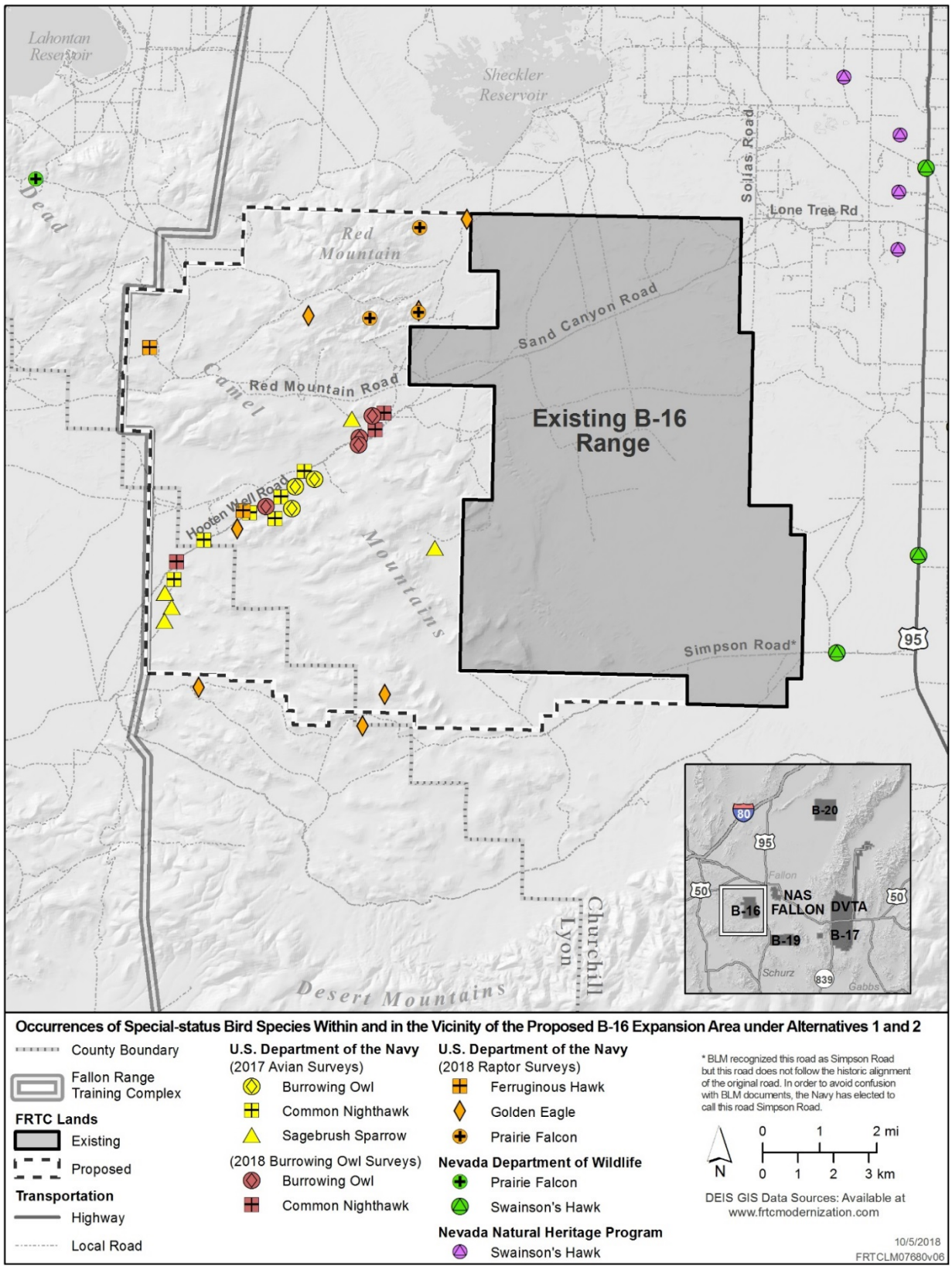


**Figure 3.10-20: Occurrences of Special-status Bird Species Within and in the Vicinity of the Proposed B-16 Expansion Area Under Alternatives 1 and 2**

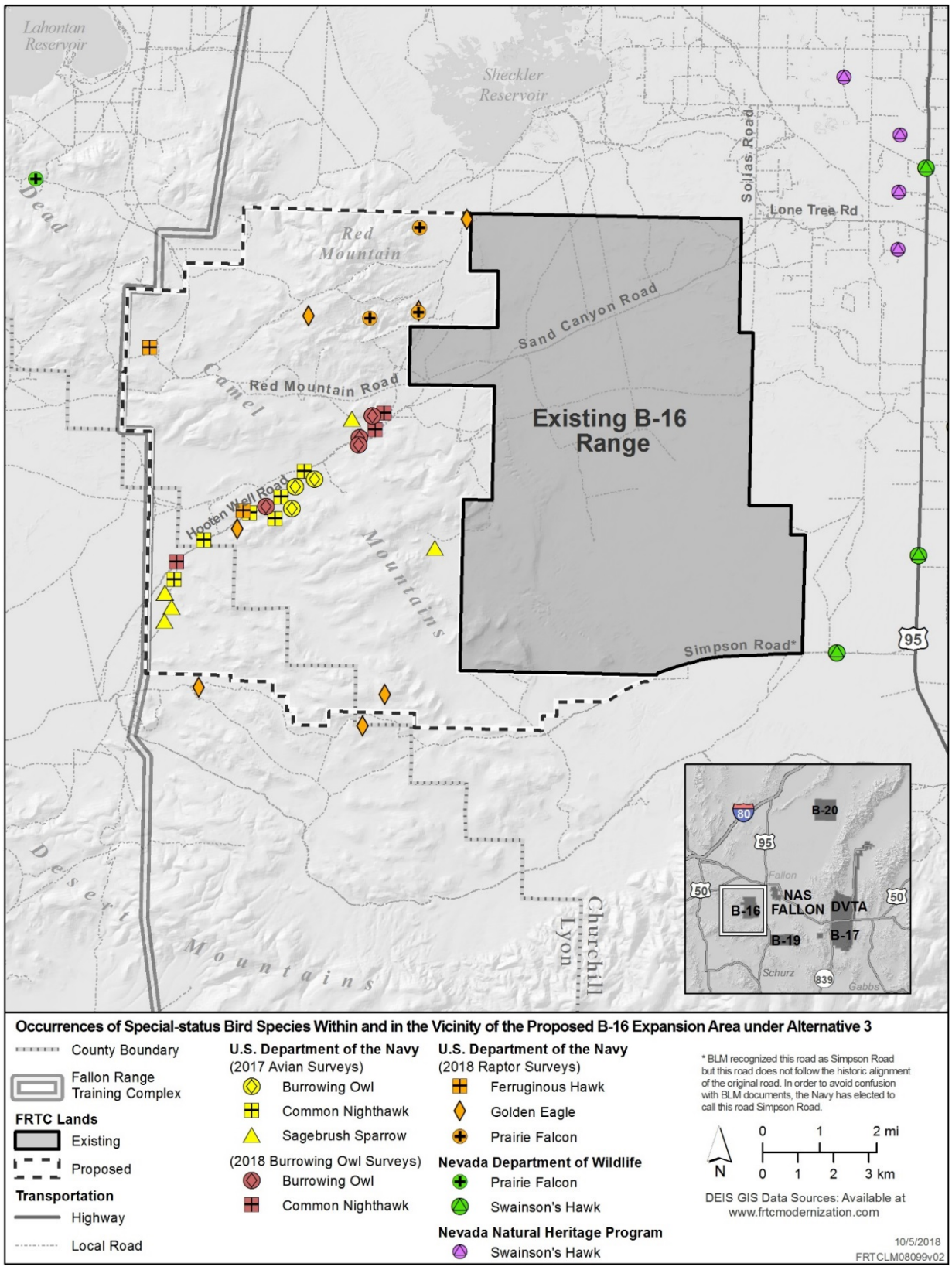


**Figure 3.10-21: Occurrences of Special-status Bird Species Within and in the Vicinity of the Proposed B-16 Expansion Area Under Alternative 3**

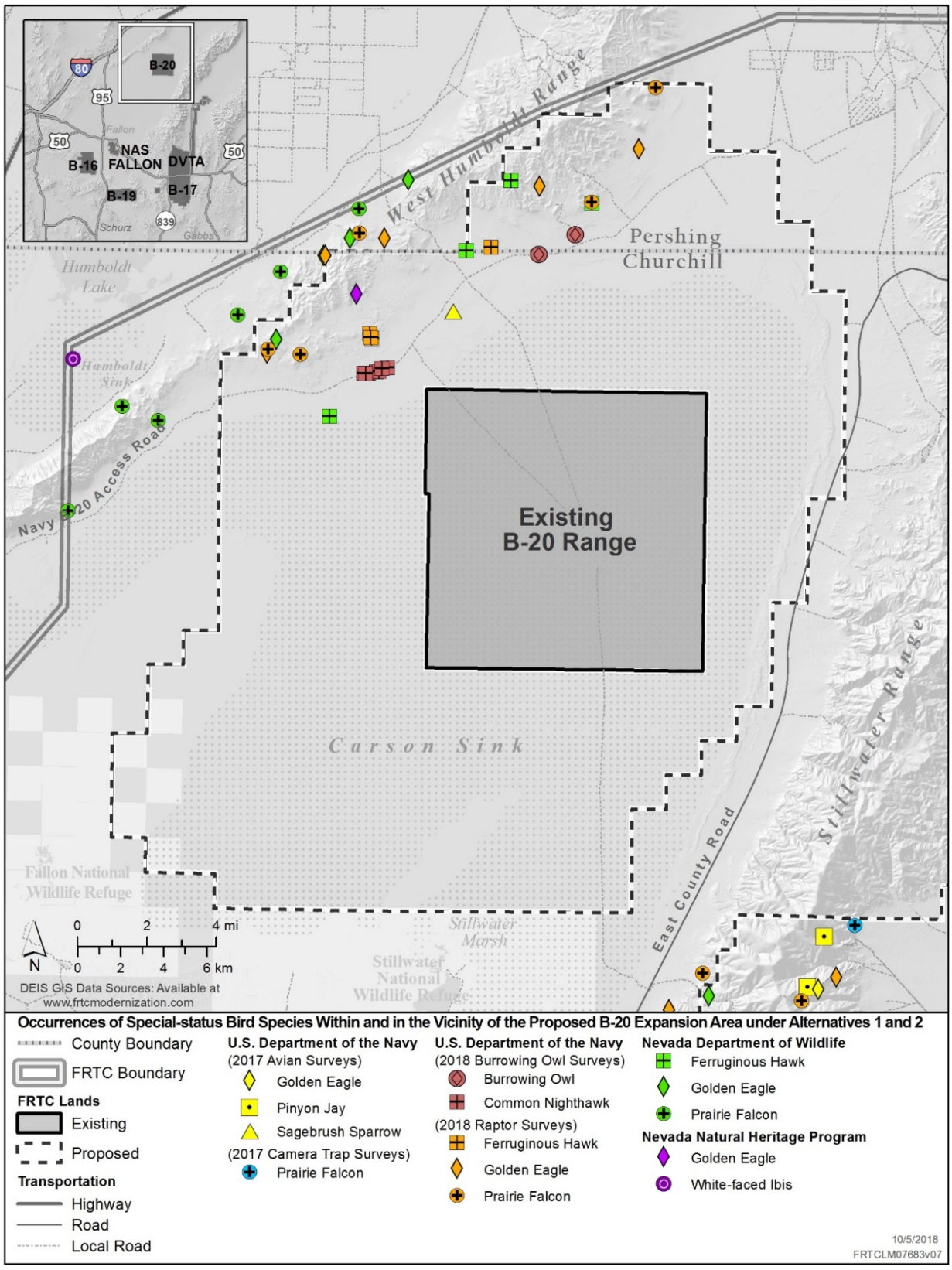


**Figure 3.10-22: Occurrences of Special-status Bird Species Within and in the Vicinity of the Proposed B-20 Expansion Area Under Alternatives 1 and 2**

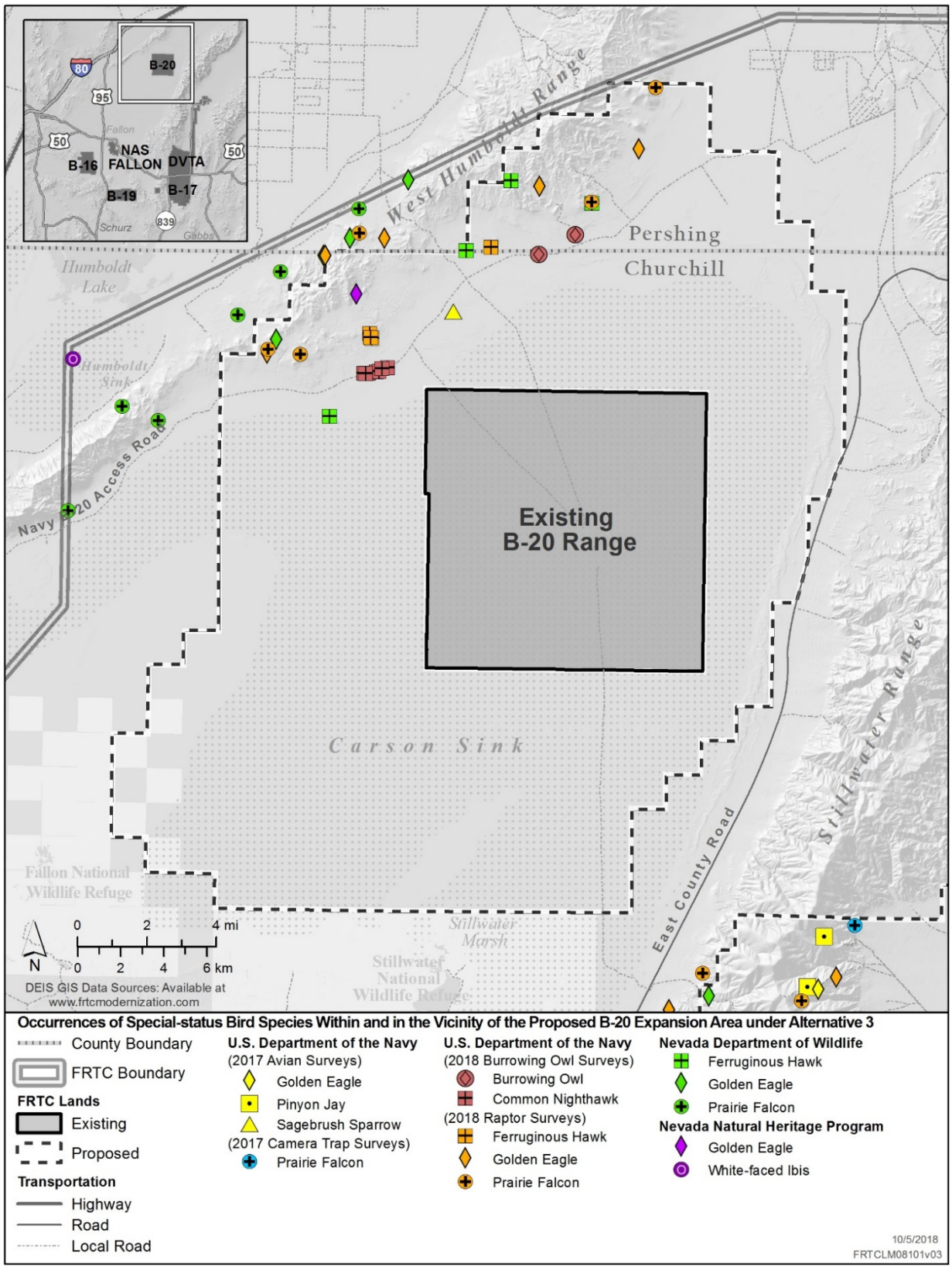


**Figure 3.10-23: Occurrences of Special-status Bird Species Within and in the Vicinity of the Proposed B-20 Expansion Area Under Alternative 3**

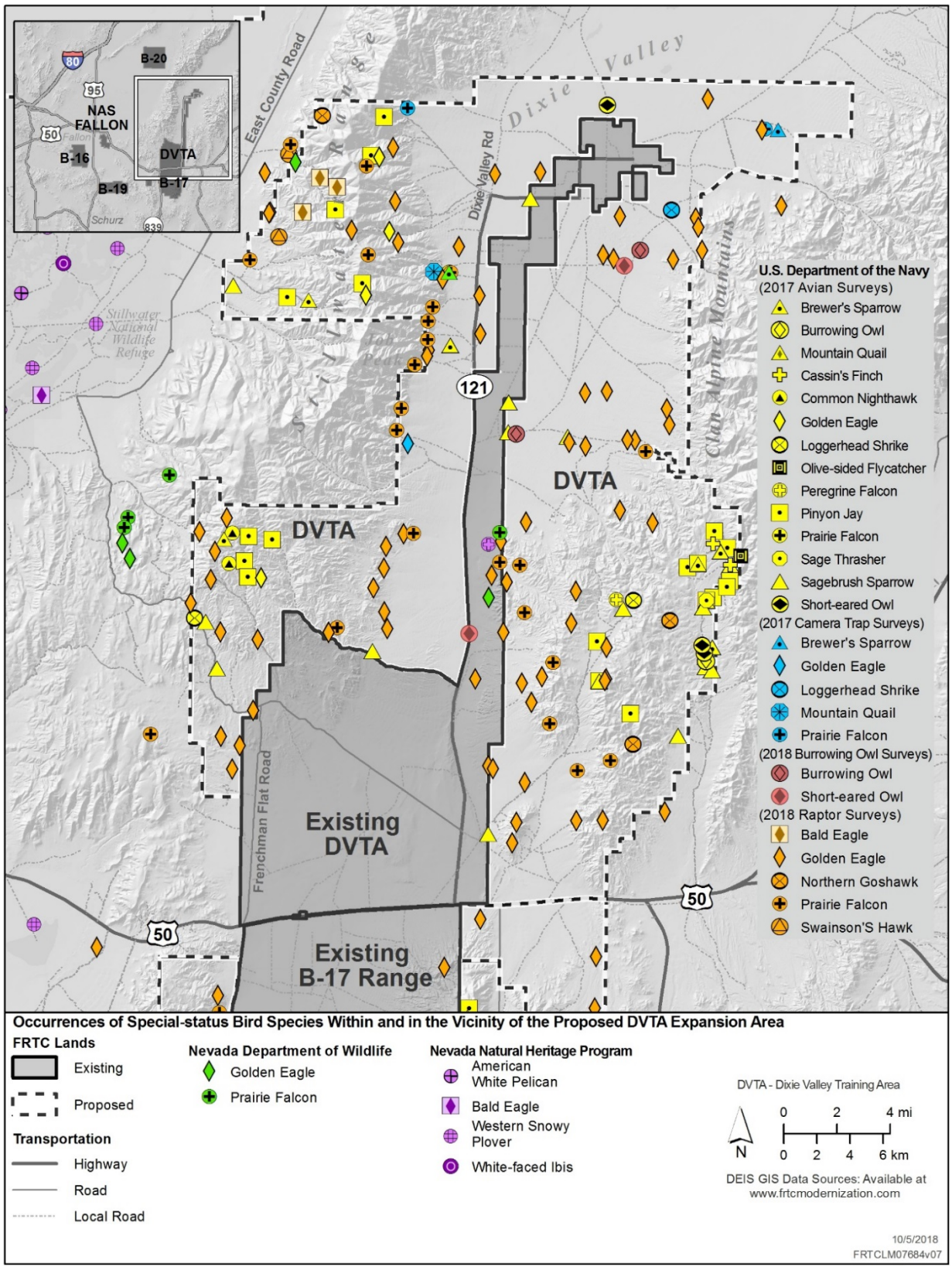


**Figure 3.10-24: Occurrences of Special-status Bird Species Within and in the Vicinity of the Proposed DVTA Expansion Area**

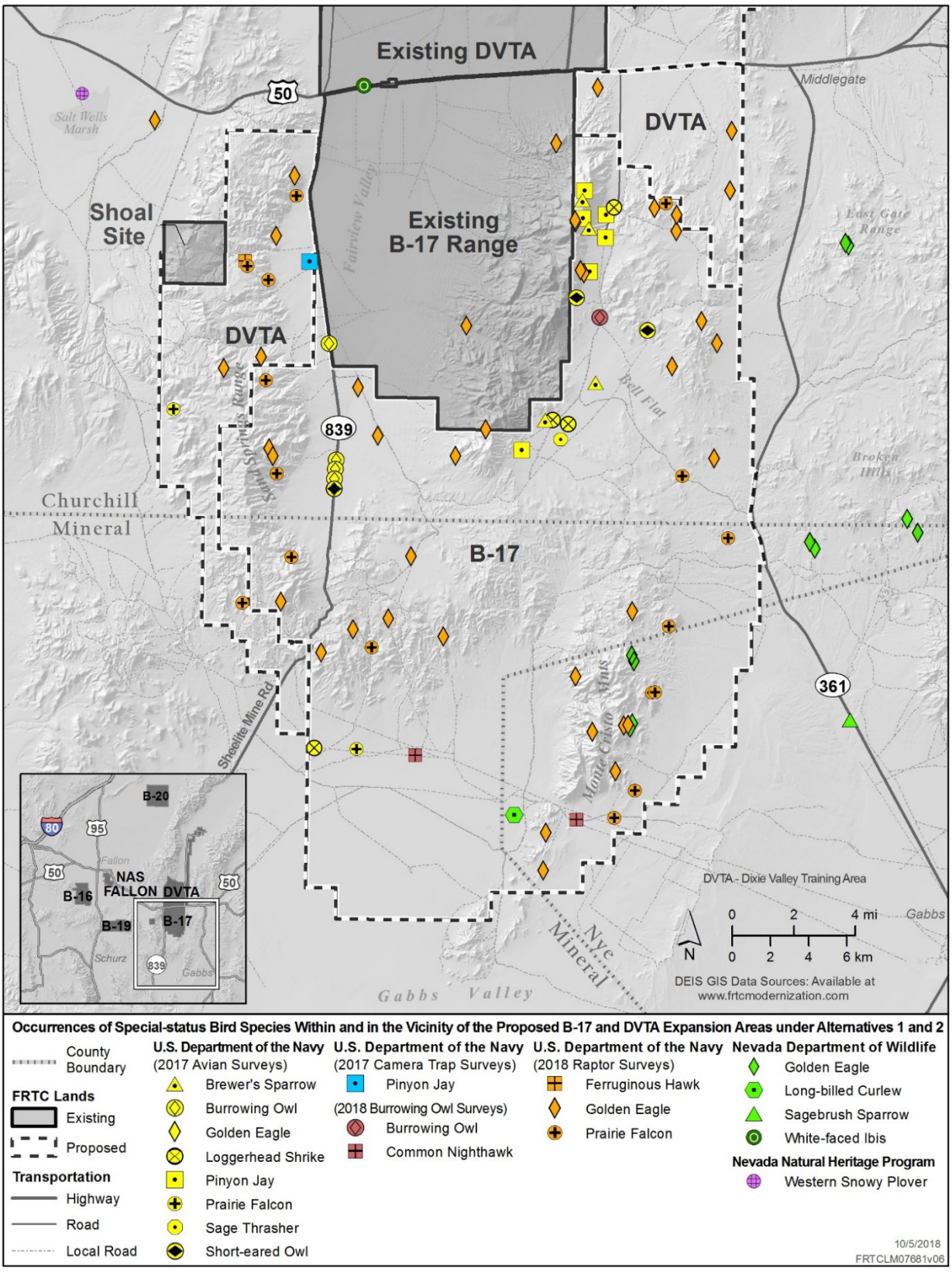


**Figure 3.10-25: Occurrences of Special-status Bird Species Within and in the Vicinity of the Proposed B-17 and DVTA Expansion Areas under Alternatives 1 and 2**

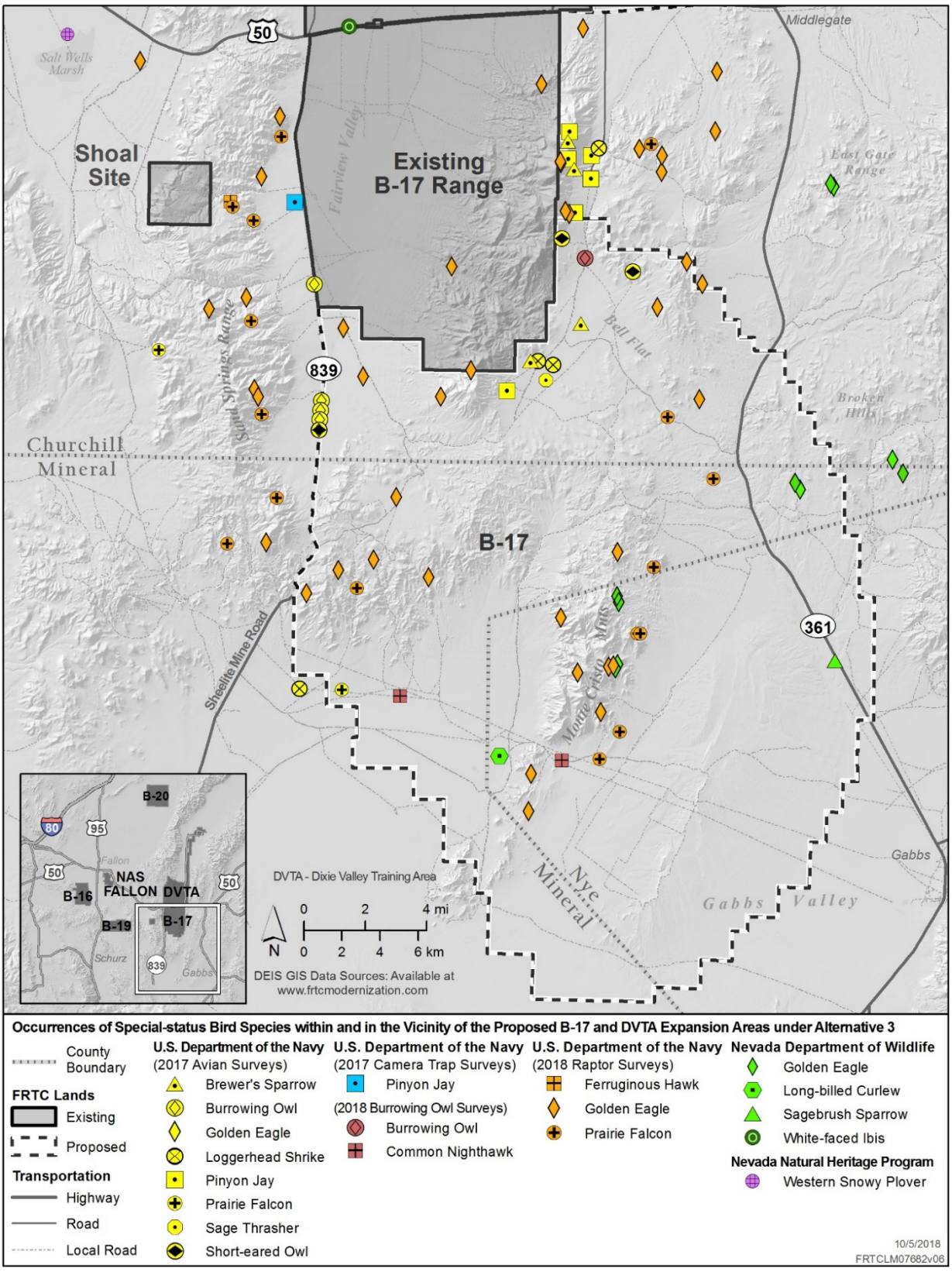


**Figure 3.10-26: Occurrences of Special-status Bird Species Within and in the Vicinity of the Proposed B-17 and DVTA Expansion Areas under Alternative 3**

Within the region of influence, the canvasback is expected to be found primarily within the Lahontan Reservoir, Carson Lake, and Stillwater NWR, and has been observed at the Humboldt Salt Marsh, north of the proposed DVTA expansion area (Tierra Data Inc., 2008).

Cassin's Finch (*Carpodacus cassinii*). Cassin's finch is a Conservation Priority Species under the Nevada WAP and ranked by the NNHP as secure. Found year-round in the region of influence, Cassin's finches breed in open coniferous forest and can be found during migration and winter in deciduous woodlands, scrub, brushy areas, and other partly open areas with scattered trees. The species was observed in the proposed DVTA expansion area during avian surveys in support of this EIS (Figure 3.10-24) (see Supporting Study: Final Avian Survey Report, available at http://www.frtcmodernization.com).

Common Nighthawk (*Chordeiles minor*). The common nighthawk is a Conservation Priority Species under the Nevada WAP and ranked by the NNHP as secure. Found in the region of influence during the summer breeding season and during fall and spring migration, nighthawks are found in a wide diversity of open and semi-open habitats including open coniferous forests, savanna, grasslands, fields within and around cites and agricultural areas where it feeds on flying insects. The species is common within the region of influence and has been observed within the proposed B-16, B-17, B-20, and DVTA expansion areas (Figures 3.10-20 through 3.10-26) (see Supporting Studies: Burrowing Owl Survey Report and Avian Survey Report, available at http://www.frtcmodernization.com) (Tierra Data Inc., 2008).

Dusky Grouse (*Dendragapus obscurus*). Listed as a Conservation Priority Species under the Nevada WAP and ranked by the NNHP as vulnerable, the dusky grouse is also a Nevada protected game bird (NAC 503.045). Although expected to be uncommon, it can be found year-round within montane habitats in the region of influence. Dusky grouse utilize aspen and montane riparian woodlands in the spring and summer, and coniferous forests in winter. Can also be found in sagebrush, montane shrubs, and mountain mahogany, especially in late fall and early winter. Dusky grouse have not been recorded on existing Navy-managed lands or proposed FRTC expansion areas.

Ferruginous Hawk (*Buteo regalis*). The ferruginous hawk is a Bird of Conservation Concern, BLM Sensitive Species, Conservation Priority Species under the Nevada WAP, and ranked by the NNHP as imperiled. The ferruginous hawk occupies arid and open grassland, shrub steppe, and desert in the western half of North America. Breeding occurs across western Canada and the U.S. and east to the Dakotas, Nebraska, and Kansas. Ferruginous Hawks in Nevada reportedly prefer landscapes where the human presence is minimal, and they are generally more sensitive to nest disturbances than most other raptors. Primary wintering grounds are in the southwestern U.S. and northern Mexico. Ferruginous hawks are expected to be an uncommon year-round resident throughout the region of influence in open country, sagebrush, saltbush-greasewood shrubland, and periphery of pinyon-juniper and other woodland communities. There are nest records within and immediately north of the proposed B-20 expansion area (Figure 3.10-22) (Nevada Department of Wildlife, 2017b, 2018a, 2018b; Nevada Natural Heritage Program, 2018b). The 2016 NDOW winter raptor survey recorded an individual east of Fallon (Jeffress, 2017). During 2018 winter raptor surveys in support of this EIS, ferruginous hawks were observed within the proposed B-16, B-17, and B-20 expansion areas (Figures 3.10-20, 3.10-22, 3.10-25). Breeding surveys conducted in spring 2018 detected two active ferruginous hawk nests within the northwestern portion of the proposed B-20 expansion area (Figure 3.10-22) (see Supporting Study, Draft Raptor Survey Report, available at http://www.frtcmodernization.com). In support of this EIS, additional winter and breeding raptor surveys will be conducted within the proposed FRTC expansion areas in winter 2018 and spring 2019, and the results will be incorporated into this EIS.

Flammulated Owl (*Psiloscops flammeolus*). Listed as a Bird of Conservation Concern, BLM Sensitive Species, Conservation Priority Species under the Nevada WAP, and ranked by the NNHP as apparently secure (breeding), the flammulated owl is an uncommon species of montane coniferous forests within the region of influence during the summer breeding season and spring and fall migration. The flammulated owl has not been recorded on existing Navy-managed lands or proposed FRTC expansion areas.

Golden Eagle (*Aquila chrysaetos*). The golden eagle is a Bird of Conservation Concern, BLM Sensitive Species, Conservation Priority Species, and ranked by the NNHP as apparently secure. In addition, the golden eagle is protected under the provisions of BGEPA. The golden eagle typically occupies open canyon land, desert, grassland, and shrub habitat. Nest sites are most often on cliffs or bluffs, less often in trees, and occasionally on the ground. The species is most numerous in winter in the Rocky Mountain states, Great Basin, and western edge of the Great Plains. The highest density of golden eagles in Nevada has been observed in long stretches of cliff located along river systems. Although found year-round in Nevada, golden eagles are especially abundant during winter when transients from other states overwinter in Nevada. Golden eagles are expected to occur throughout the region of influence in canyons, foothills, valley bottoms, and mountains. They have been recorded from the existing and proposed B-16, B-17, B-20, and DVTA expansion areas as well as east and west of the DVTA and B-17, including nests within the existing DVTA and the proposed B-17 expansion area (Figures 3.10-19 through 3.10-26) (see Supporting Studies, Draft Raptor Survey Report, Final Avian Survey Report, available at http://www.frtcmodernization.com) (Nevada Department of Wildlife, 2017b, 2018a, 2018b; Nevada Natural Heritage Program, 2018b). The golden eagle was the most frequently recorded raptor within the proposed expansion areas during spring 2018 breeding surveys with 69 adult, subadult, and unknown aged eagles observed within the proposed expansion areas. There were a total of 9 active nests (4 nests each in proposed DVTA and B-17 expansion areas and 1 nest in the proposed B-20 expansion area), with 8 of those nests supporting 12 chicks (see Supporting Study, Draft Raptor Survey Report available at http://www.frtcmodernization.com). In support of this EIS, additional winter and breeding raptor surveys will be conducted within the proposed FRTC expansion areas in winter 2018 and spring 2019, and the results will be incorporated into this EIS.

Gray-crowned Rosy-finch (*Leucosticte tephrocotis*). The gray-crowned rosy finch is a BLM Sensitive Species, Conservation Priority Species under the Nevada WAP, and ranked by the NNHP as vulnerable. Found within the region of influence only during winter in open country, including mountain meadows, shrublands, roadsides, towns, cultivated areas, rocky hillsides, and margins of dry ditches where they often join with black rosy-finches in mixed foraging and roosting flocks. There are no records of the species on Navy-managed lands or proposed FRTC expansion areas.

Great Basin Willow Flycatcher (*Empidonax traillii adastus*). Listed as a Bird of Conservation Concern, BLM Sensitive Species, Conservation Priority Species under the Nevada WAP, and ranked by the NNHP as critically imperiled/imperiled. Found throughout the region of influence in spring through fall in suitable riparian habitats and occasionally other inundated areas such as aspen stands and wet meadows. The species has been recorded from NAS Fallon and the existing DVTA (Naval Air Station Fallon, 1997; U.S. Department of the Navy, 2014). The ESA-listed subspecies southwestern willow flycatcher (*E. t. extimus*) is only found in the southern portion of Nevada.

Greater Sage-grouse (*Centrocercus urophasianus*). Listed as a Bird of Conservation Concern, BLM Sensitive Species, Conservation Priority Species under the Nevada WAP, and ranked by the NNHP as critically imperiled/imperiled. Invasive plant species and wildfires are the primary threats to the bird in

the Great Basin region and are a leading cause of sagebrush habitat loss. Originally proposed for listing under the ESA, the USFWS withdrew the proposed listing in 2015 as a result of a multi-state conservation initiative between federal, state, and private landowners. The greater sage-grouse is the largest North American grouse species and is widely distributed in association with sagebrush-shrub or sagebrush-grass habitats. The current range of greater sage-grouse is 173 million acres across 11 states and 2 Canadian provinces. Nevada contains approximately 37 million acres of occupied range, with 31 million acres under federal management. The region of influence (i.e., all proposed FRTC expansion areas and lands underlying the area proposed for the FRTC SUA expansion) overlaps approximately 4.9 million acres of sage-grouse habitat (Figure 3.10-27) (U.S. Department of the Interior & U.S. Department of Agriculture, 2016). The majority of this habitat underlies the FRTC airspace, with only approximately 45,000 acres occurring within the proposed expansion areas.

Based on NDOW data for active leks from 2008 through 2017, a total of 158 leks have been recorded within the region of influence (Table 3.10-12 and Figure 3.10-28) (Nevada Department of Wildlife, 2018a).

**Table 3.10-12: Number of Greater Sage-Grouse Leks Beneath Existing FRTC Airspace (2008-2017)[a]**

| Airspace | Current Floor–Ceiling | Leks |
|---|---|---|
| R-4816S | 500 ft. AGL–17,999 ft. MSL | 1[b] |
| Fallon North 2 MOA | 100 ft. AGL–17,999 ft. MSL | 1 |
| Fallon North 3 MOA | | 4 |
| Fallon North 4 MOA | 200 ft. AGL–17,999 ft. MSL | 43 |
| Fallon South 1 MOA | 100 ft. AGL–17,999 ft. MSL | 10[b] |
| Fallon South 2 MOA | | 1 |
| Fallon South 3 MOA | | 4 |
| Fallon South 4 MOA | 200 ft. AGL–17,999 ft. MSL | 14 |
| Fallon South 5 MOA | | 16 |
| Reno MOA | 13,000 ft. MSL–17,999 ft. MSL | 5 |
| Diamond ATCAA | 18,000 ft. MSL–29,000 ft. MSL | 36 |
| Duckwater ATCAA | 18,000 ft. MSL–25,000 ft. MSL | 21 |
| Smokie ATCAA | | 3 |
| **Total[c]** | | **158** |
| SOA B[c] | 11,000 ft. MSL to <30,000 ft. | 33 |
| SOA A[c] | ≥30,000 ft. | 93 |

[a]Only those airspace units that have recorded leks underlying the airspace are listed. See Figure 3.10-28.
[b]The one lek underlying R-4816S also underlies Fallon South 1 MOA and is not counted twice.
[c]As the SOAs overlie the majority of the existing FRTC airspace, leks underlying the SOAs are already accounted for in the total.
Notes: ATCAA = Air Traffic Control Assigned Airspace; ft. = feet; MOA = Military Operations Area; MSL = above mean sea level; SOA = Supersonic Operating Area.
Source: Supporting Study: Burrowing Owl Survey Report available at http://www.frtcmodernization.com)

Sage-grouse are well known for their breeding behavior. Males congregate on traditional display sites, called leks, to display to and breed with females. Leks are often located in openings or clearings of sagebrush or in areas where the sagebrush is low and scattered, so passing females can best evaluate the condition of prospective mates. Occasionally, other denuded areas such as grassy swales, natural and irrigated meadows, burned areas, cultivated fields adjacent to sagebrush-grass rangelands, and cleared roadsides will also support leks. However, these areas must be in the vicinity of quality sagebrush for females to disperse to for nesting. The same males attend the same lekking grounds year

after year, and these leks can be utilized for decades. Located adjacent to sagebrush habitats; the quality, proximity, configuration and abundance of sagebrush are key factors influencing lek selection and location. Leks are indicative of nesting habitat underlying the close relationship with and importance of sagebrush habitats (Natural Resources Conservation Service, 2010).

The BLM and the U.S. Forest Service have amended land use plans in California and Nevada to address threats to the greater sage-grouse. The BLM-U.S. Forest Service plans provide a layered management approach that focus protections on the areas of highest importance to the species (U.S. Department of the Interior & U.S. Department of Agriculture, 2016):

- Priority Habitat Management Area (PHMA) is an area that has been identified as having the highest conservation value to maintaining sustainable greater sage-grouse populations; it includes breeding, late brood-rearing, and winter concentration areas (Bureau of Land Management, 2015). PHMAs are managed to avoid and minimize further disturbance. Surface energy and mineral development is limited in these areas. Development is capped with limits on the amount and density of disturbance allowed (U.S. Department of the Interior & U.S. Department of Agriculture, 2016). There are approximately 1.9 million acres of PHMAs underlying the proposed FRTC airspace (Figure 3.10-27).
- General Habitat Management Area (GHMA) is an area of seasonal or year-round greater sage-grouse habitat outside of PHMAs (Bureau of Land Management, 2015). GHMAs provide greater flexibility for land use activities. Mitigation and required design features ensure that impacts from development are avoided, minimized and mitigated in GHMAs (U.S. Department of the Interior & U.S. Department of Agriculture, 2016). There are approximately 1.1 million acres of GHMA underlying the proposed FRTC airspace (Figure 3.10-27).
- Other Habitat Management Areas help preserve and restore seasonal and connectivity areas (Bureau of Land Management, 2015). There are approximately 1.6 million acres of Other Habitat Management Areas underlying the proposed FRTC airspace (Figure 3.10-27).
- The only proposed FRTC expansion area that contains sage-grouse habitat is the DVTA, which contains approximately 45,000 acres of habitat. This includes 3,235 acres of Other Habitat Management Areas along the western foot of the Clan Alpine Mountains. There are no Priority or General Habitat Management Areas within the proposed DVTA expansion area. The closest record of a lek to the proposed DVTA expansion area is approximately 5 miles east of the DVTA boundary (Figure 3.10-29).

In support of this EIS, greater sage-grouse surveys were conducted in April 2017 within suitable sage-grouse habitat of the proposed DVTA and B-17 expansion areas (see Supporting Study: Greater Sage-Grouse Lek Aerial Survey Report, available at http://www.frtcmodernization.com). During the 5-day survey effort, helicopter surveys were conducted along 10 transects totaling 246 miles and covering 52,228 acres. No greater sage-grouse leks were detected and no individual birds were observed or flushed during the aerial survey effort. However, in support of general avian surveys, two individuals were observed on different occasions but outside the DVTA expansion area, one in January and one in April, and greater sage-grouse scat was also found in April (Figure 3.10-29) (see Supporting Studies: Avian Survey Report, available at http://www.frtcmodernization.com).

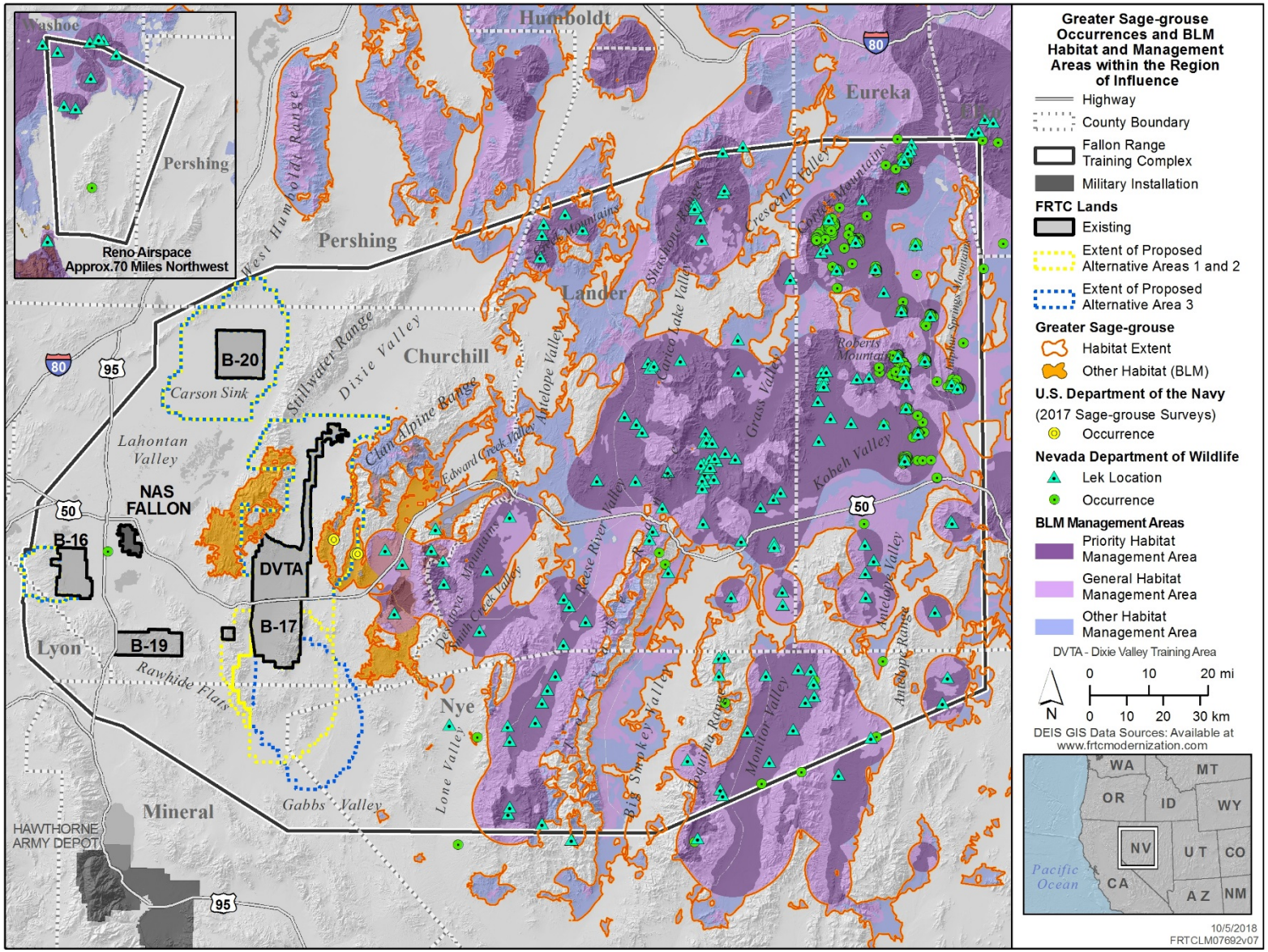


**Figure 3.10-27: Greater Sage-grouse Occurrences and BLM Habitat and Management Areas Within the Region of Influence**

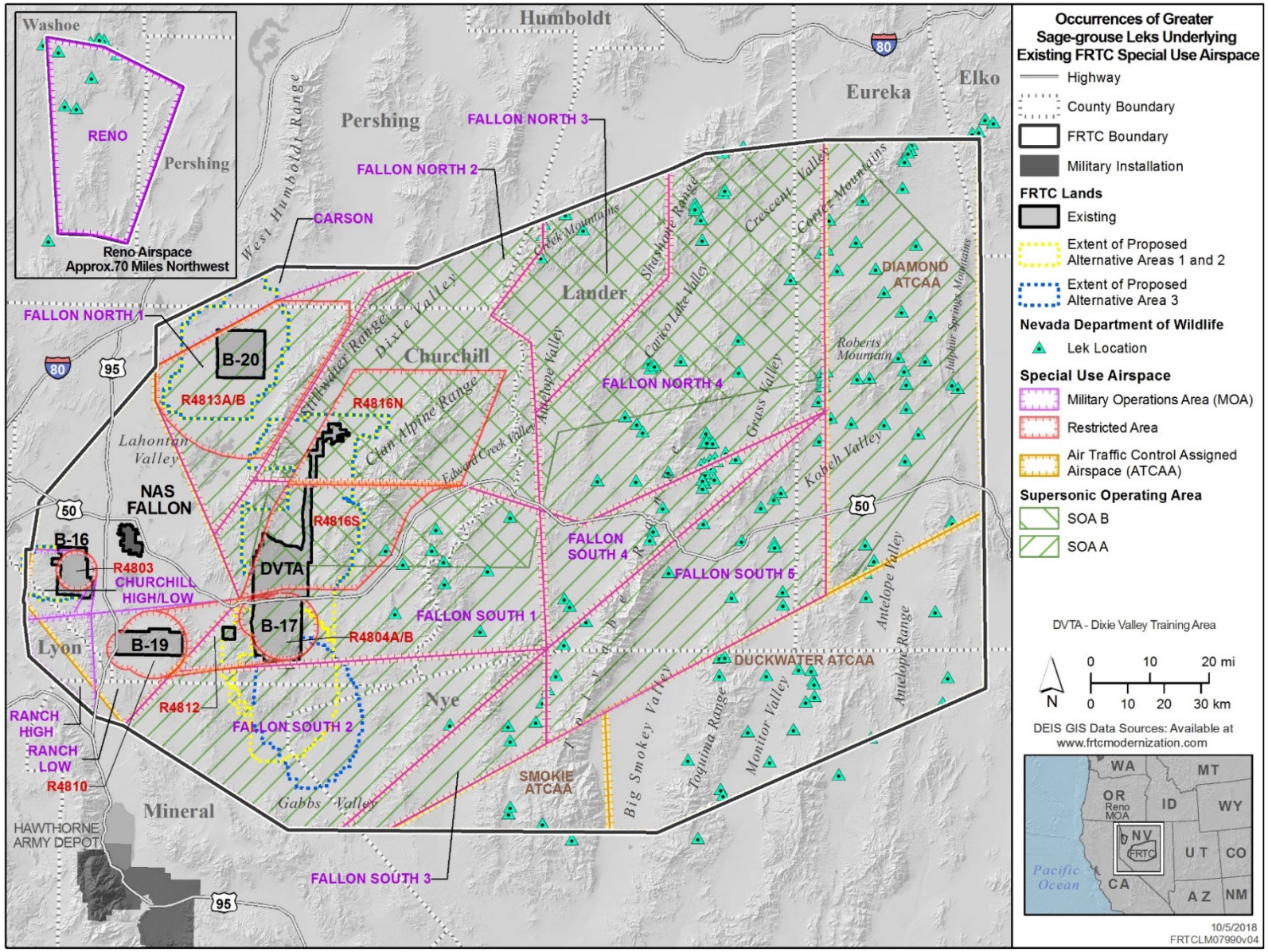


**Figure 3.10-28: Occurrences of Greater Sage-grouse Leks Underlying Existing FRTC Special Use Airspace**

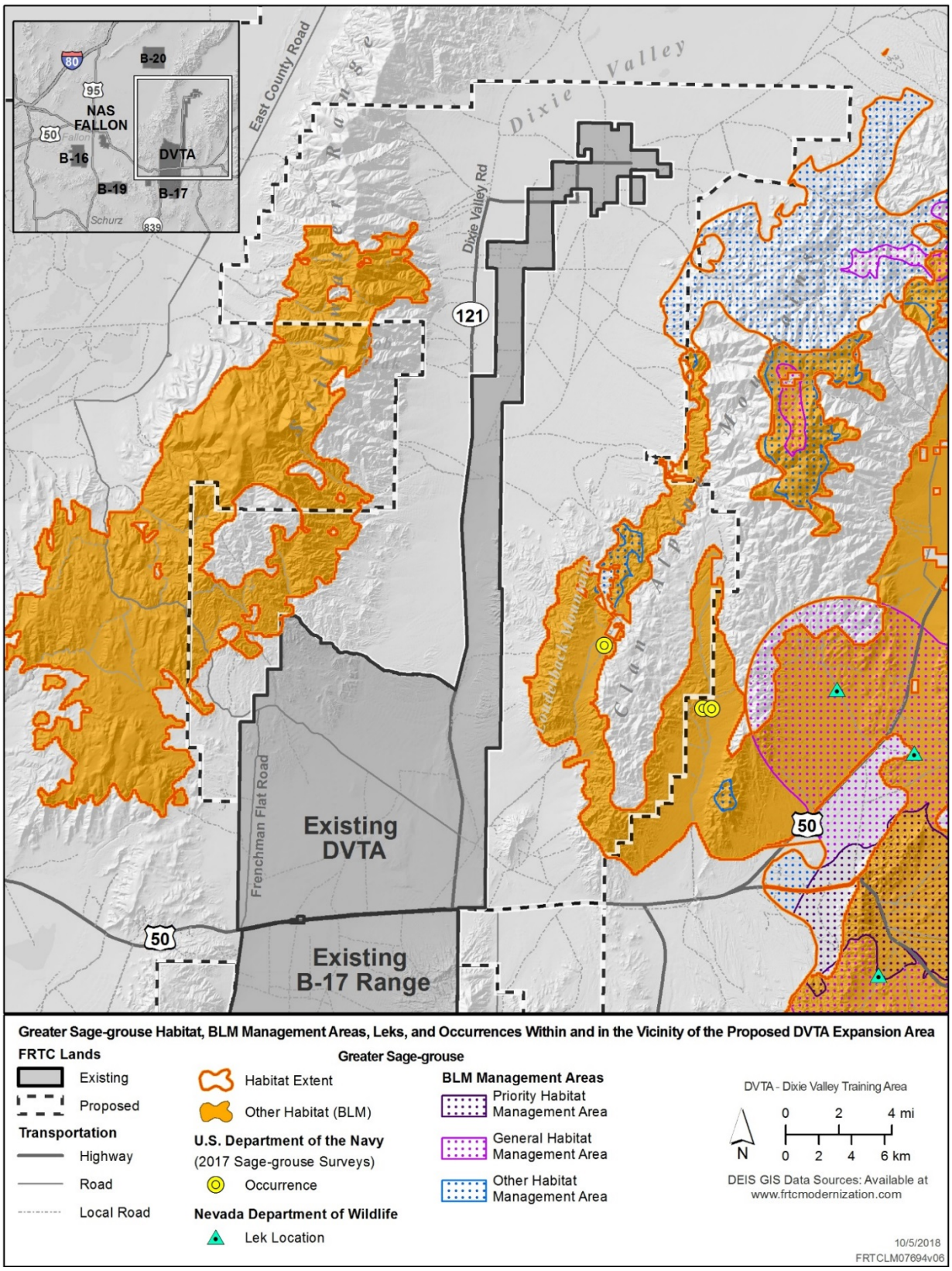


**Figure 3.10-29: Greater Sage-grouse Habitat, BLM Management Areas, Leks, and Occurrences Within and in the Vicinity of the Proposed DVTA Expansion Area**

Although no leks were identified within the proposed FRTC expansion areas during the survey effort, the incidental greater sage-grouse observations and the presence of scat indicates that birds are present during portions of the year. Without evidence of a nearby lek, this suggests that these birds may use the proposed DVTA expansion area for wintering, or they are young, dispersing birds, that have not yet joined a lek (see Supporting Study, Final Survey Report: Greater Sage-Grouse Lek Aerial Surveys, available at http://www.frtcmodernization.com).

Least Bittern (*Ixobrychus exlilis*). Listed as a BLM Sensitive Species, Conservation Priority Species under the Nevada WAP, and ranked by the NNHP as imperiled (breeding), the least bittern is a secretive marshbird found within appropriate wetland habitat within the region of influence. The larger lakes and wetlands of the region support least bitterns, particularly the Lahontan Valley wetlands and Stillwater NWR. The species would be expected within the region of influence primarily during migration. There are no records of least bitterns on Navy-managed lands or proposed FRTC expansion areas.

Lewis's Woodpecker (*Melanerpes lewis*). Lewis's woodpecker is a Bird of Conservation Concern, BLM Sensitive Species, Conservation Priority Species under the Nevada WAP, and ranked by the NNHP as vulnerable. In Nevada, Lewis's woodpeckers are most strongly associated with deciduous riparian woodlands dominated by aspen or cottonwood including the presence of large, partly decayed snags, an open forest for aerial foraging, and a well-developed shrub or native herbaceous layer that promotes populations of flying insects. Although the woodpecker no longer breeds in the valley-bottom riparian woodlands within the vicinity of the existing Navy-managed lands and proposed expansion areas, such as the Lahontan Valley, it is expected to breed within the region of influence in suitable riparian woodlands. Lewis's woodpecker has been recorded from the existing DVTA (Tierra Data Inc., 2008).

Loggerhead Shrike (*Lanius ludovicianus*). The loggerhead shrike is a Bird of Conservation Concern, BLM and Nevada Sensitive Species, Species of Conservation Priority under the Nevada WAP, and ranked by the NNHP as apparently secure. It occurs in desert shrubland, juniper, or pinyon-juniper woodland, mountain mahogany stand, and around the outskirts of ranches and towns. The loggerhead shrike is a common summer resident within the region of influence, and is present, though less common, in the winter. The species has been observed within the Stillwater NWR (Figure 3.10-19) (Nevada Department of Wildlife, 2018a) and the proposed DVTA and B-17 expansion areas (Figures 3.10-24 through 3.10-26) (see Supporting Studies: Final Wildlife Remote Camera Trapping Survey Report, Final Avian Survey Report, available at http://www.frtcmodernization.com).

Long-billed Curlew (*Numenius americanus*). The long-billed curlew is a Bird of Conservation Concern, Species of Conservation Priority under the Nevada WAP, and ranked by the NNHP as imperiled/ vulnerable (breeding). Curlews are found in wetlands, grasslands, and agricultural areas, avoiding areas with trees, high shrub densities, and tall dense grass. Expected to nest in major wetlands, pastures, and agricultural areas within the region, particularly the Lahontan Valley wetlands and Stillwater NWR (Figure 3.10-19) (Nevada Natural Heritage Program, 2018b). There is a record from the western side of the Monte Cristo Mountains within the proposed B-17 expansion area (Figure 3.10-25) (Nevada Department of Wildlife, 2018a). It was also observed on Navy-managed lands during 2007 surveys, but the location was not identified (Tierra Data Inc., 2008).

Long-billed Dowitcher (*Limnodromus scolopaceus*). Listed as a Species of Conservation Priority under the Nevada WAP and ranked by the NNHP as apparently secure, the Great Basin provides critical migration stopover habitat for long-billed dowitchers in both fall and spring. This species is one of the most

numerous migrant shorebirds in the big wetland complexes of western Nevada (e.g., Lahontan Valley, Stillwater NWR, Carson Lake).

Mountain Quail (*Oreortyx pictus*). The mountain quail is a BLM Sensitive Species, Conservation Priority Species under the Nevada WAP, state protected game bird (NAC 503.045), and ranked by the NNHP as vulnerable. As the name implies, mountain quail occur in montane areas of coniferous forest, forest and meadow edges, dense undergrowth, and chaparral, favoring areas with tall dense shrubs that are close to water. A year-round resident within the region of influence in eastern Churchill County, northeastern Nye County, and western Lander County. Mountain quail have been recorded in the Stillwater Mountains of the western portion of the proposed DVTA expansion area (Figure 3.10-24) (see Supporting Study: Final Wildlife Remote Camera Trapping Survey Report, available at http://www.frtcmodernization.com).

Northern Goshawk (*Accipter gentilis*). The northern goshawk is a BLM and Nevada Sensitive Species, Species of Conservation Priority under the Nevada WAP, and ranked by the NNHP as imperiled. Goshawks in Nevada usually nest in mature aspen stands (or less commonly, coniferous stands) with trees large enough to support their substantial stick nest. This association with aspen in Nevada is somewhat unique, for in most other parts of the western U.S., goshawks more typically nest in coniferous forest. The goshawk is a year-round resident within the region of influence and is expected to be found primarily within montane areas supporting aspen and coniferous woodlands. Within the region of influence, goshawks have been recorded nesting within the Desatoya Mountains west of the proposed DVTA expansion area (Figure 3.10-19) (Nevada Department of Wildlife, 2018a; Nevada Natural Heritage Program, 2018b). During 2018 raptor surveys in support of this EIS, two individuals were observed within the proposed DVTA expansion area during winter, and one individual was observed within the proposed DVTA expansion area during spring (Figure 3.10-24) (see Supporting Study, Draft Raptor Survey Report, available at http://www.frtcmodernization.com). In support of this EIS, breeding raptor surveys will also be conducted within the proposed FRTC expansion areas in winter and spring 2019, and the results will be incorporated into this EIS.

Northern Pintail (*Anas acuta*). A year-round resident of open water areas and seasonal wetlands within the region of influence, the northern pintail is a Conservation Priority Species under the Nevada WAP and ranked by the NNHP as secure. It breeds and overwinters throughout central and northern Nevada on wetlands, lakes, and ponds, with the greatest numbers in the region of influence during spring and fall migration. Although pintails are expected to be found primarily at the Lahontan Reservoir, Carson Lake, and Stillwater NWR, northern pintails have been observed at the existing DVTA (Tierra Data Inc., 2008).

Olive-sided Flycatcher (*Contopus cooperi*). Listed as a Species of Conservation Priority under the Nevada WAP and ranked as imperiled (breeding) by the NNHP, the olive-sided flycatcher is found within the region of influence primarily during spring and fall migration. However, as they nest in coniferous forest, they may occasionally be found within scattered coniferous forests, but the majority of confirmed breeding is only known from northeastern and western Nevada. The olive-sided flycatcher has been recorded within the existing DVTA (Naval Air Station Fallon, 1997).

Peregrine Falcon (*Falco peregrinus*). The peregrine falcon is a Bird of Conservation Concern, BLM sensitive species, listed as endangered by the State of Nevada, Species of Conservation Priority under the Nevada WAP, and ranked as imperiled by the NNHP. Although known to historically breed throughout Nevada, the significant population declines across North America due to

Dichlorodiphenyltrichloroethane (DDT) and associated eggshell thinning in the 1950s throughout the 1970s included the loss of a breeding population in Nevada. Ongoing natural recolonization is taking place and breeding peregrines are found in southern Nevada and some of the species former breeding range could eventually be reoccupied. Within the region of influence, peregrine falcons are expected to be uncommon year-round visitors in areas where prey concentrate, including marshes, lake shores, rivers, and river valleys. There is an NDOW record of a peregrine falcon at the Stillwater NWR (Figure 3.10-19) (Nevada Department of Wildlife, 2018a). Although peregrine falcon was not detected during 2018 raptor surveys of the proposed expansion areas (see Supporting Study, Draft Raptor Survey Report, available at http://www.frtcmodernization.com), a peregrine falcon was observed within the proposed DVTA expansion area during 2017 avian surveys conducted in support of this EIS (Figure 3.10-24) (see Supporting Study: Final Avian Survey Report, available at http://www.frtcmodernization.com).

Pinyon Jay (*Gymnorhinus cyanocephalus*). The pinyon jay is a Bird of Conservation Concern, BLM Sensitive Species, and Species of Conservation Priority under the Nevada WAP, and ranked by the NNHP as vulnerable/apparently secure. The pinyon jay is considered a permanent resident within the region of influence, where it is found in pinyon-juniper woodland, and less frequently pine; in the non-breeding season, also occurs in scrub oak and sagebrush. Pinyon jays have been recorded within the proposed DVTA and B-17 expansion areas (Figures 3.10-17 through 3.10-19) (see Supporting Study: Final Wildlife Remote Camera Trapping Survey Report, available at http://www.frtcmodernization.com).

Prairie Falcon (*Falco mexicanus*). A year-round resident in the region of influence, the prairie falcon is a Species of Conservation Priority under the Nevada WAP and ranked by the NNHP as apparently secure. A cliff-nesting raptor typically found adjacent to arid valleys with low vegetation such as sagebrush, salt desert, and Mojave scrub shrublands; also occur in agricultural lands, especially during the winter months. Within the region of influence, prairie falcons are known to winter at Stillwater NWR and have been observed at NAS Fallon, within the existing B-16 and B-17 ranges, and the proposed DVTA expansion area (Figures 3.10-19 through 3.10-26) (see Supporting Studies: Draft Raptor Survey Report, Final Wildlife Remote Camera Trapping Survey Report, available at http://www.frtcmodernization.com) (Tierra Data Inc., 2008; U.S. Department of the Navy, 2014). A total of 39 individual prairie falcons were observed during spring 2018 surveys and the prairie falcon was the most frequently recorded nesting raptor during spring surveys of the proposed expansion areas with 15 active nests (8 nests in the proposed B-17 expansion area, 5 nests in the proposed DVTA area, and 1 nest each in the proposed B-16 and B-20 expansion areas), with 7 of those nests containing eggs (see Supporting Study, Draft Raptor Survey Report, available at http://www.frtcmodernization.com). In addition, 11 prairie falcons were observed during winter 2018 surveys of the proposed expansion areas (1 in B-16, 3 in B-17, and 7 in DVTA). In support of this EIS, additional winter and breeding raptor surveys will be conducted within the proposed FRTC expansion areas in winter 2018 and spring 2019, and the results will be incorporated into this EIS.

Redhead (*Aythya americana*). Similar to the northern pintail, a year-round resident of open water areas and seasonal wetlands within the region of influence, the redhead is a Conservation Priority Species under the Nevada WAP and ranked by the NNHP as apparently secure (breeding). Breeds and overwinters throughout central and northern Nevada on wetlands, lakes, and ponds, with the greatest numbers in the region of influence during spring and fall migration. Within the region of influence, redheads are expected to be found primarily at the Lahontan Reservoir, Carson Lake, and Stillwater NWR. The NAS Fallon INRMP lists the species as being observed on existing DVTA lands (U.S. Department of the Navy, 2014).

Sagebrush Sparrow (*Artemisiospiza nevadensis*). Previously called the sage sparrow (*Amphispiza belli*), in 2013 the sage sparrow was split into two species: sagebrush sparrow and Bell's sparrow (*Artemisiospiza belli*), which occurs in coastal and southern California, extreme southern Nevada, and northern Baja California. The sagebrush sparrow is a Bird of Conservation Concern, Conservation Priority Species under the Nevada WAP, and is currently not ranked by the NNHP. Sagebrush sparrows avoid highly fragmented landscapes and are most abundant in large expanses of unbroken shrublands, including sagebrush and salt desert scrub; greasewood may also be used. Nevada has one of the highest-known breeding densities for the sagebrush sparrow and approximately one-half of the species' global breeding population. The sagebrush sparrow is expected to be a common summer resident and an uncommon winter resident in the region of influence. It has been recorded from the Shoal Site and existing ranges and proposed expansion areas of the DVTA, B-16, B-17, and B-20 (Figures 3.10-20 through 3.10-26) (see Supporting Study: Final Avian Survey Report, available at http://www.frtcmodernization.com) (Nevada Department of Wildlife, 2018a; Tierra Data Inc., 2008).

Sage Thrasher (*Oreoscoptes montanus*). The sage thrasher is a Bird of Conservation Concern, BLM and Nevada Sensitive Species, Conservation Priority Species under the Nevada WAP, and ranked by the NNHP as secure. They primarily inhabit sagebrush valleys, where uninterrupted sagebrush cover is present over large spatial expanses; can also be found breeding in salt desert, especially where it intergrades with sagebrush or where greasewood predominates, and montane shrubland. The species is expected to be common in the region of influence in sagebrush habitat and has been recorded in the proposed DVTA and B-17 expansion areas (Figures 3.10-24 through 3.10-26) (see Supporting Study: Final Avian Survey Report, available at http://www.frtcmodernization.com) (Tierra Data Inc., 2008).

Sandhill Crane (*Antigone canadensis*). The sandhill crane is a BLM Sensitive Species, Conservation Priority Species under the Nevada WAP, and ranked by the NNHP as imperiled (breeding)/vulnerable (migration). Sandhill cranes occupy flat river valleys and basins, often where the landscape offers a mix of marsh, riparian, wet meadow, and agricultural habitats. They nest on or near water, preferentially using small islands or peninsulas where available. Foraging takes place in adjacent wet terrestrial habitats. They are expected to occur within the western portion of the region of influence during migration, particularly in the Lahontan Reservoir, Carson Lake, and Stillwater NWR, but does breed in the eastern portion of the region of influence in Lander and Eureka counties. There are no records of the species on Navy-managed lands.

Short-eared Owl (*Asio flammeus*). A year-round resident in the region of influence, the short-eared owl is a BLM Sensitive Species, Conservation Priority Species under the Nevada WAP, and ranked by the NNHP as apparently secure. Considered a bird of dense grasslands, the short-eared owl is relatively uncommon in Nevada, but it can also be found in diverse types of open country where small mammal populations, particularly voles, are sufficiently dense (e.g., wet meadows, grasslands, or crop fields). Short-eared owls have been recorded at the Stillwater NWR, the proposed DVTA and B-17 expansion areas (Figures 3.10-19, 3.10-24, 3.10-25, and 3.10-26) (see Supporting Studies, Draft Raptor Survey Report, Final Wildlife Remote Camera Trapping Survey Report, Final Avian Survey Report, available at http://www.frtcmodernization.com)(Nevada Natural Heritage Program, 2018b).

Swainson's Hawk (*Buteo swainsoni*). Found only in the region of influence in the spring and summer, the Swainson's hawk is a BLM Sensitive Species and ranked by the NNHP as imperiled (breeding). Swainson's hawks are typically found in areas with large riparian nesting trees, and agricultural fields and open shrublands within relatively close proximity that provide small mammal prey. There are numerous records of Swainson's hawks around NAS Fallon and Stillwater NWR (Figure 3.10-19) and they have been

observed on NAS Fallon and within the existing DVTA (Tierra Data Inc., 2008; U.S. Department of the Navy, 2014). Although Swainson's hawks were not observed nesting within the proposed expansion areas during spring 2018 raptor surveys, two adults were observed within the proposed DVTA expansion area (Figure 3.10-24) (see Supporting Study, Draft Raptor Survey Report, available at http://www.frtcmodernization.com). In support of this EIS, additional raptor surveys will be conducted within the proposed FRTC expansion areas in winter and spring 2019, and the results will be incorporated into this EIS.

Western Snowy Plover (*Charadrius alexandrinus nivosus*). The western snowy plover is a Bird of Conservation Concern, BLM Sensitive Species, Conservation Priority Species under the Nevada WAP, and ranked by the NNHP as vulnerable (breeding). Nevada breeders are part of the species' interior population, and they are not part of the ESA-listed threatened Pacific coast population of western snowy plover. Distribution within the region of influence is limited to suitable nesting areas along the shorelines of alkaline playa lakes. The snowy plover is known to breed at Stillwater NWR, Humboldt Lake, and Lahontan Valley; breeding may also occur at Carson Lake and Salt Wells Marsh, northwest of the Shoal Site (Figures 3.10-19 and 3.10-24) (Nevada Natural Heritage Program, 2018b). Snowy plovers have not been recorded on Navy-managed lands.

White-faced Ibis (*Plegadis chihi*). The white-faced ibis is a Conservation Priority Species under the Nevada WAP and ranked by the NNHP as vulnerable (breeding). Found in is marshes, swamps, ponds and rivers, the Lahontan Valley supports the largest breeding population in Nevada. A common summer resident at Stillwater NWR, Carson Lake, and Humboldt Lake (Figures 3.10-19 and 3.10-22 through 3.10-26) (Nevada Department of Wildlife, 2018a; Nevada Natural Heritage Program, 2018b), and the white-faced ibis has been recorded within the existing DVTA (Tierra Data Inc., 2008).

Yellow-billed Cuckoo (*Coccyzus americanus*) – Western Distinct Population Segment. A riparian-obligate species, the yellow-billed cuckoo is a Bird of Conservation Concern, BLM and Nevada Sensitive Species, Conservation Priority Species under the Nevada WAP, and ranked by the NNHP as critically imperiled (breeding). The only ESA-listed species potentially occurring within the region of influence, the Western Distinct Population Segment was listed as threatened under the ESA in 2014 (79 Federal Register 59992). In addition, critical habitat was proposed in 2014 along the Carson River approximately 5 miles west of the region of influence (see Figure 3.10-30) (79 Federal Register 48548). Although historically found within riparian areas throughout Nevada, the species is now found only in southern Nevada along the Virgin and Muddy rivers. The last documented occurrences of the yellow-billed cuckoo within the region of influence were west of Fallon and at Carson Lake in 1977 and 1986, respectively (Figure 3.10-30). There is an additional NNHP record from July 2013 approximately 24 miles southeast of the proposed B-16 expansion area, east of the intersection of Highways 95A and 95 (Nevada Natural Heritage Program, 2018b).

In June 2018, the USFWS issued its 90-day finding on the review of a petition to remove the yellow-billed cuckoo as a threatened Distinct Population Segment under the ESA. They found that delisting the western Distinct Population Segment of the yellow-billed cuckoo may be warranted due to information on additional habitat being used by the species. The USFWS is now conducting a status review of the species and will issue a 12-month finding, which will address whether or not the petitioned action is warranted under the ESA (83 Federal Register 30091).

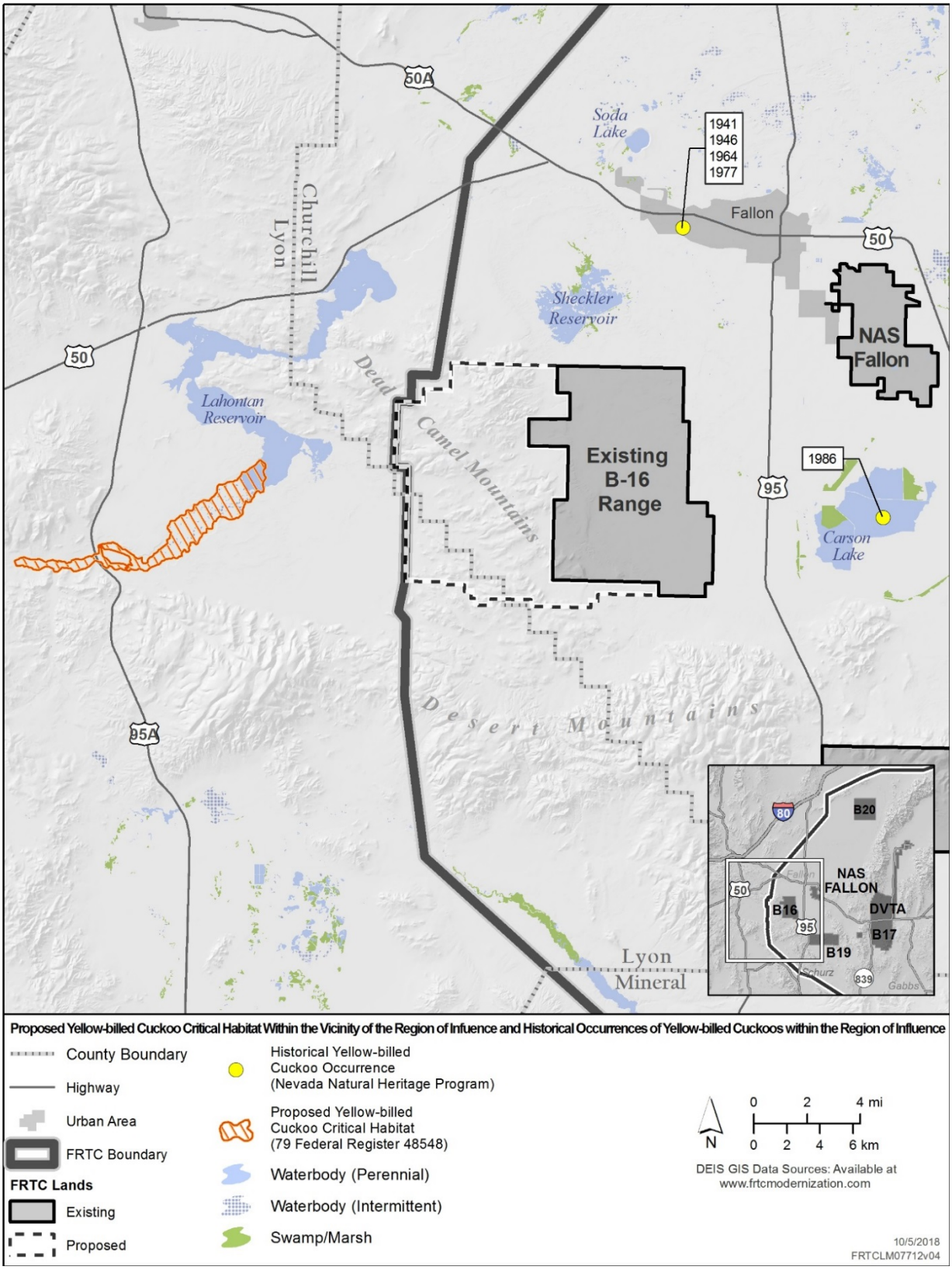


**Figure 3.10-30: Proposed Yellow-billed Cuckoo Critical Habitat Within the Vicinity of the Region of Influence and Historical Occurrences of Yellow-billed Cuckoos within the Region of Influence**

### 3.10.2.4.4 Special-status Mammals

The region of influence for special-status mammals includes all proposed FRTC expansion areas and lands underlying the proposed FRTC SUA revision. A total of 27 special-status mammal species are known or expected to occur within the region of influence (Table 3.10-13). Of these 27 species, 16 are bats and 20 have been documented as occurring on Navy-managed FRTC lands.

- State of Nevada: 18 Species of Conservation Priority under the Nevada WAP, 2 endangered species, 1 threatened species, and 13 protected species (Nevada Department of Wildlife, 2013).
- BLM (Carson City and Battle Mountain districts): 21 sensitive species (U.S. Bureau of Land Management, 2017).
- NNHP: 10 imperiled, 12 vulnerable, 2 apparently secure, and 3 secure (Nevada Natural Heritage Program, 2018b).

**Table 3.10-13: Known or Potential Occurrence of Special-status Mammals Species within the Region of Influence**

| Common Name (Scientific Name) | Status* | | |
|---|---|---|---|
| | BLM | State | NNHP |
| American pika (*Ochotona princeps*) | S | PM, WAP | S2 |
| Desert bighorn sheep (*Ovis canadensis nelsoni*) | S | PGM, WAP | S4 |
| Elk (*Cervus elaphus*) | - | PGM | S5 |
| Kit fox (*Vulpes macrotis*) | - | PM | S3 |
| Mule deer (*Odocoileus hemionus*) | - | PGM, WAP | S5 |
| Pronghorn (*Antilocapra americana*) | - | PGM | S5 |
| Pygmy rabbit (*Brachylagus idahoensis*) | S | PGM, WAP | S3 |
| Bats | | | |
| Big brown bat (*Eptesicus fuscus*) | S | - | S3S4 |
| Brazilian free-tailed bat (*Tadarida brasiliensis*) | S | PM, WAP | S4 |
| California myotis (*Myotis californicus*) | S | - | S3S4 |
| Canyon bat or western pipistrelle (*Pipistrellus hesperus*) | S | - | S3S4 |
| Fringed myotis (*Myotis thysanodes*) | S | PM, WAP | S2 |
| Hoary bat (*Lasiurus cinereus*) | S | WAP | S2S3 |
| Little brown bat (*Myotis lucifugus*) | S | WAP | S2S3 |
| Long-eared myotis (*Myotis evotis*) | S | WAP | S3 |
| Long-legged myotis (*Myotis volans*) | S | - | S3S4 |
| Pallid bat (*Antrozous pallidus*) | S | PM | S3 |
| Silver-haired bat (*Lasionycteris noctivagans*) | S | WAP | S3 |
| Spotted bat (*Euderma maculatum*) | S | T, WAP | S2 |
| Townsend's big-eared bat (*Corynorhinus townsendii*) | S | S, WAP | S2 |
| Western red bat (*Lasiurus blossevillii*) | S | S, WAP | S2 |
| Western small-footed myotis (*Myotis ciliolabrum*) | S | WAP | S3S4 |
| Yuma myotis (*Myotis yumanensis*) | S | - | S3 |
| Rodents | | | |
| Dark kangaroo mouse (*Microdipodops megacephalus*) | S | PM, WAP | S2 |
| Desert kangaroo rat (*Dipodomys deserti*) | - | WAP | S2S3 |
| Pale kangaroo mouse (*Microdipodops pallidus*) | S | PM, WAP | S2 |
| Sagebrush vole (*Lemmiscus curtatus*) | - | WAP | S3 |

Notes: *See notes for Table 3.10-8 for definitions of NNHP ranks. E = endangered, PGM = Protected Game Mammal, PM = Protected Mammal, S = sensitive, T = threatened, WAP = Wildlife Action Plan Species of Conservation Priority.
Sources: (Nevada Department of Wildlife, 2013, 2018a, 2018b).

Unless referenced otherwise, the following descriptions are based upon the following sources: Nevada Department of Wildlife (2013), U.S. Bureau of Land Management (2017), and Nevada Natural Heritage Program (2018a, 2018b).

American Pika (*Ochotona princeps*). The American pika is a BLM Sensitive Species, Nevada Protected Mammal (NAC 503.030.1), Species of Conservation Priority under the Nevada WAP, and ranked by the NNHP as imperiled. The pika is a montane species restricted to rocky talus slopes, or rimrocks with deep fissures and crevices, primarily the talus-meadow interface. Pikas also occupy areas above the treeline up to limit of vegetation and lower elevations in rocky areas within forests or near lakes. Range in central Nevada is southeastern Churchill County within the Desatoya Mountains and extending southeast into northern Nye County and the Shoshone Mountains, Toiyabe Range, and Monitor Range. Although there is the potential for occurrence within the portions of the Stillwater and Clan Alpine ranges in the proposed DVTA expansion area. There are no records of pikas on Navy-managed lands (Tierra Data Inc., 2008; U.S. Department of the Navy, 2014). There are NNHP records from the Desatoya Mountains east of the DVTA (Figure 3.10-31) (Nevada Natural Heritage Program, 2018b).

Kit Fox (*Vulpes macrotis*). The kit fox is a Nevada Protected Fur-bearing Mammal (NAC 503.025) and ranked by the NNHP as vulnerable. A species of shrublands and shrub-grass habitats in desert and semiarid climates, kit fox are found throughout the lower elevations of the Great Basin dominated by creosote bush, sagebrush, shadscale, and greasewood as well as grassland plant communities. Prefer areas with soft alluvial soils, sand dunes, or easily diggable clay soils where they can dig their dens (McGrew, 1979). During wildlife surveys in support of this EIS, kit fox were commonly recorded on camera traps within the proposed DVTA, B-16, B-17, and B-20 expansion areas (Figures 3.10-32 through 3.10-36) (see Supporting Study: Final Wildlife Remote Camera Trapping Survey Report, available at http://www.frtcmodernization.com).

Pygmy Rabbit (*Brachylagus idahoensis*). The pygmy rabbit is a BLM Sensitive Species, Species of Conservation Concern under the Nevada WAP, Nevada Protected Game Mammal (NAC 503.020), and NNHP ranked vulnerable. It is found primarily on big sagebrush dominated plains, and alluvial fans where plants occur in tall, dense clumps. The only native rabbit to dig its own burrows, pygmy rabbits require deep, friable, loamy-type soils for burrow excavation. However, they occasionally use burrows excavated by other species (e.g., yellow-bellied marmot) and therefore may occur in areas that support shallower, more compact soils as long as sufficient shrub cover is available. Big sagebrush comprises up to 99 percent and 51 percent of forage in winter and summer, respectively; wheatgrass and bluegrass are highly preferred summer foods. The species is expected to occur within the region of influence in eastern Churchill County, northern Nye County, and throughout Lander and Eureka counties. There are no records of pygmy rabbits on Navy-managed lands (Tierra Data Inc., 2008; U.S. Department of the Navy, 2014). The NNHP includes occurrences east of the DVTA in Edward Creek Valley and Smith Creek Valley (Figure 3.10-31) (Nevada Natural Heritage Program, 2018b).

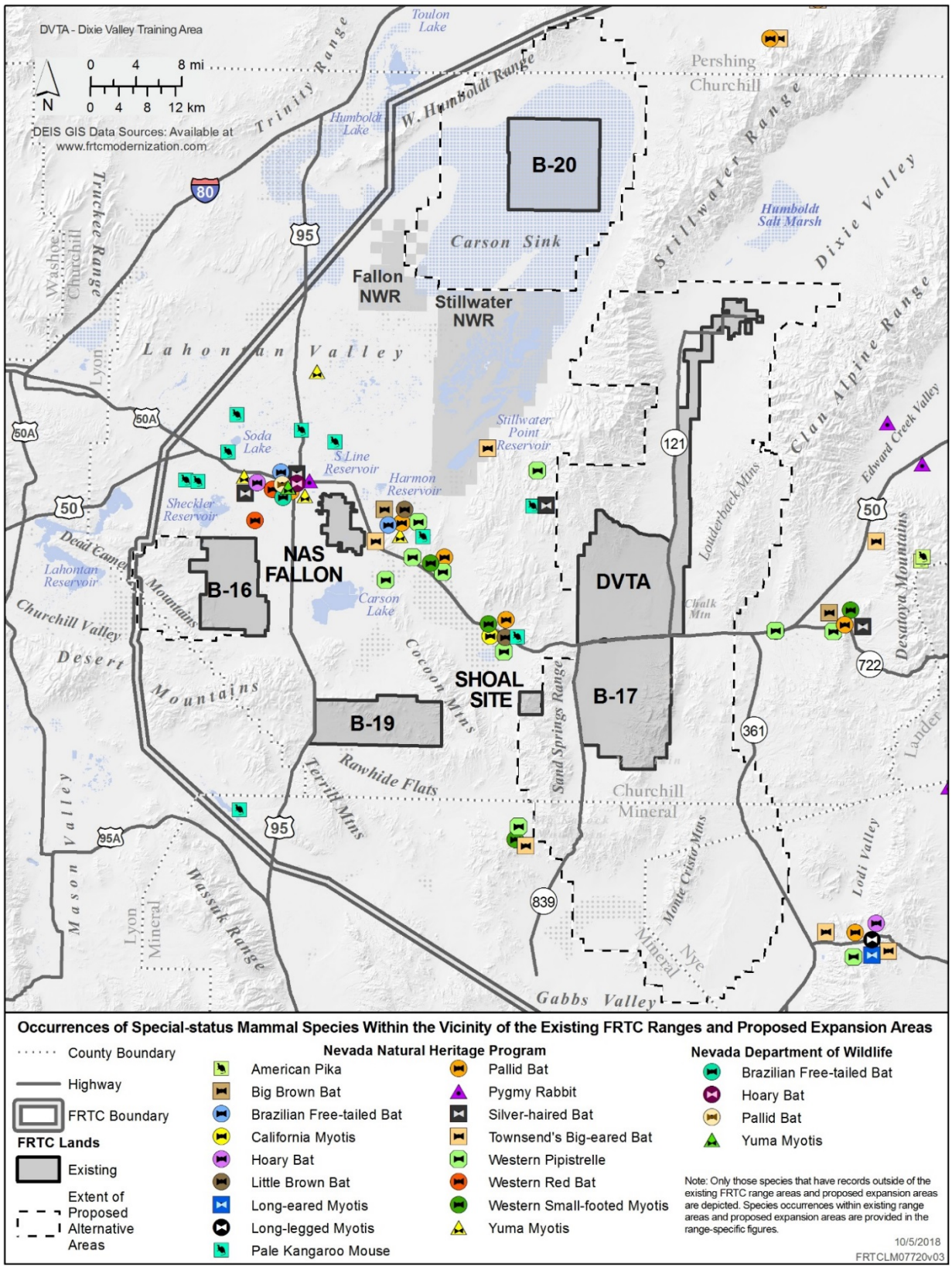


**Figure 3.10-31: Occurrences of Special-status Mammal Species Within the Vicinity of the Existing FRTC Ranges and Proposed Expansion Areas**

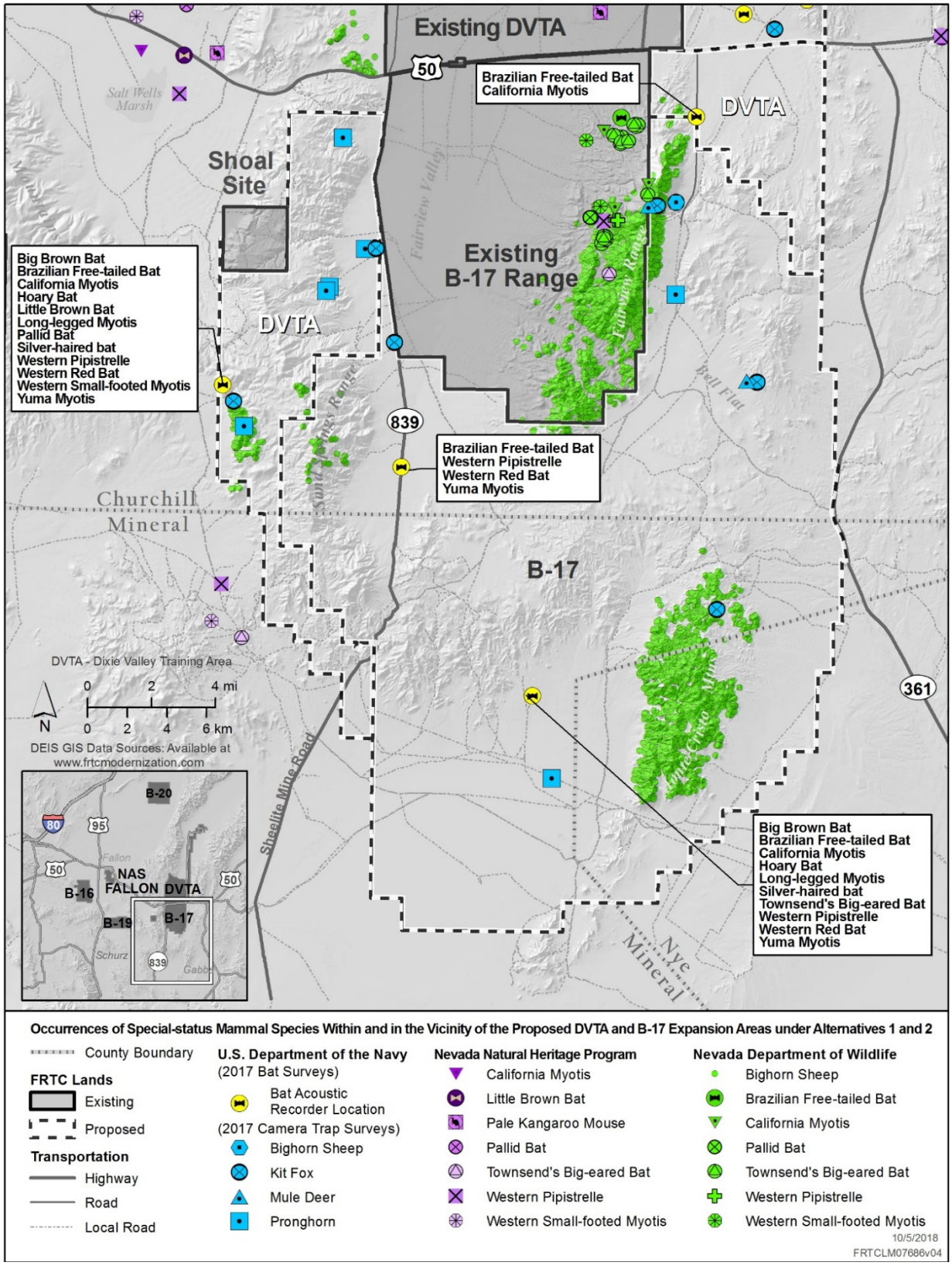


**Figure 3.10-32: Occurrences of Special-status Mammal Species Within and in the Vicinity of the Proposed DVTA and B-17 Expansion Areas under Alternatives 1 and 2**

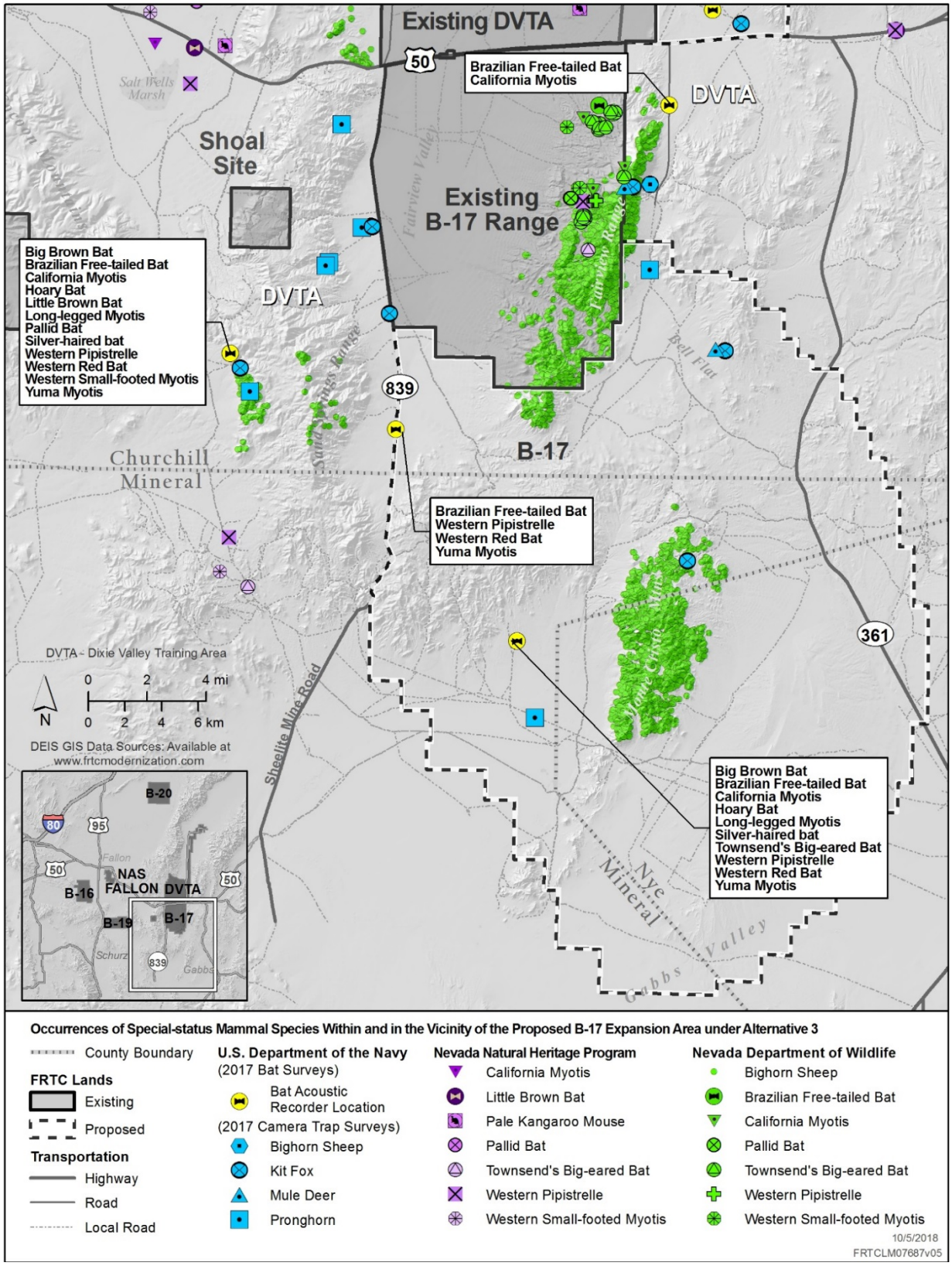


**Figure 3.10-33: Occurrences of Special-status Mammal Species Within and in the Vicinity of the Proposed B-17 Expansion Area under Alternative 3**

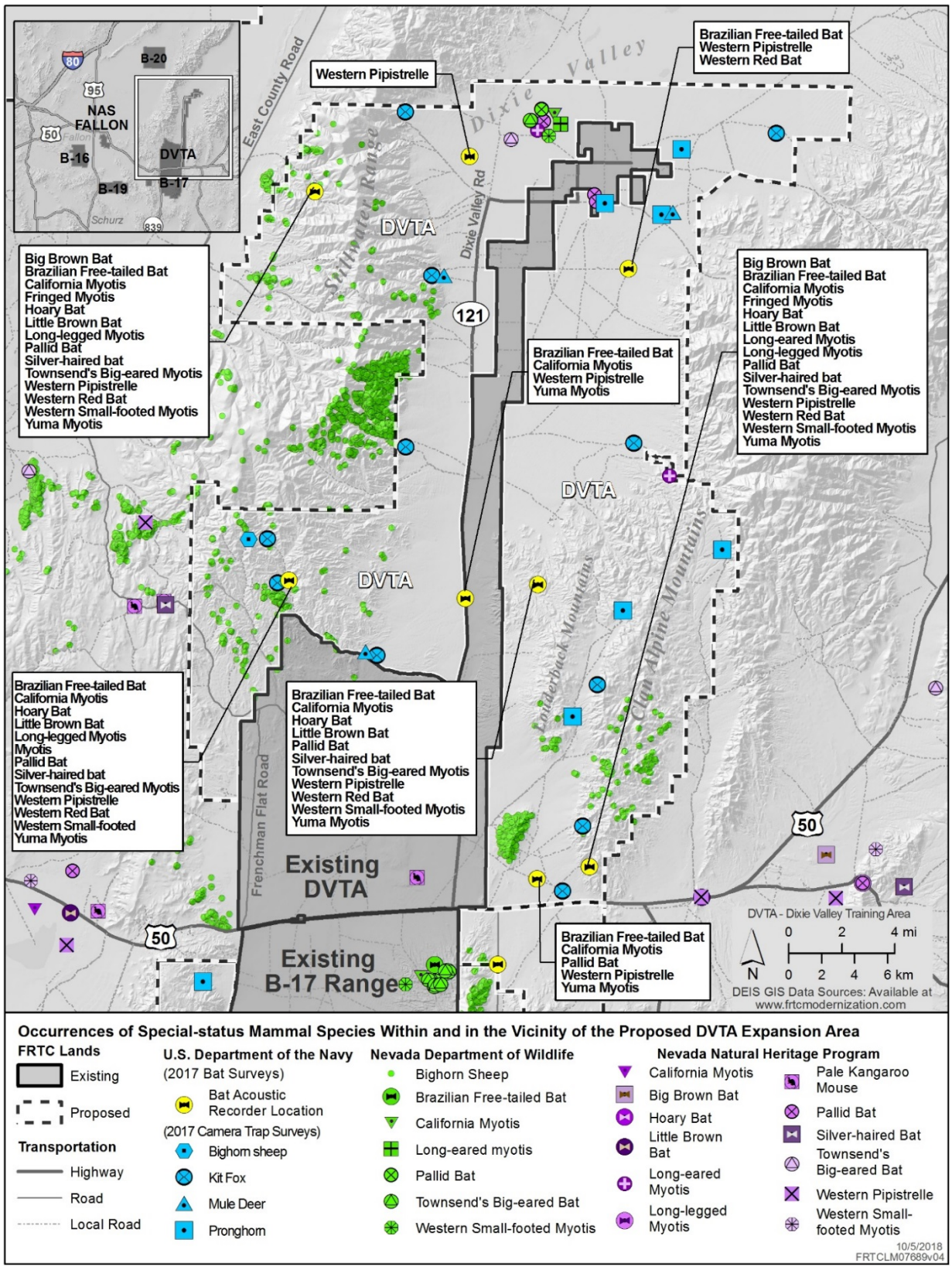


**Figure 3.10-34: Occurrences of Special-status Mammal Species Within and in the Vicinity of the Proposed DVTA Expansion Area**

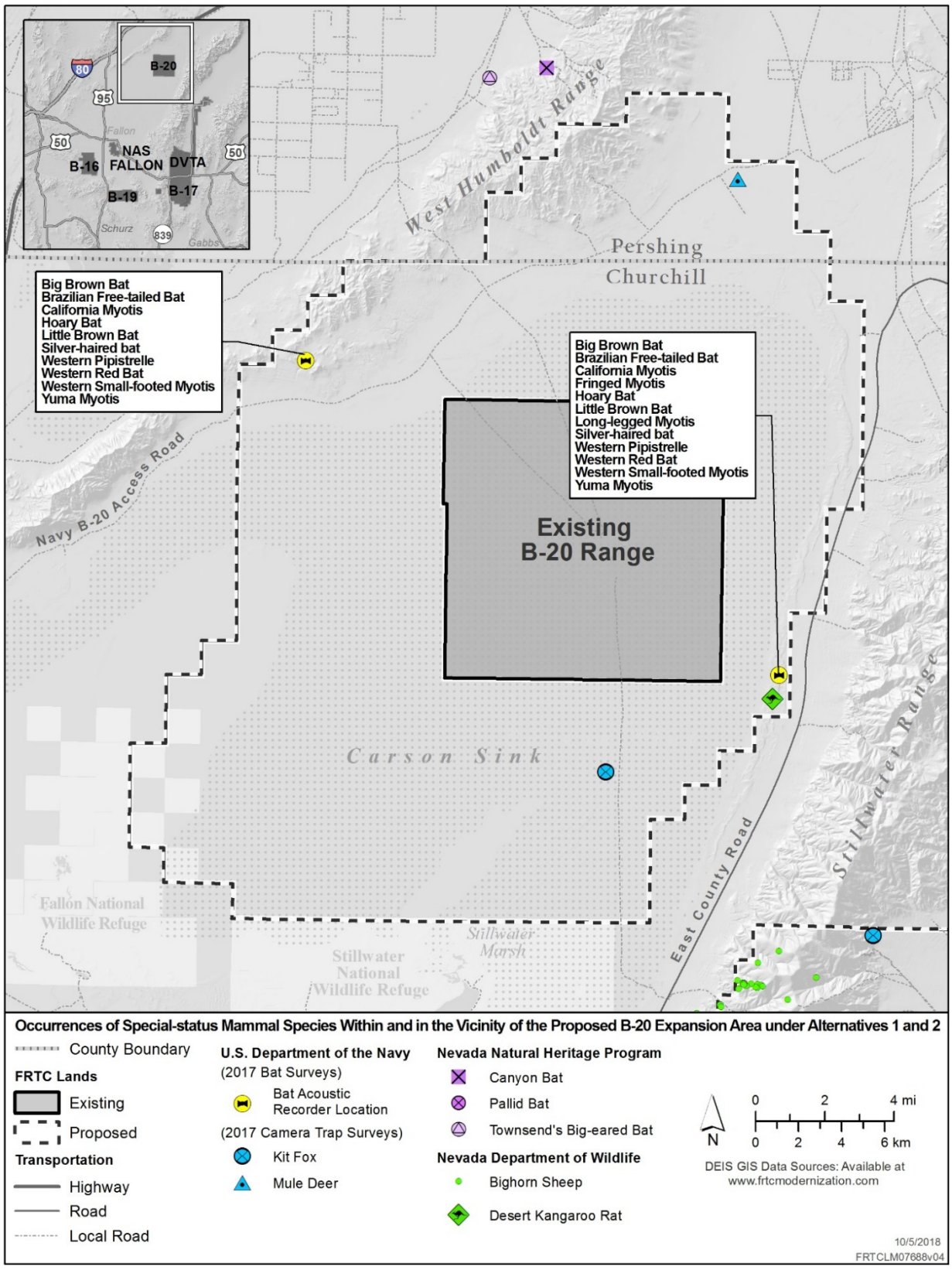


**Figure 3.10-35: Occurrences of Special-status Mammal Species Within and in the Vicinity of the Proposed B-20 Expansion Area Under Alternatives 1 and 2**

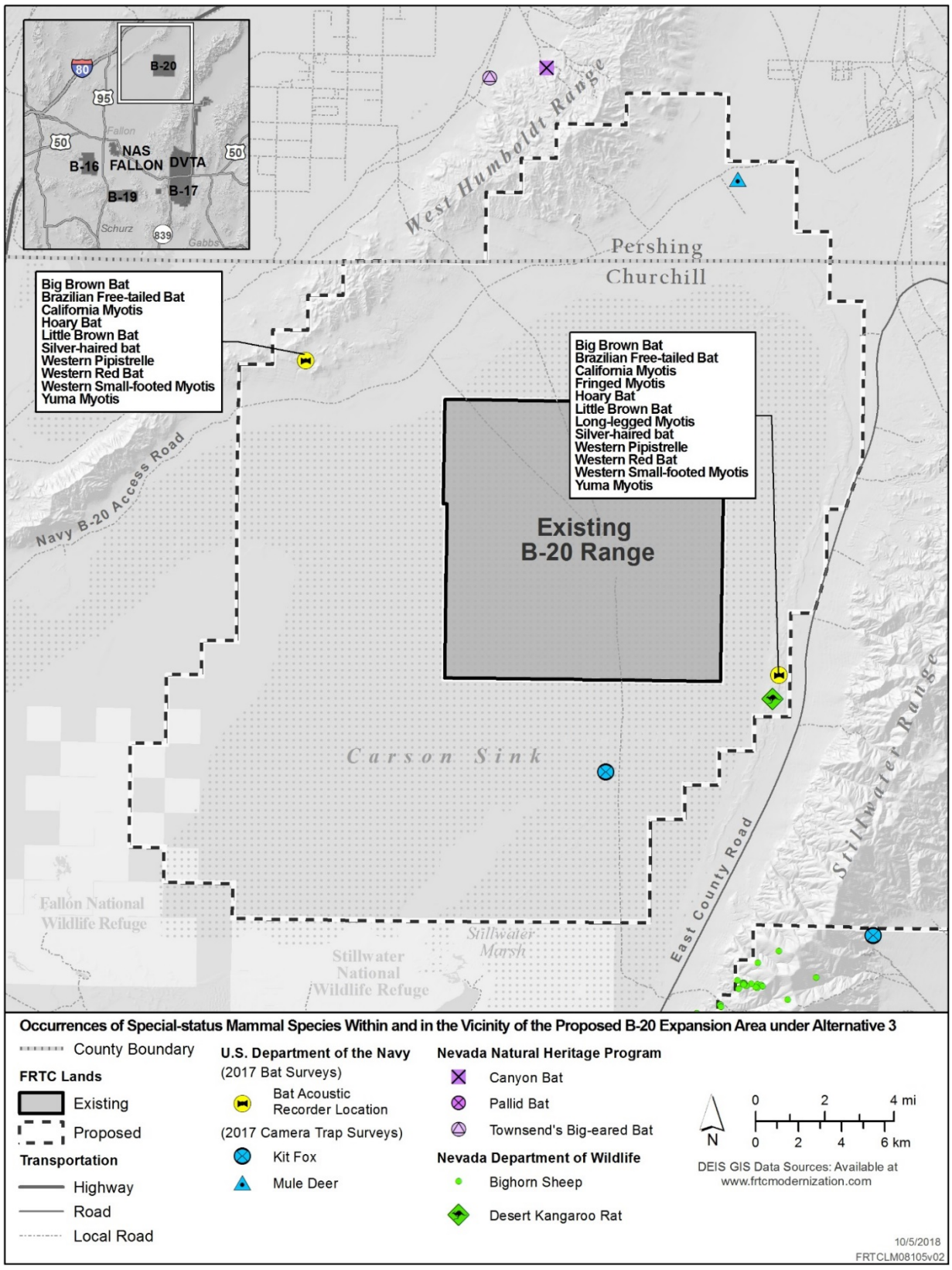


**Figure 3.10-36: Occurrences of Special-status Mammal Species Within and in the Vicinity of the Proposed B-20 Expansion Area Under Alternative 3**

### 3.10.2.5 Ungulates

In 2017, NDOW completed a summary of their ungulate survey program to provide data on the distribution of desert bighorn sheep, mule deer, and pronghorn within the proposed FRTC region of influence, particularly the proposed expansion areas (Nevada Department of Wildlife, 2017a). Using a mixed model approach, the NDOW used GPS collar data, aerial surveys, population model results (sex ratios and survival rates to estimate springtime post-lambing/fawning populations), and known and predicted species distributions based on habitat. Unless otherwise referenced, the following information for bighorn sheep, mule deer, and pronghorn is from that 2017 summary and Nevada Department of Wildlife (2013). Additional information on wildlife water developments can be found in Section 3.9 (Water Resources).

Desert Bighorn Sheep (*Ovis canadensis nelsoni*). The desert bighorn sheep is a BLM Sensitive Species, Species of Conservation Concern under the Nevada WAP, Nevada Protected Game Mammal (NAC 503.020), and NNHP ranked as apparently secure. Bighorn sheep inhabit remote mountain and desert regions where they are restricted to semi-open, steep terrain with rocky slopes, ridges, and cliffs or rugged canyons. Forage, water, and escape terrain are the most important components of bighorn sheep habitat. Based on NDOW mapping of bighorn sheep habitat, a total of approximately 1.3 million acres of six range types were delineated within the region of influence: year-round, summer, crucial summer, winter & lambing, lambing, and winter (Table 3.10-14 and Figure 3.10-37). A seventh range type, limited use, only occurs within a small area along the southern boundary of the FRTC region of influence and is not discussed further (Figure 3.10-37).

- *Year-round Range* – As the name implies, these are areas that are used by bighorn sheep throughout the year. Currently, approximately 1.1 million acres are mapped as occurring within the FRTC region of influence, and 15,820 and 4,566 acres are mapped as occurring within the existing B-17 and DVTA range areas, respectively. Under Alternatives 1 and 2, an additional 176,571 acres would be within the proposed B-17 and DVTA expansion areas. Under Alternative 3, an additional 145,651 acres would be within the proposed B-17 and DVTA expansion areas (Table 3.10-14).
- *Winter Range* – Generally, bighorn sheep have two distinct, separate summer and winter ranges. Most of the year is spent on the winter range, where the elevation is typically below 10,800 feet. The aspect is usually south or southwest. Rams often venture onto the more open slopes, although rugged terrain is always nearby. Desert bighorn sheep rarely stray far from the base of a mountain and usually are found on eastern aspects, where they use dry gullies. During severe weather, if snow becomes unusually deep or crusted, bighorn sheep move to slightly higher elevations where wind and sunshine have cleared the more exposed slopes and ridges. The spring range is generally characterized by the same parameters as the winter range. However, bighorn sheep begin to respond to local greenups along streambanks and valleys. Bighorn sheep use areas around saltlicks heavily in the spring. Currently, approximately 30,700 acres are mapped as occurring within the FRTC region of influence.
- *Summer Range* – In the summer, bighorn sheep are mostly found grazing on grassland meadows and plateaus above timber. In early summer, south and southwestern exposures are most frequently utilized; however, in the case of the desert bighorn sheep the eastern aspect is preferred. By late summer, the more northerly exposures are preferred. Snow accumulation seems to be the principal factor that triggers bighorn sheep to move from summer to winter ranges. Currently, approximately 72,100 acres are mapped as occurring within the FRTC region of influence.

**Table 3.10-14: Acreage of Mapped Ungulate Habitat/Range within the Region of Influence, Existing Ranges, and Proposed FRTC Expansion Areas**

| Habitat/Range* | Region of Influence | B-16 | | | B-17 | | | B-20 | | | DVTA | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Existing Alts 1/2 | Existing Alt 3 | Prop. EA (Alts 1-3) | Existing | Prop. EA (Alts 1&2) | Prop. EA (Alt 3) | Existing | Prop. EA (Alts 1/2) | Prop. EA (Alt 3) | Existing | Prop. EA (Alts 1/2) | Prop. EA (Alt 3) |
| Bighorn Sheep | | | | | | | | | | | | | |
| Year-round | 1,113,860 | - | - | - | 15,820 | 36,388 | 26,790 | - | - | - | 4,566 | 140,183 | 118,861 |
| Summer | 72,109 | - | - | - | - | - | - | - | - | - | - | - | - |
| Crucial Summer | 22,406 | - | - | - | - | - | - | - | - | - | - | - | - |
| Winter & Lambing | 51,267 | - | - | - | 3,493 | 2,252 | 1,934 | - | - | - | - | 13,551 | 8,799 |
| Lambing | 3,298 | - | - | - | - | - | - | - | - | - | - | - | - |
| Winter | 30,733 | - | - | - | - | - | - | - | - | - | - | - | - |
| Limited Use | 554 | - | - | - | - | - | - | - | - | - | - | - | - |
| Total | 1,294,227 | - | - | - | 19,313 | 38,640 | 28,724 | - | - | - | 4,566 | 153,734 | 127,660 |
| Mule Deer | | | | | | | | | | | | | |
| Year-round | 1,222,923 | - | - | - | 7,398 | 15,008 | 2,002 | - | - | - | 653 | 53,360 | 33,691 |
| Summer | 737,569 | - | - | - | - | - | - | - | - | - | - | - | - |
| Crucial Summer | 309,659 | - | - | - | - | - | - | - | - | - | - | 14,650 | 14,650 |
| Transition | 104,978 | - | - | - | - | - | - | - | - | - | - | - | - |
| Winter | 1,031,548 | - | - | - | - | - | 297 | - | - | - | - | - | - |
| Crucial Winter | 733,496 | - | - | - | - | - | - | - | - | - | - | 24,717 | 24,717 |
| Limited Use | 42,292 | - | - | - | - | - | - | - | - | - | - | - | - |
| Total | 4,182,465 | - | - | - | 7,398 | 15,008 | 2,299 | - | - | - | 653 | 92,727 | 73,058 |
| Pronghorn | | | | | | | | | | | | | |
| Year-round | 5,577,775 | 646 | 40 | - | 54,704 | 164,289 | 205,912 | 2,337 | 63,762 | 63,408 | 76,743 | 285,584 | 241,712 |
| Summer | 351,902 | - | - | - | - | - | - | - | - | - | - | - | - |
| Crucial Summer | 51,670 | - | - | - | - | 13,632 | 5,461 | - | - | - | - | 1,673 | - |
| Winter | 246,031 | - | - | - | - | - | - | - | - | - | - | - | - |
| Crucial Winter | 152,546 | - | - | - | - | - | - | - | - | - | - | - | - |
| Limited Use | 8,910 | - | - | - | - | - | - | - | - | - | - | - | - |
| Total | 6,388,834 | 646 | 40 | - | 54,704 | 177,921 | 211,373 | 2,337 | 63,762 | 63,408 | 76,743 | 287,257 | 241,712 |

**Table 3.10-14: Acreage of Mapped Ungulate Habitat/Range within the Region of Influence, Existing Ranges, and Proposed FRTC Expansion Areas (continued)**

| Habitat/Range* | Region of Influence | B-16 | | | B-17 | | | B-20 | | | DVTA | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Existing Alts 1/2 | Existing Alt 3 | Prop. EA (Alts 1-3) | Existing | Prop. EA (Alts 1&2) | Prop. EA (Alt 3) | Existing | Prop. EA (Alts 1/2) | Prop. EA (Alt 3) | Existing | Prop. EA (Alts 1/2) | Prop. EA (Alt 3) |
| Elk | | | | | | | | | | | | | |
| Year-round | 491,274 | - | - | - | - | - | - | - | - | - | - | - | - |
| Summer | 178,997 | - | - | - | - | - | - | - | - | - | - | - | - |
| Transition | 109,242 | - | - | - | - | - | - | - | - | - | - | - | - |
| Winter | 148,480 | - | - | - | - | - | - | - | - | - | - | - | - |
| Limited Use | 35,345 | - | - | - | - | - | - | - | - | - | - | - | - |
| Total | 963,338 | - | - | - | - | - | - | - | - | - | - | - | - |

Notes: *In most cases, NDOW has not mapped seasonal habitat/range delineations (e.g., summer, winter, crucial summer, etc.) and instead represents the distributions as year-round habitat/range.
A - within a cell for a particular habitat/range does not mean that that habitat/range is not found within the subject area.
Source: (Nevada Department of Wildlife, 2017b)

- *Crucial Summer Range* – Currently, approximately 22,400 acres are mapped as occurring within the FRTC region of influence.
- *Lambing Range* – occurs in the most steep, inaccessible cliffs near forage, and generally has a dry, southern exposure. Such terrain provides pregnant ewes security and isolation for the lambing period, which includes the time lambs need to become strong enough to follow the ewes. Large cliffs and rock outcroppings with sparse cover of trees or shrubs, such as mountain mahogany, afford both thermal and hiding cover to ewes and lambs. Currently, approximately 3,300 acres mapped as lambing range and 51,270 acres mapped as winter/lambing range underlie the FRTC region of influence (Table 3.10-14). There are four areas of mapped lambing range within the existing and proposed FRTC ranges areas: two along the west side of the Clan Alpine Range and two along the southern and eastern boundary of the existing B-17 range south of U.S. Route 50 (Figure 3.10-37). These areas are also mapped as winter range. Currently, approximately 3,500 acres of mapped winter-lambing range occurs within the existing B-17 range (Figure 3.10-37 and Table 3.10-14). Under Alternatives 1 and 2, an additional 15,800 acres of mapped winter-lambing range would be within the proposed B-17 and DVTA expansion areas. Under Alternative 3, an additional 10,733 acres of mapped winter-lambing range would be within the proposed B-17 and DVTA expansion areas.

Table 3.10-15 and Figure 3.10-30 provide a summary of mapped bighorn sheep range underlying existing FRTC airspace.

**Table 3.10-15: Area of Bighorn Sheep Range underlying Existing FRTC Special Use Airspace***

| Airspace | Current Floor – Ceiling | Mapped Bighorn Sheep Range (acres) | | | | | |
|---|---|---|---|---|---|---|---|
| | | YR | Sum | C-Sum | Win | Lamb | Win-Lamb |
| R-4804A | Surface – 17,999 ft. MSL | 22,465 | - | - | - | - | 2,011 |
| R-4812 | | 21,949 | - | - | - | - | 3,795 |
| R-4813A | | 78,920 | | | | | |
| R-4816N | 1,500 ft. AGL – 17,999 ft. MSL | 113,024 | - | - | - | - | - |
| R-4816S | 500 ft. AGL – 17,999 ft. MSL | 135,611 | - | - | - | - | 8,799 |
| Ranch Low/High | 500 ft. AGL – 9,000 ft. MSL | 1,269 | - | - | - | - | - |
| Reno MOA | 13,000 ft. MSL – 17,999 ft. MSL | 79,406 | - | - | - | - | - |
| Fallon North 1 MOA | 100 ft. AGL – 17,999 ft. MSL | 122,368 | - | - | - | - | - |
| Fallon North 2 MOA | | 225,414 | - | - | - | - | - |
| Fallon North 3 MOA | | 100,084 | - | - | - | - | - |
| Fallon North 4 MOA | 200 ft. AGL – 17,999 ft. MSL | 0 | 0 | 0 | 0 | 0 | 0 |
| Fallon South 1 MOA | 100 ft. AGL – 17,999 ft. MSL | 353,664 | - | 17,371 | - | - | 43,774 |
| Fallon South 2 MOA | | 88,036 | - | - | - | - | 7,494 |
| Fallon South 3 MOA | | 0 | 0 | 0 | 0 | 0 | 0 |
| Fallon South 4 MOA | 200 ft. AGL – 17,999 ft. MSL | 0 | 0 | 0 | 0 | 0 | 0 |
| Fallon South 5 MOA | | 41,255 | - | - | - | - | - |

**Table 3.10-15: Area of Bighorn Sheep Range underlying Existing FRTC Special Use Airspace* (continued)**

| Airspace | Current Floor – Ceiling | Mapped Bighorn Sheep Range (acres) | | | | | |
|---|---|---|---|---|---|---|---|
| | | YR | Sum | C-Sum | Win | Lamb | Win-Lamb |
| Duckwater ATCAA | 18,000 ft. MSL – 25,000 ft. MSL | 16,443 | 27,809 | 5,035 | 26,585 | 3,298 | - |
| Smokie ATCAA | | 37,667 | 44,382 | - | 4,167 | - | - |

Notes: *Only those airspace units that have mapped bighorn sheep range underlying the airspace and are proposed for revision under the proposed action are listed. See Figure 3.10-30. As the MOAs overlap the restricted areas (R-), the acreage listed within all restricted areas is already accounted for under the MOAs. In most cases, NDOW has not mapped seasonal habitat/range delineations (e.g., summer, winter, lambing, crucial summer, etc.) and instead represents the distributions as year-round habitat/range. A - within a cell for a particular habitat/range does not mean that that habitat/range is not found within the subject area. AGL = above ground level; ATCAA = Air Traffic Control Assigned Airspace; C-Sum = crucial summer; ft. = feet; Lamb = lambing; MOA = Military Operations Area; MSL = above mean sea level; R - = Restricted Area; Sum = summer; Win = winter; Win-Lamb = winter and lambing; YR = year-round.
Source: (Nevada Department of Wildlife, 2017b).

Based on 2017 NDOW data, six bighorn sheep populations occur within the existing B-17 and DVTA ranges and proposed B-17 and DVTA expansion areas: Stillwater Mountains, Sand Springs Range, Monte Cristo Mountains, Fairview Range, Slate Mountain, and Clan Alpine Range (Figures 3.10-32 and 3.10-34). These six herds are managed based on three Hunt Units/Herd Areas: (1) Stillwater Mountains, (2) Sand Springs Range/ Fairview Range/Monte Cristo Mountains, and (3) Clan Alpine Range. All herds were reintroduced into these areas in the 1980s and 1990s and have increased from lows of 34-38 animals in each herd area to all-time high population estimates in 2017 of 430 animals in the Stillwater Mountains, 425 in the Sand Springs Range/Fairview Range/Monte Cristo Mountains, and 440 in the Clan Alpine Range (Nevada Department of Wildlife, 2017a).

Mule Deer (*Odocoileus hemionus*). The mule deer is a Species of Conservation Concern under the Nevada WAP, Nevada Protected Game Mammal (NAC 503.020), and NNHP ranked as secure. Mule deer occur in a diversity of habitat types throughout Nevada but occur in highest densities in montane shrub dominated communities often associated with successional vegetation. During recent wildlife surveys in support of this EIS, mule deer were commonly recorded on camera traps within the proposed DVTA, B-17, and B-20 expansion areas (Figures 3.10-32 through 3.10-36) (see Supporting Study: Final Wildlife Remote Camera Trapping Survey Report, available at http://www.frtcmodernization.com). Based on NDOW mapping of mule deer habitat, a total of approximately 4.2 million acres of six habitat or range types were delineated within the region of influence: year-round, summer, crucial summer, transition, winter, crucial winter, and limited use (Table 3.10-14 and Figure 3.10-38). Limited use habitat only occurs in the northeastern corner of the region of influence and is not discussed further.

- *Year-round Range* – Areas where animals are likely to inhabit all months of the year; year-round range is exclusive of all other seasonal ranges. Currently, approximately 1.2 million acres are mapped as occurring within the FRTC region of influence, and 653 and 7,400 acres are within the existing DVTA and B-17 range areas, respectively. Under Alternatives 1 and 2, 68,368 acres would be within the proposed B-17 and DVTA expansion areas. Under Alternative 3, 35,693 acres would be within the proposed B-17 and DVTA expansion areas (Table 3.10-14).
- *Summer Range* – Currently, approximately 737,570 acres underlie the FRTC region of influence (Table 3.10-14). There is no mapped summer range within the proposed FRTC expansion areas, as most mule deer habitat in these areas is considered year-round habitat.

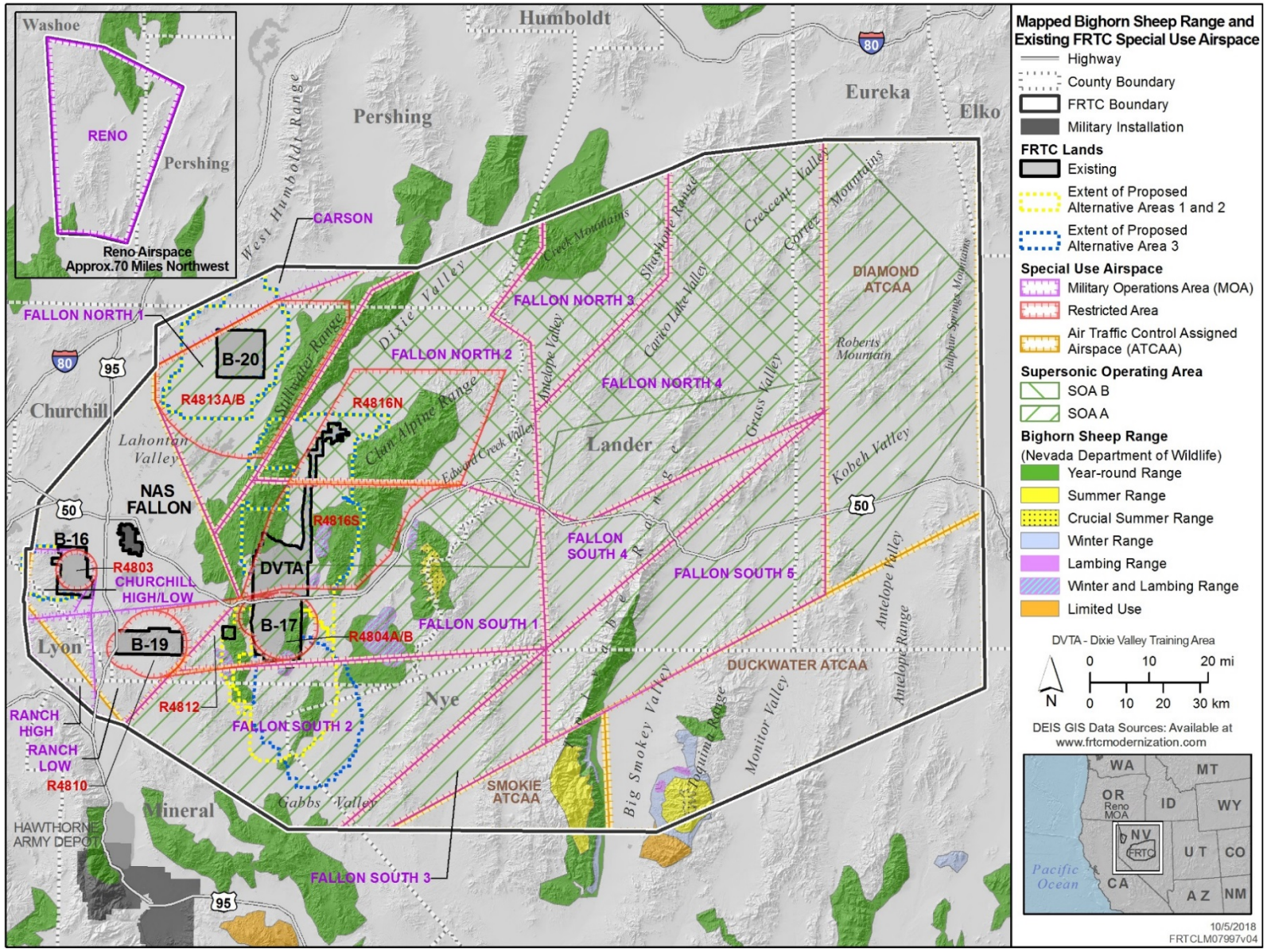


**Figure 3.10-37: Mapped Bighorn Sheep Range and Existing FRTC Special Use Airspace**

- *Crucial Summer Range* – Part of the summer range that is vital or critical to the continued existence and propagation of the herd population; crucial summer range is exclusive of other summer seasonal ranges. Currently, approximately 309,700 acres are mapped as occurring within the FRTC region of influence. There is no mapped crucial summer range within the proposed FRTC expansion areas, as most mule deer habitat in these areas is considered year-round habitat. Under Alternatives 1, 2, and 3, 14,650 acres would occur within the proposed DVTA expansion area (Table 3.10-14).
- *Transition Range* – Areas that animals consistently utilize between seasonal ranges but are not used for extended seasonal use. These areas are inhabited longer than movement corridors and can be crucial for building fat reserves to survive winters or build body condition to increase birthing success. Currently, approximately 105,000 acres are mapped as occurring within the FRTC region of influence (Table 3.10-14). There is no mapped transition range within the proposed FRTC expansion areas, as most mule deer habitat in these areas is considered year-round habitat.
- *Winter Range* – Part of the overall distribution range where animals typically occur during winter (January through April) and are influenced by snow depth and forage availability (late fall). Winter range is not necessarily exclusive of other seasonal uses. Currently, approximately 1.0 million acres are mapped as occurring within the FRTC region of influence. There is no mapped winter range within the proposed FRTC expansion areas, as most mule deer habitat in these areas is considered year-round habitat. Under Alternative 3, there would be approximately 300 acres of mapped winter range within the proposed B-17 expansion area (Table 3.10-14).
- *Crucial Winter Range* – Part of the winter range that is vital or critical to the continued existence and propagation of the herd population; crucial winter range is exclusive of other winter seasonal ranges. Currently, approximately 733,500 acres are mapped as occurring within the FRTC region of influence. There is no mapped crucial winter range within the proposed FRTC expansion areas, as most mule deer habitat in these areas is considered year-round habitat. Under Alternatives 1, 2, and 3, 24,717 acres would occur within the proposed DVTA expansion area (Table 3.10-14).

Table 3.10-16 and Figure 3.10-38 provide a summary of mapped mule deer range underlying existing FRTC airspace.

**Table 3.10-16: Area of Mule Deer Range underlying Existing FRTC Airspace***

| Airspace | Current Floor–Ceiling | Mapped Mule Deer Range (acres) | | | | | |
|---|---|---|---|---|---|---|---|
| | | YR | Sum | C-Sum | Win | C-Win | Trans |
| R-4804A | Surface–17,999 ft. MSL | 11,842 | - | - | - | - | - |
| R-4812 | | 20,664 | - | - | - | - | - |
| R-4813A | | | | | | | |
| R-4816N | 1,500 ft. AGL–17,999 ft. MSL | 58,758 | - | 23,677 | - | 31,129 | - |
| R-4816S | 500 ft. AGL–17,999 ft. MSL | 9,715 | - | 21,901 | - | 53,972 | - |
| Reno MOA | 13,000 ft. MSL–17,999 ft. MSL | 88,346 | 13,904 | 95,462 | 29,156 | 126,303 | - |
| Fallon North 1 MOA | 100 ft. AGL–17,999 ft. MSL | 72,241 | - | - | - | - | - |
| Fallon North 2 MOA | | 190,207 | 3,894 | 33,038 | 13,396 | 34,242 | - |
| Fallon North 3 MOA | | 9,634 | 33,681 | - | 74,637 | 0 | - |
| Fallon North 4 MOA | 200 ft. AGL–17,999 ft. MSL | 132,158 | 166,707 | - | 201,011 | 193,340 | - |
| Fallon South 1 MOA | 100 ft. AGL–17,999 ft. MSL | 135,716 | 265 | 91,027 | 28,537 | 142,733 | - |
| Fallon South 2 MOA | | 75,683 | 11,284 | - | 17,882 | 35,410 | - |
| Fallon South 3 MOA | | 38,057 | 3,643 | - | 29,573 | 9,173 | - |
| Fallon South 4 MOA | 200 ft. AGL–17,999 ft. MSL | 22,364 | 50,048 | - | 81,786 | 9,106 | - |
| Fallon South 5 MOA | | 57,092 | 102,404 | - | 185,202 | 1,477 | - |
| Diamond ATCAA | 18,000 ft. MSL–29,000 ft. MSL | 118,587 | 166,535 | 89,529 | 69,777 | 108,090 | 104,978 |
| Duckwater ATCAA | 18,000 ft. MSL–25,000 ft. MSL | 200,481 | 107,408 | - | 242,654 | 58,946 | - |
| Smokie ATCAA | | 66,747 | 75,306 | - | 52,862 | 8,535 | - |

Notes: *Only those airspace units that have mapped mule deer range underlying the airspace and are proposed for revision under the proposed action are listed. See Figure 3.10-31.
In most cases, NDOW has not mapped seasonal habitat/range delineations (e.g., summer, winter, crucial summer, etc.) and instead represents the distributions as year-round habitat/range. A - within a cell for a particular habitat/range does not mean that that habitat/range is not found within the subject area. AGL = above ground level; ATCAA = Air Traffic Control Assigned Airspace; C-Sum = crucial summer; C-Win = crucial winter; ft. = feet; MOA = Military Operations Area; MSL = above mean sea level; R - = Restricted Area; Sum = summer; Trans = transition; Win = winter; YR = year-round.
Source: (Nevada Department of Wildlife, 2017b)

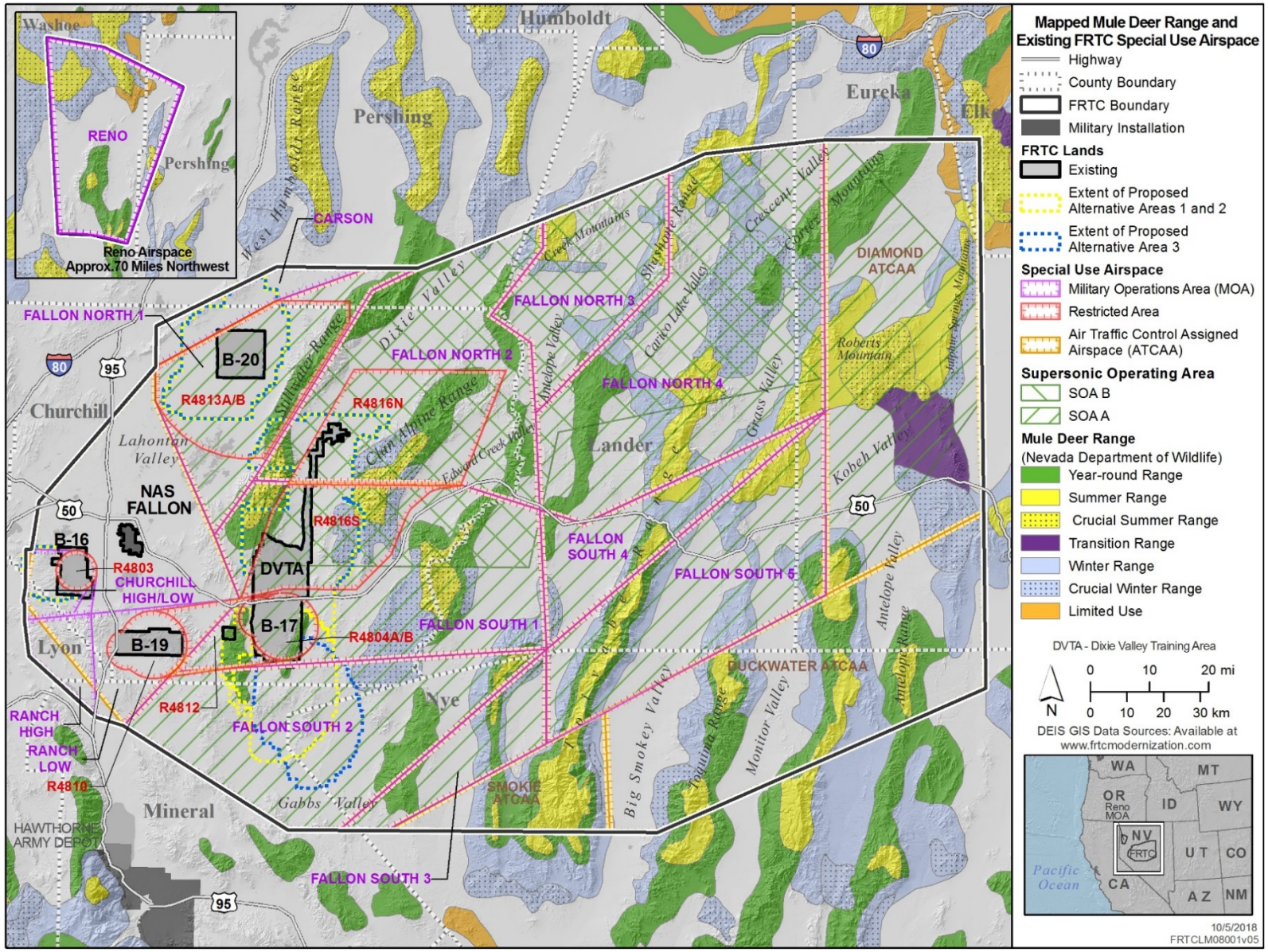


**Figure 3.10-38: Mapped Mule Deer Range and Existing FRTC Special Use Airspace**

Pronghorn (*Antilocapra americana*). The pronghorn is a Nevada Protected Game Mammal (NAC 503.020) and ranked by the NNHP as secure. Pronghorn are found primarily in gentle rolling to flat, wide-open topography in valleys between mountain ranges in northern and central Nevada dominated by low sagebrush and northern desert shrubs. Over 150 different species of grasses, forbs, and browse plants are eaten by pronghorn, which allows them to occupy a variety of habitat types. Some of the main components of pronghorn diet include sagebrush, antelope bitterbrush, saltbrush, rabbitbrush, cheatgrass, Indian rice grass, crested wheat grass, lambsquarter, and shadscale. During recent wildlife surveys in support of this EIS, pronghorn were commonly recorded on camera traps within the proposed DVTA and B-17 expansion areas (Figures 3.10-32 through 3.10-34) (see Supporting Study: Final Wildlife Remote Camera Trapping Survey Report, available at http://www.frtcmodernization.com). Based on NDOW mapping of pronghorn habitat, a total of approximately 6.4 million acres of five range types were delineated within the region of influence: year-round, summer, crucial summer, winter, and crucial winter. Limited use habitat only occurs in the northern portion of the Reno MOA and is not discussed further (Figure 3.10-39). Only mapped year-round range and crucial summer range are found within existing FRTC ranges or proposed expansion areas.

- *Year-round Range* – Areas where animals are likely to inhabit all months of the year; year-round range is exclusive of all other seasonal ranges. Currently, approximately 5.6 million acres are mapped as occurring within the FRTC region of influence, and the following are within the existing FRTC lands: B-16 (646 acres), B-17 (54,700 acres), B-20 (2,337 acres), and DVTA (76,743 acres). Under Alternatives 1 and 2, approximately 513,600 acres would be within the proposed B-16, B-17, B-20, and DVTA expansion areas. Under Alternative 3, approximately 511,000 acres would be within the proposed B-16, B-17, B-20, and DVTA expansion areas (Table 3.10-14).
- *Summer Range* – Currently, approximately 351,900 acres are mapped as occurring within the FRTC region of influence (Table 3.10-14). There is no mapped summer range within the proposed FRTC expansion areas, as most pronghorn habitat in these areas is considered year-round habitat.
- *Crucial Summer Range* – Part of the summer range that is vital or critical to the continued existence and propagation of the herd population; crucial summer range is exclusive of other summer seasonal ranges. Currently, approximately 51,670 acres are mapped as occurring within the FRTC region of influence. There is no mapped crucial summer range within the existing FRTC ranges, as most pronghorn habitat in these areas is considered year-round habitat. Under Alternatives 1 and 2, approximately 15,300 acres would be within the proposed B-17 and DVTA expansion areas. Under Alternative 3, approximately 5,500 acres would be within the proposed DVTA expansion area (Table 3.10-14).
- *Winter Range* – Currently, approximately 246,000 acres are mapped as occurring within the FRTC region of influence (Table 3.10-14). There is no mapped winter range within the proposed FRTC expansion areas, as most pronghorn habitat in these areas is considered year-round habitat.
- *Crucial Winter Range* – Part of the winter range that is vital or critical to the continued existence and propagation of the herd population; crucial winter range is exclusive of other winter seasonal ranges. Currently, approximately 152,500 acres are mapped as occurring within the FRTC region of influence (Table 3.10-14). There is no mapped crucial winter range within the proposed FRTC expansion areas, as most pronghorn habitat in these areas is considered year-round habitat.

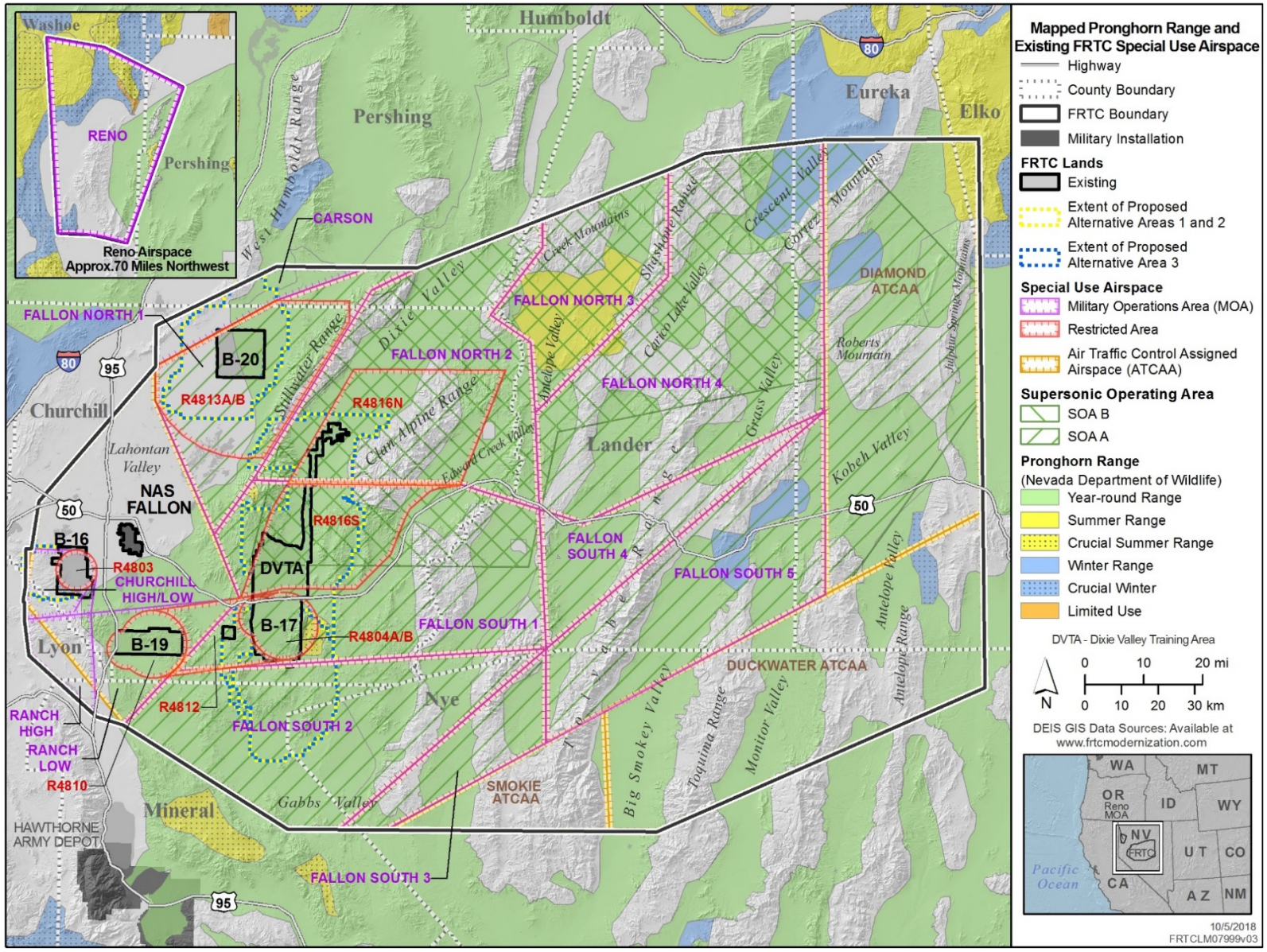


**Figure 3.10-39: Mapped Pronghorn Range and Existing FRTC Special Use Airspace**

Table 3.10-17 and Figure 3.10-39 provide a summary of mapped pronghorn range underlying existing FRTC airspace.

**Table 3.10-17: Area of Pronghorn Range Underlying Existing FRTC Airspace***

| Airspace | Current Floor–Ceiling | Mapped Pronghorn Range (acres) | | | | |
|---|---|---|---|---|---|---|
| | | YR | Sum | C-Sum | Win | C-Win |
| R-4804A | Surface–17,999 ft. MSL | 66,707 | - | 7,532 | - | - |
| R-4812 | | 90,414 | - | - | - | - |
| R-4810 | Surface–17,000 ft. MSL | 73,748 | - | - | - | - |
| R-4816N | 1,500 ft. AGL–17,999 ft. MSL | 208,288 | - | - | - | - |
| R-4816S | 500 ft. AGL–17,999 ft. MSL | 239,299 | - | - | - | - |
| Ranch High/Low MOA | 500 ft. AGL–13,000 ft. MSL | 170,742 | - | - | - | - |
| Reno MOA | 13,000 ft. MSL–17,999 ft. MSL | 195,513 | 123,271 | 32,278 | - | 121,863 |
| Fallon North 1 MOA | 100 ft. AGL–17,999 ft. MSL | 249,769 | - | 1,055 | - | - |
| Fallon North 2 MOA | | 640,390 | 293 | - | - | - |
| Fallon North 3 MOA | | 93,847 | 171,691 | - | - | - |
| Fallon North 4 MOA | 200 ft. AGL–17,999 ft. MSL | 533,560 | 8,857 | - | 98,041 | - |
| Fallon South 1 MOA | 100 ft. AGL–17,999 ft. MSL | 807,359 | - | 18,337 | - | - |
| Fallon South 2 MOA | | 689,167 | - | - | - | - |
| Fallon South 3 MOA | | 134,115 | - | - | - | - |
| Fallon South 4 MOA | 200 ft. AGL–17,999 ft. MSL | 171,874 | - | - | - | - |
| Fallon South 5 MOA | | 350,980 | - | - | 67,783 | - |
| Diamond ATCAA | 18,000 ft. MSL–29,000 ft. MSL | 656,913 | 47,794 | - | 80,180 | 10,647 |
| Duckwater ATCAA | 18,000 ft. MSL–25,000 ft. MSL | 604,806 | - | - | - | 19,913 |
| Smokie ATCAA | | 56,651 | - | - | - | - |

Notes: *Only those airspace units that have mapped pronghorn range underlying the airspace and are proposed for revision under the proposed action are listed. See Figure 3.10-32.
In most cases, NDOW has not mapped seasonal habitat/range delineations (e.g., summer, winter, crucial summer, etc.) and instead represents the distributions as year-round habitat/range. Therefore, a - within a cell for a particular habitat/range does not mean that that habitat/range is not found within the subject area. AGL = above ground level; ATCAA = Air Traffic Control Assigned Airspace; C-Sum = crucial summer; C-Win = crucial winter; ft. = feet; MOA = Military Operations Area; MSL = above mean sea level; R- = Restricted Area; Sum = summer; Win = winter; YR = year-round.
Source:(Nevada Department of Wildlife, 2017b)

Elk (*Cervus elaphus*). The elk is a Nevada Protected Game Mammal (NAC 503.020) and NNHP ranked as secure. Elk are found in two areas within the south-central and southeastern portions of the FRTC region of influence and are not found within the existing ranges or proposed FRTC expansion areas (Figure 3.10-40). Elk are probably the most adaptable of North American ungulates and inhabit a wide variety of habitats. Across the elk's range in North America, important elk habitats include open grasslands, shrublands, and open- and closed-canopy conifer, hardwood, and mixed hardwood-conifer forests from valley bottoms up mountain slopes to alpine areas. In addition, elk can adapt to a wide range of ecological disturbances, including fire, and occur in early-successional habitats such as logged areas,

burns, and subalpine shrublands. On the landscape scale, elk are generally associated with a mosaic of open areas used for foraging and forested area used for cover. Habitat use depends upon season, weather (e.g., snow conditions), calving, presence of salt lick sites and water, presence of predators and human disturbance, and individual age and gender (Hall, 1995; Kays & Wilson, 2009).

- *Year-round Range* – Areas where animals are likely to inhabit all months of the year; year-round range is exclusive of all other seasonal ranges. Currently, approximately 490,000 acres are mapped as occurring within the southeastern portion of the FRTC region of influence (Table 3.10-14 and Figure 3.10-40).
- *Summer Range* – Currently, approximately 180,000 acres are mapped as occurring within the southcentral and southeastern portions of the FRTC region of influence (Table 3.10-14 and Figure 3.10-40).
- *Transition Range* – Areas that animals consistently utilize between seasonal ranges but are not used for extended seasonal use. These areas are inhabited longer than movement corridors and can be crucial for building fat reserves to survive winters or build body condition to increase birthing success. There are approximately 109,000 acres of mapped elk transition range within the south-central portion of the FRTC region of influence (Table 3.10-14 and Figure 3.10-40).
- *Winter Range* – Currently, approximately 148,000 acres are mapped as occurring within the southcentral and southeastern portions of the FRTC region of influence (Table 3.10-14 and Figure 3.10-40).

Table 3.10-18 and Figure 3.10-40 provide a summary of mapped elk range underlying existing FRTC airspace.

**Table 3.10-18: Area of Elk Range underlying Existing FRTC Airspace***

| Airspace | Current Floor–Ceiling | Mapped Elk Range (acres) | | | |
|---|---|---|---|---|---|
| | | YR | Sum | Win | Trans |
| Fallon South 1 MOA | 100 ft. AGL–17,999 ft. MSL | 0 | 0 | 24,599 | 4,463 |
| Fallon South 2 MOA | | 0 | 0 | 54,310 | 49,579 |
| Fallon South 3 MOA | | 0 | 496 | 1,624 | 47,928 |
| Fallon South 5 MOA | 200 ft. AGL–17,999 ft. MSL | 121,608 | 11,444 | - | - |
| Diamond ATCAA | 18,000 ft. MSL–29,000 ft. MSL | 26,268 | 16,036 | - | - |
| Duckwater ATCAA | 18,000 ft. MSL–25,000 ft. MSL | 344,706 | 72,191 | 67,946 | - |
| Smokie ATCAA | | 0 | 79,598 | 0 | 7,963 |

Notes: *Only those airspace units that have mapped elk range underlying the airspace and are proposed for revision under the proposed action are listed. See Figure 3.10-33.
In most cases, NDOW has not mapped seasonal habitat/range delineations (e.g., summer, winter, etc.) and instead represents the distributions as year-round habitat/range. Therefore, a - within a cell for a particular habitat/range does not mean that that habitat/range is not found within the subject area. AGL = above ground level; ATCAA = Air Traffic Control Assigned Airspace; ft. = feet; MOA = Military Operations Area; MSL = above mean sea level; R- = Restricted Area; Sum = summer; Trans = transition; Win = winter; YR = year-round.
Source: Nevada Department of Wildlife (2017a).

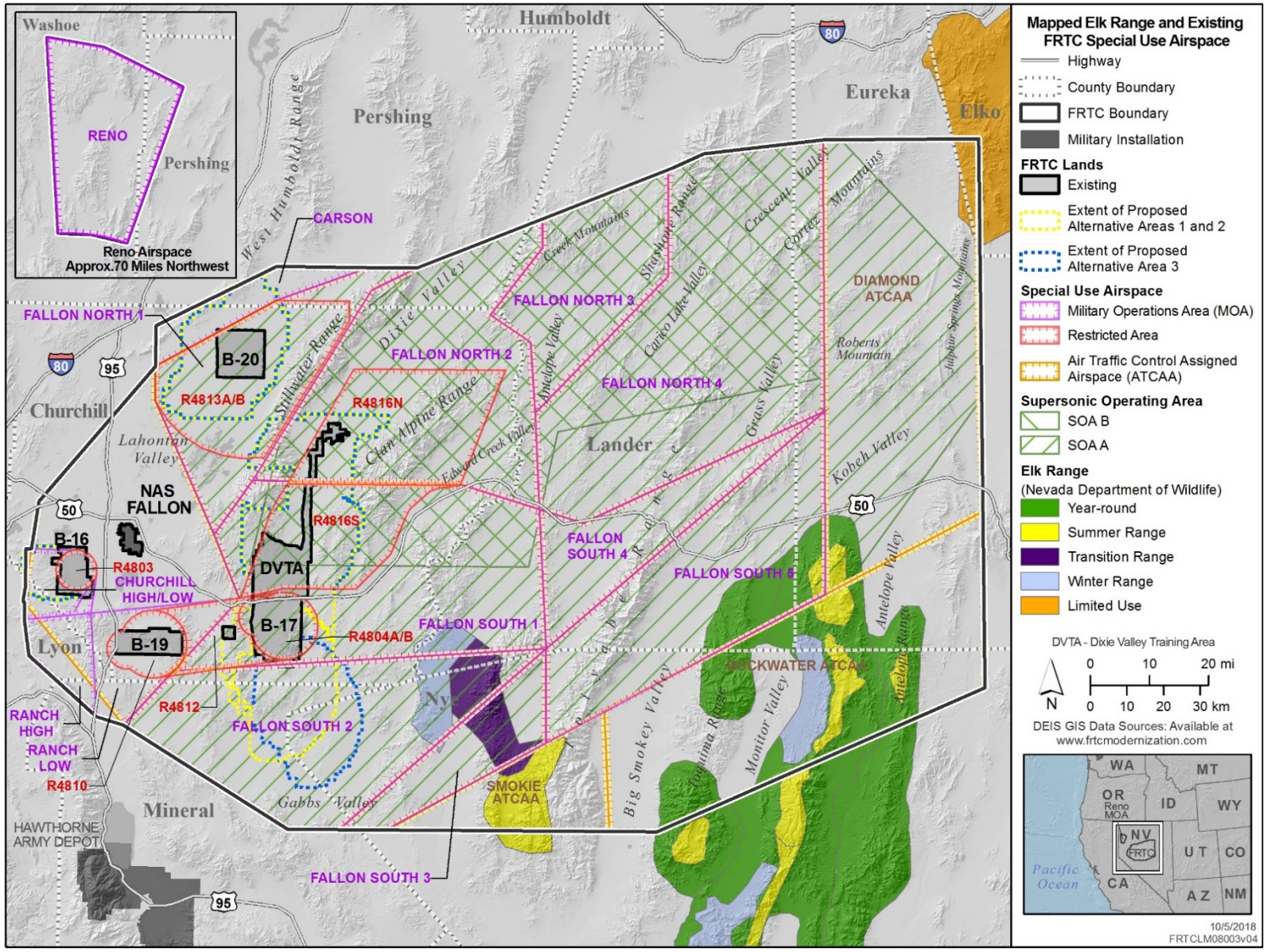


**Figure 3.10-40: Mapped Elk Range and Existing FRTC Special Use Airspace**

### 3.10.2.6 Bats

In 2017, the Navy completed acoustic surveys for bat species within the proposed FRTC expansion areas. Two survey methods were used: driving transects and stationary acoustic stations. Six driving transects were conducted within the proposed DVTA and B-17 expansion areas over the course of three nights using an acoustic recorder and ultrasonic microphone. A total of nine stationary ultrasonic acoustic bat detectors were placed within the proposed B-16, B-17, B-20, and DVTA expansion areas from September through early December 2017. Detectors were placed so as to include a variety of potential bat foraging and roosting habitats (e.g., in the vicinity of mine shafts, ephemeral draws, small water sources, and canyons where bat activity might be focused along a corridor). Further details regarding survey methodologies can be found in the Supporting Study: Passive Acoustic Bat Survey Report [available at http://www.frtcmodernization.com]. Based on the passive acoustic surveys, 6,533 acoustic files were collected and 15 bat species were identifiable within all proposed FRTC expansion areas (Table 3.10-19). All of these species are considered special-status species and are discussed below. Unless referenced otherwise, the following information is taken from the *Revised Nevada Bat Conservation Plan* (Bradley et al., 2006) and the Nevada WAP (Nevada Department of Wildlife, 2013).

**Table 3.10-19: Occurrence of Special-status Bat Species within the Proposed FRTC Expansion Areas**

| Common Name (Scientific Name) | Proposed Expansion Area* | | | |
|---|---|---|---|---|
| | B-16 | B-17 | B-20 | DVTA |
| Big brown bat (*Eptesicus fuscus*) | x | x | x | x |
| Brazilian free-tailed bat (*Tadarida brasiliensis*) | x | x | x | x |
| California myotis (*Myotis californicus*) | x | x | x | x |
| Canyon bat or western pipistrelle (*Pipistrellus hesperus*) | x | x | x | x |
| Fringed myotis (*Myotis thysanodes*) | | | x | x |
| Hoary bat (*Lasiurus cinereus*) | x | x | x | x |
| Little brown bat (*Myotis lucifugus*) | x | | x | x |
| Long-eared myotis (*Myotis evotis*) | | | | x |
| Long-legged myotis (*Myotis volans*) | x | | x | x |
| Pallid bat (*Antrozous pallidus*) | x | | | x |
| Silver-haired bat (*Lasionycteris noctivagans*) | x | x | x | x |
| Townsend's big-eared bat (*Corynorhinus townsendii*) | x | x | | x |
| Western red bat (*Lasiurus blossevillii*) | x | x | x | x |
| Western small-footed myotis (*Myotis ciliolabrum*) | x | | x | x |
| Yuma myotis (*Myotis yumanensis*) | x | x | x | x |

Note: *DVTA = Dixie Valley Training Area.
Source: Supporting Study: Burrowing Owl Survey Report (available at http://www.frtcmodernization.com)

Big Brown Bat (*Eptesicus fuscus*). The big brown bat is a BLM Sensitive Species and ranked by the NNHP as vulnerable/apparently secure. A year-round resident, big brown bats hibernate in Nevada but periodically arouse to actively forage and drink in the winter. Characteristics and locations of winter hibernacula in Nevada are completely unknown, and poorly understood throughout this species range. Big brown bats select a variety of day roosts including caves, trees, mines, buildings, and bridges. It often roosts at night in more open settings in buildings, mines and bridges, and may roost in groups up to several hundred individuals. The big brown bat was detected in all proposed FRTC expansion areas (see Supporting Study, Final Survey Report: Passive Acoustic Bat Surveys, available at http://www.frtcmodernization.com), was previously detected within the northern portion of the existing DVTA (Tierra Data Inc., 2008), and the NNHP includes records of the species in the vicinity of the

proposed expansion areas (Nevada Natural Heritage Program, 2018b) (Figures 3.10-31 through 3.10-36, 3.10-41, and 3.10-42).

Brazilian Free-tailed Bat (*Tadarida brasiliensis*). The Brazilian free-tailed bat is a BLM Sensitive Species, Conservation Priority Species under the Nevada WAP, Nevada Protected Mammal (NAC 503.030.1), and ranked by the NNHP as apparently secure. Although Brazilian free-tails are one of the most common species in much of the west, their numbers may be well below what they were historically. This species is thought to be a summer resident, although they may hibernate in southern Nevada. They use 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 approximately 70,000-100,000). The Brazilian free-tailed bat was detected in all proposed expansion areas (see Supporting Study, Final Survey Report: Passive Acoustic Bat Surveys, available at http://www.frtcmodernization.com); was previously detected in Dixie Meadows, north of the existing DVTA (Tierra Data Inc., 2008); and the NNHP and NDOW include records of the species within and in the vicinity of the proposed expansion areas (Nevada Department of Wildlife, 2018a; Nevada Natural Heritage Program, 2018b) (Figures 3.10-31 through 3.10-36, 3.10-41, and 3.10-42).

California Myotis (*Myotis californicus*). The California myotis is a BLM Sensitive Species and ranked by the NNHP as vulnerable/apparently secure. Although more common in the southern half of the state, this species is found throughout Nevada, primarily at the low and middle elevations to 5,900 feet (1,800 m), although occasionally found at higher elevations. It is thought to roost primarily in crevices, although other day roosts may include mines, caves, buildings, hollow trees, and under exfoliating bark, and night roost sites may occur in a wider variety of structures. California myotis 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. Foraging occurs in the open, but some individuals have been observed entering mines at dusk presumably to feed on resident insects. The California myotis was detected in all proposed expansion areas (see Supporting Study, Final Survey Report: Passive Acoustic Bat Surveys, available at http://www.frtcmodernization.com); was previously detected in the existing DVTA, NAS Fallon, and B-19 (Tierra Data Inc., 2008); and the NNHP and NDOW include records of the species within and in the vicinity of the proposed expansion areas (Nevada Department of Wildlife, 2018a; Nevada Natural Heritage Program, 2018b) (Figures 3.10-31 through 3.10-36, 3.10-41, and 3.10-42).

Canyon Bat or Western Pipistrelle (*Pipistrellus hesperus*). The western pipistrelle is a BLM Sensitive Species and ranked by the NNHP as vulnerable/apparently secure. It is found throughout most of the state, primarily in the southern and western portions. These bats are most common in low and middle elevations (5,900 feet), although occasionally at higher elevations, and is thought to be a year-round resident. This species hibernates in winter, but periodically arouse to actively forage and drink. Day roosts are primarily associated with rock crevices but may include mines, caves, or occasional buildings and vegetation. The western pipistrelle was detected in all proposed expansion areas (see Supporting Study, Final Survey Report: Passive Acoustic Bat Surveys, available at http://www.frtcmodernization.com), was previously detected within the northern portion of the existing DVTA (Tierra Data Inc., 2008), and the NNHP and NDOW include records of the species within and in the vicinity of the proposed expansion areas (Nevada Department of Wildlife, 2018a; Nevada Natural Heritage Program, 2018b) (Figures 3.10-31 through 3.10-36, 3.10-41, and 3.10-42).

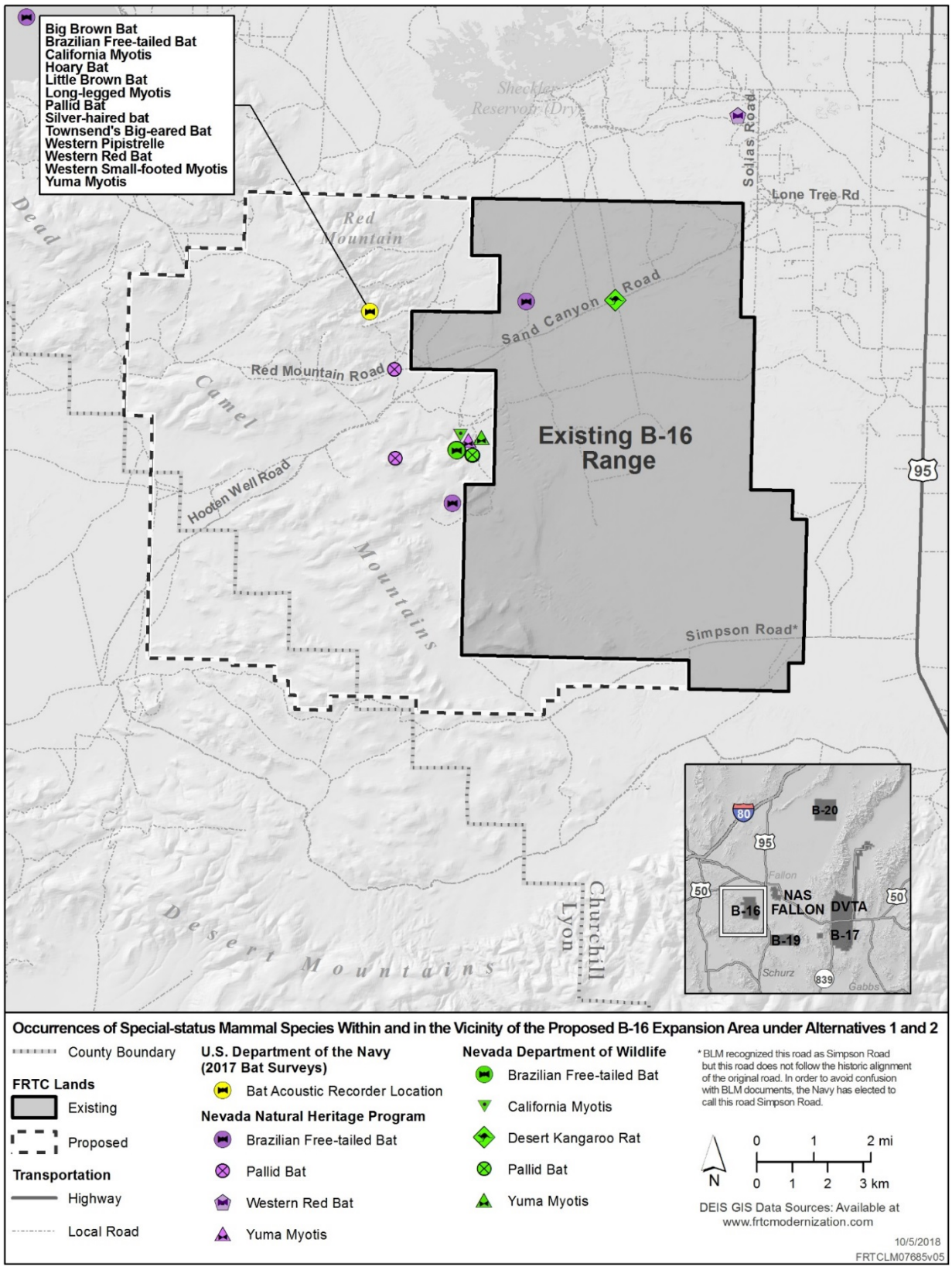


**Figure 3.10-41: Occurrences of Special-status Mammal Species Within and in the Vicinity of the Proposed B-16 Expansion Area Under Alternatives 1 and 2**

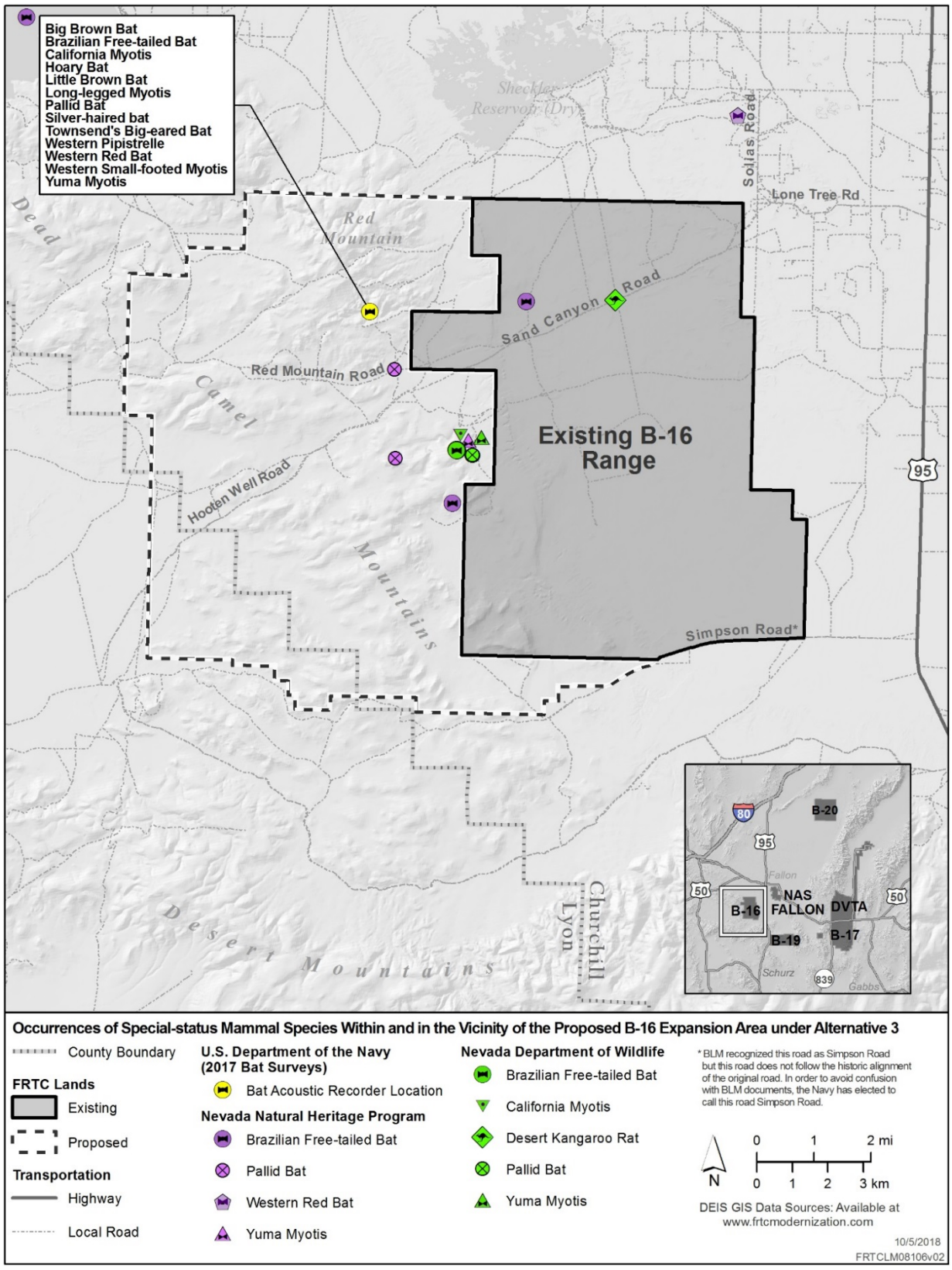


**Figure 3.10-42: Occurrences of Special-status Mammal Species Within and in the Vicinity of the Proposed B-16 Expansion Area Under Alternative 3**

Fringed myotis (*Myotis thysanodes*). The fringed myotis is a BLM Sensitive Species, Conservation Priority Species under the Nevada WAP, Nevada Protected Mammal (NAC 503.030.1), and ranked by the NNHP as imperiled. Fringed myotis are widely distributed but rare in Nevada. Caves and mines are not only used as roost sites but also may be used for foraging sites. Little is known about the cliff and crevice roosting behavior of this species in Nevada. Foraging occurs in and among vegetation, with some gleaning activity. They are found in a wide range of habitats from low desert scrub habitats to high elevation coniferous forests, and from upper elevation creosote bush desert to pinyon-juniper and white fir. Only four recordings were logged for the fringed myotis within the proposed DVTA and B-20 expansion areas, which may indicate transient individuals moving through the study area during the 2017 survey period (Figures 3.10-34 and 3.10-35) (see Supporting Study, Final Survey Report: Passive Acoustic Bat Surveys, available at http://www.frtcmodernization.com). Fringed myotis were not detected during 2007 bat surveys on existing Navy-managed FRTC lands (Tierra Data Inc., 2008), and the NNHP and NDOW do not include any records of the species in the vicinity of the proposed expansion areas (Nevada Department of Wildlife, 2018a; Nevada Natural Heritage Program, 2018b).

Hoary bat (*Lasiurus cinereus*). Considered an extremely rare species in Nevada, the hoary bat is a BLM Sensitive Species, Conservation Priority Species under the Nevada WAP, and ranked by the NNHP as imperiled/vulnerable. Hoary bats have been documented in Nevada primarily in wooded habitats, including mesquite bosque and cottonwood/willow riparian areas. Current Nevada records indicate this species is distributed at elevations of 1,380-6,595 feet. Hoary bats are thought to be migrants but may be a summer resident in the Fallon area. A solitary rooster, the hoary bat day roosts in trees, within the foliage and presumably in leaf litter on the ground. Foraging is generally at high altitude over the tree canopy. The hoary bat was detected in all proposed expansion areas (see Supporting Study, Final Survey Report: Passive Acoustic Bat Surveys, available at http://www.frtcmodernization.com), was previously detected within the northern portion of the existing DVTA (Tierra Data Inc., 2008), and the NNHP and NDOW include records of the species in the vicinity of the proposed expansion areas (Nevada Natural Heritage Program, 2018b) (Figures 3.10-31 through 3.10-36, 3.10-41, and 3.10-42).

Little brown bat (*Myotis lucifugus*). The little brown bat is a BLM Sensitive Species, Conservation Priority Species under the Nevada WAP, and ranked by the NNHP as imperiled/vulnerable. Found primarily at higher elevations and higher latitudes and often associated with coniferous forest, little brown bats require water sources near day roosts. Day roosts include hollow trees, rock outcrops, buildings, and occasionally mines and caves, and are often roost with Yuma myotis. Foraging occurs in open areas among vegetation, along water margins, and sometimes about 3 feet above the water surface. The little brown bat was detected in the proposed B-16, B-20, and DVTA expansion areas (see Supporting Study, Final Survey Report: Passive Acoustic Bat Surveys, available at http://www.frtcmodernization.com), was previously detected within the northern portion of the existing DVTA (Tierra Data Inc., 2008), and the NNHP includes records of the species in the vicinity of the proposed expansion areas (Nevada Natural Heritage Program, 2018b) (Figures 3.10-31 through 3.10-36, 3.10-41, and 3.10-42).

Long-eared myotis (*Myotis evotis*). The long-eared myotis is a BLM Sensitive Species, Conservation Priority Species under the Nevada WAP, and ranked by the NNHP as vulnerable. They are widespread throughout Nevada in upper elevation woodlands and forests. However, they tend not to be abundant anywhere with the possible exception of pinyon-juniper woodlands in limestone mountains. They do not appear to form large roosts and seem to alternate roosts frequently. Foraging occurs near vegetation and the ground along rivers and streams, over ponds, and within cluttered forest environment. Night roost use of caves and mines may involve feeding within the structure, gleaning moths from the rock

walls. Only one recording of long-eared myotis was logged within the proposed DVTA expansion area, which may indicate transient individuals moving through the area during the survey period (see Supporting Study, Final Survey Report: Passive Acoustic Bat Surveys, available at http://www.frtcmodernization.com). It was previously detected within the northern portion of the existing DVTA (Tierra Data Inc., 2008), and the NNHP and NDOW include records of the species in the vicinity of the proposed expansion areas (Nevada Department of Wildlife, 2018a; Nevada Natural Heritage Program, 2018b) (Figures 3.10-31 and 3.10-34).

Long-legged myotis (*Myotis volans*). The long-legged myotis is a BLM Sensitive Species and ranked by the NNHP as vulnerable/apparently secure. This species is typically found throughout Nevada but more widespread and common in the northern half of the state, occurring from mid to high elevations. Long-legged myotis are found in pinyon-juniper, Joshua tree woodland, and montane coniferous forest habitats. This species is occasionally found in Mojave and salt desert scrub, and blackbrush, mountain shrub, and sagebrush. Day roosts primarily in hollow trees, particularly large diameter snags or live trees with lightning scars, and may also use rock crevices, caves, mines, and buildings when available. Caves and mines may be used for night roosts. Foraging occurs in open areas, often at canopy height. The long-legged myotis was detected in the proposed B-16, B-20, and DVTA expansion areas (see Supporting Study, Final Survey Report: Passive Acoustic Bat Surveys, available at http://www.frtcmodernization.com), was previously detected within the northern portion of the existing DVTA (Tierra Data Inc., 2008), and the NNHP includes numerous records of the species in the vicinity of the proposed expansion areas (Nevada Natural Heritage Program, 2018b) (Figures 3.10-31 through 3.10-36, 3.10-41, and 3.10-42).

Pallid bat (*Antrozous pallidus*). The pallid bat is a BLM Sensitive Species, Nevada Protected Mammal (NAC 503.030.1), and is ranked by the NNHP as vulnerable. It is found year-round throughout the state, primarily in the low and middle elevations (5,900 feet), although it has been found at over 10,170 feet. It occurs in a variety of habitats, such as low desert, brushy terrain, pinyon-juniper, blackbrush, creosote, sagebrush, salt desert scrub habitats, coniferous forest, and non-coniferous woodlands. The pallid bat hibernates during the winter but periodically rouses to forage and drink water. The species was detected in the proposed B-16 and DVTA expansion areas (see Supporting Study, Final Survey Report: Passive Acoustic Bat Surveys, available at http://www.frtcmodernization.com), was previously detected within the northern portion of the existing DVTA (Tierra Data Inc., 2008), and the NNHP and NDOW includes records of the species in the vicinity of the proposed expansion areas (Nevada Department of Wildlife, 2018a; Nevada Natural Heritage Program, 2018b) (Figures 3.10-31 through 3.10-36, 3.10-41, and 3.10-42).

Silver-haired bat (*Lasionycteris noctivagans*). The silver-haired bat is a BLM Sensitive Species, Conservation Priority Species under the Nevada WAP, and ranked by the NNHP as vulnerable. Silvered-haired bats are widely distributed in Nevada in mature forested habitats especially coniferous and mixed deciduous/coniferous forests of pinyon-juniper, subalpine fir, white fir, limber pine, aspen, cottonwood, and willow. Current Nevada records indicate this species occurs at 1,575-8,270 feet. Roosting occurs almost exclusively in trees in summer. Maternity roosts are generally in woodpecker hollows and under the loose bark of large diameter snags. Small groups and single animals will roost under exfoliating bark; it has also been found roosting under leaf litter. Winter roosts include hollow trees, rock crevices, mines, caves, and houses. Foraging is generally above the canopy layer in or near wooded areas and along edges of roads, streams or water bodies. Foraging areas may be far from roost sites (up to 9 miles). The silver-haired bat was detected in all proposed expansion areas (see Supporting Study, Final Survey

Report: Passive Acoustic Bat Surveys, available at http://www.frtcmodernization.com), was previously detected within the northern portion of the existing DVTA (Tierra Data Inc., 2008), and the NNHP and NDOW include records of the species in the vicinity of the proposed expansion areas (Nevada Department of Wildlife, 2018a; Nevada Natural Heritage Program, 2018b) (Figures 3.10-31 through 3.10-36, 3.10-41, and 3.10-42).

Spotted bat (*Euderma maculatum*). The spotted bat is a BLM Sensitive Species, Nevada-listed threatened mammal, Conservation Priority Species under the Nevada WAP, and is ranked by the NNHP as imperiled. Its habitats include low-elevation desert scrub to high-elevation coniferous forests, including pinyon-juniper, sagebrush, riparian, and urban high-rises. The spotted bat is patchily distributed across Nevada, which is linked to the availability of cliff-roosting habitat. This is the only special-status bat species not detected during 2017 surveys, was not detected during 2007 surveys, and the NNHP and NDOW have no records for spotted bats in the vicinity of the proposed FRTC expansion areas (see Supporting Study, Final Survey Report: Passive Acoustic Bat Surveys, available at http://www.frtcmodernization.com) (Nevada Department of Wildlife, 2018a; Nevada Natural Heritage Program, 2018b; Tierra Data Inc., 2008).

Townsend's big-eared bat (*Corynorhinus townsendii*). Townsend's big-eared bat is a BLM Sensitive Species, Conservation Priority Species under the Nevada WAP, Nevada Sensitive Mammal (NAC 503.030.3), and ranked by the NNHP as imperiled. It is found throughout the state, from low desert to high mountain habitats. Distribution is strongly correlated with the availability of caves and abandoned mines, and is considered one of the species most dependent on mines and caves. Trees and buildings must offer "cave-like" spaces in order to be suitable, and will night roost in more open settings, including under bridges. Townsend's big-eared bat was detected in the proposed B-16, B-17, and DVTA expansion areas (see Supporting Study, Final Survey Report: Passive Acoustic Bat Surveys, available at http://www.frtcmodernization.com), was previously detected within the northern portion of the existing DVTA (Tierra Data Inc., 2008), and the NNHP and NDOW include records of the species in the vicinity of the proposed expansion areas (Nevada Department of Wildlife, 2018a; Nevada Natural Heritage Program, 2018b) (Figures 3.10-31 through 3.10-36, 3.10-41, and 3.10-42).

Western red bat (*Lasiurus blossevillii*). The western red bat is a BLM Sensitive Species, Conservation Priority Species under the Nevada WAP, Nevada Sensitive Mammal (NAC 503.030.3), and ranked by the NNHP as imperiled. This species is thought to be extremely rare in Nevada, and is historically known from only two locations (one of which is in the Fallon area). The western red bat is found primarily in wooded habitats, including mesquite bosque and cottonwood/willow riparian areas. A solitary rooster, western red bats roosts in trees during the day, within the foliage and presumably in leaf litter on the ground. Foraging is generally high over the tree canopy. Although considered rare in Nevada, the western red bat was detected in all proposed expansion areas (see Supporting Study, Final Survey Report: Passive Acoustic Bat Surveys, available at http://www.frtcmodernization.com), was previously detected on NAS Fallon (Tierra Data Inc., 2008), and the NNHP includes records of the species in the vicinity of the proposed expansion areas (Nevada Natural Heritage Program, 2018b) (Figures 3.10-31 through 3.10-36, 3.10-41, and 3.10-42).

Western small-footed myotis (*Myotis ciliolabrum*). The western small-footed myotis is a BLM Sensitive Species, Conservation Priority Species under the Nevada WAP, and ranked by the NNHP as vulnerable/ apparently secure. The species is found throughout the state, and in central and northern Nevada is more common at valley bottoms (3,445-5,900 feet). This bat typically inhabits a variety of habitats including desert scrub, grasslands, sagebrush steppe, blackbrush, greasewood, pinyon-juniper

woodlands, pine-fir forests, agriculture, and urban areas. Roosts have been found in caves, mines, and trees. Roosting preferences expected to be similar to those for California myotis. In winter, western small-footed myotis hibernate individually or in large colonies. The western small-footed myotis was detected in the proposed B-16, B-20, and DVTA expansion areas (see Supporting Study, Final Survey Report: Passive Acoustic Bat Surveys, available at http://www.frtcmodernization.com), was previously detected within the northern portion of the existing DVTA (Tierra Data Inc., 2008), and the NNHP and NDOW includes records of the species in the vicinity of the proposed expansion areas (Nevada Department of Wildlife, 2018a; Nevada Natural Heritage Program, 2018b) (Figures 3.10-31 through 3.10-36, 3.10-41, and 3.10-42).

Yuma myotis (*Myotis yumanensis*). The Yuma myotis is a BLM Sensitive Species and ranked by the NNHP as vulnerable. It is found at least in the southern and western half of the state, primarily at low to middle elevations, and uses a wide variety of habitats including sagebrush, salt desert scrub, agriculture, playa, and riparian. The Yuma myotis appears to be tolerant of human disturbance relative to other bat species, and is one of the few bat species that thrives in a relatively urbanized environment. Although often considered to be a "building" bat, it is also found in heavily forested settings. This species day roosts in buildings, trees, mines, caves, bridges, and rock crevices. Night roosts are usually associated with buildings, bridges, or other man-made structures. Foraging occurs directly over the surface of open water and above vegetation. Yuma myotis was detected in all proposed expansion areas (see Supporting Study, Final Survey Report: Passive Acoustic Bat Surveys, available at http://www.frtcmodernization.com), was previously detected within the northern portion of the existing DVTA (Tierra Data Inc., 2008), and the NNHP includes numerous records of the species in the vicinity of the proposed expansion areas (Nevada Natural Heritage Program, 2018b) (Figures 3.10-31 through 3.10-36, 3.10-41, and 3.10-42).

### 3.10.2.7 Rodents

The region of influence for rodents includes only those areas potentially subject to ground-disturbing activities within the proposed FRTC expansion areas. The following information regarding special-status rodent species is based upon previous survey efforts within the existing Navy-managed FRTC lands (Tierra Data Inc., 2008), as well as NNHP occurrence records within the vicinity of proposed expansion areas (Nevada Natural Heritage Program, 2018b). In support of this EIS, small mammal surveys will be conducted within the proposed FRTC expansion areas in fall 2018/summer 2019, and the results will be incorporated into this EIS. Unless referenced otherwise, the following information is taken from the Nevada WAP (Nevada Department of Wildlife, 2013) and the Nevada Natural Heritage Program (2018a).

Dark Kangaroo Mouse (*Microdipodops megacephalus*). The dark kangaroo mouse is a BLM Sensitive Species, Nevada Protected Mammal (NAC 503.030.1), Species of Conservation Priority under the Nevada WAP, and ranked by the NNHP as imperiled. The dark kangaroo mouse moves around by hopping along on its hind legs, much like a kangaroo. It is restricted to the Great Basin Desert, with distribution centered in Nevada, although populations extend into California, Oregon, and Utah. The dark kangaroo mouse inhabits stabilized dunes, sandy soils, and fine gravelly soils in valley bottoms and alluvial fans that are dominated by big sagebrush, rabbitbrush, and horsebrush. It is expected to occur within the region of influence west of Churchill County in Nye, Lander, and Eureka counties. There are no records of the species on or in the vicinity of Navy-managed FRTC lands (Nevada Department of Wildlife, 2018a; Nevada Natural Heritage Program, 2018b; Tierra Data Inc., 2008; U.S. Department of the Navy, 2014).

Desert Kangaroo Rat (*Dipodomys deserti*). The desert kangaroo rat is a Species of Conservation Priority under the Nevada WAP and ranked by the NNHP as imperiled/vulnerable. Desert kangaroo rats are found in low deserts, in sandy soil with sparse vegetation or in alkali sinks. They are mostly restricted to deposits of deep wind-blown sand (sometimes including deposits formed as result of human activity) in shadscale scrub and creosote bush scrub. NDOW has records of the species within the proposed B-20 expansion area (Figure 3.10-35) and within the existing B-16 range (Figure 3.10-41) (Nevada Department of Wildlife, 2018a). The species was also observed within the existing B-16 range during 2007 surveys (Tierra Data Inc., 2008). There are no NNHP occurrence records within or in the vicinity of the proposed FRTC expansion areas (Nevada Natural Heritage Program, 2018b).

Pale Kangaroo Mouse (*Microdipodops pallidus*). The pale kangaroo mouse is a BLM Sensitive Species, Nevada Protected Mammal (NAC 503.030.1), Species of Conservation Priority under the Nevada WAP, and ranked by the NNHP as imperiled. It is generally found west of the range of dark kangaroo mouse, in the west-central portion of the state. This species is a highly specialized sand-obligate and is typically restricted to fine, loose, sandy soils in valley bottoms dominated by saltbush and greasewood; it may also be found near sagebrush at its higher elevation range (6,000 feet). It is expected to occur within the region of influence in Churchill and Mineral counties and northeastern Nye County. There are numerous NNHP occurrence records in the Fallon area (Figure 3.10-31), and records within and in the vicinity of the existing DVTA and proposed expansion area (Figures 3.10-32 and 3.10-34) (Nevada Natural Heritage Program, 2018b).

Sagebrush Vole (*Lemmiscus curtatus*). The sagebrush vole is a Species of Conservation Priority under the Nevada WAP and ranked by the NNHP as vulnerable. It occurs in colonies in semiarid habitats on well-drained or rock-covered soils with vegetation usually dominated by sagebrush or rabbitbrush mixed with bunchgrass. Sagebrush voles are active throughout day, year round. Although they are expected to occur throughout the region of influence and within proposed FRTC expansion areas, there are currently no records of the species on or in the vicinity of Navy-managed FRTC lands (Nevada Department of Wildlife, 2018a; Nevada Natural Heritage Program, 2018b; Tierra Data Inc., 2008; U.S. Department of the Navy, 2014).

### 3.10.3 Environmental Consequences

This section evaluates how and to what degree the activities described in Chapter 2 (Description of Proposed Action and Alternatives) could impact biological resources (vegetation and wildlife) within the region of influence. The analysis focuses on potential impacts to biological resources, particularly special-status species, and overall changes associated with implementation of the three action alternatives, including proposed military readiness activities and range enhancements at the FRTC. A summary of the potential impacts with implementation of the No Action Alternative or any of the three action alternatives (Alternatives 1, 2, and 3) is provided at the end of this section (see Section 3.10.3.7, Summary of Effects and Conclusions).

The stressors on biological resources from the proposed action vary in intensity, frequency, duration, and location within the region of influence. The following primary stressors are applicable to biological resources within the region of influence:

- noise (i.e., from aircraft operations, including sonic booms, weapons firing, and munitions explosion/impact)
- energy (electromagnetic radiation, lasers)

- physical disturbance (i.e., potential strikes from aircraft, aerial targets, and military expended materials; increased potential for wildfire; other ground-disturbing activities such as training and construction activities and prevention of migration/movement of wildlife species)
- The following provides an analysis of environmental effects of the No Action Alternative and Alternatives 1 through 3 against the environmental baseline as described in Section 2.4 (Environmental Baseline [Current Training Activities and Affected Environment]).

### 3.10.3.1 Potential Stressors

The following sections provide an overview of potential stressors of the action alternatives.

#### 3.10.3.1.1 Noise

Section 3.7 (Noise) describes baseline noise conditions for the Study Area; provides a general introduction to sound and noise, including the various noise descriptors (noise metrics) and methods used to predict noise levels in this EIS; presents noise levels associated with proposed training and testing activities; and addresses the potential effects of noise on human receptors. This section analyzes the potential effects of noise on wildlife on lands proposed for expansion or that would be potentially impacted by aircraft noise within the proposed SUA.

Proposed FRTC expansion areas would be exposed to noise associated with proposed Navy activities, including from the following sources:

- construction noise associated with range enhancements and road construction
- fixed-wing, helicopter, and unmanned aircraft system overflights
- small and large arms firing
- live and non-explosive practice munitions
- vehicle and equipment operations
- occasional explosions from unexploded ordnance disposal

**Overview of Wildlife Responses to Noise**

Numerous studies have documented that wild animals respond to human-made noise (Bowles et al., 1995; Goldstein et al., 2005; Larkin et al., 1996; National Park Service, 1994). The manner in which animals respond to noise depends on several factors, including life history characteristics of the species, characteristics of the noise source, loudness, how suddenly the sound occurs (onset rate), distance from the noise source, presence/absence of associated visual stimuli, and previous exposure to the sound. Noise may cause physiological or behavioral responses that reduce the animals' fitness or ability to grow, survive, and reproduce successfully. The potential effects of noise on wildlife can take many forms, including changing habitat use and activity patterns, increasing stress response, decreasing immune response, reducing reproductive success, increasing predation risk, degrading communication, and damaging hearing if the sound is sufficiently loud and/or prolonged (Larkin et al., 1996).

Studies on the effects of aircraft noise on wildlife have been predominantly conducted on mammals and birds. Some studies have shown that the responses of large mammals to aircraft noise are transient and of short duration and suggest that animals acclimate to the sounds (Krausman et al., 1993; Krausman et al., 1998; Weisenberger et al., 1996; Workman et al., 1992). Similarly, the effect on raptors and other

birds (e.g., waterfowl, grebes) from aircraft low-level flights were found to be brief and not detrimental to reproductive success (Ellis et al., 1991; Grubb & Bowerman, 1997; Lamp, 1989; Smith et al., 1988).

While the effects of noise on wildlife have been addressed in numerous studies, research is hampered by a preponderance of small, disconnected, anecdotal or correlational studies as opposed to coherent programs of controlled experiments (Larkin et al., 1996). These factors, coupled with differences between species, individuals of the same species, and other factors such as habitat, make it difficult to definitively predict how wildlife populations will respond to noise under a specific exposure scenario.

Behavioral responses are the most commonly used endpoints when studying the effects of noise on wildlife. This is largely based on practical considerations and the difficulty in measuring animal fitness or physiological and ecological endpoints. Researchers have documented a range of behavioral responses to noise, ranging from indifference to extreme panic. Common behavioral responses include alert behavior, startle response, flying or running away, and increased vocalizations (Bowles et al., 1995; Larkin et al., 1996; National Park Service, 1994). In some instances, behavioral responses could interfere with breeding, raising young, foraging, habitat use, and physiological energy budgets, particularly when an animal continues to respond to repeated exposures.

While difficult to measure in the field, some form of physiological response, such as increased heart rate or a startle response, accompanies all behavioral responses. A startle is a rapid, primitive reflex characterized by rapid increase in heart rate, shutdown of nonessential functions, and mobilization of glucose reserves. Animals can learn to control the behavioral reactions associated with a startle response and often become habituated to noise (Bowles et al., 1995; Larkin et al., 1996; National Park Service, 1994). Habituation keeps animals from expending energy and attention on harmless stimuli, but the physiological component might not habituate completely (Bowles et al., 1995). Therefore, animal fitness could still be affected when an animal has habituated to noise (Barber et al., 2010). Gill et al. (2001) described theoretical circumstances when habituation to or tolerance of a stressor could be more detrimental to a population than a strong avoidance reaction. Nonetheless, what appears to be habituation has been observed in many studies and is well demonstrated in studies evaluating bird control devices (e.g., noise cannons, pyrotechnics, and recorded sounds), which are used to scare birds away from airfields and agricultural areas (Larkin et al., 1996). Larkin et al. (1996) describe one example where red-winged blackbirds began resting on the noise cannon intended to scare them away. The birds learned to fly a short distance away when they heard the click of the mechanism that released the gas and signaled an impending explosion.

Likewise, a strong and consistent behavioral or physiological response is not necessarily indicative of negative consequences to individuals or to populations (Bowles et al., 1995; Larkin et al., 1996; National Park Service, 1994). For example, many of the reported behavioral and physiological responses to noise are within the range of normal adaptive responses to external stimuli, such as predation, that wild animals face on a regular basis. In many cases, individuals would return to homeostasis or a stable equilibrium almost immediately after exposure. The individual's overall metabolism and energy budgets would not be affected, assuming it had time to recover before being exposed again. If the individual does not recover before another exposure, physiological responses could be cumulative and lead to reduced fitness. However, it is also possible that an individual would have an avoidance reaction (i.e., move away from the noise source) to repeated exposure or habituate to the noise when repeatedly exposed.

Chronic stress can compromise the general health of animals, but stress is not necessarily indicative of negative consequences to individuals or to populations (Larkin et al., 1996; National Park Service, 1994). Unless repeatedly exposed to loud noises or simultaneously exposed to synergistic stressors, it is possible that individuals would return to homeostasis almost immediately after exposure, and the individual's overall metabolism and energy budgets would not be affected. Aircraft noise is generally thought to be most detrimental during periods of stress such as winter, gestation, and nesting (DeForge, 1981; Pepper et al., 2003).

For instance, a 3-year study by Bowles et al. (1995) focused on military aircraft exposure to small mammal populations. The study took place in a region in south-central Arizona characterized by creosote and mixed Sonoran Desert scrub. The sites were exposed to low-altitude flights of more than 20,000 sound events in excess of 80 decibels (dB), with 115.5 dB being the highest A-weighted single event level recorded. The control sites received noise levels at least an order of magnitude lower, with an average of 51.3 dB and none over 100 dB. The control area event rate was approximately one flight per day. Numerous kangaroo rat (*Dipodomys* spp.) and pocket mouse (*Chaetodipus* spp.) species and the white-throated wood rat (*Neotoma albigula*) were included in the study. The study measured populations' densities, body weight, reproductive activity, recruitment by immigration and reproduction, and survival rate month to month. Overall, the outcome of the study suggested the effects of lifetime exposure to intermittent aircraft noise on animal demography are likely to be small and difficult to detect, if they exist at all.

Relatively little is known about the responses of reptiles to noise. Sound perception appears to be subordinate in importance to vision or chemoreception in the activities of most reptiles (Manci et al., 1988). Some reptiles have sound-producing mechanisms, but they are absent in the majority of species. Sensitive hearing acuity is essential to the survival of some desert reptiles because critical environmental sounds are often of relatively low intensity movement of insect prey and predators (Manci et al., 1988). Noise may elicit physiological and behavioral responses, though exposed individuals would be expected to quickly recover from these responses, and exposure would be intermittent and infrequent.

Based on information presented above and literature summarized for the other species (Bowles et al., 1995; Larkin et al., 1996; National Park Service, 1994), wildlife in the FRTC region of influence could exhibit a range of behavioral and physiological responses to noise depending on distance from the noise source (strength or intensity of behavioral or physiological response decreases with increasing distance from noise source). It is also likely that wildlife would habituate to some sound levels. Several studies indicate that there is a strong tendency for species to acclimate to noise disturbances (Grubb & King, 2012) (Black et al., 1984; Ellis et al., 1991; Manci et al., 1988). Both field and laboratory data indicate that in mammals (e.g., pronghorn, bighorn sheep, elk, and mule deer) effects are transient and of short duration and suggest that the animals appear to habituate to noise through repeated exposure without long-term discernible negative effects (Krausman et al., 1998; Weisenberger et al., 1996).

High sound levels and any associated visual or other cues (e.g., vehicle and equipment movement, other human activity, vibration, or projectile impacting the ground nearby) would likely be perceived as a threat, and species may exhibit defense behavior. With repeated exposure over a short time frame, such responses have the potential to reduce an animal's fitness by limiting foraging time, increasing energy expenditure, inducing a stress response, and interfering with breeding. Various studies have indicated that some animals respond to repeated loud noises by temporarily or permanently abandoning habitat. However, the majority of studies have reported short-term or negligible impacts on wildlife.

In addition to noise level, the frequency and regularity of the noise also affect species sensitivity. That is, different types of noise sources produce varied effects on different species. Noise from aircraft overflights may not produce the same response from a wildlife species as noise from a land-based source such as a vehicle, chainsaw, or gunshot. Wildlife species often do not react to a noise source when unaccompanied by a visual cue, but often do react to the visual component associated with that noise source. For example, birds may not react to just the sound of a chainsaw, but when that sound is coupled with a human walking near the bird, the bird will flush. This is also shown in reactions by various species to aircraft overflights (airplanes and helicopters). An overflight with just a sound component does not elicit a strong response, but if an animal hears and then sees the aircraft, it will more likely flush and move away (Manci et al. 1988; U.S. Forest Service 1992; Krausman et al. 1993; Bowles 1995).

A primary concern with implementation of the proposed action is that low-altitude overflights may cause physiological or behavioral responses that reduce the animals' fitness or ability to survive. High-noise events (like a low-altitude aircraft overflight or sudden sonic boom) may cause animals to startle or engage in escape or avoidance behaviors, such as flushing or running away. These activities impose an energy cost that, over the long term, may affect survival or growth. In addition, the animals may spend less time engaged in necessary activities like feeding, foraging, or caring for their young because they spend time in noise-avoidance activity. However, most of the effects of noise are mild enough that they may never be detectable as changes in population size or population growth against the background of normal variation (Bowles et al., 1995). Many other environmental variables (e.g., predators, weather, changing prey base, ground-based human disturbance) may influence reproductive success and confound the ability to identify the ultimate factor in limiting productivity of a certain nest, area, or region.

**Supersonic Noise**

Current and proposed aircraft operations within the FRTC region of influence would generate sonic booms, an impulsive sound similar to thunder. A sonic boom is the sound associated with the shock waves created by a vehicle traveling through air faster than the speed of sound. The duration of a sonic boom is brief (less than a second), and the intensity is greatest directly under the flight path and weakens as distance from the flight track increases. The change in air pressure associated with a sonic boom is only a few pounds per square foot greater than normal atmospheric pressure. This is about the same pressure change experienced by a change in elevation of 20–30 feet, or riding an elevator down two or three floors. This additional pressure above normal atmospheric pressure is called *overpressure*. It is the sudden onset of the pressure change that makes the sonic boom audible.

*Effects of Sonic Booms on Wildlife*

Many scientific studies have investigated the effects of aircraft noise and sonic booms on wildlife, and some have focused on wildlife "flight" due to noise. Natural factors that affect reaction include season, group size, age and sex composition, on-going activity, motivational state, reproductive condition, terrain, weather, and temperament (Bowles et al., 1995). Individual animal response to a given noise event or series of events also can vary widely due to a variety of factors, including time of day, physical condition of the animal, physical environment, the experience of the individual animal with noises, and whether or not other physical stressors (e.g., drought) are present (Manci et al., 1988). Consequently, it is difficult to generalize animal responses to noise disturbances across species.

The following discussion presents a summary of some of the more relevant studies addressing the potential impacts to wildlife from sonic booms. Teer (1973) tested quail eggs subjected to sonic booms

and found no adverse effects. Heinemann and LeBrocq Jr. (1965) exposed chicken eggs to sonic booms and found no adverse effects. In a mathematical analysis of the response of avian eggs to sonic boom overpressures, Ting et al. (2002) determined that it would take a sonic boom of 250 pounds per square foot to crack an egg. Bowles et al. (1995) states that it is physically impossible for a sonic boom to crack an egg because one cannot generate sufficient sound pressure in air to crack eggs.

Teer (1973) examined reproductive success in mourning doves, mockingbirds, northern cardinals, and lark sparrows when exposed to sonic booms of 1 pound per square foot or greater and found no adverse effects. Awbrey and Bowles (1990) in a review of the literature on the effects of aircraft noise and sonic booms on raptors found that the available evidence shows very marginal effects on reproductive success. Ellis et al. (1991) examined the effects of sonic booms (actual and simulated) on nesting peregrine falcons, prairie falcons, and six other raptor species. While some individuals did respond by leaving the nest, the response was temporary and overall there were no adverse effects on nesting. Lynch and Speake (1978) studied the effects of both real and simulated sonic booms on the nesting and brooding of eastern wild turkey (*Meleagris gallopavo silvestris*) in Alabama. Hens at four nest sites were subjected to between 8 and 11 combined real and simulated sonic booms. Turkey hens exhibited only a few seconds of head alert behavior at the sound of the sonic boom. No hens were flushed off the nests, and productivity estimates revealed no effect from the booms. Twenty brood groups were also subjected to simulated sonic booms. In no instance did the hens desert any poults (young birds), nor did the poults scatter or desert the rest of the brood group. In every observation, the brood group returned to normal activity within 30 seconds after a simulated sonic boom. Similarly, researchers cited in Manci et al. (1988) observed no difference in hatching success of bobwhite quail (*Colinus virginianus*) exposed to simulated sonic booms.

Animal species exhibit a wide variety of responses to noise. It is therefore difficult to generalize animal responses to noise disturbances or to draw inferences across species, as reactions to jet aircraft noise and sonic booms appear to be species-specific. Consequently, some animal species may be more sensitive than other species and may exhibit different forms or intensities of behavioral responses.

The literature does suggest that common responses include the “startle” or “fright” response and, ultimately, habituation. It has been reported that the intensities and durations of the startle response decrease with the numbers and frequencies of exposures, suggesting no long-term adverse effects. The majority of the literature suggests that domestic animal species (e.g., cows, horses, chickens) and wildlife species exhibit adaptation, acclimation, and habituation after repeated exposure to jet aircraft overflights and associated noise, including sonic booms.

#### 3.10.3.1.2 Energy Stressors within the Proposed Expansion Areas

***Electromagnetic Radiation***

Under the proposed action, wildlife would be exposed to various forms of sources of electromagnetic radiation including radar, threat transmitters, communications equipment, and electronic detection equipment, primarily during electronic combat training events. Electromagnetic radiation may impact wildlife in various ways depending on type of radiation, duration of exposure, and the species of the receiving animal. Effects on birds may include reduced nesting success (Balmori, 2009; Fernie & Reynolds, 2005) and various behavioral and physiological responses to electromagnetic fields (Fernie & Bird, 2001), such as disruption of normal sleep-wake cycles through interference with pineal gland and hormonal imbalance.

Continual and long-duration exposure form the basis of the experiments and field observations in these studies. For instance, Balmori (2009) reports reduced bird activity (breeding and foraging) followed by extirpation within areas saturated with high microwave radiation (greater than 2 volts/meter). The same study reported anomalies in magpies (*Pica pica*), such as plumage deterioration, limps and deformities in limbs, and partial albinism. In another study by Balmori and Hallberg (2007), significant declines of house sparrow densities were observed in areas of high electromagnetic field strength. The study predicted that no sparrows would be expected in an electromagnetic field of greater than 4 volts/meter of long-term constant exposure.

In a review of magnetoreception in animals, animals from a wide range of taxa have been shown to possess magnetic sense and use magnetic compasses to orient. Such taxa include mollusks, crustaceans, insects, fishes, birds, amphibians, lizards, sea turtles, and mammals (Wiltschko & Wiltschko, 2006). Non-migratory animals such as mice (Mather & Baker, 1981) and rats (Burda et al., 1990) also reportedly have magnetic sense. Salford et al. (2003) and Marks et al. (1995) report various effects on mammals from electromagnetic exposure, including changes in alarm and aversion behavior, deterioration of health, reproductive problems, and changes in normal sleep wake patterns.

***Lasers***

Military uses of lasers include applications such as target designation and ranging, defensive countermeasures, communications, and directed energy weapons. Targeting and ranging lasers are the only laser applications used during training on the ground at the FRTC and within the airspace. Chapter 2 (Description of Proposed Action and Alternatives) describes these platforms and devices. Target designation and ranging laser types are relatively low-power lasers (compared to directed-energy lasers or lasers used for defensive countermeasures). A targeting laser is a low-power laser pointer used to indicate a target for a precision-guided munition, typically launched from an aircraft. The guided munition adjusts its flight-path to home into the laser light reflected by the target, enabling great precision in aiming. The laser designator can be shone onto the target by aircraft or ground-based personnel. Lasers used for this purpose are usually infrared lasers so the enemy cannot easily detect the guiding laser light. The potential for vision damage from the use of lasers at the FRTC is the primary concern for wildlife species, although the likelihood that a laser aimed at target would ever accidentally strike the eye of an animal is highly unlikely. Most studies of the effects of lasers on terrestrial animals involve birds because of the interest in developing deterrents to minimize bird-aircraft strike hazards at airports and wind developments (Baxter, 2007). Fewer studies are available for other species groups, such as terrestrial mammals and reptiles, but the same range of responses (none to avoidance behavior) is expected. In summary, no physiological damage is expected to occur from the use of lasers, and there is an extremely low likelihood of vision damage or behavioral responses if a laser was to ever accidentally strike the eye of an animal.

Lustick (1973) conducted an experiment using pulsing light, which indicated that starlings and gulls were able to look directly into the laser beam and not change their behavior. A later study conducted through the National Wildlife Research Center's Mississippi Field Station demonstrated that there was no eye damage to double-crested cormorants (*Phalacrocorax auritus*) that had been exposed to a moderate-power red laser as close as 3 feet (Glahn et al., 2000). Furthermore, the bird eye is protected from thermal damage to retinal tissue associated with concentrated laser radiation by eye tissue (U.S. Department of Agriculture, 2001b). Most targeting lasers used during training activities are low to moderate power, so these studies are relevant to species that occur within the region of interest.

For several decades, pulsing light has been used on aircraft, aircraft hangars, and high towers as a means of avian management or bird control. In 2001, the U.S. Department of Agriculture's National Wildlife Research Center conducted research on low- to moderate-power, long-wavelength lasers (630–650 nanometers) as an effective, environmentally safe means of dispersing specific bird species under low-light (sunset to dusk) conditions (Blackwell et al., 2002). Results of the U.S. Department of Agriculture research concluded that waterfowl species, wading birds, gulls, vultures, and American crows (*Corvus brachyrhynchos*) have all exhibited avoidance of laser beams during field trials (Blackwell et al., 2002; U.S. Department of Agriculture, 2001b). However, avoidance reaction times and duration are dependent upon context and species (Blackwell et al., 2002). In general, diurnal birds (active during the day and resting during the night) are not sensitive to extremely intense laser light and elicit a slow avoidance response to lasers. In contrast, nocturnal birds (active during the night and resting during the day) are more sensitive to light and react more quickly to avoid intense light (Blackwell et al., 2002). Blackwell and Bernhardt (2004) found that the avoidance response to pulsed white and wavelength-specific aircraft-mounted light was inconsistent across experiments with cowbirds (*Molothrus* spp.), and there was little or no avoidance behavior in experiments with other species. Also, some studies on the use of lasers for bird control have shown that birds may become habituated to light quickly, and there is a loss of effect as the distance increases from the bird and the laser (U.S. Department of Agriculture, 2001a).

#### 3.10.3.1.3 Physical Disturbance

***Aircraft Strikes***

Wildlife-aircraft strikes are a major concern for the Navy because they can cause harm to aircrews, damage to equipment, and mortality to wildlife. The number of Navy recorded wildlife-aircraft strikes from 1999 through 2009 ranged from 48 to 827 per year (mostly birds) (Naval Safety Center, 2009). The number of U.S. Air Force recorded wildlife-aircraft strikes between 1999 and 2013 ranged from 1,960 to 5,107. The majority of these strikes were birds, but approximately 5 percent of the reported strikes were bats. Bird and bat strikes may occur during any phase of flight, but are most likely during the take-off, initial climb, approach, and landing phases because of the greater numbers of animals in flight at lower levels. While the Navy considers all aircraft strikes serious and dangerous events, the number of related mortalities is small considering Navy-wide aircraft activities. Although strikes can occur anywhere aircraft are operated, Navy and Air Force data indicate they occur more often over land (Naval Safety Center, 2009; U.S. Department of Defense, 2010). Potential for wildlife strike is greatest in foraging or resting areas, in migration corridors, and at low altitudes. For example, animals can be attracted to airports because they often provide foraging and nesting resources (U.S. Department of Defense, 2010).

Approximately 95 percent of bird flight during migration occurs below 10,000 feet, with the majority below 3,000 feet (Naval Safety Center, 2009; U.S. Department of Defense, 2010). In a study that examined 38,961 bird and aircraft collisions, Dolbeer (2006) found that the majority (74 percent) of wildlife collisions occurred below 500 feet. Therefore, low-altitude, fixed-wing aircraft overflights likely present the greatest risk of aircraft strikes in the proposed revised SUA. High-speed flight in a low-altitude environment places aircraft in airspace that may contain animals in flight. Further, animals may flush in response to approaching aircraft noise. Helicopter training also presents aircraft strike hazards, as the vast majority of training activities (approximately 97 percent of aircraft flights) occur below 3,000 feet above ground level.

Fixed-wing aircraft and helicopter overflights would take place at various altitudes and airspeeds throughout the proposed SUA, with most occurring during the daytime. Part of aviation safety during training activities is the implementation of the Bird/Animal Aircraft-Strike Hazard (BASH) program. The BASH program manages risk by addressing specific aviation safety hazards associated with wildlife near airfields through coordination among all the entities supporting the aviation mission (U.S. Department of Defense, 2010). The BASH program includes identifying the bird/animal species involved and the location of any strikes to understand why the species is attracted to a particular area of the airfield or training area (Naval Air Station Fallon, 2012).

In addition, pilots can use the Avian Hazard Advisory System (AHAS) to monitor bird activity in near real-time to increase flight crew awareness and planning capabilities (http://www.usahas.com). The Avian Hazard Advisory System uses Next Generation Radar weather radars to track the movements of birds and represents the most comprehensive methods of remote sensing of birds today. Next Generation Radar weather radars were originally built to track storm cells and chart precipitation returns. The system removes weather and aircraft from radar returns in order to extract and display only biological targets. Avian Hazard Advisory System relies on the U.S. Air Force Bird Avoidance Model that uses GIS technology as a key tool for analysis and correlation of bird habitat, migration, and breeding characteristics, combined with key environmental and man-made geospatial data. Pilots can select a specific area (e.g., airfield, MOA, range, military training route), specific date, and time and obtain the current or 12-hour Avian Hazard Advisory System risk for that area. The system also provides Google Map or Google Earth aerial imagery of the area that provides a color-coded live, real-time Avian Hazard Advisory System risk based on the current conditions using Next Generation Radar data and the Bird Avoidance Model.

### 3.10.3.2 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur. If Congress were to not renew the 1999 Public Law 106-65 land withdrawal, air-to-surface training would likely become non-existent or severely reduced due to the lack of available lands for the bombing ranges. Therefore, with the likely cessation of military training activities within current FRTC ranges, there would be a potential net beneficial impact to biological resources. Refer to Section 2.3.1 (No Action Alternative) for further details on the No-Action Alternative.

### 3.10.3.3 Alternative 1: Modernization of the Fallon Range Training Complex

Under Alternative 1, the Navy's current public land withdrawal would be renewed, and additional public and non-federally owned lands would be withdrawn or acquired for military training. As described in Chapter 2 (Description of Proposed Action and Alternatives), Alternative 1 would expand the FRTC to approximately 916,168 acres of land for military uses. This includes renewing the current withdrawal of 202,864 acres as well as requesting the withdrawal of an additional 618,727 acres of public land, and proposing to acquire 65,159 acres of private land. Under Alternative 1, new construction would be required for supporting infrastructure (e.g., new roads, administrative buildings, utility and communication infrastructure, and perimeter fencing).

#### 3.10.3.3.1 Training Activities

Under Alternative 1, the amount of training within the proposed FRTC expansion areas and proposed revised SUA relative to baseline conditions analyzed in the 2015 Military Readiness Activities at Fallon Range Training Complex, Nevada Final Environmental Impact Statement (U.S. Department of the Navy, 2015) would remain the same but be dispersed within a larger area (i.e., throughout the existing FRTC

ranges and SUA plus the proposed FRTC expansion areas and revised SUA). Training activities would use existing target locations within the existing FRTC ranges and include new targets and training areas within the proposed expansion areas. This would increase the area where stressors (e.g., noise, strikes) would potentially impact wildlife resources.

**Vegetation and Special-status Plants**

Wildland Fire

The potential for wildfires from current training activities within the proposed range expansion areas is the primary concern with respect to potential impacts to vegetation. Although the vegetation communities within the region of influence are resistant to the environmental extremes of the Great Basin, changes in the fire regime can affect regional vegetation communities and take decades if not centuries to reestablish. In addition, non-native invasive species such as cheatgrass can alter the structure and distribution of wildlife habitat. Native plants of the Great Basin, such as sagebrush, are not adapted to frequent fire and cannot recover quickly, particularly when fire frequency exceeds the pre-historical norm. Cheatgrass, in contrast, recovers from fire very rapidly and takes advantage of the low-competition, high-nutrient, and ample light in post-fire conditions to rebound in even greater numbers, thereby further increasing the likelihood of future fires (U.S. Fish and Wildlife Service, 2014; Young & Tipton, 1990).

Training activities on the ranges would not change in type or quantity under Alternative 1; they would change in target location. In addition, currently implemented fire management measures within FRTC lands would continue to be implemented as discussed below, and a fire management plan would be developed for the proposed expansion lands. Therefore, there would be no significant impacts to biological resources from potential wildfires within the proposed range expansion areas.

An unintended effect of training activities is the inadvertent ignition of wildfires. Because wildfires are so destructive to the environment, the Navy has implemented and will continue to implement operational and administrative controls to avoid and minimize the occurrence of wildfires. Within range boundaries within the proposed expansion areas, the Navy would prevent fires by establishing fire breaks and green stripping around targets; conducting weed abatement programs; and removing dry vegetative fuel sources near targets that prevent fires and assist in reducing the growth of a fire, if one were to occur. Outside of range boundaries, the Navy implements control measures to ensure that airborne training activities do not start fires. For example, regarding the use of airborne flares, the Navy has established minimum flare release heights to prevent wildfire occurrence. When it is not fire season, flares are authorized for deployment below 2,000 feet above ground level on the Bravo ranges. During standard fire season restrictions, the minimum safe altitude for deploying decoy flares outside of and inside of the boundaries of the FRTC bombing ranges is 2,000 feet above ground level to further reduce a flare ignition source. During the severe fire season (typically between May and October), the Navy ceases use of airborne flares. In addition, during the possibility of severe drought, the Navy eliminates the use of flares.

A Wildland Fire Management Plan is being developed for the FRTC. The Wildland Fire Management Plan would address integrated fire prevention, fire suppression, and post-fire rehabilitation/restoration processes for the FRTC in cooperation with regional stakeholders (e.g., NDOW, BLM, affected counties).The effectiveness of the Wildland Fire Management Plan would continue to be reviewed on an ongoing basis in accordance with adaptive fire management procedures that would be contained in the Wildland Fire Management Plan. The measures would be refined as necessary to ensure they remain

effective to sustain the Installation's mission, and protect and conserve natural resources. Refer to Section 3.14 (Public Health and Safety) for further details regarding fire management on existing and proposed Navy-managed lands.

**Wildlife and Special-status Wildlife Species**

Noise

Under Alternative 1, changes in the location of aircraft targets and land-based munitions and live-fire training areas within the proposed range expansion areas may result in potential noise impacts to wildlife species. The following provides a brief summary of the proposed changes in noise levels within each proposed range expansion area and the revised SUA.

- *Proposed B-16 Expansion Area*. Under Alternative 1, the expansion of the B-16 range would increase the area subject to noise exposures during aircraft and land-based training activities, primarily to the west of the existing B-16 range. In general, under Alternative 1, estimated aircraft noise levels within the proposed B-16 expansion area (see Figure 3.7-15) would not change from existing levels (see Figure 3.7-3). The primary change is the increase in the 50–55 day-night sound level (DNL) A-weighted decibel (dBA) noise contour to the west from proposed aircraft operations. In addition, due to the proposed munitions activities within the proposed expansion area, the estimated 57–70 DNL C-weighted decibel (dBC) noise contours would shift to the west along the border of the existing B-16 range but remain primarily within the existing range boundary (see Figure 3.7-16).
- *Proposed B-17 Expansion Area*. Under Alternative 1, the expansion of the B-17 range to the south would increase the area subject to noise exposures during aircraft and land-based training activities. Aircraft targets and land-based training facilities would be installed south of the existing B-17 range thereby causing associated aircraft and munitions activities to also shift to the south. Currently, DNL dBA noise contours from aircraft operations are confined within the existing B-17 range (see Figure 3.7-6). Under Alternative 1, the 56-64 DNL dBA noise contours from proposed aircraft operations would overlie the majority of the proposed B-17 expansion area (see Figure 3.7-18). Similarly, estimated DNL dBC noise contours from proposed munitions activities would shift from occurring completely within the existing B-17 range (see Figure 3.7-7) to overlying the proposed expansion area (see Figure 3.7-19).
- *Proposed B-20 Expansion Area*. Under Alternative 1, the aircraft targets and land-based training facilities would be installed west of the existing B-20 range thereby causing associated aircraft and munitions activities to also shift to the west. Currently, DNL dBA noise contours from aircraft operations overlie the existing B-20 range and also some areas to the west, south, and east (see Figure 3.7-9). Estimated 61-65 DNL dBA noise contours from proposed aircraft operations under Alternative 1 would increase within the existing B-20 range and to the west, south, and east within the proposed expansion area (see Figure 3.7-22). Similarly, the estimated 57–70 DNL dBC noise contours from proposed munitions activities would shift to the northwest corner of the existing B-20 range and within the proposed expansion area (see Figure 3.7-23).
- *Proposed DVTA Expansion Area*. As aircraft and munitions activities are not proposed within the proposed DVTA expansion area, and existing training activities (e.g., convoy training and Combat Search and Rescue training) would continue within the proposed expanded training area, there would be no change in the noise environment within the proposed DVTA expansion area.

- *Proposed Revision of SUA*. Under Alternative 1, proposed changes to SUA would include new airspace associated with proposed B-16, B-17, and B-20 range expansion areas, lowering of floor within some existing Restricted Areas and MOAs, and establishment of new MOAs (see Figures 2-7, 2-8, and 2-9). Estimated noise levels associated with aircraft operations within the majority of the proposed SUA would not change from existing noise levels (see Figure 3.7-12). The primary changes would occur within restricted airspace associated with the proposed range expansion areas (discussed above) and the proposed new MOAs within the southern and eastern portions of the proposed revised FRTC SUA (i.e., Zircon, Diamond, Duckwater, and Smokie MOAs) (see Figures 3.7-25 and 3.7-26).

Estimated noise levels under Alternative 1 within proposed range expansion areas and revised SUA would likely elicit physiological and behavioral responses in avian and mammal species. As described previously under the general discussion on noise stressors, noise exposures on wildlife would be anticipated to be less than significant for the following reasons: (1) individual animals would be expected to recover quickly from these responses, (2) exposures would be intermittent and infrequent as training activities consist of non-continuous events, and (3) short-term behavioral responses would not be expected to affect individual animal fitness or have population-level effects. In addition, as estimated noise levels within the proposed range expansion areas would occur within the same habitats as found within the current range areas, the proposed expansion areas would be expected to contain the same wildlife species. As current training operations within the existing ranges have not significantly impacted wildlife species (U.S. Department of the Navy, 2015), it is expected that the same training activities would also not have significant impacts on the same wildlife species within an immediately adjacent area (i.e., proposed range expansion areas).

The proposed B-16 and B-20 expansion areas are outside of the current mapped range of bighorn sheep and mule deer, and only the eastern portion of the proposed B-20 expansion area overlaps with year-round pronghorn range (Nevada Department of Wildlife (2017a). However, mule deer were observed within the proposed B-20 expansion area during camera trap surveys conducted in support of this EIS (see Supporting Study: Final Wildlife Remote Camera Trapping Survey Report, available at http://www.frtcmodernization.com). In addition, the estimated 60-65 DNL dBA aircraft noise contours within the proposed B-17 expansion area overlies a portion of currently mapped bighorn sheep winter-lambing range (i.e., the flats at the southern end of the Fairview Range) and year-round range within the central Monte Cristo Mountains and southern Sand Springs Range. The estimated 70-75 DNL dBA contours would not appreciably change from existing conditions (see Figures 3.7-9 and 3.7-22). Given the estimated number of bighorn sheep within the vicinity of the existing B-17 and DVTA range areas are at an all time high (Nevada Department of Wildlife, 2017a), existing training operations are not having an effect on regional bighorn sheep populations. Therefore, it is expected that proposed training operations conducted within the proposed restricted areas (R-4805A and R4816S Low) and associated expansion areas at the same level as current training operations would not have a significant impact on bighorn sheep.

As stated above in the summary of estimated changes in the noise environment within the revised SUA under Alternative 1, the majority of changes would occur within the within the southern and eastern portions of the FRTC SUA (i.e., establishment of the Ruby, Zircon, Diamond, Duckwater, and Smokie MOAs and extension of the Supersonic Operating Areas to the east), lowering of the floor of the existing Reno MOA, and establishing Reno MOA as supersonic capable (see Figure 2-7).

Based on agency and public concern, five special-status species warrant further consideration regarding the potential for impacts from proposed aircraft operations, particularly at lower altitudes within the revised SUA: great sage-grouse, bighorn sheep, mule deer, pronghorn, and elk.

*Greater Sage-grouse*. The primary threats to greater sage-grouse are the loss, fragmentation, and degradation of sagebrush habitat due to a variety of causes. In the Great Basin, the primary threats are the expansion of invasive grasses such as cheatgrass (which results in more frequent and intense wildfires) and conifer encroachment. Both eliminate the sagebrush that greater sage-grouse need. Additional stressors, such as improper grazing, predation, mining, and infrastructure development can contribute to localized population declines (U.S. Fish and Wildlife Service, 2015).

Data are lacking on the effects of aircraft overflights or sonic booms on galliformes (e.g., grouse, quail), particularly on greater sage-grouse lekking attendance and behavior. Greater sage-grouse, like most bird species, rely on auditory signals as part of mating. Sage-grouse are known to select their leks based on acoustic properties and depend on auditory communication for mating behavior (Blickley & Patricelli, 2012). Although little specific research has been completed to determine what, if any, effects aircraft overflight and sonic booms would have on the breeding behavior of this species, factors that may be important include season and time of day, altitude, frequency and duration of overflights, and frequency and loudness of sonic booms. Based on the available information regarding sage-grouse and similar species (e.g., prairie chickens) response to noise, aerial-based noise may have no impact or may impact lekking sage grouse by: (1) causing a decrease in lek attendance, (2) increasing stress hormone concentrations, or (3) masking lek communication (within and among leks).

Booth et al. (2009) found, while attempting to count sage-grouse at leks using light sport aircraft at 500–650 feet AGL, that sage-grouse flushed from leks on 12 of 14 approaches when the airplane was within 656–984 feet of the lek. In the other two instances, male grouse stopped exhibiting breeding behavior and crouched but stayed on the lek. The time to resumption of normal behavior after disturbance was not provided in this study. Strutting ceased around the time when observers on the ground heard the aircraft. It is unclear how the response to the slow-flying light sport aircraft used in the study would compare to overflight by military jets. It is possible that response of the birds was related to the slow speed of the light sport aircraft and its long-term presence above the lek, causing it to resemble an aerial predator. A military aircraft overflight would be significantly shorter in duration (seconds).

Other studies have found disturbance from energy operations and other nearby development have adversely affected breeding behavior of greater sage-grouse (Harju et al., 2010; Holloran, 2005; Walker et al., 2007). These studies do not specifically address overflight and do not isolate noise disturbance from other types (e.g., visual, human presence), nor do they generally provide noise levels or qualification of the noise source (e.g., continuous or intermittent, frequency, duration). Evidence from Wyoming suggests greater sage-grouse avoided leks with anthropogenic noise associated with oil and gas development, and intermittent noise had a greater effect on lek attendance than continuous noise (Blickley et al., 2012a). In addition to effecting lek attendance, ground-based anthropogenic noise also increased stress hormone concentrations in male greater sage grouse (Blickley et al., 2012b) as well as masked vocalizations of males on leks (Blickley & Patricelli, 2012). Likewise, Zeiler and Grunschachner-Berger (2009) postulated lek signaling was disrupted among multiple black grouse (*Lyrurus tetrix*) leks in Scandinavia due to the presence of a large wind facility and associated noise.

Based on the most current data from 2008 to 2017 regarding active greater sage-grouse leks within the region of influence, 158 leks occur beneath existing FRTC SUA (Table 3.10-20 and Figure 3.10-28).

Although there would be no change in the number of leks potentially overflown under Alternative 1 with the proposed SUA revision (Figure 3.10-43), 65 leks would experience overflights at a lower altitude or floor:

- 5 leks under the Reno MOA: current floor = 13,000 feet MSL; proposed floor = 1,200 feet AGL.
- 36 leks under the Diamond ATCAA: current floor = 18,000 feet MSL; proposed floor within the new Ruby, Zircon, and Diamond MOAs = 1,200 feet AGL.
- 24 leks under the Duckwater and Smokie ATCAAs: current floor = 18,000 feet MSL; proposed floor within the new Duckwater and Smokie MOAs = 200 feet AGL.

**Table 3.10-20: Number of Greater Sage-Grouse Leks Beneath Existing and Proposed FRTC SUA***

| Existing | | | Proposed | | |
|---|---|---|---|---|---|
| **Airspace** | **Floor–Ceiling** | **Leks** | **Airspace** | **Floor–Ceiling** | **Leks** |
| R-4816S | 500 ft. AGL–17,999 ft. MSL | 1 | R-4816S | No change | 1 |
| Reno MOA | 13,000 ft. MSL–17,999 ft. MSL | 5 | **Reno MOA (supersonic capable)** | **1,200 ft. AGL–17,999 ft. MSL** | **5** |
| Fallon N 2 MOA | 100 ft. AGL–17,999 ft. MSL | 1 | Fallon N 2 MOA | No change | 1 |
| Fallon N 3 MOA | | 4 | Fallon N 3 MOA | No change | 4 |
| Fallon N 4 MOA | 200 ft. AGL–17,999 ft. MSL | 43 | Fallon N 4 MOA | No change | 43 |
| Fallon S 1 MOA | 100 ft. AGL–17,999 ft. MSL | 10 | Fallon S 1 MOA | No change | 10 |
| Fallon S 2 MOA | | 1 | Fallon S 2 MOA | No change | 5 |
| Fallon S 3 MOA | | 4 | | | |
| Fallon S 4 MOA | 200 ft. AGL–17,999 ft. MSL | 14 | Fallon S 3 MOA | No change | 30 |
| Fallon S 5 MOA | | 16 | | | |
| Diamond ATCAA | 18,000 ft. MSL–29,000 ft. MSL | 36 | **Ruby MOA** | **1,200 ft. AGL–17,999 ft. MSL** | **6** |
| | | | **Zircon MOA** | | **26** |
| | | | **Diamond MOA** | | **4** |
| Duckwater ATCAA | 18,000 ft. MSL–25,000 ft. MSL | 21 | **Duckwater MOA** | **200 ft. AGL–17,999 ft. MSL** | **17** |
| Smokie ATCAA | | 3 | **Smokie MOA** | | **7** |
| SOA B | 11,000 ft. MSL–<30,000 ft. | 33 | SOA B | No change | 51 |
| SOA A | ≥30,000 ft. | 119 | SOA A | No change | 140 |

Notes: *Only those airspace units that have recorded leks underlying the airspace are listed. As the SOAs overlie the majority of the existing FRTC airspace, leks underlying the SOAs are already accounted for under the MOAs. The one lek underlying R-4816S also underlies Fallon South 1 MOA. See Figure 3.10-43.
Bold cells = proposed lower minimum altitude (floor). AGL = above ground level; ATCAA = Air Traffic Control Assigned Airspace; ft. = feet; MOA = Military Operations Area; MSL = above mean sea level; N = north; R- = Restricted Area; S = south; SOA = Supersonic Operating Area.
Source: (Nevada Department of Wildlife, 2018b)

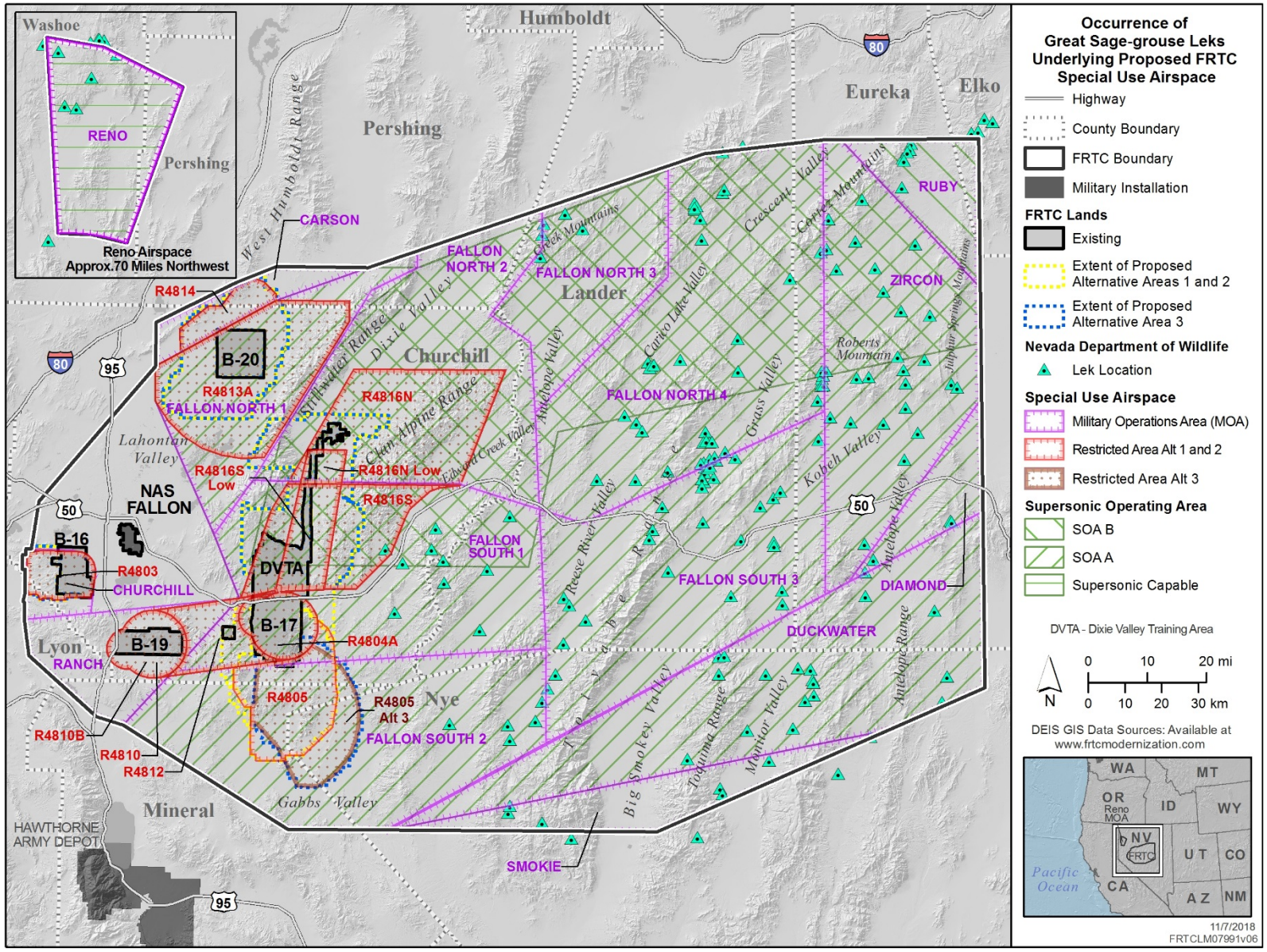


**Figure 3.10-43: Occurrence of Greater Sage-grouse Leks Underlying Proposed FRTC Special Use Airspace**

Although greater-sage grouse leks and populations underlying the proposed airspace revisions of the Reno MOA and Diamond, Duckwater, and Smokie ATCAAs would experience aircraft overflights at a lower altitude (i.e., 200 feet and 1,200 feet AGL) than they currently experience, the majority (93 or 60 percent) of the leks within the region of influence currently experience overflights of 200 feet or less: 20 leks occur under airspace with a floor of 100 feet AGL, and 73 leks occur under airspace with a floor of 200 feet AGL (Table 3.10-20). The existing airspace associated with the current low-level aircraft operations (Fallon North MOAs and Fallon South MOAs) has been in use for over 20 years, and greater sage-grouse continue to lek beneath the airspace. As stated above, the primary threats to greater sage-grouse are habitat loss and fragmentation. Military aircraft overflights have not been identified as a threat to greater-sage grouse lekking attendance and behavior or populations.

Although the proposed expansion of the Supersonic Operating Areas to the east and south within the FRTC region of influence, and also establishing the Reno MOA as supersonic capable, would result in 196 greater sage-grouse leks potentially receiving sonic booms, currently 152 greater sage-grouse leks receive sonic booms under the existing Supersonic Operating Areas. As discussed above with regard to non-supersonic aircraft operations within current airspace, supersonic operations within the existing Supersonic Operating Areas have been conducted for over 20 years, and greater sage-grouse continue to lek beneath the airspace. Under Alternative 1, the sonic booms generated from proposed aircraft operations within the proposed revised Supersonic Operating Area A (above 31,000 feet MSL), Supersonic Operating Area B (11,000-30,000 feet MSL), and the Reno MOA within the FRTC would be similar in nature to a clap of thunder. As summarized in Section 3.7 (Noise), when employing noise sources that are impulsive in nature, less than 1 second in duration, but are not small arms related (e.g., sonic booms), the C-weighted DNL is used. As presented in the 2015 Military Readiness Activities at Fallon Range Training Complex, Nevada Final Environmental Impact Statement (U.S. Department of the Navy, 2015), the C-weighted DNL contours do not reach or exceed 57 dB due to insufficient activity for the size of the flight area. The maximum C-weighted DNL of 52 dB occurs near the center of the Supersonic Operating Areas. While individual sonic booms may provide a brief, impulsive noise, the contribution to C-weighted DNLs would not represent a significant degradation of the noise environment. As presented above, sonic booms have not been shown to result in significant impacts to avian species, including sage-grouse.

Therefore, proposed low-level aircraft operations within the Reno, Ruby, Diamond, Duckwater, and Smokie MOAs and supersonic operations within the revised Supersonic Operating Areas would not result in significant impacts to greater sage-grouse leks or sage-grouse populations in general for the following reasons:

1. The probability of an animal, nest, or lek experiencing overflights more than once per day would be low due to the random nature of flight within the MOAs and the large area of land overflown.
2. The majority of greater sage-grouse leks within the region of influence are currently experiencing aircraft overflights at altitudes of less than 200 feet AGL with no known impacts to lekking behavior or populations.
3. The majority of greater sage-grouse leks within the region of influence are currently experiencing sonic booms with no known impacts to lekking behavior or populations.
4. The majority of aircraft operations within the MOAs would occur at altitudes greater than the minimum altitude (floor).
5. Averaged noise levels within the proposed MOAs would be 55 dBA DNL and within the Reno MOA would be less than 50 dBA DNL.

6. Noise levels from sonic booms within the Supersonic Operating Areas would only reach a maximum 52 dB C-weighted DNL.
7. The majority of the literature suggests that wildlife species exhibit adaptation, acclimation, and habituation after repeated exposure to jet aircraft overflights and associated noise, including sonic booms, and that there are no adverse impacts to wildlife species from aircraft overflights.

*Ungulates: Bighorn Sheep, Mule Deer, Pronghorn, and Elk*. Under Alternative 1, seven new airspace units would be established with a floor at the surface, at 200 feet AGL, or at 1,200 feet AGL (Tables 3.10-21 through 3.10-24):

- Two new restricted areas (R-4805A and R-4816S Low) with floors at the surface would be established and overlie mapped bighorn sheep, mule deer, and pronghorn range (Figures 3.10-44 through 3.10-46).
- Reno MOA would be revised from a floor of 13,000 feet MSL to 1,200 feet AGL and overlies mapped bighorn sheep, mule deer, and pronghorn range (Figures 3.10-44 through 3.10-46).
- Diamond ATCAA, with an existing floor of 18,000 feet MSL, would be revised to establish the Diamond, Ruby, and Zircon MOAs with floors of 1,200 feet AGL and would overlie mapped mule deer, pronghorn, and elk range (Figures 3.10-45 through 3.10-47).
- Duckwater and Smokie ATCAAs, with existing floors of 18,000 feet MSL, would be revised to establish the Duckwater and Smokie MOAs with floors of 200 feet AGL and would overlie mapped bighorn sheep, mule deer, pronghorn, and elk range (Figures 3.10-44 through 3.10-47).

In addition, Supersonic Operating Areas would be expanded to the east over the proposed Duckwater, Ruby, Zircon, and Diamond MOAs, including establishing Reno MOA as supersonic capable, and would overlie mapped bighorn sheep, mule deer, pronghorn, and elk range (Figures 3.10-44 through 3.10-47).

Although populations of ungulates beneath these proposed airspace revisions would now experience aircraft operations at a lower altitude, all of the ungulate populations underlying the FRTC region of influence airspace currently experience aircraft overflights at similar altitudes. For example, hundreds of thousands of mapped bighorn sheep, mule deer, pronghorn, and elk range currently experience overflights at altitudes ranging from the surface to 500 feet AGL (Tables 3.10-21 through 3.10-24). These existing airspace units have been used for over 20 years, and current ungulate populations underlying the FRTC region of influence are either healthy and stable or increasing (Cox et al., 2017; Nevada Department of Wildlife, 2017a). For example, as summarized in Section 3.10.2.4.4 (Special-status Mammals – Ungulates), all bighorn sheep herds underlying R-4804A, R-4812, R-4816S, and Fallon South 2 MOA, which include airspace floors at surface and 100 feet AGL, are at all-time-high population estimates in 2017 (Nevada Department of Wildlife, 2017a).

Therefore, proposed low-level aircraft operations within the Reno, Duckwater, Ruby, and Diamond MOAs and supersonic operations within the revised Supersonic Operating Areas would not result in significant impacts to ungulate populations for the following reasons:

1. The probability of an animal experiencing overflights more than once per day would be low due to the random nature of flight within the airspace and the large area of land overflown.
2. The majority of mapped ungulate range within the region of influence is currently experiencing aircraft overflights at altitudes of less than 500 feet AGL with no known impacts to ungulate populations.
3. The majority of greater sage-grouse leks within the region of influence are currently experiencing sonic booms with no known impacts to lekking behavior or populations.
4. The majority of aircraft operations within the airspace would occur at altitudes greater than the minimum altitude (floor).
5. Averaged noise levels within the proposed MOAs would be 55 dBA onset-rate adjusted day-night average sound level ($L_{dnmr}$) and within the Reno MOA would be less than 50 dBA ($L_{dnmr}$) (refer to the Supporting Study: Noise Study [available at http://www.frtcmodernization.com]).
6. Noise levels from sonic booms within the Supersonic Operating Areas would only reach a maximum 52 dB C-weighted DNL (refer to the Supporting Study: Noise Study [available at http://www.frtcmodernization.com]).
7. The majority of the literature suggests that wildlife species exhibit adaptation, acclimation, and habituation after repeated exposure to jet aircraft overflights and associated noise, including sonic booms, and that there are no adverse impacts to wildlife species from aircraft overflights.

**Table 3.10-21: Mapped Bighorn Sheep Range Beneath Existing and Proposed FRTC SUA***

| Existing | | | Proposed | | |
|---|---|---|---|---|---|
| **Airspace** | **Floor–Ceiling** | **Total Range (acres)** | **Airspace** | **Floor–Ceiling** | **Total Range (acres)** |
| R-4804A | Surface–17,999 ft. MSL | 24,476 | R-4804A | No change | 24,476 |
| | | | **R-4805A** | **Surface–17,999 ft. MSL** | **36,343** |
| R-4812 | Surface–17,999 ft. MSL | 25,744 | R-4812 | No change | 25,744 |
| R-4813A | | 78,920 | R-4813A | | 78,920 |
| R-4816N | 1,500 ft. AGL–17,999 ft. MSL | 113,024 | R-4816N | No change | 113,024 |
| R-4816S | 500 ft. AGL–17,999 ft. MSL | 144,410 | R-4816S | No change | 144,410 |
| | | | **R-4816S Low** | **Surface–499 ft. AGL** | **28,149** |
| Ranch Low/High MOA | 500 ft. AGL–13,000 ft. MSL | 1,269 | Ranch MOA | No change | 1,269 |
| Reno MOA | 13,000 ft. MSL–17,999 ft. MSL | 79,406 | **Reno MOA (supersonic capable)** | **1,200 ft. AGL–17,999 ft. MSL** | **79,406** |
| Fallon N 1 MOA | 100 ft. AGL–17,999 ft. MSL | 122,368 | Fallon N 1 MOA | No change | 122,368 |
| Fallon N 2 MOA | | 225,414 | Fallon N 2 MOA | | 225,414 |
| Fallon N 3 MOA | | 100,084 | Fallon N 3 MOA | | 100,084 |
| Fallon S 1 MOA | 100 ft. AGL–17,999 ft. MSL | 414,809 | Fallon S 1 MOA | No change | 414,809 |
| Fallon S 2 MOA | | 95,530 | Fallon S 2 MOA | No change | 95,530 |
| Fallon S 3 MOA | | 0 | | | |
| Fallon S 4 MOA | 200 ft. AGL–17,999 ft. MSL | 0 | Fallon S 3 MOA | No change | 41,255 |
| Fallon S 5 MOA | | 41,255 | | | |
| Duckwater & Smokie ATCAAs | 18,000 ft. MSL–25,000 ft. MSL | 165,386 | **Duckwater & Smokie MOAs** | **200 ft. AGL–17,999 ft. MSL** | **165,386** |
| SOA B | 11,000 ft. MSL–<30,000 ft. | 477,366 | SOA B | No change | 477,366 |
| SOA A | ≥30,000 ft. | 939,565 | SOA A | No change | 1,021,397 |

Notes: *Only those airspace units that have mapped bighorn sheep range underlying the airspace are listed. As the SOAs overlie the majority of the existing FRTC airspace, mapped bighorn sheep range underlying the SOAs are already accounted for under the MOAs and is not double counted. As the MOAs overlap the restricted areas (R-), the acreage listed within all restricted areas is already accounted for under the MOAs. See Figure 3.10-44.

Bold cells = proposed change in airspace configuration = lower minimum altitude (floor). AGL = above ground level; ATCAA = Air Traffic Control Assigned Airspace; ft. = feet; MOA = Military Operations Area; MSL = above mean sea level; N = north; R- = Restricted Area; S = south; SOA = Supersonic Operating Area.

Source: (Nevada Department of Wildlife, 2018b)

**Table 3.10-22: Mapped Mule Deer Range Beneath Existing and Proposed FRTC SUA***

| Existing | | | Proposed | | |
|---|---|---|---|---|---|
| **Airspace** | **Floor–Ceiling** | **Total Range (acres)** | **Airspace** | **Floor–Ceiling** | **Total Range (acres)** |
| R-4804A | Surface–17,999 ft. MSL | 11,842 | R-4804A | No change | 11,842 |
| | | | **R-4805A** | **Surface–17,999 ft. MSL** | **3,206** |
| R-4812 | Surface–17,999 ft. MSL | 20,664 | R-4812 | No change | 20,664 |
| R-4813A | | 47,930 | R-4813A | | 47,930 |
| R-4816N | 1,500 ft. AGL–17,999 ft. MSL | 113,564 | R-4816N | No change | 113,564 |
| R-4816S | 500 ft. AGL–17,999 ft. MSL | 85,588 | R-4816S | No change | 85,588 |
| | | | **R-4816S Low** | **Surface–499 ft. AGL** | **919** |
| Reno MOA | 13,000 ft. MSL–17,999 ft. MSL | 353,171 | **Reno MOA (supersonic capable)** | **1,200 ft. AGL–17,999 ft. MSL** | **353,171** |
| Fallon N 1 MOA | 100 ft. AGL–17,999 ft. MSL | 72,241 | Fallon N 1 MOA | No change | 72,241 |
| Fallon N 2 MOA | | 274,777 | Fallon N 2 MOA | | 274,777 |
| Fallon N 3 MOA | | 117,952 | Fallon N 3 MOA | | 117,952 |
| Fallon N 4 MOA | 200 ft. AGL–17,999 ft. MSL | 693,216 | Fallon N 4 MOA | No change | 693,216 |
| Fallon S 1 MOA | 100 ft. AGL–17,999 ft. MSL | 398,278 | Fallon S 1 MOA | No change | 398,278 |
| Fallon S 2 MOA | | 140,259 | Fallon S 2 MOA | No change | 220,705 |
| Fallon S 3 MOA | | 80,446 | | | |
| Fallon S 4 MOA | 200 ft. AGL–17,999 ft. MSL | 163,304 | Fallon S 3 MOA | No change | 509,479 |
| Fallon S 5 MOA | | 346,175 | | | |
| Diamond ATCAA | 18,000 ft. MSL–29,000 ft. MSL | 657,496 | **Diamond MOA** | **1,200 ft. AGL–17,999 ft. MSL** | **79,954** |
| | | | **Ruby MOA** | | **98,824** |
| | | | **Zircon MOA** | | **478,718** |
| Duckwater & Smokie ATCAAs | 18,000 ft. MSL–25,000 ft. MSL | 812,939 | **Duckwater & Smokie MOAs** | **200 ft. AGL–17,999 ft. MSL** | **812,939** |
| SOA B | 11,000 ft. MSL–<30,000 ft. | 1,136,833 | SOA B | No change | 1,514,802 |
| SOA A | ≥30,000 ft. | 2,934,985 | SOA A | No change | 3,687,119 |

Notes: *Only those airspace units that have mapped mule deer range underlying the airspace are listed. As the SOAs overlie the majority of the existing FRTC airspace, mapped mule deer range underlying the SOAs are already accounted for under the MOAs and is not double counted. As the MOAs overlap the restricted areas (R-), the acreage listed within all restricted areas is already accounted for under the MOAs. See Figure 3.10-45.

Bold cells = proposed change in airspace configuration = lower minimum altitude (floor). AGL = above ground level; ATCAA = Air Traffic Control Assigned Airspace; ft. = feet; MOA = Military Operations Area; MSL = above mean sea level; N = north; R- = Restricted Area; S = south; SOA = Supersonic Operating Area.

Source: (Nevada Department of Wildlife, 2018b)

**Table 3.10-23: Mapped Pronghorn Range Beneath Existing and Proposed FRTC SUA***

| Existing | | | Proposed | | |
|---|---|---|---|---|---|
| **Airspace** | **Floor–Ceiling** | **Total Range (acres)** | **Airspace** | **Floor–Ceiling** | **Total Range (acres)** |
| R-4804A | Surface–17,999 ft. MSL | 74,240 | R-4804A | No change | 74,240 |
| | | | **R-4805A** | **Surface–17,999 ft. MSL** | **200,450** |
| R-4812 | Surface–17,999 ft. MSL | 90,414 | R-4812 | No change | 90,414 |
| R-4813A | | 175,474 | R-4813A | | 175,474 |
| R-4816N | 1,500 ft. AGL–17,999 ft. MSL | 208,288 | R-4816N | No change | 208,288 |
| R-4816S | 500 ft. AGL–17,999 ft. MSL | 239,299 | R-4816S | No change | 239,299 |
| | | | **R-4816S Low** | **Surface–499 ft. AGL** | **87,954** |
| Ranch Low/High MOA | 500 ft. AGL–13,000 ft. MSL | 170,742 | Ranch MOA | No change | 170,742 |
| Reno MOA | 13,000 ft. MSL–17,999 ft. MSL | 481,835 | **Reno MOA (supersonic capable)** | **1,200 ft. AGL–17,999 ft. MSL** | **481,835** |
| Fallon N 1 MOA | 100 ft. AGL–17,999 ft. MSL | 250,824 | Fallon N 1 MOA | No change | 250,824 |
| Fallon N 2 MOA | | 640,683 | Fallon N 2 MOA | | 640,683 |
| Fallon N 3 MOA | | 265,538 | Fallon N 3 MOA | | 265,538 |
| Fallon N 4 MOA | 200 ft. AGL–17,999 ft. MSL | 640,458 | Fallon N 4 MOA | No change | 640,458 |
| Fallon S 1 MOA | 100 ft. AGL–17,999 ft. MSL | 825,696 | Fallon S 1 MOA | No change | 825,696 |
| Fallon S 2 MOA | | 689,167 | Fallon S 2 MOA | No change | 823,282 |
| Fallon S 3 MOA | | 134,115 | | | |
| Fallon S 4 MOA | 200 ft. AGL–17,999 ft. MSL | 171,874 | Fallon S 3 MOA | No change | 590,637 |
| Fallon S 5 MOA | | 418,763 | | | |
| Diamond ATCAA | 18,000 ft. MSL–29,000 ft. MSL | 786,758 | **Diamond MOA** | **1,200 ft. AGL–17,999 ft. MSL** | **78,746** |
| | | | **Ruby MOA** | | **144,958** |
| | | | **Zircon MOA** | | **563,054** |
| Duckwater & Smokie ATCAAs | 18,000 ft. MSL–25,000 ft. MSL | 681,370 | **Duckwater & Smokie MOAs** | **200 ft. AGL–17,999 ft. MSL** | **681,370** |
| SOA B | 11,000 ft. MSL–<30,000 ft. | 1,677,590 | SOA B | No change | 2,093,572 |
| SOA A | ≥30,000 ft. | 4,604,317 | SOA A | No change | 5,240,976 |

Notes: *Only those airspace units that have mapped pronghorn range underlying the airspace are listed. As the SOAs overlie the majority of the existing FRTC airspace, mapped pronghorn range underlying the SOAs are already accounted for under the MOAs and is not double counted. As the MOAs overlap the restricted areas (R-), the acreage listed within all restricted areas is already accounted for under the MOAs. See Figure 3.10-46.

Bold cells = proposed change in airspace configuration = lower minimum altitude (floor). AGL = above ground level; ATCAA = Air Traffic Control Assigned Airspace; ft. = feet; MOA = Military Operations Area; MSL = above mean sea level; N = north; R- = Restricted Area; S = south; SOA = Supersonic Operating Area.

Source: (Nevada Department of Wildlife, 2018b)

**Table 3.10-24: Mapped Elk Range Beneath Existing and Proposed FRTC SUA***

| Existing | | | Proposed | | |
|---|---|---|---|---|---|
| **Airspace** | **Floor–Ceiling** | **Total Range (acres)** | **Airspace** | **Floor–Ceiling** | **Total Range (acres)** |
| Fallon S 1 MOA | 100 ft. AGL–17,999 ft. MSL | 29,062 | Fallon S 1 MOA | No change | 29,062 |
| Fallon S 2 MOA | | 103,889 | Fallon S 2 MOA | No change | 153,937 |
| Fallon S 3 MOA | | 50,048 | | | |
| Fallon S 4 MOA | 200 ft. AGL–17,999 ft. MSL | 0 | Fallon S 3 MOA | No change | 133,052 |
| Fallon S 5 MOA | | 133,052 | | | |
| Diamond ATCAA | 18,000 ft. MSL–29,000 ft. MSL | 76,046 | **Diamond MOA** | **1,200 ft. AGL–17,999 ft. MSL** | **1,368** |
| | | | **Ruby MOA** | | **33,884** |
| | | | **Zircon MOA** | | **40,794** |
| Duckwater & Smokie ATCAAs | 18,000 ft. MSL–25,000 ft. MSL | 572,404 | **Duckwater & Smokie MOAs** | **200 ft. AGL–17,999 ft. MSL** | **572,404** |
| SOA B | 11,000 ft. MSL–<30,000 ft. | 0 | SOA B | No change | 34,288 |
| SOA A | ≥30,000 ft. | 356,845 | SOA A | No change | 810,916 |

Notes: *Only those airspace units that have mapped elk range underlying the airspace are listed. As the SOAs overlie the majority of the existing FRTC airspace, mapped elk range underlying the SOAs are already accounted for under the MOAs and is not double counted. See Figure 3.10-47.
Bold cells = proposed change in airspace configuration = lower minimum altitude (floor).
AGL = above ground level; ATCAA = Air Traffic Control Assigned Airspace; ft. = feet; MOA = Military Operations Area; MSL = above mean sea level; S = south; SOA = Supersonic Operating Area.
Source: (Nevada Department of Wildlife, 2018b)

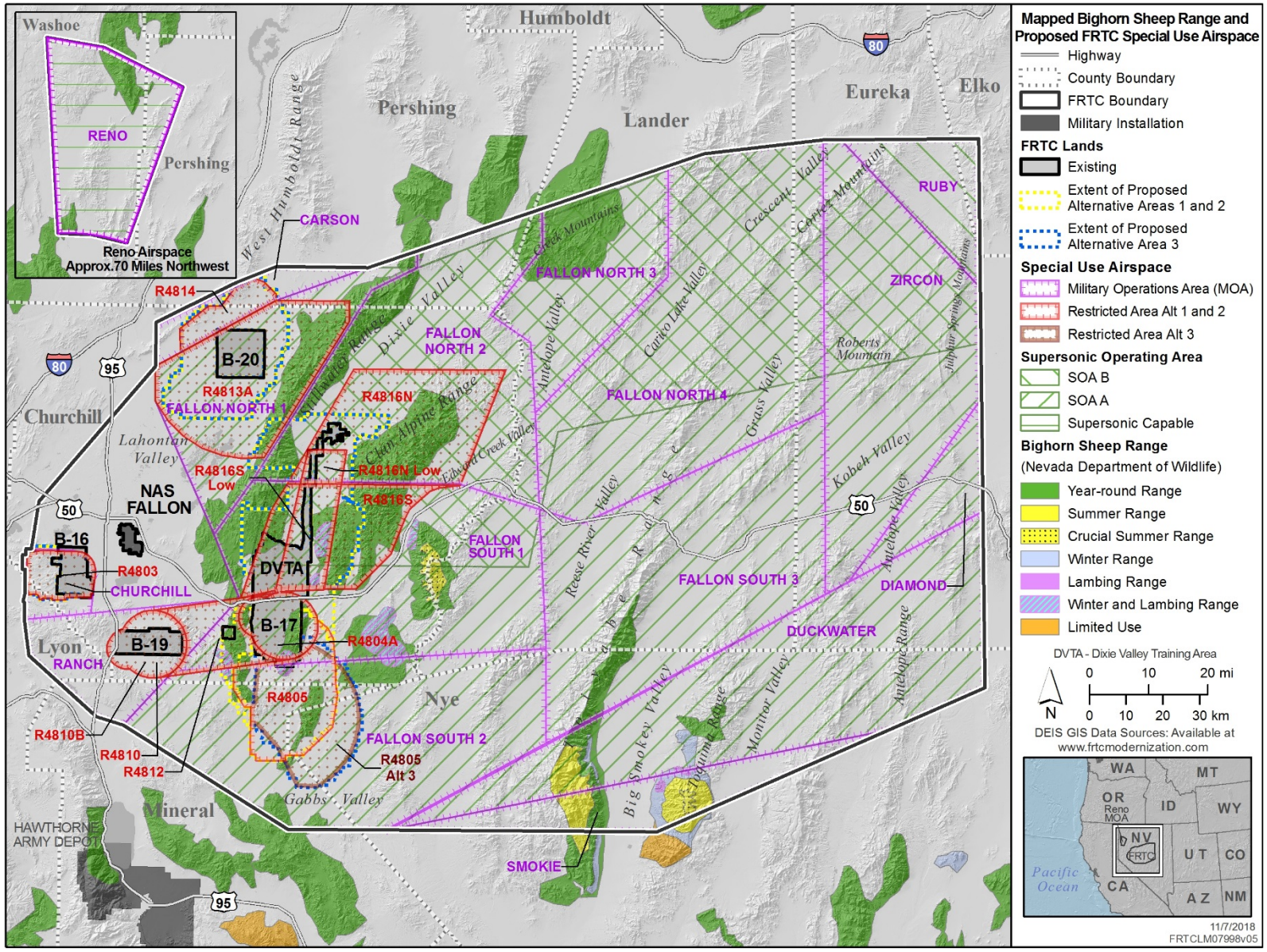


**Figure 3.10-44: Mapped Bighorn Sheep Range and Proposed FRTC Special Use Airspace**

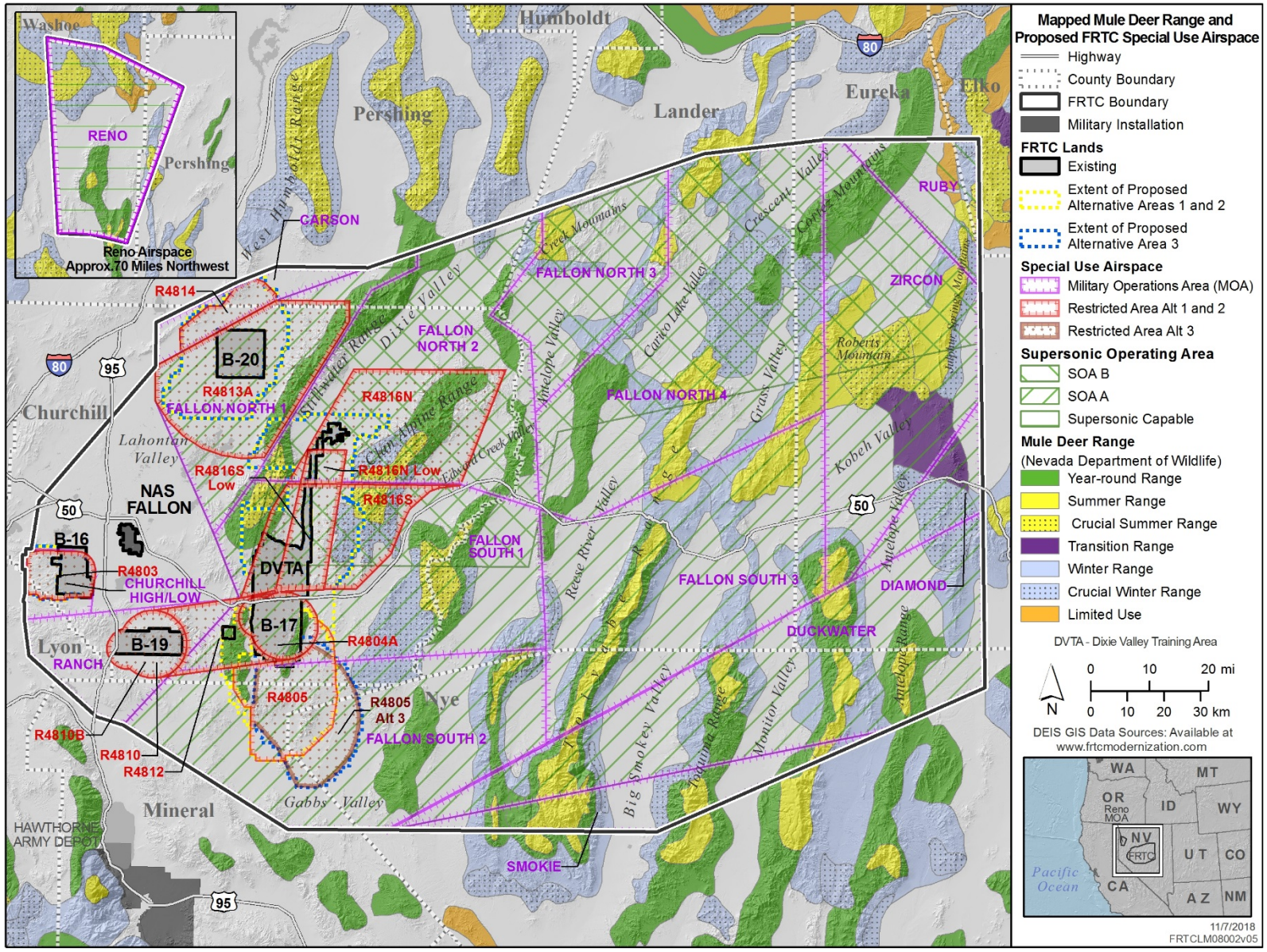


**Figure 3.10-45: Mapped Mule Deer Range and Proposed FRTC Special Use Airspace**

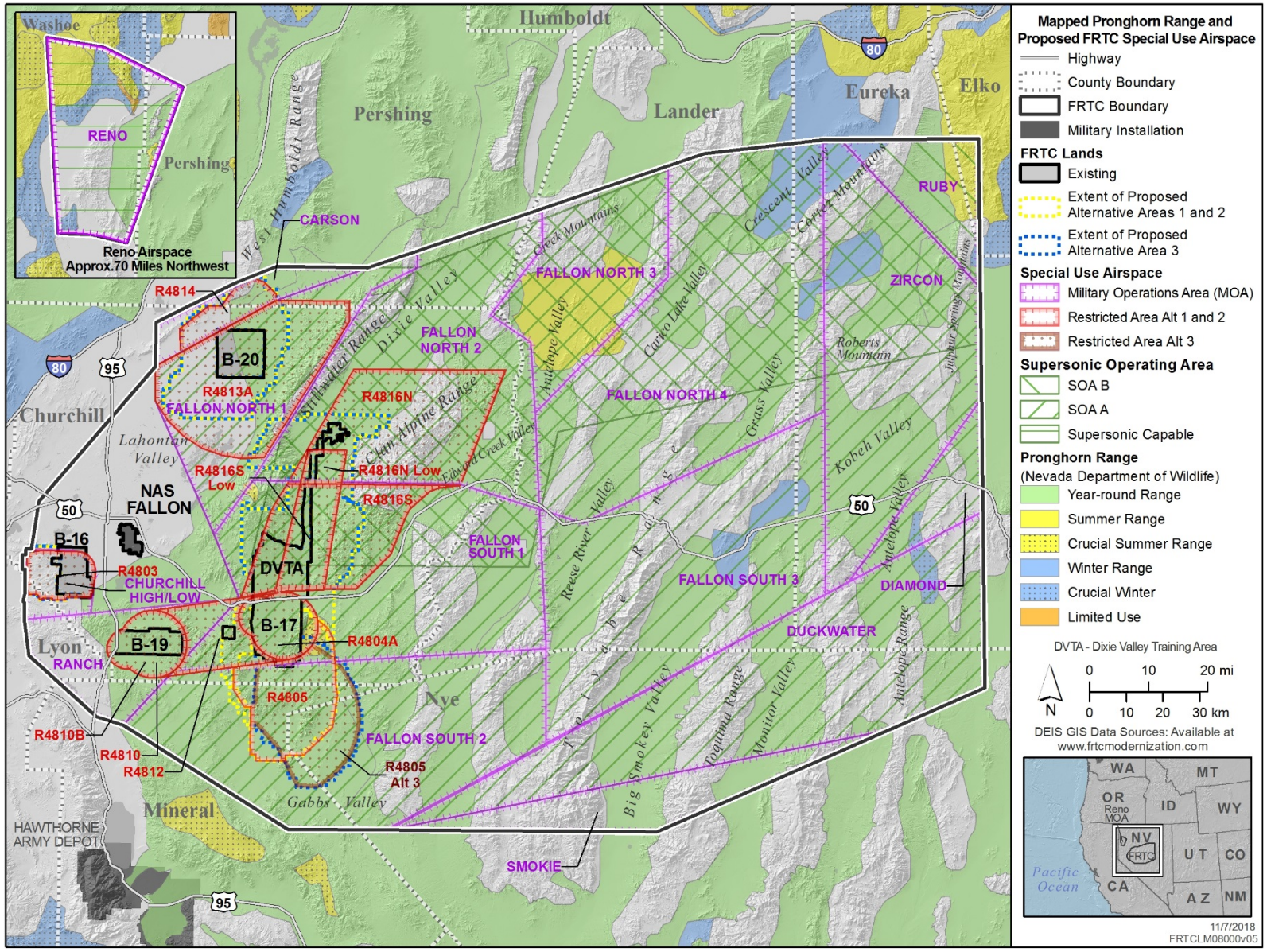


**Figure 3.10-46: Mapped Pronghorn Range and Proposed FRTC Special Use Airspace**

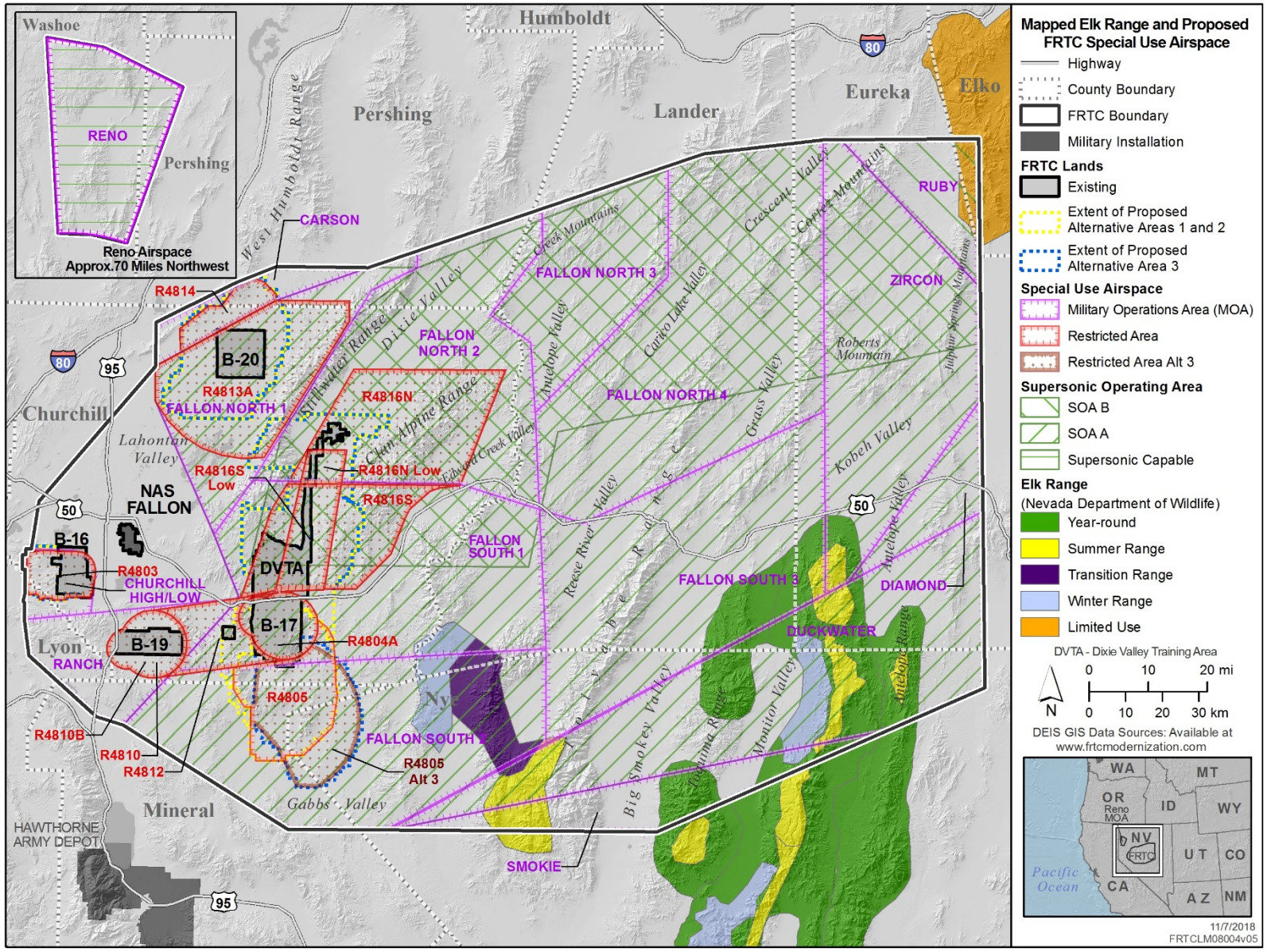


**Figure 3.10-47: Mapped Elk Range and Proposed FRTC Special Use Airspace**

**Electromagnetic Fields**. Wildlife within the proposed FRTC expansion areas would be exposed to various forms of electromagnetic sources including radar, threat transmitters, communications equipment, and electronic detection equipment, primarily during electronic combat training events. Typically, the maximum magnetic field generated would be approximately 0.0023 Tesla (T). This level of electromagnetic density is very low when compared to magnetic fields generated by other everyday items. The magnetic field generated is between the levels of a refrigerator magnet (0.015–0.02 T) and a standard household can opener (up to 0.004 measured at 4 inches away). The strength of the electromagnetic field decreases quickly away from the source. The magnetic field generated at a distance of 13.12 feet from the source is comparable to the earth's magnetic field, which is approximately 0.00005 T. The strength of the field at just under 26 feet is only 40 percent of the earth's field, and only 10 percent at 79 feet. At a radius of 656 feet, the magnetic field would be approximately 0.002 G.

Under Alternative 1, the amount of training over baseline conditions analyzed in the 2015 Military Readiness Activities at Fallon Range Training Complex, Nevada Final Environmental Impact Statement (U.S. Department of the Navy, 2015) would remain the same but be dispersed throughout the existing and proposed FRTC expansion areas. Although the potential effects of this radiation on wildlife within the proposed expansion areas cannot be quantified, the effects would be expected to be minor for the following reasons:

1. animals within the proposed expansion areas would not be exposed to constant radiation as electromagnetic fields would not be constantly generated, training activities would vary by location, and because of the variable duration of training activities that generate magnetic fields;
2. the strength of the electromagnetic fields is similar or less than the electromagnetic fields generated by the earth; and
3. the beam of electromagnetic radiation (e.g., from radars) could expose animals to increased levels of radiation; however, animals would typically be moving through the area (e.g., bird flight) and potentially out of the path of the main beam (U.S. Department of the Navy, 2015).

Animals within the proposed expansion areas may experience a detectable behavioral response to an electromagnetic field but would quickly recover after the exposure. The general characteristics of electromagnetic fields and their potential to impact wildlife were discussed previously under the general overview of stressors. The fitness (physiological health and normal behavior) of individuals or populations would not be affected by electromagnetic fields generated from sources included under Alternative 1.

**Lasers.** Under Alternative 1, the amount of training over baseline conditions analyzed in the 2015 Military Readiness Activities at Fallon Range Training Complex, Nevada Final Environmental Impact Statement (U.S. Department of the Navy, 2015) would remain the same but would be dispersed throughout the existing and proposed FRTC expansion areas. Although this would increase the area where stressors would potentially impact wildlife resources, the intensity of each stressor would decrease because of the wider area where military training activities would expose animals to lasers. Lasers would only be employed between the device and a target, greatly reducing the chance of wildlife being exposed to the beam. Based on the low likelihood of a laser beam directly reaching an animal (or an animal's eye), how close an animal would need to be in order to experience effects, the dispersion of training activities would potentially benefit wildlife resources throughout the existing B-16 range because the numbers of exposures in any one location would decrease.

Under Alternative 1, laser-guided munitions would be used in B-16. Lasers used in the FRTC Study Area would be similar to the moderate-powered lasers from the studies cited above, and therefore no damaging effects on vision would be anticipated. Further, because laser-guided munitions would only be used within the Bravo training ranges, only wildlife species within this area would be potentially affected. Impacts associated with lasers are anticipated to be less than significant because: (1) it is unlikely an animal would detect a laser beam; (2) if detected, the animal would be expected to recover quickly (within a few seconds); and (3) the fitness (physiological health and normal behavior) of individual animals would not be affected by this temporary effect (the length of time a laser beam might accidentally be sighted directly on an animal's eyes).

**Chaff.** Chaff consists of very small (about an inch long and one thousandth of an inch in diameter) fibers that are released from chaff dispensers. The principal components of chaff (i.e., aluminum, silica glass fibers, and stearic acid) are biodegradable, including the dispenser's end cap, and pose no known risk to wildlife (Spargo, 1999; U.S. Department of the Air Force, 1997; U.S. Government Accountability Office, 1998). Therefore, there would be no significant impacts to biological resources with the use of chaff during proposed training activities.

**Physical Disturbance**. The resources within the withdrawal areas associated with the proposed range expansion areas would be subject to physical disturbance from ordnance expenditures and construction activities. Impacts associated with construction activities and military training activities would not be significant because: (1) although individual animals may be impacted by disturbance or strikes from ordnance, it is not anticipated that population-level effects would occur; and BLM-certified fencing would be installed in accordance with specifications outlined in BLM Handbook H-1741-1 (Fencing), therefore minimizing impacts on animals and animal movements (e.g., bighorn sheep, pronghorn).

Aircraft strikes of birds, and infrequently bats, may occur during any phase of flight, but are most likely during the take-off, initial climb, approach, and landing phases because of the greater numbers of animals in flight at lower levels. While all aircraft strikes are considered serious and dangerous events, the number of related mortalities is small considering Navy-wide aircraft activities. Most would be expected to occur during take-off and landings, but would have a potential to occur if low-altitude flights occurred over areas with wildlife aggregating features, such as water (e.g., lakes, wetlands), riparian corridors, and ridge lines.

U.S. Navy policy requires NAS Fallon to manage their operations to minimize flight-related and aviation ground mishaps. As part of this policy, hazards to aircraft and ground operations must be identified and eliminated or minimized. The daily and seasonal movement of resident and migratory birds in the vicinity of NAS Fallon and associated existing and proposed revised Social Impact Assessment create various hazardous conditions to aviation. NAS Fallon has prepared a BASH Plan is to identify potential areas of concern and to establish procedures to mitigate the threat of bird and other animal strikes to aircrews and aircraft at NAS Fallon and the associated SUA. On average, there are between three and eight BASH incidents annually at NAS Fallon (Naval Air Station Fallon, 2012).

The BASH program is an ongoing process including an aircrew notification and warning system. This system establishes procedures for the immediate exchange of information between ground agencies and aircrews concerning the existence and location of birds that pose a hazard to flight safety, both within the NAS Fallon airfield environment and within SUA, including range areas. The BASH plan provides detailed procedures to monitor and react to heightened risk of bird/animal strikes. When risk increases, limits would be placed on low-altitude flight and some types of training. Special briefings

would be provided to pilots whenever the potential exists for increased bird/animal strikes within the airspace. When conducting low-level flight operations within the SUA, pilots are informed of areas or route segments that are under a Bird Hazard Condition Red (Severe), which is generally based on migration patterns, radar reports, or current conditions from pilots within the airspace. In addition, pilots would continue to use the Avian Hazard Advisory System to monitor bird activity in near real-time to increase flight crew awareness and planning capabilities, particularly in areas of known concentrations of migratory birds (e.g., wetlands associated with Fallon and Stillwater NWRs within the proposed B-20 expansion area) and during known migratory periods. Currently three SUA units overlap the Stillwater and Fallon NWRs: Fallon North 1 MOA, R-4813A, and R-4813B. Under Alternative 1, there are no proposed changes to the operating altitudes of the SUAs that overlap the Stillwater NWR, no changes in number of aircraft operations, and no changes in the approach and departure tracks of aircraft utilizing targets in B-20. The proposed B-20 expansion area that overlaps the NWRs is for a ground-based safety zone and not due to an increase or change in aircraft operations over the NWRs. Therefore, there would be no change in the BASH potential with implementation of the proposed action.

The following are some general operational changes that are implemented during aircraft operations to reduce threats from bird strikes, mission permitting:

- When practical, reduce low-level flight time.
- Reduce formation flying.
- Reduce airspeeds to allow birds to be seen sooner and lessen damage in event of a strike.
- Avoid areas with known raptor concentrations during summer, especially during 1000–1700 hours due to increased thermals (Naval Air Station Fallon, 2012).

With adherence to the NAS Fallon BASH Plan and use of the Avian Hazard Advisory System, there would be no significant impacts to bird or bat populations as no population-level effects to birds or bats would be expected.

#### 3.10.3.3.2 Public Access

Under Alternative 1, the proposed B-16, B-17, and B-20 expansion areas would be fenced to control access. To minimize impacts on animals and animal movements (e.g., bighorn sheep, pronghorn), BLM-certified fencing would be installed in accordance with specifications outlined in BLM Handbook H-1741-1 (Fencing). The Navy would install perimeter fencing to enclose the proposed expansion areas and connect with existing range perimeter fencing. The Navy would close and restrict public access to the proposed range expansion areas and existing ranges except for Navy-authorized activities (e.g., ceremonial or cultural site visits, research/academic pursuits, or regulatory or management activities such as BLM, USFWS, NDOW activities). Under Alternative 1, allowable public uses of the lands within the existing DVTA and proposed DVTA expansion area would not change from current conditions. For further details regarding public access refer to Sections 3.2 (Land Use), 3.11 (Cultural Resources), and 3.12 (Recreation).

#### 3.10.3.3.3 Construction Activities

Based on the information presented below, there would be no significant impacts to vegetation and special-status plant species with implementation of proposed construction activities under Alternative 1 because (1) ground-disturbing activities would primarily impact a common and dominant vegetation

type within the region, (2) no special-status plant species would be directly impacted, and (3) Stormwater Pollution Prevention Plans (SWPPPs) would be prepared and implemented to avoid and minimize potential direct and indirect impacts on soil and vegetation.

### Vegetation and Special-status Plants

Under Alternative 1, approximately 4,500 acres of 14 vegetation types would be impacted from construction activities associated with the proposed B-16, B-17, and B-20 expansion areas (Table 3.10-25). Two vegetation types comprise 85 percent of the total vegetation that would be impacted: Bailey's greasewood shrubland (2,410 acres or 54 percent) and microphytic playa (1,372 acres or 31 percent). Specific vegetation impacts within each proposed expansion area are discussed below.

**Table 3.10-25: Acreage of Direct Vegetation Impacts from Proposed Construction Activities Within the Proposed B-16, B-17, B-20, and DVTA Expansion Areas under Alternatives 1 and 2**

| Vegetation Type | Range | | | | Total |
|---|---|---|---|---|---|
| | B-16 | B-17 | B-20 | DVTA | |
| Bailey's Greasewood Shrubland | 76 | 2,334 | 0 | 0 | **2,410** |
| Big Sagebrush - Mixed Shrub Dry Steppe & Shrubland | 0.2 | 0 | 0 | 0 | **0.2** |
| Black Sagebrush Steppe & Shrubland | 0 | 2.3 | 0 | 5 | **7.3** |
| Cheatgrass Ruderal Grassland | 0 | 9.6 | 0 | 0 | **9.6** |
| Intermountain Greasewood Wet Shrubland | 5.4 | 0 | 0 | 0 | **5.4** |
| Fremont's Smokebush - Nevada Smokebush Desert Wash Scrub | 0.4 | 0 | 0 | 0 | **0.4** |
| Great Basin Singleaf Pinyon-Utah Juniper/Shrub Woodland | 0 | 0 | 0 | 5.0 | **5.0** |
| Microphytic Playa | 0 | 0 | 1,372 | 0 | **1,372** |
| Mojave-Sonoran Burrobush - Sweetbush Desert Wash Scrub | 0 | 198 | 0 | 0 | **198** |
| Rubber Rabbitbrush - Sand Buckwheat - Four-part Horsebrush Sparse Scrub | 0 | 131 | 0 | 0 | **131** |
| Shadscale Saltbush Scrub | 36 | 0 | 0 | 0 | **36** |
| Utah Juniper/Shrub Woodland | 0 | 5 | 0 | 0 | **5** |
| Winterfat Steppe Dwarf Shrubland | 0 | 48 | 0 | 0 | **48** |
| Wyoming Big Sagebrush Dry Steppe & Shrubland | 0 | 235 | 0 | 0 | **235** |
| **Total** | **118** | **2,963** | **1,372** | **10** | **4,463** |

- *Proposed B-16 Expansion Area*. Proposed ground-disturbing construction activities (e.g., excavating, grading, grubbing, compacting, and clearing soil) associated with the proposed B-16 expansion area would directly impact 118 acres of vegetation (Table 3.10-25 and Figure 3.10-48). These construction activities are associated with the proposed combat village that would contain 35-45 conex boxes and the installation of 31 miles of security fencing with five access gates. Approximately 112 acres (95 percent) of the impacted vegetation is the regionally common and dominant Bailey's greasewood shrubland (76 acres or 64 percent) and shadscale saltbush scrub (36 acres or 31 percent).

  Based on special-status plant surveys conducted in 2017 in support of this EIS, one special-status plant species (sand cholla, a Nevada protected cactus) potentially occurs in the vicinity of the northwestern corner of the proposed perimeter fence of the proposed B-16 expansion area (Figure 3.10-48). Any sand cholla identified within the route of the perimeter fence would be avoided during construction depending on the proposed final routing of the perimeter fence. No other special-status plant species are known to occur within the areas of proposed ground-disturbing activities within the proposed B-16 expansion area.

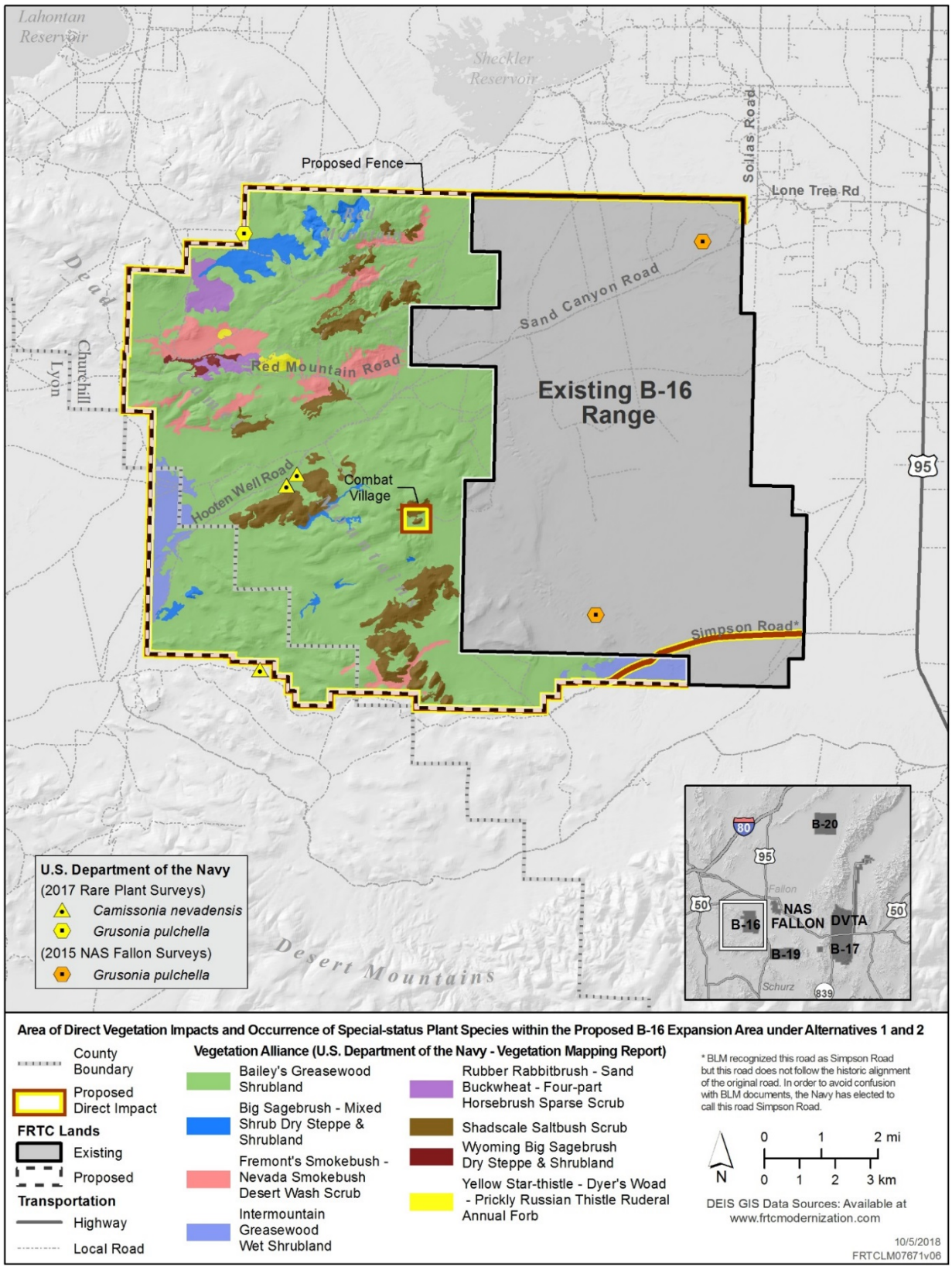


**Figure 3.10-48: Area of Direct Vegetation Impacts and Occurrence of Special-status Plant Species Within the Proposed B-16 Expansion Area under Alternatives 1 and 2**

- *Proposed B-17 Expansion Area*. Proposed ground-disturbing construction activities (e.g., excavating, grading, grubbing, compacting, and clearing soil) associated with the proposed B-17 expansion area would directly impact 2,963 acres of vegetation (Table 3.10-25 and Figure 3.10-49). These ground-disturbing activities are associated with the proposed construction of two communication towers, electronic warfare site, convoy routes, military vehicle training routes, ground target areas, and 75 miles of security fencing with eight gates. The majority (2,334 acres or 79 percent) of the impacted vegetation is the regionally common and dominant Bailey's greasewood shrubland. Based on special-status plant surveys conducted in 2017 in support of this EIS, no special-status plant species occur in the vicinity of the proposed ground-disturbing activities within the proposed B-17 expansion area (Figure 3.10-49).
- *Proposed B-20 Expansion Area*. Proposed ground-disturbing construction activities (e.g., excavating, grading, grubbing, compacting, and clearing soil) associated with the proposed B-20 expansion area would directly impact 1,372 acres of the microphytic playa vegetation alliance (Table 3.10-25 and Figure 3.10-50). These ground-disturbing activities are associated with the proposed target maintenance building and associated vehicle parking and staging, and 90 miles of security fencing with eight gates. Based on special-status plant surveys conducted in 2017 in support of this EIS, no special-status plant species occur in the vicinity of the proposed ground-disturbing activities within the proposed B-20 expansion area (Figure 3.10-50).
- *Proposed DVTA Expansion Area*. Proposed ground-disturbing construction activities (e.g., excavating, grading, grubbing, compacting, and clearing soil) associated with the proposed DVTA expansion area would directly impact 1 acre of Black Sagebrush Steppe and Shrubland and 4 acres of 10 acres of the microphytic playa vegetation alliance (Table 3.10-25). These ground-disturbing activities are associated with the proposed 5-acre fenced electronic warfare sites at North Job Peak and 11 Mile Canyon (Figure 3.10-51). Based on special-status plant surveys conducted in 2017 in support of this EIS, no special-status plant species occur in the vicinity of the proposed ground-disturbing activities within the proposed DVTA expansion area (Figure 3.10-51).

SWPPPs would be prepared for proposed construction activities at all proposed expansion areas when such activities would disturb 1 or more acres or be part of a common plan that disturbs 1 or more acres. In accordance with Nevada's Stormwater Construction General Permit, all project-related SWPPPs would include erosion and sediment control measures (e.g., wattles, silt fences) and best management practices that would minimize or avoid direct and indirect impacts on soil, vegetation, and surface waters (Nevada Division of Environmental Protection, 2015). SWPPP(s) would remain in effect until the construction sites have stabilized.

Therefore, there would be no significant impacts to vegetation and special-status plant species with implementation of proposed construction activities under Alternative 1 because: (1) ground-disturbing activities would primarily impact a common and dominant vegetation type within the region; (2) no special-status plant species would be directly impacted; and (3) SWPPPs would be prepared and implemented to avoid and minimize potential direct and indirect impacts on soil and vegetation.

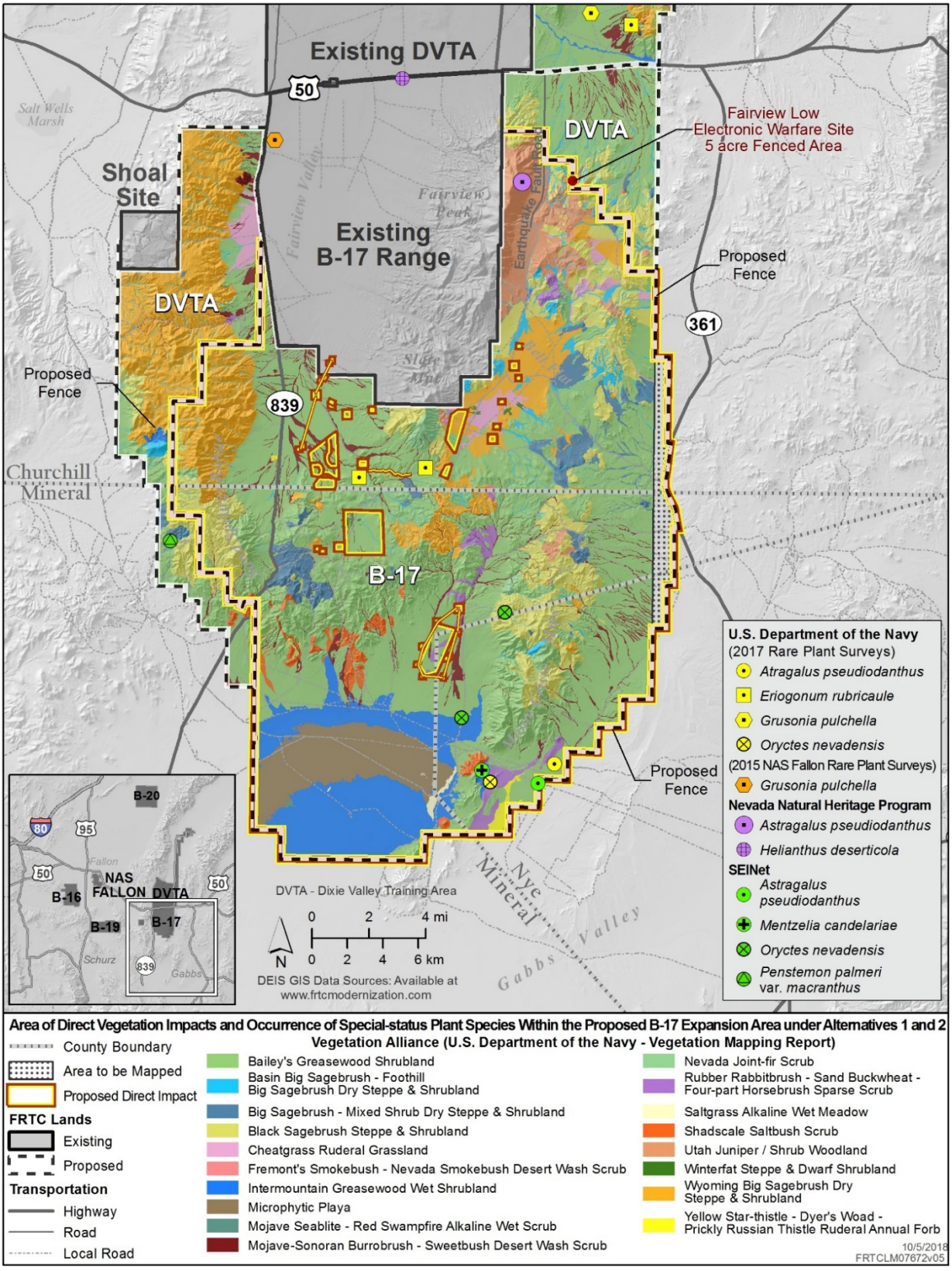


**Figure 3.10-49: Area of Direct Vegetation Impacts and Occurrence of Special-status Plant Species Within the Proposed B-17 Expansion Area under Alternatives 1 and 2**

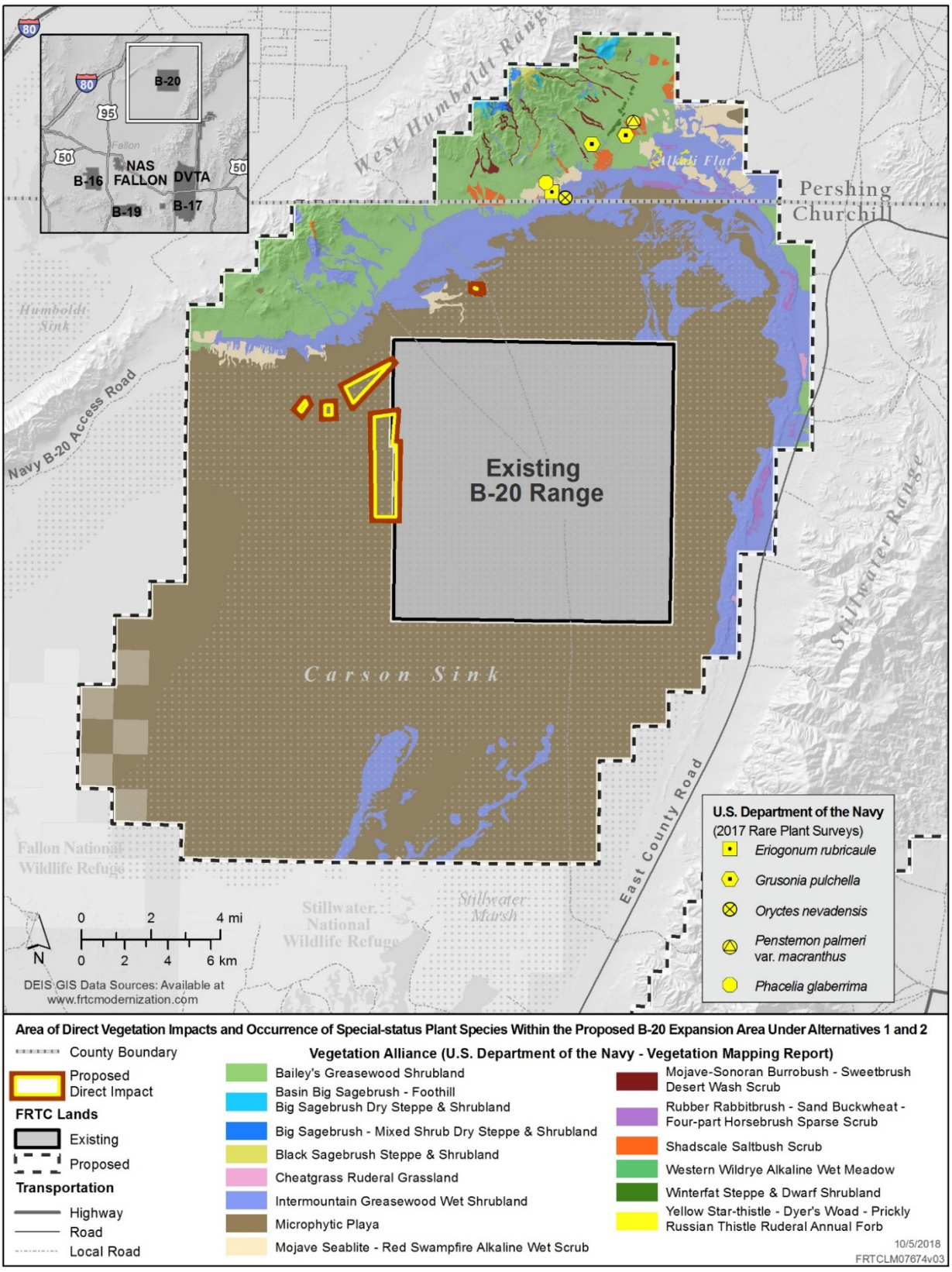


**Figure 3.10-50: Area of Direct Vegetation Impacts and Occurrence of Special-status Plant Species Within the Proposed B-20 Expansion Area under Alternatives 1 and 2**

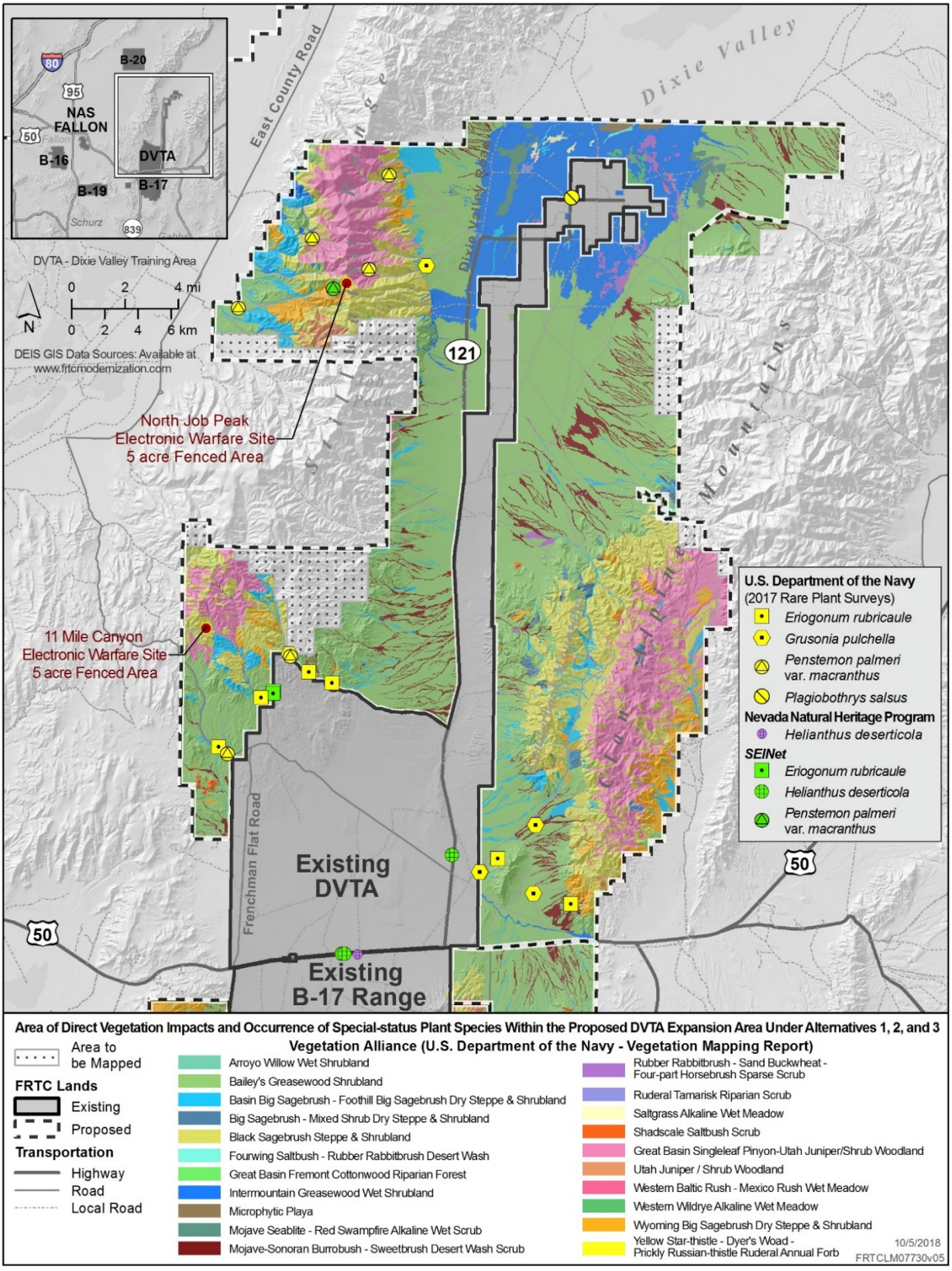


**Figure 3.10-51: Area of Direct Vegetation Impacts and Occurrence of Special-status Plant Species Within the Proposed DVTA Expansion Area under Alternatives 1, 2, and 3**

### Wildlife and Special-status Wildlife Species

For the purposes of this EIS, training activities within the proposed expansion areas are considered military readiness activities and the construction of the proposed targets and associated infrastructure within the proposed expansion areas is considered a non-military readiness activity. The DoD must confer and cooperate with the USFWS on developing and implementing conservation measures to minimize or mitigate adverse effects of a military readiness activity if that activity has a significant adverse effect on a population of a migratory bird species. Migratory bird conservation relative to non-military readiness activities is addressed separately in a Memorandum of Understanding developed in accordance with EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*.

As stated above under Vegetation, proposed construction activities associated with Alternative 1 would remove approximately 4,504 acres of vegetation from within the proposed B-16, B-17, and B-20 expansion areas. The removal of 2,450 acres of Bailey's greasewood shrubland would result in the loss of nesting, foraging, and resting areas for wildlife species. In addition, there would be impacts to 1,372 acres of microphytic playa, which does not support plants and therefore wildlife species during the majority of the year. During periods of sufficient rainfall, the playa would contain water and could support various wildlife species, particularly waterbirds and shorebirds that feed on invertebrates. However, proposed construction activities would impact less than 1 percent of the total 136,000 acres of microphytic playa that has been mapped only within the proposed FRTC expansion areas, and does not include areas of microphytic playa within the region of influence.

Approximately 8 acres of mapped bighorn sheep year-round range, 28 acres of mapped bighorn sheep winter & lambing range, 3,000 acres of mapped pronghorn year-round range, and 2 acres of mapped pronghorn crucial summer range would be directly impacted by proposed construction activities within the proposed B-16, B-17, and B-20 expansion areas (Table 3.10-26 and Figures 3.10-52 and 3.10-53); mule deer range would not be impacted. The majority of the 28 acres of mapped bighorn sheep winter & lambing range would actually be only winter range as the area impacted is associated with the flats at the foot of the southern point of the Fairview Range. However, within the FRTC region of influence, there are over 1 million acres of mapped bighorn sheep year-round range, over 51,000 acres of mapped bighorn sheep winter/lambing range, 5.6 million acres of mapped year-round pronghorn range, and 52,000 acres of mapped pronghorn crucial summer range. Therefore, impacts to these ungulate ranges would not have a significant or measureable impact to bighorn sheep or pronghorn populations.

**Table 3.10-26: Acreage of Direct Impacts to Bighorn Sheep and Pronghorn Range from Proposed Construction Activities within the Proposed B-16, B-17, and B-20 Expansion Areas under Alternatives 1 and 2**

| Species – Habitat/Range | Range | | | Total |
|---|---|---|---|---|
| | B-16 | B-17 | B-20 | |
| Bighorn Sheep – Year-round Range | 0 | 8 | 0 | **8** |
| Bighorn Sheep – Winter & Lambing Range | 0 | 28 | 0 | **28** |
| Pronghorn – Year-round Range | 0 | 2,982 | 3 | **2,985** |
| Pronghorn – Crucial Summer Range | 0 | 2 | 0 | **2** |

Noise and the presence of construction equipment and human activity may cause wildlife to temporarily avoid areas in the immediate vicinity of construction activities. Nesting or breeding adults of various wildlife species may be disturbed by noise and construction activities, which may result in abandonment or depredation of eggs or young. These activities may also temporarily displace wildlife from breeding habitat, resulting in reduced breeding success. However, noise impacts associated with construction activities would be short-term and minor.

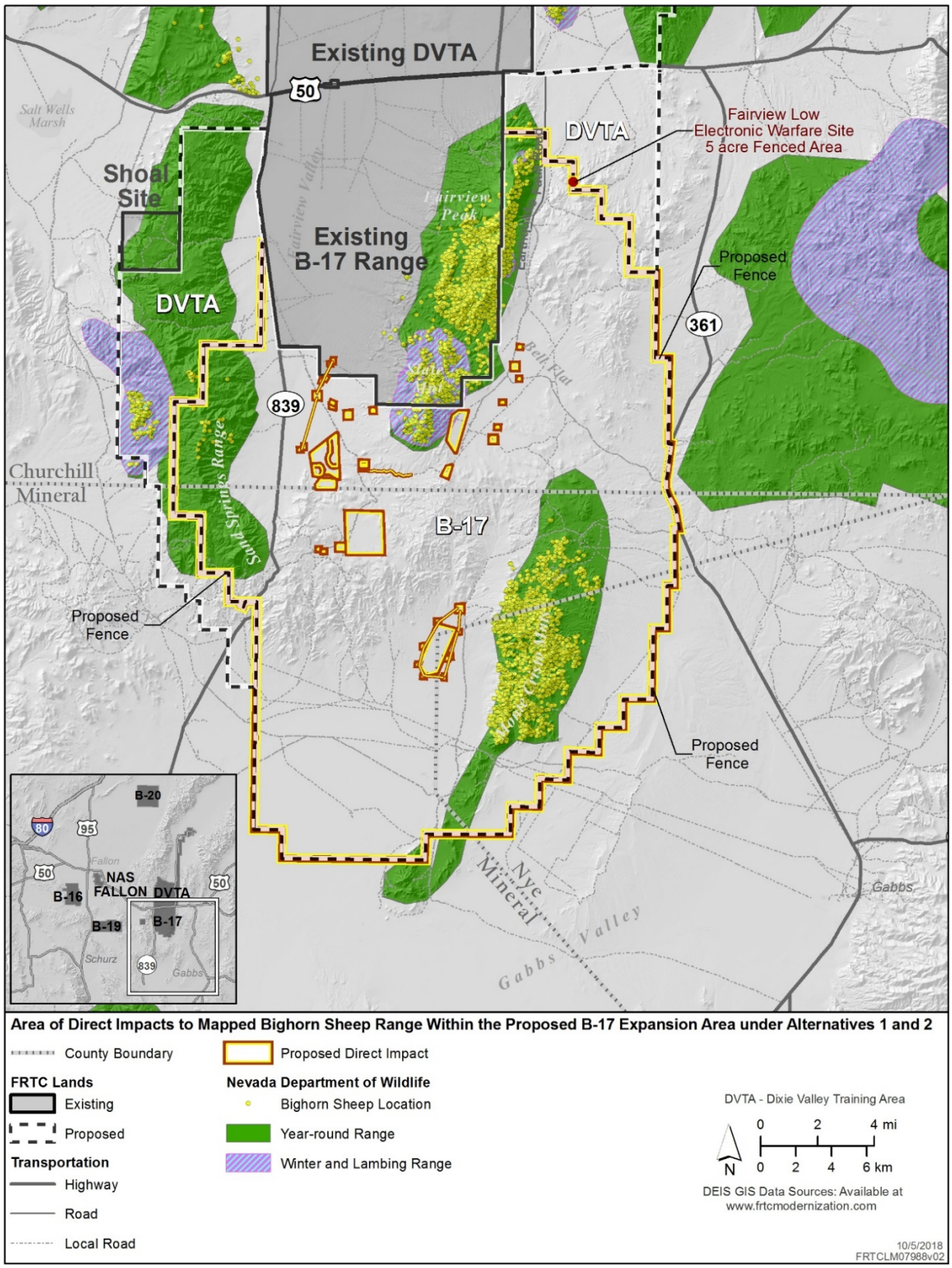


**Figure 3.10-52: Area of Direct Impacts to Mapped Bighorn Sheep Range Within the Proposed B-17 Expansion Area under Alternatives 1 and 2**

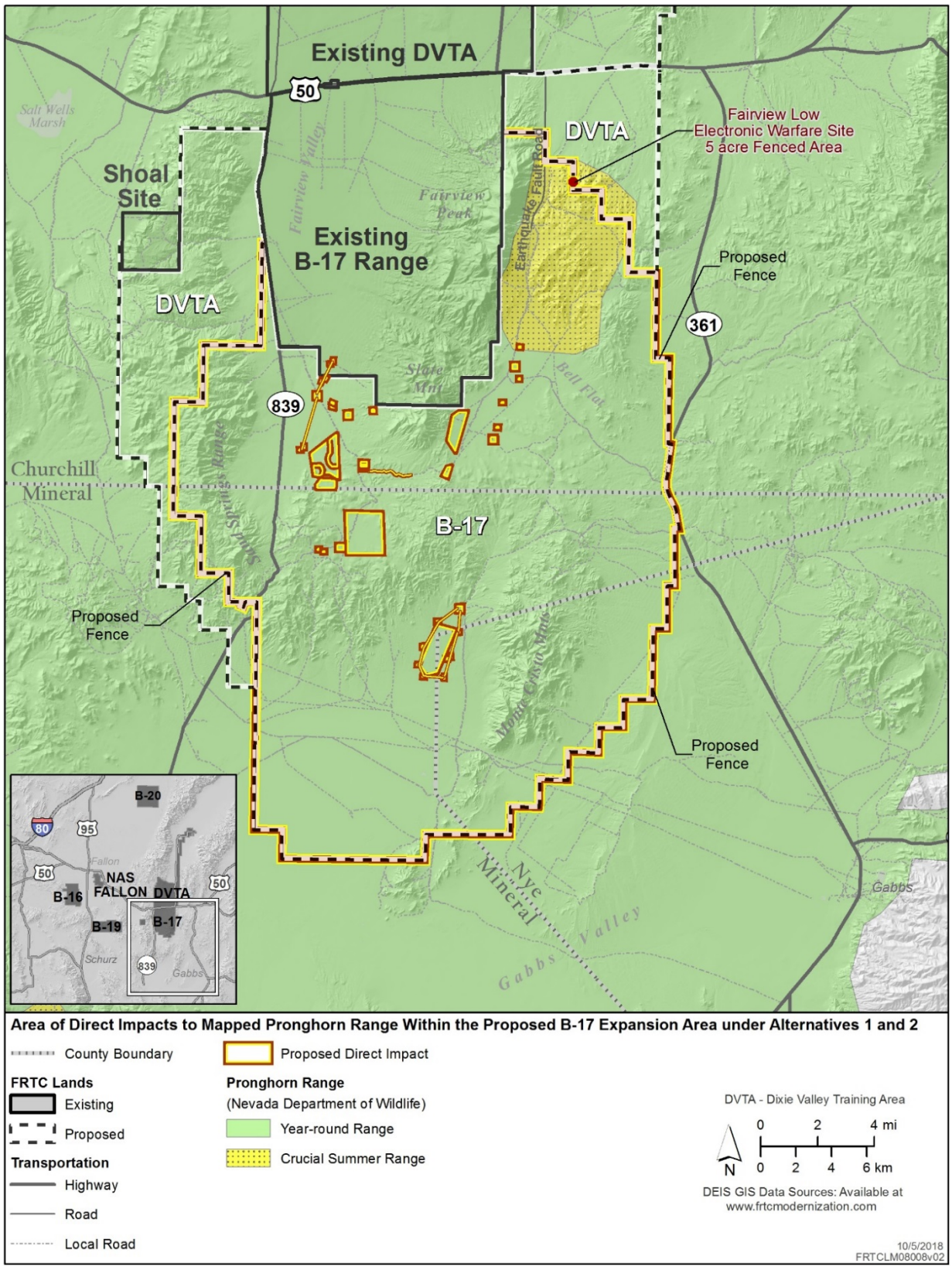


**Figure 3.10-53: Area of Direct Impacts to Mapped Pronghorn Range Within the Proposed B-17 Expansion Area under Alternatives 1 and 2**

Direct mortality from construction equipment is unlikely because noise associated with pre-construction activities and human presence is likely to disperse wildlife prior to any equipment use, although vehicle traffic would increase the potential for wildlife collisions. Smaller, less mobile species and those seeking refuge in burrows could inadvertently be killed during construction activities; however, long-term impacts to populations of such species would not result. To avoid and minimize impacts to migratory birds, construction would occur outside the breeding season to the maximum extent practicable, and pre-construction surveys would be conducted for MBTA-listed nesting birds. Construction would be delayed if nests were found within the ground disturbance footprint.

Perimeter fencing would be installed to exclude public access and dissuade trespass. To minimize impacts on animals and animal movements (e.g., bighorn sheep, pronghorn), BLM-certified fencing would be installed in accordance with specifications outlined in BLM Handbook H-1741-1 (Fencing). Perimeter fencing, although encompassing a larger area than what currently exists, would not impede seasonal migrations and general wildlife movement. Further, the addition of perimeter fencing would provide additional predator perches (i.e., raptors), which may adversely impact bird and mammal populations. As appropriate, predator proofing of a proportion of or all fence posts would be determined based upon the location of the fencing and associated habitat.

Therefore, these temporary direct impacts to wildlife populations, including special-status species, from construction noise and human activities associated with the implementation of Alternative 1 would not be significant.

#### 3.10.3.3.4 Infrastructure Projects to Support Alternative 1

**State Route 839**

Alternative 1 includes the potential relocation of State Route 839 and associated utility infrastructure. All three proposed options would include closing portions of the existing State Route 839 to public travel and improving existing roads from dirt roads to paved roads. The Navy is working with the Nevada Department of Transportation, BLM, Churchill County, and other stakeholders to identify a suitable location outside of the B-17 Weapons Danger Zone for the proposed relocation of State Route 839. The different alignments would generally affect biological resources in the same way. For example, direct impacts would occur through the vegetation removal and ground disturbance, with indirect effects resulting from potential habitat fragmentation. Depending on the selected alignment, State Route 839 options would permanently remove between approximately 115 and 180 acres of vegetation. A follow-on, site-specific National Environmental Policy Act (NEPA) document would be required to analyze the impacts of any route ultimately identified for the proposed relocation of the State Route 839, which would include analyzing potential impacts on biological resources.

**Paiute Pipeline**

Alternative 1 includes potential relocation of the Paiute Pipeline and associated utility infrastructure outside the B-17 Weapons Danger Zone. Although the exact location of the potential pipeline relocation has not yet been determined, the impacts on biological resources resulting from the relocation would be temporary (as the majority of the pipeline infrastructure would be underground), with construction impacts generally within a 50-foot-wide corridor. Constructing a new pipeline and removing existing pipeline could result in impacts on biological resources, including direct physical disturbance on vegetation (e.g., excavating, grading, grubbing, and soil compaction) and wildlife species (e.g., construction noise). A follow-on, site-specific NEPA document would be required to analyze the impacts

of any route ultimately identified for the proposed relocation of the Paiute Pipeline, which would include analyzing potential impacts on biological resources.

#### 3.10.3.3.5 Summary of Effects and Conclusions

**Electromagnetic Radiation**. Under Alternative 1, wildlife within the proposed expansion areas may experience a detectable behavioral response to an electromagnetic field but would quickly recover after the exposure. The health and behavior of individuals or populations would not be affected by electromagnetic fields generated from sources included under Alternative 1.

**Lasers.** Under Alternative 1, impacts associated with lasers are anticipated to be less than significant because: (1) it is unlikely an animal would detect a laser beam; (2) if detected, the animal would be expected to recover quickly (within a few seconds); and (3) the health and behavior of individual animals would not be affected by this temporary effect.

**Chaff.** The principal components of chaff are biodegradable and pose no known risk to wildlife ((Spargo, 1999; U.S. Department of the Air Force, 1997; U.S. Government Accountability Office, 1998)). Therefore, there would be no significant impacts to biological resources with the use of chaff during proposed training activities.

**Physical Disturbance**. The resources within the withdrawal areas associated with the proposed range expansion areas would be subject to physical disturbance from ordnance expenditures and construction activities. Impacts associated with construction activities and military training activities would not be significant because: (1) although individual animals may be impacted by disturbance or strikes from ordnance, it is not anticipated that population-level effects would occur; and BLM-certified fencing would be installed in accordance with specifications outlined in BLM Handbook H-1741-1 (Fencing), therefore minimizing impacts on animals and animal movements (e.g., bighorn sheep, pronghorn).

U.S. Navy policy requires NAS Fallon to manage their operations to minimize flight-related and aviation ground mishaps. As part of this policy, hazards to aircraft and ground operations must be identified and eliminated or minimized. With adherence to the NAS Fallon BASH Plan and use of the Avian Hazard Advisory System, there would be no significant impacts to bird or bat populations as no population-level effects to birds or bats would be expected.

**Noise**. Under Alternative 1, military training levels would continue at the same levels of activities analyzed in the 2015 Military Readiness Activities at Fallon Range Training Complex, Nevada Final Environmental Impact Statement (U.S. Department of the Navy, 2015), with activities dispersed more widely both vertically and horizontally within the existing and revised SUA. Wildlife resources would continue to be exposed at the same intensity because the training would be the same, but the exposures would be dispersed over a wider area and thus the same overall level (and nature) of impacts would be spread (or diffused) over a greater area. In particular, proposed low-level aircraft operations within the revised SUA would not result in significant impacts to wildlife populations for the following reasons:

1. The probability of an animal, nest, or other defined location experiencing overflights more than once per day would be low due to the random nature of flight within the SUA and the large area of land overflown.
2. Wildlife species within the region of influence are currently experiencing aircraft overflights at altitudes of less than 200 feet AGL with no known impacts to populations.

3. Wildlife species within the region of influence are currently experiencing sonic booms with no known impacts to populations.
4. The majority of aircraft operations within the SUA would occur at altitudes greater than the minimum altitude (floor).
5. Averaged noise levels within the proposed MOAs would be 55 dBA ($L_{dnmr}$) and within the Reno MOA would be less than 50 dBA ($L_{dnmr}$) (refer to the Supporting Study: Noise Study [available at http://www.frtcmodernization.com]);
6. Noise levels from sonic booms within the Supersonic Operating Areas would only reach a maximum 52 dB C-weighted DNL (refer to the Supporting Study: Noise Study [available at http://www.frtcmodernization.com])
7. The majority of the literature suggests that wildlife species exhibit adaptation, acclimation, and habituation after repeated exposure to jet aircraft overflights and associated noise, including sonic booms, and that there are no adverse impacts to wildlife species from aircraft overflights.

Therefore, there would be no significant impacts to biological resources with implementation of Alternative 1.

***Endangered Species Act***

There are no ESA-listed species within the proposed expansion areas under Alternative 1. Therefore, implementation of Alternative 1 would have no effect on ESA-listed species.

***Migratory Bird Treaty Act***

To avoid and minimize impacts to migratory birds during non-military readiness activities (i.e., construction of targets and infrastructure), construction would occur outside the breeding season to the maximum extent practicable, and pre-construction surveys would be conducted for MBTA-listed nesting birds. Construction would be delayed if nests were found within the ground disturbance footprint. Therefore, there would be no significant impacts to populations of migratory birds with implementation of Alternative 1.

Pursuant with the Final Rule authorizing incidental take of migratory birds during military readiness activities (50 Code of Federal Regulations Part 21), implementation of Alternative 1 would not have a significant adverse effect on populations of migratory bird species. Based on this conclusion, the consultation requirements of the Final Rule authorizing DoD to take migratory birds during military readiness activities do not apply to the Proposed Action.

***Bald and Golden Eagle Protection Act***

Based on the impact analysis presented above for wildlife and special-status species, temporary direct impacts to bald and golden eagle populations from proposed aircraft operations and construction activities associated with the implementation of Alternative 1 would not be significant. Therefore, the Navy has determined that implementation of Alternative 1 would not result in the "taking" of bald or golden eagles, their nests, or their eggs as defined by the Bald and Golden Eagle Protection Act.

#### 3.10.3.4 Alternative 2: Modernization of Fallon Range Training Complex and Managed Access

Alternative 2 is similar to Alternative 1. The proposed expansion areas, construction activities, and SUA would be the same as Alternative 1. The differences between Alternative 1 and Alternative 2 is that Alternative 2 would allow certain categories of users access to B-16, B-17, and B-20 when the ranges are not operational (i.e., typically weekends, holidays, and when closed for scheduled maintenance).

Therefore, impacts to biological resources with implementation of Alternative 2 would be the same as those previously assessed under Alternative 1.

### 3.10.3.5 Alternative 3: Bravo-17 Shift and Managed Access (Preferred Alternative)

Under Alternative 3, the Navy's current public land withdrawal would be renewed, and additional public and non-federally owned lands would be withdrawn or acquired for military training. As described in Chapter 2 (Description of Proposed Action and Alternatives), Alternative 3 would expand the FRTC to approximately 904,468 acres of land for military uses. This includes renewing the current withdrawal of 202,864 acres as well as requesting the withdrawal of an additional 606,664 acres of public land, and proposing to acquire 65,520 acres of private land. Under Alternative 3, new construction would be required for supporting infrastructure (e.g., new roads, administrative buildings, utility and communication infrastructure, and perimeter fencing).

Alternative 3 is similar to Alternative 1 and Alternative 2, but the proposed B-17 expansion area would extend further southeast. Unlike Alternative 1, the Navy would not withdraw land south of U.S. Route 50 as the DVTA. Rather, the Navy proposes that Congress categorizes this area as a Special Land Management Overlay. This Special Land Management Overlay will define two areas (one east and one west of the B-17 range) as Military Electromagnetic Spectrum Special Use Zones. These two areas, which are public lands under the jurisdiction of BLM, will not be withdrawn by the Navy and would not directly be used for land-based military training or managed by the Navy. This alternative would have the same access restrictions and Controlled Access Program as Alternative 2. All proposed activities associated with Alternative 3, including construction and training activities, are similar to Alternatives 1 and 2, although Alternative 3 would have a different laydown for the target areas within the proposed B-17 expansion area. The major construction differences between Alternative 3 and Alternative 1 are that Alternative 3 would not require the potential relocation of State Route 839 but would potentially relocate a portion of State Route 361. In addition, Alternative 3 has a different notional path for the Paiute Pipeline than Alternative 1.

#### 3.10.3.5.1 Training Activities

Under Alternative 3, the amount of training within the proposed FRTC expansion areas and proposed revised SUA relative to baseline conditions analyzed in the 2015 Military Readiness Activities at Fallon Range Training Complex, Nevada Final Environmental Impact Statement (U.S. Department of the Navy, 2015) would remain the same but be dispersed within a larger area (i.e., throughout the existing FRTC ranges and SUA plus the proposed FRTC expansion areas and revised SUA). Training activities would use existing target locations within the existing FRTC ranges and include new targets and training areas within the proposed expansion areas. This would increase the area where stressors (e.g., noise, strikes) would potentially impact wildlife resources.

**Vegetation and Special-status Plant Species**

Wildfire

The potential for wildfires from current training activities within the proposed range expansion areas would be the same as that presented under Alternative 1. Training activities on the ranges would not change in type or quantity under Alternative 3; they would change in target location. In addition, currently implemented fire management measures within FRTC lands would continue to be implemented as discussed under Alternative 1, and a fire management plan would be developed.

Therefore, there would be no significant impacts to biological resources from potential wildfires within the proposed range expansion areas.

**Wildlife and Special-status Wildlife Species**

Noise

Under Alternative 3, changes in the location of aircraft targets and land-based munitions and live-fire training areas within the proposed range expansion areas may result in potential noise impacts to wildlife species. Proposed changes in the noise environment and associated impacts to wildlife species within the proposed B-16, B-20, and DVTA expansion areas and the revised SUA would be the same as those presented under Alternative 1. Only the noise environment within the proposed B-17 expansion area differs from Alternative 1 and is summarized below.

- *Proposed B-17 Expansion Area*. Under Alternative 3, the expansion of the B-17 range to the south and southeast would increase the area subject to noise exposures during aircraft and land-based training activities. Aircraft targets and land-based training facilities would be installed southeast of the existing B-17 range thereby causing some associated aircraft and munitions activities to also shift to the south. Currently, DNL dBA noise contours from aircraft operations are confined within the existing B-17 range (see Figure 3.7-6). Under Alternative 3, the majority of aircraft activities and associated noise would remain within the existing B-17 range (see Figure 3.7-25). The 56-64 DNL dBA noise contours from proposed aircraft operations would overlie the majority of the proposed B-17 expansion area (see Figure 3.7-28). Similarly, estimated DNL dBC noise contours from proposed munitions activities would shift from occurring completely within the existing B-17 range (see Figure 3.7-7) to overlying the proposed expansion area (see Figure 3.7-29).

As with Alternative 1, estimated noise levels under Alternative 3 within proposed range expansion areas and revised SUA would likely elicit physiological and behavioral responses in avian and mammal species. As described previously under the general discussion on noise stressors, noise exposures on wildlife would be anticipated to be less than significant for the following reasons: (1) individual animals would be expected to recover quickly from these responses, (2) exposures would be intermittent and infrequent as training activities consist of non-continuous events, and (3) short-term behavioral responses would not be expected to affect individual animal fitness or have population-level effects. In addition, as estimated noise levels within the proposed range expansion areas would occur within the same habitats as found within the current range areas, the proposed expansion areas would be expected to contain the same wildlife species. As current training operations within the existing ranges have not significantly impacted wildlife species (U.S. Department of the Navy, 2015), it is expected that the same training activities would also not have significant impacts on the same wildlife species within an immediately adjacent area (i.e., proposed range expansion areas).

Under Alternative 3, the estimated 65 DNL dBA aircraft noise contour and 57-70 DNL dBC munitions noise contours would overlie currently mapped bighorn sheep year-round range (i.e., the flats at the southern end of the Fairview Range). Given the estimated number of bighorn sheep within the vicinity of the existing B-17 range area are at an all time high (Nevada Department of Wildlife, 2017a), existing training operations are not having an effect on regional bighorn sheep populations. Therefore, it is expected that current training operations conducted within the proposed expansion areas would not have a significant impact on bighorn sheep.

Electromagnetic Fields

Potential impacts to wildlife species from electromagnetic fields under Alternative 3 would be the same as that previously described for Alternative 1. Therefore, there would be no significant impacts.

Lasers

Potential impacts to wildlife species from lasers under Alternative 3 would be the same as that previously described for Alternative 1. Therefore, there would be no significant impacts.

Chaff

Potential impacts to wildlife species from chaff under Alternative 3 would be the same as that previously described for Alternative 1. Therefore, there would be no significant impacts.

Physical Disturbance

Potential impacts to wildlife species from physical disturbance (i.e., direct munitions strikes, aircraft/wildlife strikes) under Alternative 3 would be the same as that previously described for Alternative 1. Therefore, there would be no significant impacts.

#### 3.10.3.5.2 Public Access

Under Alternative 3, the Navy would close and restrict public access to the proposed range expansion areas and existing ranges except for Navy-authorized activities (e.g., ceremonial or cultural site visits, research/academic pursuits, or regulatory or management activities such as BLM, USFWS, NDOW activities). Under Alternative 3, allowable public uses of the lands within the existing DVTA and proposed DVTA expansion area would not change from current conditions. For further details regarding public access refer to Sections 3.2 (Land Use), 3.11 (Cultural Resources), and 3.12 (Recreation).

#### 3.10.3.5.3 Construction Activities

Under Alternative 3, approximately 5,700 acres of nine vegetation types would be impacted from construction activities associated with the proposed B-16, B-17, B-20, and DVTA expansion areas (Table 3.10-27). Two vegetation types comprise 86 percent of the total vegetation that would be impacted: Bailey's greasewood shrubland (3,576 acres or 62 percent) and microphytic playa (1,372 acres or 24 percent). The construction activities within the proposed B-17 expansion area would be similar to Alternative 1. The primary differences would be the location and length of the proposed perimeter fence and location of proposed target areas.

- *Proposed B-17 Expansion Area*. Proposed ground-disturbing construction activities (e.g., excavating, grading, grubbing, compacting, and clearing soil) associated with the proposed B-17 expansion area would directly impact 4,231 acres of vegetation (Table 3.10-27 and Figure 3.10-54). These ground-disturbing activities are associated with the proposed construction of two communication towers, convoy routes, military vehicle training routes, ground target areas, three electronic warfare sites, and 78 miles of security fencing with eight gates. The majority (3,500 acres or 82 percent) of the impacted vegetation is the regionally common and dominant Bailey's greasewood shrubland. Based on special-status plant surveys conducted in 2017 in support of this EIS, no special-status plant species occur in the vicinity of the proposed ground-disturbing activities within the proposed B-17 expansion area (Figure 3.10-54).

Construction activities within the proposed B-16 expansion area would be similar to Alternative 1 but with a small change in the boundary along Simpson Road in the southeast corner (Figure 3.10-55). The

proposed construction activities within the proposed B-20 expansion area would be the same as Alternative 1 (see Section 3.10.3.3.3, Construction Activities) (Figure 3.10-56). The only construction within the DVTA expansion area would be associated with two 5-acre electronic warfare sites (see Figure 3.10-51). In addition, a third 5-acre electronic warfare site would be constructed to the east of the existing B-17 range (Figure 3.10-54).

**Table 3.10-27: Acreage of Direct Vegetation Impacts from Proposed Construction Activities Within the Proposed B-16, B-17, B-20, and DVTA Expansion Areas under Alternative 3**

| Vegetation Type | Range | | | | Total |
|---|---|---|---|---|---|
| | B-16 | B-17 | B-20 | DVTA | |
| Bailey's Greasewood Shrubland | 76 | 3,500 | 0 | 0 | **3,576** |
| Big Sagebrush - Mixed Shrub Dry Steppe & Shrubland | 0.2 | 4.3 | 0 | 0 | **4.5** |
| Fremont's Smokebush–Nevada Smokebush Desert Wash Scrub | 0.4 | 0 | 0 | 0 | **0.4** |
| Intermountain Greasewood Wet Shrubland | 6.2 | 0 | 0 | 0 | **6.2** |
| Microphytic Playa | 0 | 0 | 1,372 | 0 | **1,372** |
| Mojave-Sonoran Burrobush - Sweetbush Desert Wash Scrub | 0 | 316 | 0 | 0 | **316** |
| Rubber Rabbitbrush - Sand Buckwheat - Four-part Horsebrush Sparse Scrub | 0 | 289 | 0 | 0 | **289** |
| Shadscale Saltbush Scrub | 36 | 0 | 0 | 0 | **36** |
| Utah Juniper/Shrub Woodland | 0 | 0 | 0 | 5.0 | **5.0** |
| To Be Mapped | 0 | 122 | 0 | 0 | **122** |
| **Total** | **119** | **4,231** | **1,372** | **5.0** | **5,727** |

An SWPPP would be prepared for proposed construction activities when such activities would disturb 1 or more acres or be part of a common plan that disturbs 1 or more acres. In accordance with Nevada's Stormwater Construction General Permit, all project-related SWPPP(s) would include erosion and sediment control measures (e.g., wattles, silt fences) and best management practices that would minimize or avoid direct and indirect impacts on soil, vegetation, and surface waters (Nevada Division of Environmental Protection, 2015). SWPPP(s) would remain in effect until the construction sites have stabilized.

Therefore, there would be no significant impacts to vegetation and special-status plant species with implementation of proposed construction activities under Alternative 3 because: (1) ground-disturbing activities would primarily impact a common and dominant vegetation type within the region; (2) no special-status plant species would be directly impacted; and (3) SWPPPs would be prepared and implemented to avoid and minimize potential direct and indirect impacts on soil and vegetation.

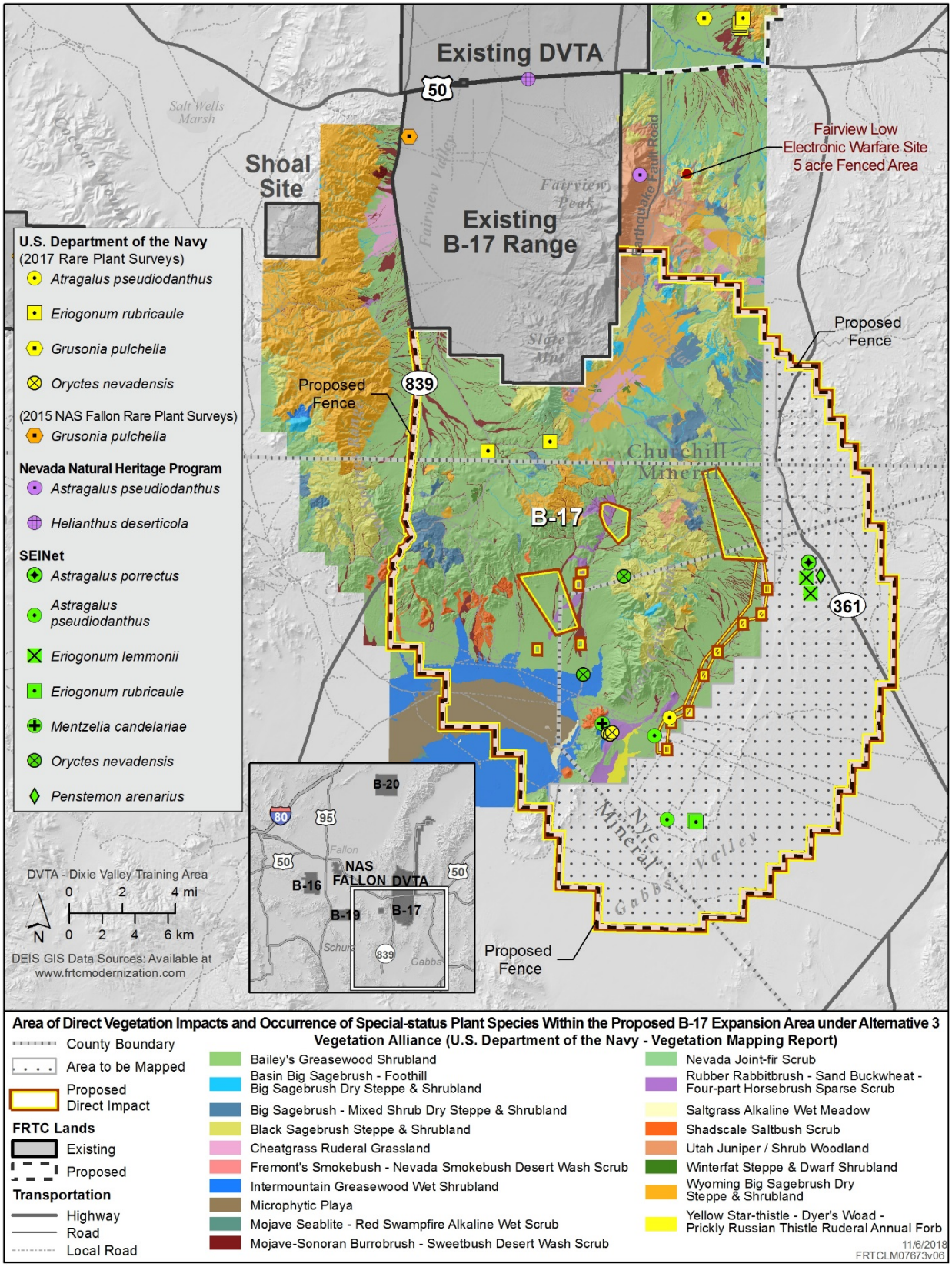


**Figure 3.10-54: Area of Direct Vegetation Impacts and Occurrence of Special-status Plant Species Within the Proposed B-17 Expansion Area under Alternative 3**

### Wildlife and Special-status Wildlife Species

For the purposes of this EIS, training activities within the proposed expansion areas are considered military readiness activities and the construction of the proposed targets and associated infrastructure within the proposed expansion areas is considered a non-military readiness activity. The DoD must confer and cooperate with the USFWS on developing and implementing conservation measures to minimize or mitigate adverse effects of a military readiness activity if that activity has a significant adverse effect on a population of a migratory bird species. Migratory bird conservation relative to non-military readiness activities is addressed separately in a Memorandum of Understanding developed in accordance with EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*.

As stated above under Vegetation, proposed construction activities associated with Alternative 3 would remove approximately 5,700 acres of vegetation from within the proposed B-16, B-17, and B-20 expansion areas. The removal of 3,576 acres of Bailey's greasewood shrubland would result in the loss of nesting, foraging, and resting areas for wildlife species. In addition, there would be impacts to 1,372 acres of microphytic playa, which does not support plants and therefore wildlife species during the majority of the year. During periods of sufficient rainfall, the playa would contain water and could support various wildlife species, particularly waterbirds and shorebirds that feed on invertebrates. However, proposed construction activities would impact less than 1 percent of the total 136,000 acres of microphytic playa that has been mapped only within the proposed FRTC expansion areas, and does not include areas of microphytic playa within the region of influence.

Approximately 400 acres of mapped bighorn sheep year-round range and 4,279 acres of mapped pronghorn year-round range would be directly impacted by proposed construction activities within the proposed B-16, B-17, and B-20 expansion areas (Table 3.10-28; Figures 3.10-57 and 3.10-58); mapped mule deer range would not be impacted. However, within the FRTC region of influence, there are over 1 million acres of mapped bighorn sheep year-round range and 5.6 million acres of mapped year-round pronghorn range. Therefore, impacts to these ungulate ranges would not have a significant or measureable impact to regional bighorn sheep or pronghorn populations.

**Table 3.10-28: Acreage of Direct Impacts to Bighorn Sheep and Pronghorn Range from Proposed Construction Activities Within the Proposed B-16, B-17, and B-20 Expansion Areas under Alternative 3**

| Species – Habitat/Range | Range | | | Total |
|---|---|---|---|---|
| | B-16 | B-17 | B-20 | |
| Bighorn Sheep – Year-round Range | 0 | 400 | 0 | **400** |
| Pronghorn – Year-round Range | 43 | 4,233 | 3 | **4,279** |

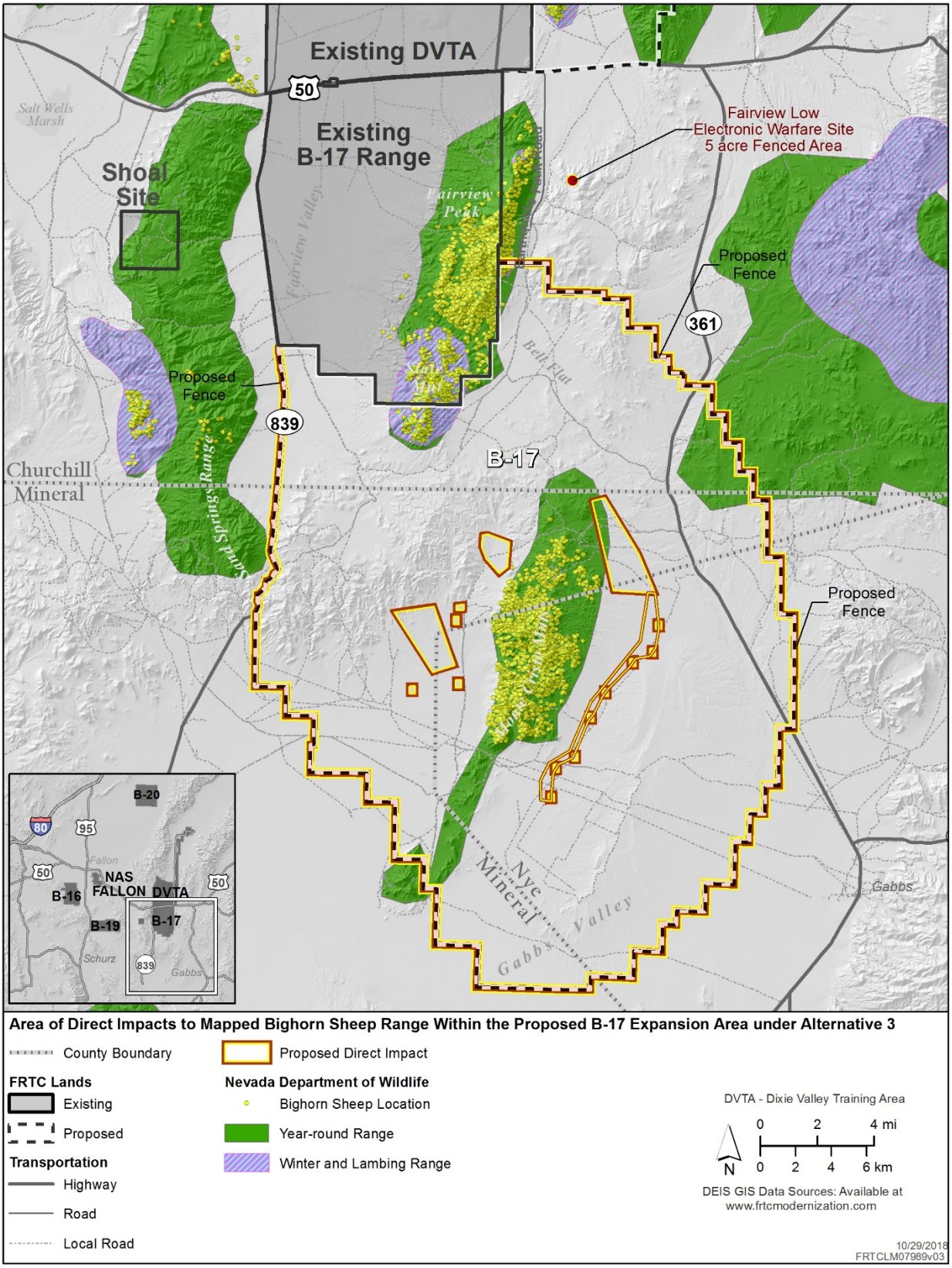


**Figure 3.10-55: Area of Direct Impacts to Mapped Bighorn Sheep Range Within the Proposed B-17 Expansion Area under Alternative 3**

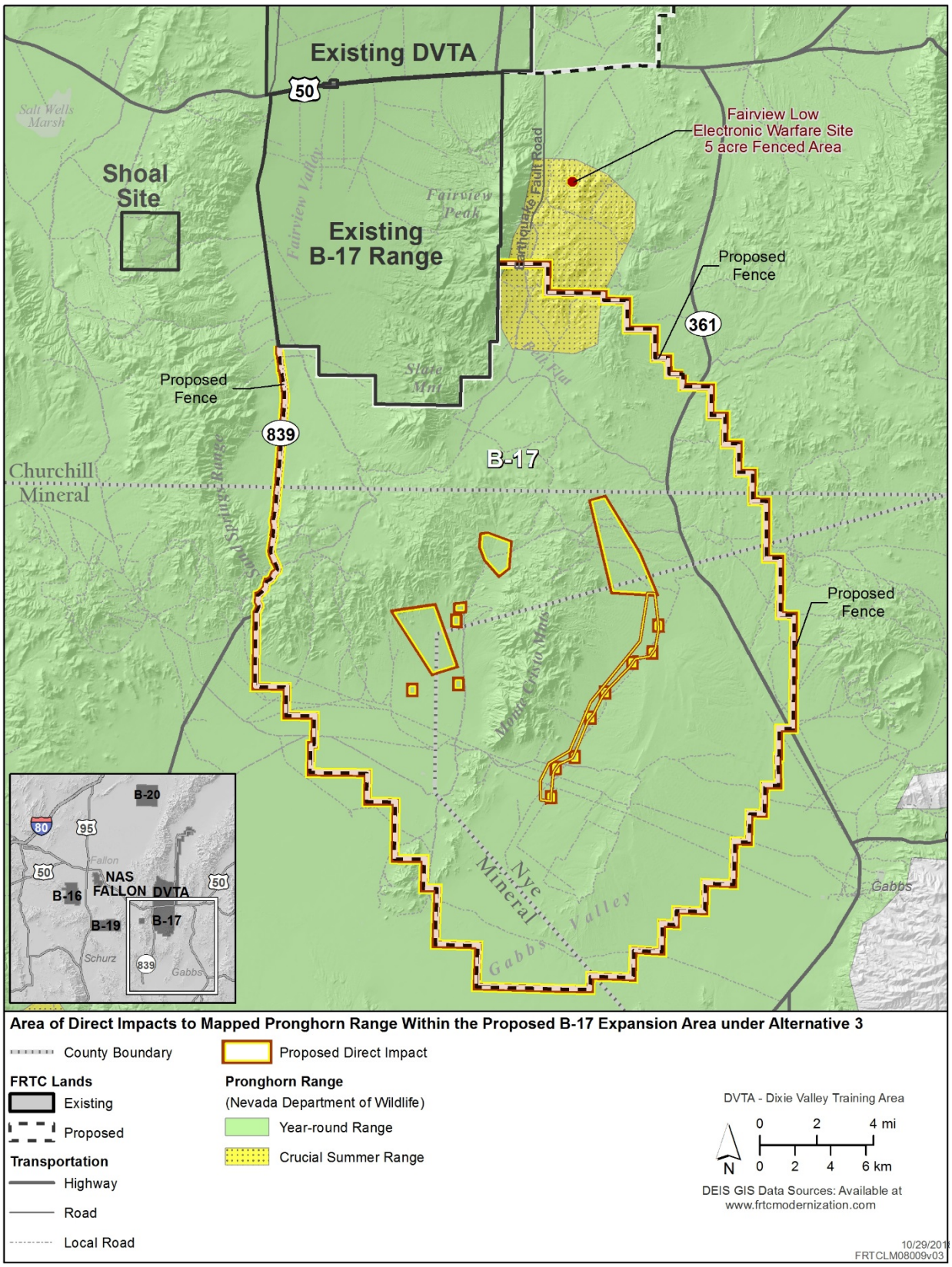


**Figure 3.10-56: Area of Direct Impacts to Mapped Pronghorn Range Within the Proposed B-17 Expansion Area under Alternative 3**

Noise and the presence of construction equipment and human activity may cause wildlife to temporarily avoid areas in the immediate vicinity of construction activities. Nesting or breeding adults of various wildlife species may be disturbed by noise and construction activities, which may result in abandonment or depredation of eggs or young. These activities may also temporarily displace wildlife from breeding habitat, resulting in reduced breeding success. To avoid and minimize impacts to migratory birds, construction would occur outside the breeding season to the maximum extent practicable, and pre-construction surveys would be conducted for MBTA-listed nesting birds. Construction would be delayed if nests were found within the ground disturbance footprint.

Direct mortality from construction equipment is unlikely because noise associated with pre-construction activities and human presence is likely to disperse wildlife prior to any equipment use, although vehicle traffic would increase the potential for wildlife collisions. Smaller, less mobile species and those seeking refuge in burrows could inadvertently be killed during construction activities; however, long-term impacts to populations of such species would not result.

Proposed perimeter fencing would include BLM-approved 4-foot high strand fencing. The purpose of this fencing is to exclude public access and dissuade trespass. Perimeter fencing would not impact wildlife movements because special-status game species (e.g., mule deer) can jump 4-foot fence heights (as intended by fence design), pronghorn can move through fences installed with proper strand spacing, and wire height and spacing allow for passage of smaller animals (e.g., kit fox). Perimeter fencing, although encompassing a larger area than what currently exists, would not impede seasonal migrations and general wildlife movement.

Therefore, these temporary direct impacts to wildlife populations, including special-status species, from construction noise and human activities associated with the implementation of Alternative 3 would not be significant.

#### 3.10.3.5.4 Infrastructure Projects to Support Alternative 3

**State Route 361**

Under Alternative 3, a portion (approximately 12 miles) of State Route 361 and associated utility infrastructure would potentially be relocated. The Navy is working with the Nevada Department of Transportation, BLM, Churchill County, and other stakeholders to identify a suitable location outside of the proposed B-17 expansion area for the relocation of State Route 361. Direct impacts would occur through the vegetation removal and ground disturbance, with indirect effects resulting from potential habitat fragmentation. A follow-on, site-specific NEPA document would be required to analyze the impacts of any route ultimately identified for the proposed relocation of the State Route 361, which would include analyzing potential impacts on biological resources.

**Paiute Pipeline**

As with Alternative 1, Alternative 3 includes the potential relocation of approximately 18 miles of the Paiute Pipeline and associated infrastructure outside the proposed B-17 expansion area. Constructing a new pipeline and utility infrastructure, and removing existing pipeline and utility infrastructure could result in impacts on biological resources, including direct impacts through vegetation removal disturbance. Although the exact location of the pipeline relocation has not yet been determined, the impacts on biological resources resulting from the relocation would be temporary (as the majority of the pipeline infrastructure is underground), with construction impacts generally within a 50-foot-wide corridor. A follow-on, site-specific NEPA document would be required to analyze the impacts of any

feasible relocation of the Paiute Pipeline, which would include analyzing potential impacts on biological resources.

#### 3.10.3.5.5 Summary of Effects and Conclusions

Under Alternative 3, military training levels would continue at the same levels of activities analyzed in the *2015 Military Readiness Activities at Fallon Range Training Complex, Nevada Final Environmental Impact Statement* (U.S. Department of the Navy, 2015), with activities dispersed more widely with the inclusion of the proposed expansion areas. Impacts under Alternative 3 would be similar to Alternative 1, but Alternative 3 would allow more public access to proposed expansion areas than Alternative 1. There would be no significant impacts with implementation of Alternative 3.

***Endangered Species Act***

There are no ESA-listed species within the proposed expansion areas under Alternative 3. Therefore, implementation of Alternative 3 would have no effect on ESA-listed species.

***Migratory Bird Treaty Act***

To avoid and minimize impacts to migratory birds during non-military readiness activities (i.e., construction of targets and infrastructure), construction would occur outside the breeding season to the maximum extent practicable, and pre-construction surveys would be conducted for MBTA-listed nesting birds. Construction would be delayed if nests were found within the ground disturbance footprint. Therefore, there would be no significant impacts to populations of migratory birds with implementation of Alternative 3.

Pursuant with the Final Rule authorizing incidental take of migratory birds during military readiness activities (50 Code of Federal Regulations Part 21), implementation of Alternative 3 would not have a significant adverse effect on populations of migratory bird species. In addition, the proposed training activities under Alternative 3 would not change from those activities assessed in the *2015 Military Readiness Activities at Fallon Range Training Complex, Nevada Final Environmental Impact Statement* (U.S. Department of the Navy, 2015). Based on this conclusion, the consultation requirements of the Final Rule authorizing DoD to take migratory birds during military readiness activities do not apply to the Proposed Action.

***Bald and Golden Eagle Protection Act***

Based on the impact analysis presented above for wildlife and special-status species under Alternative 1, temporary direct impacts to bald and golden eagle populations from proposed aircraft operations and construction activities associated with the implementation of Alternative 3 would not be significant. Therefore, the Navy has determined that implementation of Alternative 3 would not result in the "taking" of bald or golden eagles, their nests, or their eggs as defined by the Bald and Golden Eagle Protection Act.

### 3.10.3.6 Proposed Management Practices, Monitoring, and Mitigation

Management of proposed expansion areas would require extensive updates to management plans. If the proposed action is implemented (i.e., expansion of the existing DVTA and B-16, B-17, and B-20 ranges), the NAS Fallon INRMP would be revised to include management practices for special-status species. The Navy will coordinate with BLM, NDOW, and USFWS in the revision of the INRMP and will consider which additional management or monitoring activities can be incorporated. This coordination

would include grazing management by BLM on DVTA, invasive species control and interdiction, wildland fire management, and other stewardship conservation programs.

### 3.10.3.7 Summary of Effects and Conclusions

Special-status wildlife species within withdrawal areas would be exposed to noise from aircraft operations and munitions activities. Noise may elicit physiological and behavioral responses in special status avian and mammal species under the action alternatives. Exposed individuals would be expected to quickly recover from these responses, and exposure would be intermittent and infrequent. The short-term behavioral responses are not expected to affect the fitness of individuals. Therefore, population-level effects would not occur. Noise would have short-term effects on special status avian and mammal species, but would be widespread throughout the withdrawal areas.

Under the action alternatives, special-status wildlife species within proposed expansion areas would be exposed to noise, energy, and strike (i.e., aircraft and munitions) stressors. Additionally, special-status wildlife species within the proposed expansion areas would be exposed to physical disturbance. As described above, these stressors are expected to result in short-term behavioral responses that are not expected to affect the fitness of individuals and therefore would result in significant population-level effects to any species.

The MBTA prohibits the taking, killing, or possessing of migratory birds or the parts, nests, or eggs of such birds, unless permitted by regulation. The Final Rule authorizing DoD to take migratory birds during military readiness activities was published in the Federal Register on February 28, 2007 (50 Code of Federal Regulations Part 21). The Final Rules authorizes incidental take of migratory birds during military training and testing activities that would be conducted under the Proposed Action, but does not authorize incidental take during “non-military readiness activities” such as range construction or routine maintenance of targets. Accordingly, conclusions regarding compliance with the MBTA are presented separately for military readiness activities and non-military readiness activities. The Final Rule authorizing DoD to take migratory birds during military readiness activities provides that the Armed Forces must confer and cooperate with USFWS on the development and implementation of conservation measures. Doing so will minimize or mitigate adverse effects of a military readiness activity if the DoD determines that such activity may have a “significant adverse effect” on a population of a migratory bird species. An activity has a significant adverse effect if, over a reasonable period, it diminishes the capacity of a population of a migratory bird species to maintain genetic diversity, to reproduce, and to function effectively in its native ecosystem. As used here, population means a group of distinct, coexisting, conspecific individuals (i.e., organisms of the same species), whose breeding site fidelity, migration routes, and wintering areas are temporally and spatially stable, sufficiently distinct geographically (at some time of the year), and adequately described so that the population can be effectively monitored to discern changes in its status. The analysis presented in this section indicates that the combined effects of noise, general human disturbance, and reduced habitat quality associated with military readiness activities could result in reduced fitness of individual birds—in particular, species that may breed in habitats of the Bravo ranges. However, the analysis indicates that military readiness activities are not expected to have a significant adverse effect on a population of a migratory bird species. Based on this conclusion, the conferencing requirements of the Final Rule authorizing DoD to take migratory birds during military readiness activities do not apply to the Proposed Action.
Table 3.10-29 summarizes the effects of the alternatives on biological resources.

**Table 3.10-29: Summary of Effects for Biological Resources**

| | Summary of Effects and National Environmental Policy Act Determinations |
|---|---|
| **No Action Alternative** | |
| Summary | Biological resources would continue to be exposed to stressors from any continuing military training activities. |
| **Impact Conclusion** | The No Action Alternative would not result in significant impacts on biological resources. |
| **Alternative 1** | |
| Summary | • Estimated noise contours from aircraft operations and munitions activities would be similar to current noise contours within existing ranges but under Alternative 1 would occur within the proposed expansion areas.<br>• The probability of an animal, nest, or other defined location experiencing overflights more than once per day would be low due to the random nature of flight within the SUA and the large area of land overflown.<br>• Although proposed airspace revisions would include aircraft overflights of less than 500 feet AGL, wildlife species (e.g., bighorn sheep, pronghorn, greater sage-grouse) within the region of influence are currently experiencing aircraft overflights at altitudes of less than 200 feet AGL with no known impacts to populations.<br>• Wildlife species (e.g., bighorn sheep, pronghorn, greater sage-grouse) within the region of influence are currently experiencing sonic booms with no known impacts to populations.<br>• The majority of aircraft operations within the SUA would occur at altitudes greater than the minimum altitude (floor).<br>• Averaged noise levels within the proposed MOAs would be 55 dBA DNL and within the Reno MOA would be less than 50 dBA DNL.<br>• Noise levels from sonic booms within the SOAs would only reach a maximum 52 dB C-weighted DNL.<br>• The majority of the literature suggests that wildlife species exhibit adaptation, acclimation, and habituation after repeated exposure to jet aircraft overflights and associated noise, including sonic booms, and that there are no adverse impacts to wildlife species from aircraft overflights.<br>• There would be no significant impacts to biological resources from the use of electromagnetic radiation, chaff, and lasers within the proposed range expansion areas and revised SUA.<br>• Potential impacts to migratory birds would continue to be avoided and minimized by pilots by incorporating BASH awareness protocols as standard flight operation procedures.<br>• Direct impacts to 4,500 acres of regionally common vegetation communities would not be significant.<br>• Potential direct impacts to bighorn sheep and pronghorn ranges would not have a significant or measureable impact to bighorn sheep or pronghorn populations. |
| **Impact Conclusion** | Implementation of Alternative 1 would not result in significant impacts on biological resources. |

**Table 3.10-29: Summary of Effects for Biological Resources (continued)**

| | Summary of Effects and National Environmental Policy Act Determinations |
|---|---|
| **Alternative 2** | |
| Summary | Impacts under Alternative 2 would be the same as those under Alternative 1. |
| **Impact Conclusion** | Implementation of Alternative 2 would not result in significant impacts on biological resources. |
| **Alternative 3** | |
| Summary | • Impacts to wildlife species under Alternative 3 would be the same as those under Alternative 1<br>• Direct construction impacts to 5,700 acres of regionally common vegetation communities would not be significant.<br>• Direct construction impacts to bighorn sheep and pronghorn ranges would not have a significant or measureable impact to bighorn sheep or pronghorn populations. |
| **Impact Conclusion** | Implementation of Alternative 3 would not result in significant impacts on biological resources. |

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